Forest Resource Management Plan

The Hamlin Lot

The Town of Meredith, NH

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Prepared for The Meredith Conservation Commission

Northern Forest Resources

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Introduction

The Hamlin lot, is located in the southwestern portion of the Town of Meredith Tax Map R-31-20. The lot is 315.2 acres in size and located north of Chemung Road. The previous forest management plan for the property was prepared by Brenda Brown in September 1998. The Town purchased the land in December 1979 from Robert H. Hamlin. The northern portion of the property has 2,400 feet of undeveloped frontage along the western shore of Wicwas Lake. This land is situated in a portion of Town that is sparsely settled with most of the surrounding acreage predominantly used as forestland, along with small scale agricultural uses. The development pressures in the surrounding landscape increase the value of the protected lands owned by the Town of Meredith. The Hamlin Forest, combined with the 385 acre Chemung State Forest which abuts the Hamlin Forest south of Chemung Road, create a large protected landscape. Neighboring lands owned by the Town include the Hamlin and Eames Forests, the Tucker Mountain and Carleton Lots, along with the Leighton Town Forest. These abutting and nearby tracts lead to habitat connectivity and travel corridors for creatures that are dependent upon larger wild landscapes, such as moose, bear, fishers and raptors (see Wildlife).

Management Goals

- Maintenance of the extensive, well utilized trail network which extends over most of the land
- During the next 15 years there are no plans to conduct significant forest harvests on the property. However, small harvest measures may be taken to improve wildlife habitats, or to salvage trees damaged by insects, pathogens or storm damage
- Maintaining and enhancing the habitat for a wide array of wildlife species
- Employ the practice of climate sensitive forestry, designed to propagate and grow tree species that are projected to successfully adapt. Develop awareness/management decisions concerning the consequences of tree pathogens
- Rare ecotypes, unusual species, large hardwood trees, nesting and denning sites, along with natural anomalies will be preserved

Description

The forest is dominated by red oak, hemlock, and white pine forest ecotypes. Red oak is by far the most prevalent species on the property. This is a fortunate circumstance in that during these times of a changing climate, red oak is predicted by the Northern Institute of Applied Climate to be resilient to the warming temperatures for decades to come (see Climate Change). The extensive hemlock stands are healthy, and thus far, free of both the hemlock wooly adelghid, and the elongated hemlock scale.

Field Work

The field work was carried out in early April and May of 2024. A systematic sampling was carried out using parallel lines upon which sample points were taken at predetermined intervals. The sampling points were taken to assess the forest's stocking levels and health, wildlife habitats, ground vegetation, invasive species, and predisposition to future threats.

Access

There is are two log landing locations on the discontinued Old Stanton Road. Stanton Road has access from both ends of Chemung Road. The western access from the recreational parking lot is the preferred access route. The Chemung Road access to the landing on the eastern terminus of Stanton Road is gated and locked. The western log landing currently serves as the trailhead in the southwestern portion of the property. Other access points include a logging road from Wicwas Shore Road which leads to a good log landing. On Arbutus Hill Road there exists a 30 foot corridor of ownership which contains a 12+/- foot wide ox-cart road bounded by tall stone walls leading to the northwest corner of the Hamlin Lot. This cart road is remarkable, and at the same time too rough and narrow for the passage of vehicles, although it could be cleared for foot travel.

A blazed boundary corner found on the northwestern corner of the Hamlin lot.

Boundaries & Cultural Resources

Stone walls, wire fences, and maintained roads comprise the majority of the boundary lines on the Hamlin lot. There are also extensive interior stone walls. The cultural resources located include a cellar hole on the Old Stanton Road, where there is also extensive stone construction of out-building foundations and livestock enclosures. The walls demonstrate that the land was

well suited for agrarian purposes, just as it is now suitable for growing high quality forests (see Soils). This cart road to Arbutus Hill Road is remarkable with its uneven surface, due to its use by livestock and carts, along with its high stone walls on either side.

History

A commercial forest thinning was conducted in the southern portion of the land in 1992/93. A larger subsequent harvest was carried out in 1999 by the town's previous forester, Brenda Brown. This is evident by timber marking paint which can still be seen on a few trees that were marked for harvest and not cut. The decline of agricultural use is demonstrated by the fact that the most of the live trees on the property are less than 150 years old.

Recreation

This Town of Meredith property is public land. It is open to all forms of non-motorized recreation. The use of the parking area and the trails by hikers and skiers attests to the fact that this property is a recreational destination. Many of the old farm and logging roads present are now used as recreational trails.

A remarkable boulder with a sheltered compartment beneath it

Downy rattlesnake plantain, found in the southwest corner of Stand 1

Aesthetics

Nearly the entire property is forested, with both hardwood and softwood forests. There are two shallow ponds, with adjoining wetlands which provide viewing opportunities for wildlife and vegetation. A trail located at the top of the ledge drops to Wicwas Lake and offers grand winter views of the lake and the surrounding countryside. There is a wonderful hillside of large

boulders near the eastern terminus of the Old Stanton Road. At the northern portion of the property there is a steep pitch with many large boulders where a brook descends into a moist forest of tall northern hardwoods containing red oak, red and sugar maples, yellow birch, dying white ash, and basswood.

A view of the water in Pond A

Wetlands and Waterways 16.6 acres

There are two significant shallow ponds on the property each of which has a brook flowing through it. The two larger ponds previously had higher water levels when beavers were present. There are abandoned beaver dams and lodges in the pond basins. There are

additional small shrub and sedge swamps present. These beaver meadow sites have vegetation ranging from grasses and sedges, to cattails, to shrubs. There are also numerous vernal pools on the property. Vernal pools are essential breeding locations for salamanders and forest frogs. This property is an active watershed with first and second order brooks coursing over the landscape. Some wetlands are forested, while those at the shallow end of each large pond are shrub swamps. The shallow wetlands provide habitat for a wide array of native birds. Snags are essential bird habitat in shallow wetlands providing nesting habitat. Birds drawn to these wetland habitats include kingbirds, Canada warblers, yellow bellied flycatchers and tree swallows, along with black and wood ducks. (See Forestry for the Birds)

Forest Protection

The current spread of invasive species in the forests of New England, along with our rapidly changing climate, the protection of our forests has become an issue of increasing concern. As we know, the ash tree species are nearly all dead. Small ash below 4”DBH may survive, as will ash saplings, awaiting the hopeful introduction of a biological control to prey upon the emerald ash borer, and thereby restore the ability of the ash trees to again grow large. The hemlock wooly adelghid will continue to gradually erode this species’ position in our forests. This decline will be gradual, as the adelghid populations are reduced by up to 95% whenever winter temperatures fall to below 5 degrees F, as it has during this winter of 2024/25. The next significant tree species to decline will be the American beech. The beech leaf disease arrived in Ohio in 2012, and was discovered in the Town of Meredith during 2024. Signs of the infestation will become apparent in Meredith during 2025 or 2026 when beech leaves become malformed and discolored due to the culprit - a microscopic nematode native to Japan. This ‘disease’ was named before the forest pathologists had yet to learn of its cause. The tiny nematode and its eggs are spread by nearly everything in the forest, insects, birds, mammals, even by the wind. Initially it kills the beech understory, with the mortality gradually moving higher into the mid-story canopy and eventually into the overstory. There appears to be no inherent resistance of the beech to this infestation. It will kill the entire beech understory within 2-3 years of its arrival. The question then arises, what trees will grow to take the place of the ubiquitous beech, and how can we facilitate its successful germination? A priority is to match the replacement tree species to suitable sites for their growth. Growing tree species on sites that they are not suited to is a long-term waste of forest productivity. Black birch is often a good choice on a beech site. Black birch seeds can be purchased and planted. The red pine scale, a tiny bark insect, is also advancing northward. Nearly all of the red pine south of Concord are dead or dying. It would be wise to preemptively harvest the red pine trees on Town lands prior to their demise, replacing them with white pine regeneration. Often the only solution to an invasive species infestation is to introduce biological control agents that are either predatory or pathogenic. This safety of such a release takes years of research to ensure that the introduced control species are safe for release without having negative collateral impacts. These solutions

seek to establish predator/prey biological balance to limit the invasive species' population levels.

One important consideration is that invasive tree and shrub species will nearly all seek to capitalize upon canopy openings. The greatest threat on this front is the European buckthorns. The two species present in NH are the glossy and common buckthorns. They need to be eliminated as soon as they are detected, as they spread fast growing berries that birds eat, along with sprouting from their root systems. Sadly, once invasive plants have spread the only effective treatment is with the use of chemical herbicides. Monitoring our forests is now more important than ever to prevent invasive infestations from becoming unmanageable. The spread can happen very rapidly and can dramatically downgrade habitats for native species.

The Climate

The changing climate has become one of our leading silvicultural considerations. Most of the trees in NH take at least 85 years to approach economic maturity, and longer to achieve biological maturity. Maintaining adequate stocking levels in our forests will help to preserve soil moisture levels, which will keep forest soils moist and cool. The Northern Institute of Applied Climate Science is a branch of the US Forest Service. Their research has found that the ranges of tree species such as paper birch (white birch), balsam fir, black spruce, tamarack, serviceberry, quaking aspen among others will move inexorably northwards. Moving trees northward with species that are adapted to ranges a bit south of NH is how we can prepare our forests for the changes afoot. This practice is known as assisted migration. Trees take over 80 years to mature. Foresters are responsible to keep forests healthy throughout their life cycles. Assisted migration is a practice designed to introduce adaptive tree species into stands.

Forest managers can improve the carbon capture capacity of forest stands by keeping forests well stocked. Foresters can also increase the rate of photosynthetic carbon sequestration in a stand by managing forests to encourage the growth of trees that are well adapted to the site indexupon which they grow. Site index is the measure of how tall each tree species can grow on a specific site over a period of +/- 50 years.

Trees growing on appropriate sites can grow a higher volume of timber/acre at a faster pace, while allowing multiple layers forest canopy to develop. These features will absorb more CO2/acre to reduce the effects of climate change. In hardwood stands the height of the overstory tree canopy is closely correlated to the site index for each tree species growing there. The canopy level is one way to determine the site index for a hardwood tree species.

Vertical Structure and Crown Closure

Vertical structure is the layering of live and dead limbs on trees within a forest. Uneven aged forest management can be achieved by using light group selection harvests. This allows enough peripheral light in the stand openings for adjacent trees to grow limbs lower in the openings

providing layers in the forest canopy. The Hamlin lot has softwood stands with hemlock trees doing just that in stands that were harvested in 1999. This feature provides habitat for a wide *

array of neo-tropical* bird species (see Forests for the Birds). The NH Threatened pine marten, along with fisher thrive hunting in forests with structure.

Habitat & Coarse Woody Debris

Coarse woody debris is composed of dead limbs and downed trees lying on the forest floor. Undisturbed older forests are often laden with this material, due to dead trees falling in place. The debris enhances biodiversity in the forest. Harvested trees also increase debris by being limbed in a forest. The woody debris facilitates the successful germination of tree and shrub seed by their falling into the spaces between pieces of wood where adequate summer moisture is maintained to facilitate seed germination. Woody debris leads to the proliferation of wood decay fungi, which is fed upon by the insects, which are in turn fed upon by rodents and birds, which are then fed upon by predators. The entire the food chain benefits. It also allows for the growth of both herbaceous and woody ground vegetation helping to feed wildlife while again serving as a foundation to the forest's food chain, from the ground up. The mycorrhizal fungi grown in soils and encouraged by woody debris conduct nutrients and minerals from the soil into the fine root tips of trees, while the trees symbiotically provide a return flow carbohydrates from the trees to the fungi. The presence of these fungi dramatically accelerates tree growth rates. Decaying woody debris returns the nutrients in the trees back to the forest soils, providing a full nutrient cycle. The sum total of organic material in a forest ecosystem correlates directly to the amount of life in a forest. Shrew populations provide a good metric for this, although this correlation would be difficult to measure.

Invasive Species

The forester is pleased to report that, during the field work, there were no invasive species found on the Hamlin lot that present a threat to the forested landscape. However, there is Japanese knotweed adjacent to the parking area, along with Asian bittersweet found along openings, it does not inhabit unbroken forests. The bittersweet present needs to be cut down. This will be a maintenance issue with repeated cutting done every three years.

*Neo-tropical birds migrate to warmer climates during the winter

A winter wren found along the brook in the southwestern corner of the property

Forests for the Birds

The forester saw and photographed a winter wren along the brook in the southwestern corner of the lot. This is a bird that requires moist sites with layers of shrubs and/or softwood saplings. The songs of winter wrens are perhaps the most beautiful found in the northern forests. The large super canopy white pines on the Hamlin Lot provide a sense of security for many arboreal species, such as ravens, pine siskins, and numerous species of raptors.

Most neo-tropical birds and warblers feed upon caterpillars that inhabit the leaves and flowers of hardwood trees. Oak trees provide habitat for a far greater number of caterpillar species, along with the resulting diversity of birds, than any other native tree genus. The timing of caterpillar hatches is straying further from historical norms. The timing of bird arrivals and caterpillar hatches is now falling out of sync, which has a negative impact on the number of bird eggs laid, and upon the survival of newly hatched nestlings.

Large hardwood trees (22”DBH* +) that are showing signs of decay in their upper stems or have existing round holes should be retained for habitat.

Bear scat with birdseed on the Hamlin Lot

Canada yew growing below the ledges near Wicwas Shore Road

Wildlife

The southern portion of the Hamlin lot has numerous hiking trails on it, limiting the use of the property for some species. On the Hamlin lot there are ubiquitous large red oak trees which enrich habitats over nearly all the property. The mast (acorn) crops, provide acorns which provide the richest source of fat and protein found in a forest ecosystem. The fat content of the nuts allows deer to survive difficult winters. A mast year can also determine whether bears will have cubs, while also increasing the number of cubs born. All manner of wildlife will take advantage of mast crops. Bears will climb into beech and oak trees during mast years where they will break off limbs to eat the nuts. They will then place the broken limbs in a suitable

location for making a nest, which they will then use as a dinner chair upon which to eat the nuts from the successive broken limbs.

This property is an oak/hemlock/northern hardwood ecosystem. Large trees in particular provide rich animal habitat, including habitat for roosting bats. The richest habitats exist in trees that have cavities, and decayed centers. The older a large hardwood gets the better the habitat becomes. These trees provide habitats for fisher, marten, flying squirrels, bats, chickadees, nuthatches, flickers, owls, woodpeckers, along with an array of rodents. Old maple and yellow birch trees can have flaking bark which provides roosting habitat for endangered forest bats.

Aspen and red maples are preferred den trees, by having low density woods that are easily excavated by cavity nesting species. Woodpeckers and flickers generally create the initial irregular cavities, followed by the mammals who will refine the openings into nearly perfect cylinders. The dense canopy layers found in unbroken hemlock overstories provide habitat for winter deer yards. The snow is held above ground by the limbs creating easier movement, along with access for the deer to dig for hard mast like acorns and beech nuts. During February and March, the deer will move to oak stands on southern slopes where the snow melts to allow the access to last fall's acorns. Canada yew (see photo above) is the most favored deer browse during the winter.

Forest management can be used to encourage the proliferation of soft mast (fruit) trees and shrubs in the forest. Forest fruit is produced by black cherry trees, which the bears will climb in July to eat cherries. Good sources of fruit include the serviceberry (aka Juneberry, shadbush, sugar plum) which is the earliest fruit producer. Red berried elder, found on sites with enriched soils, is next. Other sources include hobblebush, species of the Genus Rubus which includes raspberry, blackberry, thimbleberry, dewberry, partridgeberry, viburnum, bearberry, apple and wintergreen, and old apple trees in found in abandoned fields.

Soils

Soils are the basis for all that lives and grows in our forests. They ultimately determine which trees are best suited to growing on each particular site.

The predominant soils found on the Hamlin Lot are Tunbridge, Lyman, and Becket, as their title clearly shows this soil is an amalgamation of soil types. This group has soil locations that are purely Becket or Tunbridge, along with locations that are a mixture. The richer Becket soils are found in hollows, north slopes, and adjacent to seeps.

Becket- This soil is rich and provides an excellent site index for the growth of high-quality northern hardwoods and red oak. However, it will also grow excellent quality white pine trees. An enriched soil provides the ability to grow a wide array of hardwood and softwood trees. A softwood promoting soil will rarely have the capacity to successfully grow northern hardwood trees. A soil growing sugar maple trees has high fertility.

Lyman- This is a shallow soil with limited seasonal water and ledge often within 2 feet of the surface. It is best suited for the growth of northern hardwood and red oak. Care must be taken when harvesting trees on Lyman soils as their shallow root systems make them susceptible to being blown over by wind storms.

Tunbridge- This is a deeper loamy glacial till soil containing many rocks. It is well drained and best suited to growing white pine trees.

General Silvicultural Principles

Portions of the Hamlin lot were harvested during two harvests which took place 1992/23, and in 1999. Foresters were engaged to manage both harvests. The lot remains adequately stocked with tree species that are well-suited to the sites upon which they are growing. The long term prospects for this forest are good, which allows for a forester to work with what is there. The recent harvests have left this forest with adequate tree spacing to allow the present stands to grow undisturbed while they expand their crowns. Fortunately, the predominant tree species present, including red oak, hemlock, and white pine, are among those species predicted to be adaptable to the warming climate over the next 35 years. This statement does not predict the calculus of damage from known, or yet unknown, invasive species.

Silviculture is the science and art of growing and managing forests. The forests of northern New England are diverse both in age class and species distribution. Written forest management plan prescriptions generalize, as the actual composition of each location in a natural forest is unique. An average 90 year old forest stand will tend to have from 120 to 200 trees per acre. The silvicultural decisions made for each individual location involve tree health, growth rates, species adaptability, moisture levels, stand density, and climate considerations. High site index locations in a hardwood forest can grow more trees/acre than on a poor site.

High nutrient levels and adequate moisture levels can more than compensate for less photosynthesis in each tree crown. A general rule of thumb is to leave 80 sq. feet of basal area in a post-harvest hardwood forest, with 120 sq. feet in softwood stands. When conducting a timber harvest in a diverse, intact forest, the land is best served by working in portions of the forest that demonstrate a clear need while leaving other portions to grow undisturbed. Undisturbed stands serve as a refuge for wildlife.

Shade tolerant species such as red spruce, hemlock and sugar maple can survive for many years in the understory of a well-stocked stand. When additional sunlight becomes available their growth rates will rapidly increase. In most mature forest harvest scenarios, it works best to cut trees in groups and patches, or in single tree selection. This is how foresters are best able to imitate nature, similar to what is seen in blowdowns, or by tree dying. We originally learned forest management from the forest, a lesson we should not forget.

In this age of invasive species forests must be periodically inspected to guard against an infestation. If caught early, an invasive species occurrence can be curtailed. If ignored, it rapidly

can become nearly impossible to stop. The European buckthorns (glossy and common) are currently the most ecologically dangerous invasive species plant to threaten our forests.

Forest Stands

The Hamlin has a predominant forest type which is red oak/hardwood/hemlock. This type is the dominant forest type found south of the White Mountains in eastern NH. The stands found in the southern portions of this property are well-stocked young sawlog stands of red oak/hardwood that also contain groups of larger red oak trees having numerous trees from 16-22" dbh. In both dominant forest types found on the Hamlin lot, the aforementioned red oak/hardwood, along with the red oak/hemlock/white pine types have stocking levels that are adequate to good. The two harvests in 92/92 & 99 both focused on the harvest of large white pines, reducing their proportions in the growing forests. The need to grow the right species of trees on soils to which they are suited is ever present. The use of forest stand improvement (FS) to release the suitable tree species from the competing regeneration provides a way for desirable tree species to successfully grow and become the successive forest type. Other than for habitat, safety, or to address invasive species mortality, there is no reason not to allow the portion of this forest north of the bisecting wall to grow undisturbed for the foreseeable future.

It is recognized that this property is a heavily used recreational landscape. The Town of Meredith values the land for its recreational values, more than its forest management value. Forestry practices on this parcel will bear this out by prioritizing wildlife habitat management, over timber production.

A stand of hardwood, along with dead ash found on a rich site in Stand 3

A tall red oak showing the vigor and height of trees in the southern portions of Stand 1

Stand 1 Red Oak/Beech/Red Maple/Hemlock 4/3/2- 150.4 acres

Stand Description

Portions of this stand are underlain by enriched Tunbridge/Becket soils (see Soils), which provides a higher level of soil moisture, along with higher levels of available calcium than most. These features combine to create a high site index* for the growth of hardwood trees. The evidence of this is demonstrated by the increased height of the red and black oak trees, along with their relatively smooth bark, which demonstrates a rapid growth rate. This is a mixed stand primarily composed of red oak, beech, and red maple along with black oak, hemlock and white pine. Hardwood stands are by nature more variable than softwood stands. This is due to variable species and growth rates that are directly correlated to the soil types upon which they grow. In the stand south of the stone wall which was judiciously harvested during 1992-3, the intervening 30 years have allowed the released red oaks to grow larger. There are also portions of this stand south of the wall where nearly half of the trees are beech. In most of the stand the forest is fully stocked with healthy red oaks. The prescriptions found below will focus upon growing red oak stands.

In the white pine trees found in Stand 1 there are occasional large, slow growing trees, mixed with a higher proportion of vigorous younger white pines. This is a good situation to maintain in an oak/pine forest, as the large white pine provide a reliable, stalwart seed source.

Stand 1 Prescriptions

In Stand 1 maintaining and growing large red oak trees is the management focus. Red, black and white oak trees provide habitat for dozens of species of caterpillars, far more than any other forest type in New England. Caterpillars are the primary food source for warblers, along with other neo-tropical song birds such as wrens, thrushes and flycatchers. Creating, and growing a refuge of large oak trees would be a worthy goal in this stand for the Town of Meredith. To facilitate the growth of large, broad canopied trees the removal or girdling of a small number of competing trees would be beneficial. The first step in this process will soon be carried out by an invasive species, the beech leaf disease (a nematode). Within five years, many of the beech trees in the stand will be dead.

If the beech is allowed to die in place there will be a threat to human health in the Hamlin Forest by falling dead beech limbs, along with entire trees falling over, for years to come. This is combined with the fact that dead trees are expensive to remove. When the mortality begins to take place, cutting the dying beech along the hiking trails could be combined with the removal of an occasional suppressed oak tree to release the growth of the large vigorous oaks.

Further habitat improvements could be made by harvesting an area of red maples close to the large ponds. This would restore the beaver habitat by providing maple sprouts for beavers to feed upon, and with which they will build new lodges. Beavers provide a wealth of habitat

enhancements for birds, insects, fish, and mammals. If the habitat is restored the beaver will repopulate the ponds.

This year there was a heavy crop of acorns in this forest. Acorn crops are welcomed by wildlife populations, providing a rich source of fat and protein. Acorns will initiate the growth of red oak seedlings in the forest understory which will germinate and stay alive until the beech die to release them. Planting black birch seed, along with white oak and swamp white oak acorns in forest openings will diversify the narrow tree species diversity in this forest. Planting these three climate adaptive tree species would mark an effort to conduct assisted migration (see Climate).

Stand 2 - Hemlock/White Pine/Red Oak 4/3 B 138 acres

Stand Description

This is a is softwood/hardwood stand in which the dominant species are hemlock, red oak, red maple and white pine. This multi-aged stand has older trees intermixed with younger trees. The timber harvest carried out in 1999, by forester Brenda Brown, included most the acreage in these stands. The regeneration initiated by this harvest is good with hemlock, beech, and white pine. Had the harvest openings been larger, the regeneration would have been tilted to white pine and red oak.

The stand is adequately stocked with trees that are growing well. A dense hemlock understory, is found in many of the harvested areas. This provides good cover and nesting habitat for numerous wildlife species. There was logging damage to the bark of the hemlock and white pines due to entire tree crowns being pulled through the forest in order to chip the tree tops. The damaged trees can be allowed to eventually fall in place without causing significant damage to the stand. There are no short-term threats to this forest, nor any forestry prescriptions in this stand for the next 15 years. As in Stand 1, in time this will also become a fine forest of large trees. The only caveat is that if the hemlock wooly adelghid causes high levels of mortality, there may be a need to harvest some hemlock.

Stand 3 Red Oak, Red Maple, Sugar Maple, Yellow Birch 11.2 acres

Stand Description

This rich stand is situated below the ledges sloping downward toward Wicwas Lake, along with an area sloping towards the north boundary line. The waters that flow into these landscapes through the ledges have accumulated nutrients from both organic and inorganic (mineral) sources. The forests found near the Wicwas Shore Road cul de sac are on moist, organic soils with plentiful woody debris supporting species preferring enriched soils, such as Canadian yew

(see photos). These are sites that can support rare amphibians, such as leopard frogs, along with blue spotted, and Jefferson salamanders.

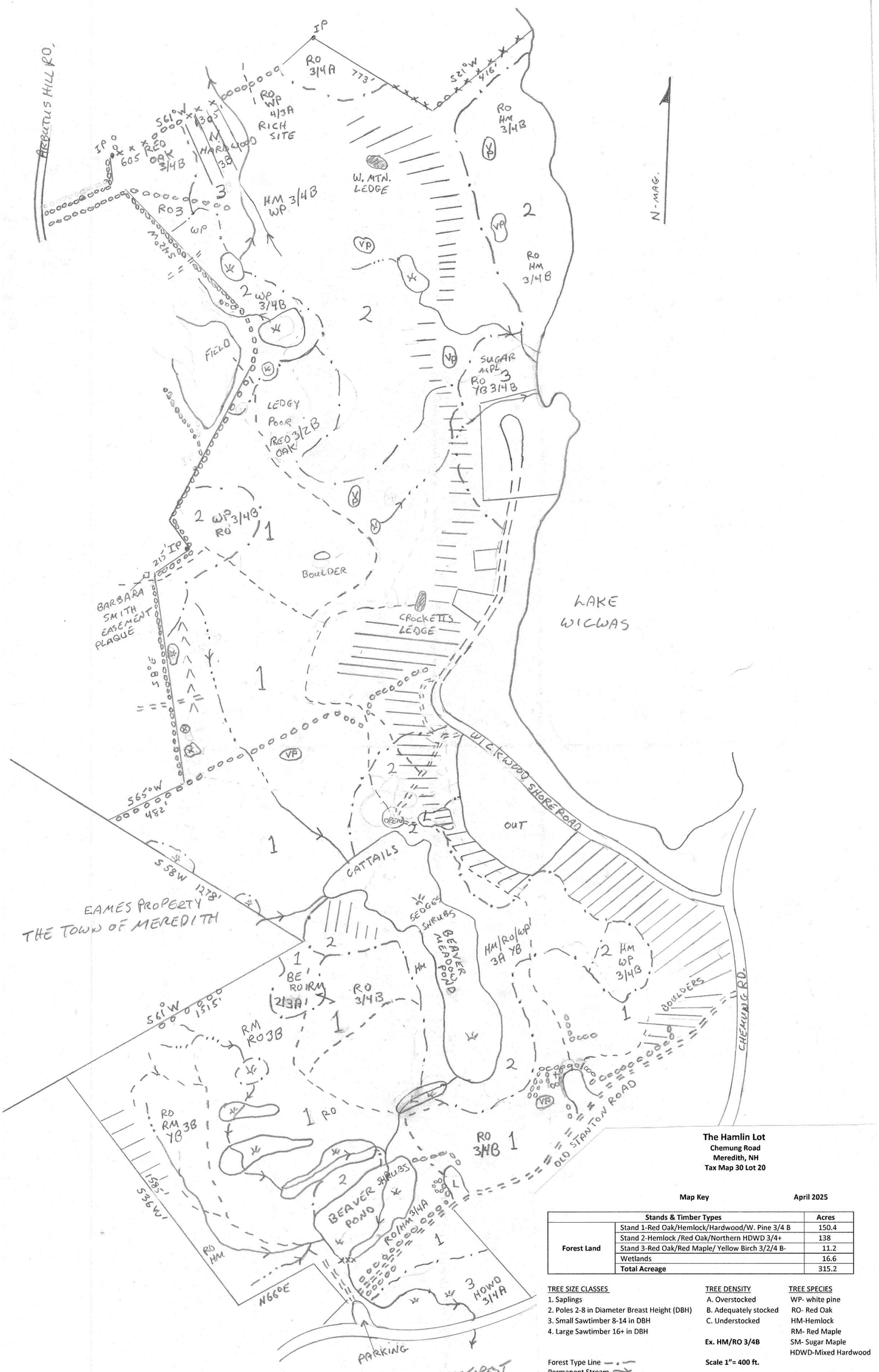
These forests are growing tall, red oak, red & sugar maples, yellow birch, hemlock, and basswood, along with the many recently deceased white ash.

Glossary

Assisted migration – a climate adaptation practice where trees native south of a site are seeded or planted north of their native range to prepare a forest for the eventual northward migration of forest types
basal area (of a tree) - the cross-sectional area of the trunk 4 1/2 feet above the ground; (per acre) the sum of the basal areas of the trees on an acre; used as a measure of forest density.
BMPs - Best Management Practices: a set of guidelines to protect water quality. BMPs focus on careful road construction and maintenance, careful timber harvesting, minimal impact site preparation and protection of streamside management zones and wetlands.
board foot - a unit for measuring wood volume in a tree, log, or board. A board foot is commonly 1 foot by 1 foot by 1 inch thick.
browse - parts of woody plants, including twigs, shoots, and leaves, eaten by forest animals.
canopy - the continuous cover formed by tree crowns in a forest.
cord - a unit of wood cut for fuel that is equal to a stack 4 x 4 by 8 feet or 128 cubic feet. A cord is the legal measure of fuelwood volume in Maine and New Hampshire.
diameter at breast height (dbh) - standard measurement of a tree's diameter, usually taken at 4 1/2 feet above the ground.
DBH – tree diameter breast height
even-aged stand - a stand in which the age difference between the oldest and youngest trees is minimal, usually no greater than 10 to 20 years. Even-aged stands are perpetuated by cutting all the trees within a relatively short period of time.
forest types - associations of tree species that have similar ecological requirements. Northern New England forest types include white pine, spruce-fir, hemlock, northern hardwood, oak-pine, and others.
group selection - a process of harvesting patches of trees to open the forest canopy and encourage the reproduction of unevenaged stands.
herbaceous vegetation - low-growing, non-woody plants, including wildflowers and ferns, in a forest understory.
high grading—The practice of removing only the biggest and best trees from a stand during a harvest operation and leaving only the poorest, lowest quality culls to dominate the site.
intolerance - a characteristic of certain tree species that does not permit them to survive in the shade of other trees.

landing - a cleared area within a timber harvest where harvested logs are processed, piled, and loaded for transport to a sawmill or other facility.
MBF - Thousand board feet. A unit of measure for tree volume or sawed lumber.
marking timber - indicating by paint or other means which trees are to be cut or otherwise treated. It is advisable to mark trees to be harvested twice-once at eye level and once on the stump.
mast - Fruits or nuts used as a food source by wildlife. Soft mast includes most fruits with fleshy coverings, such as persimmon, dogwood seed or black gum seed. Hard mast refers to nuts such as acorns and beech, pecan and hickory nuts.
overstocked - the situation in which trees are so closely spaced that they compete for resources and do not reach full growth potential.
pole timber - trees 4 to 10 inches dbh.
precommercial treatments - forestry operations that require landowner investment, such as cleaning or weeding stands to remove trees that have little or no cash value.
pruning - the act of sawing or cutting branches from a living tree. In forest management, pruning is done to promote the growth of clear, valuable wood on the tree bole.
pulpwood - wood suitable for use in paper manufacturing.
regeneration - the process by which a forest is reseeded and renewed. Advanced regeneration refers to regeneration that is established before the existing forest stand is removed.
regeneration cut - a timber harvest designed to promote natural establishment of trees.
release - to remove overtopping trees that compete with understory or suppressed trees.
residual stand - the trees remaining intact following any cutting operation.
sapling stand - a stand of trees whose average dbh is between 1 and 4 inches.
sawlog - a log large enough to be sawed economically on a sawmill. Sawlogs are usually at least 8 inches in diameter at the small end.
seed-tree harvest - the felling of all the trees in an area except for a few desirable individuals that provide seed for the next forest.
seep- where water comes to the surface of the ground at the head of drainage-ways. This most often occurs in rich forest soils settings.
selection harvest - the harvest of all individual trees or small groups at regular intervals to maintain an uneven-aged forest. Selection harvests are used to manage species that do not need sunlight to survive.
shelterwood harvest - the harvest of all mature trees in an area in a series of two or more cuts, leaving enough trees of other sizes to provide shade and protection for forest seedlings.
significant wildlife habitat – habitats identified and mapped by the Maine Inland Fisheries and Wildlife Department and afforded special protection including deer wintering areas, bald eagle nests, shorebird nesting areas, etc., or identified by NH Fish & Game's Wildlife Action Plan. However, the NH Action Plan provides no special protection for these critical areas.
site index - a measure of the quality of a site based on the height of dominate trees at a specified age (usually 25 or 50 years), depending on the species.
stocking level – the density of trees by species or timber type in a particular area
slash - branches and other woody material left on a site after logging.
slope – a measure of steepness of terrain and a feature that can limit equipment use; it is the vertical gain (rise) divided by the horizontal distance cover (run).
snag - a dead tree that is still standing. Snags provide important food and cover for a wide variety of wildlife species.

stand - a group of forest trees of sufficiently uniform species composition, age, and condition to be considered a homogeneous unit for management purposes.
stand density - the quantity of trees per unit area, usually evaluated in terms of basal area, crown cover and stocking.
stocking - the number and density of trees in a forest stand. Stands are often classified as understocked, well-stocked or overstocked.
stumpage - the value of standing trees in a forest.
thinning - a partial cut in an immature, overstocked stand of trees used to increase the growth of existing trees by concentrating on individuals with the best potential, no regeneration results
tolerance - a tree species' capacity to grow in shade.
understocked - a stand of trees so widely spaced, that even with full growth potential realized, crown closure will not occur.
understory - the level of forest vegetation beneath the canopy.
uneven-aged stand - Three or more age classes of trees represented.
well-stocked - the situation in which a forest stand contains trees spaced widely enough to prevent competition yet closely enough to utilize the entire site.



The Hamlin Lot
Chemung Road
Meredith, NH
Tax Map 30 Lot 20

Map Key **April 2025**

Stands & Timber Types		Acres
Forest Land	Stand 1-Red Oak/Hemlock/Hardwood/W. Pine 3/4 B	150.4
	Stand 2-Hemlock /Red Oak/Northern HDWD 3/4+	138
	Stand 3-Red Oak/Red Maple/ Yellow Birch 3/2/4 B-	11.2
	Wetlands	16.6
	Total Acreage	315.2

TREE SIZE CLASSES
1. Saplings
2. Poles 2-8 in Diameter Breast Height (DBH)
3. Small Sawtimber 8-14 in DBH
4. Large Sawtimber 16+ in DBH

TREE DENSITY
A. Overstocked
B. Adequately stocked
C. Understocked

Ex. HM/RO 3/4B

Scale 1"= 400 ft.

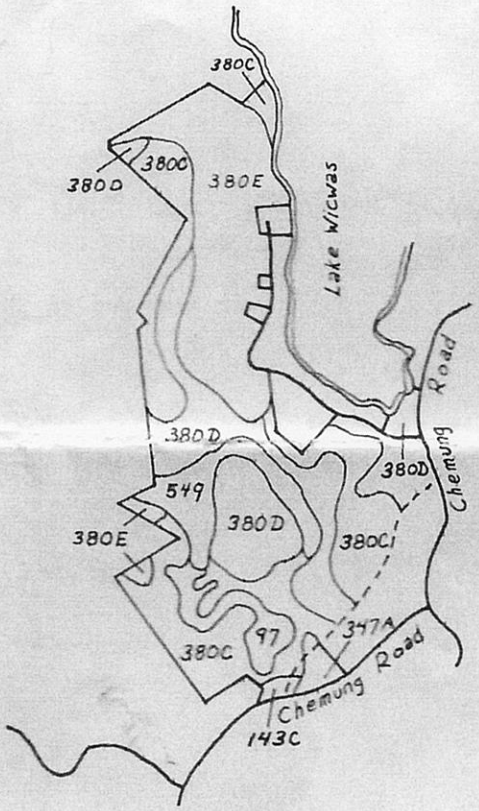
TREE SPECIES
WP- white pine
RO- Red Oak
HM-Hemlock
RM- Red Maple
SM- Sugar Maple
HDWD-Mixed Hardwood

Forest Type Line
Permanent Stream
Intermittent Stream
Wetland
Steep ////
Stone Wall
Trail/Skid Road - - - - -
Truck Road = = = = =

Prepared by: Daniel Stepanauskas, NH Forester 138
135 High St.
Silver Lake, NH 03875
danstepanauskas@gmail.com
603-367-8111

Soils Map

1" = 2000'



Soil Group	Map Symbol	Description
NC	97	Greenwood and Ossipee Soils, Ponded
NC	549	Peacham Muck, very stony
IB	143C	Monadnock Gravelly Fine Sandy Loam, 8 to 15% slopes
IB	380C	Tunbridge-Lyman-Becket Complex, 8 to 15% slopes
IB	380D	Tunbridge-Lyman-Becket Complex, 15 to 25% slopes
IIA	380E	Tunbridge-Lyman-Becket Complex, 25 to 60% slopes
IIB	347A	Lyme and Moosilauke Soils, 0 to 3% slopes

NHB DataCheck Results Letter
NH Natural Heritage Bureau
Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: daniel stepanauskas
135 high st.
silver lake, NH 03875
danstepanauskas@gmail.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Maddie Severance - nhbreview@dncr.nh.gov

cc: NHFG Review

Date: 04/22/2025 (valid until 04/22/2026)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game Permits: OTHER - forest management plan

NHB ID: NHB25-1137

Town: meredith
Location: chemung road

Project Description: the preparation of a forest management plan

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments below and the consultation requirements on the following page.

NHB Comments: No comments at this time.

NHFG Comments: For informational purposes only.

NHB DataCheck Results Letter
NH Natural Heritage Bureau
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NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://www.wildlife.nh.gov/wildlife and-habitat/nongame-and-endangered-species/environmental-review. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line**.

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.
Contact NH Fish & Game at (603) 271-0467 with questions.

nhbreview@dncr.nh.gov (603) 271- 2834

NHB DataCheck Results Letter
NH Natural Heritage Bureau
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NHB Database Records:
The following record(s) have been documented in the vicinity of the proposed project. Please see the map and detailed information about the record(s) on the following pages.

Vertebrate species State[1] Federal Notes

Bridle Shiner (*Notropis bifrenatus*)
T -- Contact the NH Fish & Game Dept (see above).

Common Loon (*Gavia immer*) T -- Contact the NH Fish & Game Dept (see above).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list.
An asterisk (*) indicates that the most recent report for that occurrence was 20 or more years ago. *For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section above.*

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.
However, many areas have never been surveyed, or have only been surveyed for certain species. NHB recommends surveys to determine what species/natural communities are present onsite.

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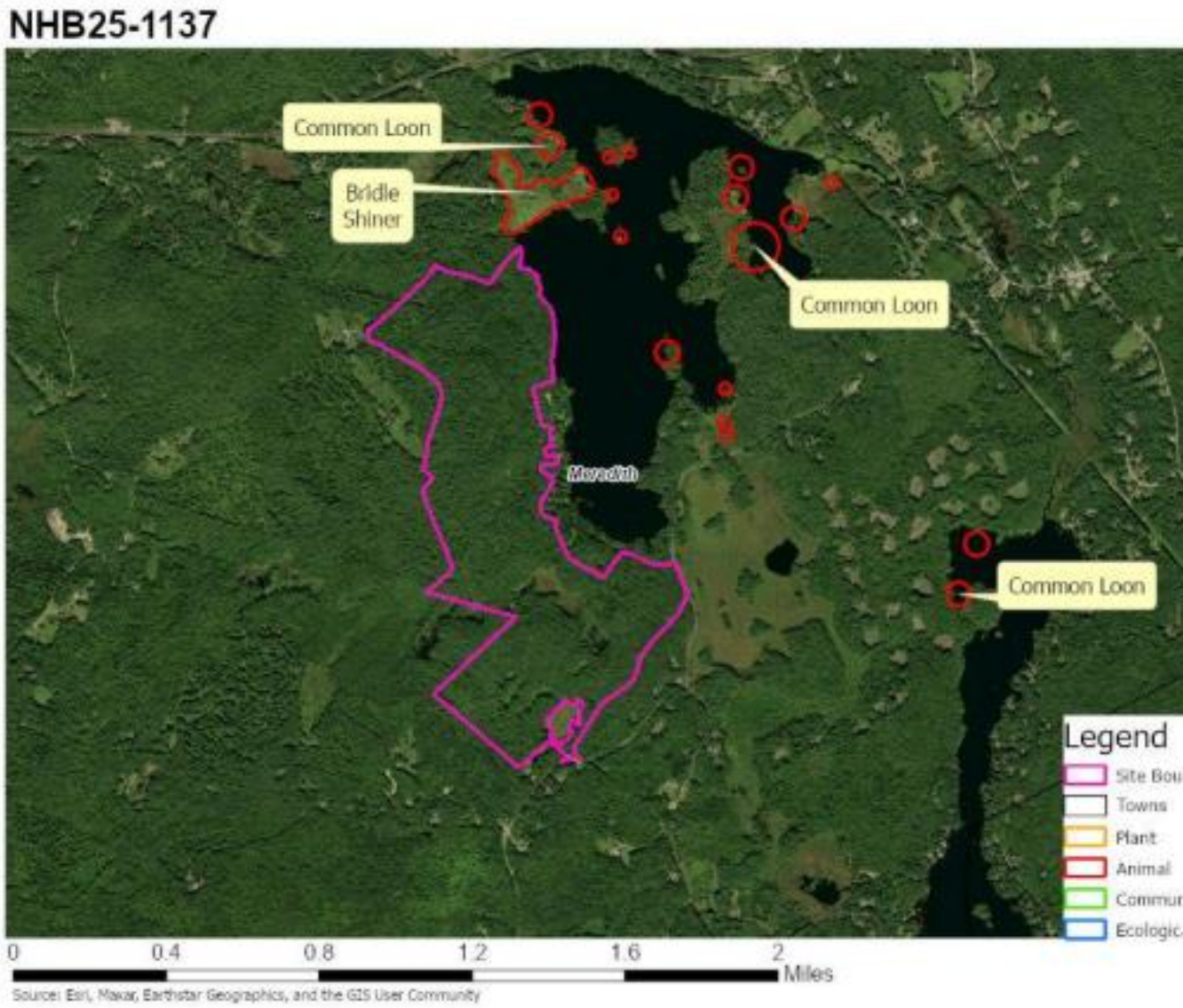

nhbreview@dncr.nh.gov (603) 271- 2834

NHB DataCheck Results Letter
NH Natural Heritage Bureau
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New Hampshire Natural Heritage Bureau - Animal Record

Bridle Shiner (*Notropis bifrenatus*)

Legal Status Conservation Status
Federal: Not listed Global: Rare or uncommon
State: Listed Threatened State: Imperiled due to rarity or vulnerability

Description at this Location
Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D). Comments on Rank: --

Detailed Description: 2021: Area 15083: Habitat looked good. Bridle shiner abundant and easy to locate. General Area: 2021: Area 15083: Most of land surrounding cove is protected. Habitat could be impacted by water level draw down at dam.
General Comments: --

Management Comments:

Location
--

Survey Site Name: Wickwas Lake
Managed By:

County: Belknap
Town(s): Meredith
Size: 14.7 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map. Directions: 2021: Area 15083: Cove on north side of Wickwas Lake.

Dates documented

First reported: 2021-07-23 Last reported: 2021-07-23

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

nhbreview@dncr.nh.gov (603) 271- 2834

NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents. NHB25-1137 EOCODE: ABNBA01030*038*NH