Mount Abraham

Character of the Land Base

The 6,214-acre Mt. Abraham property includes the two summits and most of the northeast side of the mountain. Known locally as Mt. Abram, it is the ninth tallest mountain in Maine at 4,050 feet, and is characterized by very steep and rugged talus slopes, particularly on the northern and eastern sides. The extensive, treeless alpine area covers 200 acres on the northwest summit, and 150 acres on the southeast summit. The abundance of talus distinguishes Mt. Abram from other mountains in Maine. The mountain also has a striking and rugged appearance from the valley below.

Most of this property, 5,285 acres, has been designated as the Mount Abraham Ecological Reserve. The Ecological Reserve encompasses the treeless ridge top and a majority of the northern and eastern slopes, and incorporates a number of rare plants and exemplary natural communities that collectively form an exemplary alpine ecosystem. Also of note is the state's largest mountain ash (*Sorbus americana*), which grows on the slopes of Mt. Abraham. Though not a rare species, this remarkable tree has a circumference of 47 inches and a height of 49 feet.

A 1,028 acre parcel to the east of the reserve area consists of several hundred acres of softwood plantations and hundreds more acres of recent (within the past 20 years) and heavy partial cuts.

The Appalachian Trail abuts the northwestern boundary of the Reserve, and a side trail from the AT extends to the summit, where it joins with the former Fire warden's trail which descends the eastern slope to a woods road located off the Bureau ownership. This is the traditional access to the Mountain.

Mount Abraham Ecological Reserve

The Maine Natural Areas Program describes the Mount Abraham Ecological Reserve:

Mt. Abraham's summit forms an extensive treeless ridge dominated by characteristic alpine vegetation. In fact, Mt. Abraham supports some of Maine's largest alpine habitat outside of Katahdin. Three different types of alpine communities are present, and together these rare communities provide habitat for five rare plant species. One vegetation type in particular – Diapensia Alpine Ridge – occurs at only two other locations in Maine.

Lower slopes of the mountain contain mature hardwood and spruce forests with little to no signs of past harvesting. Some old growth spruce stands sampled in 1997 support trees over three hundred years old. Other noteworthy natural communities include fire-dependant, open canopy spruce woodlands and birch woodlands.

Natural Resources

Geology and Soils: Prior to the Acadian orogeny (375 million years ago), one of the three major mountain building events in New England, sediments accumulated in an ocean basin between two of the earth's plates. Once these plates collided, the sandstone and mudstone from the basin were folded and deformed under pressure, building mountains. These folded rocks form the bedrock of Mt. Abraham.

Glaciers have also left their mark on the mountain. The most recent ice sheet in New England, 12,500 years ago, moved from northwest to southeast. As a consequence, the ice smoothed the northwest side of the mountain and left the southeast side relatively rough. Glaciers also left a layer of till on the mountain, with thin deposits near the summit and thicker deposits downslope. Once the ice retreated, the relatively porous metamorphosed standstone on the summit of the mountain was exposed to the weather. Repeatedly, water seeped in to small cracks and pores in the rock, then froze and expanded, wedging the rock apart and deepening the formerly small cracks. This process, called frost wedging, is responsible for the mountain's distinct mound of talus at the summit.

Soils on the property reflect their glacial heritage; many of the soils are based in glacial till or other glacial deposits and are very stony. Soils at the summit and along the upper ridgeline are well drained, and tend to have a thin organic layer overlying rock fragments and till. Further down slope, soils become more variable, with drainage ranging from somewhat poorly to somewhat excessively drained and soil depth varying with topography.

Hydrology: Numerous small, forested streams drain the mountain. The streams draining the mountain are extremely steep, frequently jumping their channels to form new channels, and occasionally forming small pools below steep drops in elevation. Most of the property drains to the Carrabassett River, while the southeast side drains to the Sandy River. Both are part of the Kennebec River drainage.

Wetlands: There are no wetlands on the property.

Ecological Processes: Ice, wind, and cold temperatures at the top of Mt. Abraham limit the number of species that can successfully live there. A krummholz of balsam fir, black spruce, and heart-leaf paper birch populate this harsh environment.

Spruce budworm damage is evident along the ridge of the mountain. Although balsam fir is its preferred food, the fir-dominated krummholz community was also targeted. The most recent outbreak occurred in the 1980s, though the damage was difficult to assess against the backdrop of wind and ice damage.

The hardwood communities on the property show evidence of typical small gap disturbances from ice, windthrow, and natural tree mortality. These gaps have increased the complexity of the forest structure, and have added to the diversity of microhabitats in the forest for plants and animals.

Rare Plant Species: A number of rare plants have been documented on Mount Abraham. These are plants determined to be critically imperiled in Maine because of extreme rarity or vulnerability to extirpation (State rank S1), or imperiled in Maine because of rarity or

vulnerability to further decline (S2). Both the northwest and southeast summits of Mt. Abraham host a number of rare alpine plant species rated as S2. Lapland diapensia (*Diapensia lapponica*), a plant with a low, "pincushion" shape, is found on both summits. Alpine blueberry (*Vaccinium boreale*) and northern comandra (*Geocaulon lividum*) are also on both summits. The northern comandra tends to have a patchy distribution in the alpine area, tucked in among sheep laurel, blueberry, and krummholz vegetation. In addition, the northwest summit hosts a small patch of Bigelow's sedge (S2) (*Carex bigelowii*) near the fire tower, which has been partially trampled by hikers. Lastly, a single individual of a rare hybrid birch (*Betula x minor*) (S1) has been found on the southeast slope of the northwest summit.

Hornemann's willow-herb (*Epilobium hornemannii*) (S1) has been found in several shaded, moist, rocky drainages on the east side of the mountain including Norton Brook. Northern firmoss (*Hupersia selago*) (S1) was also found along the margins of Norton Brook.

Natural Communities: The most distinctive feature of the mountain is the summit, and the host of exemplary natural communities found there.

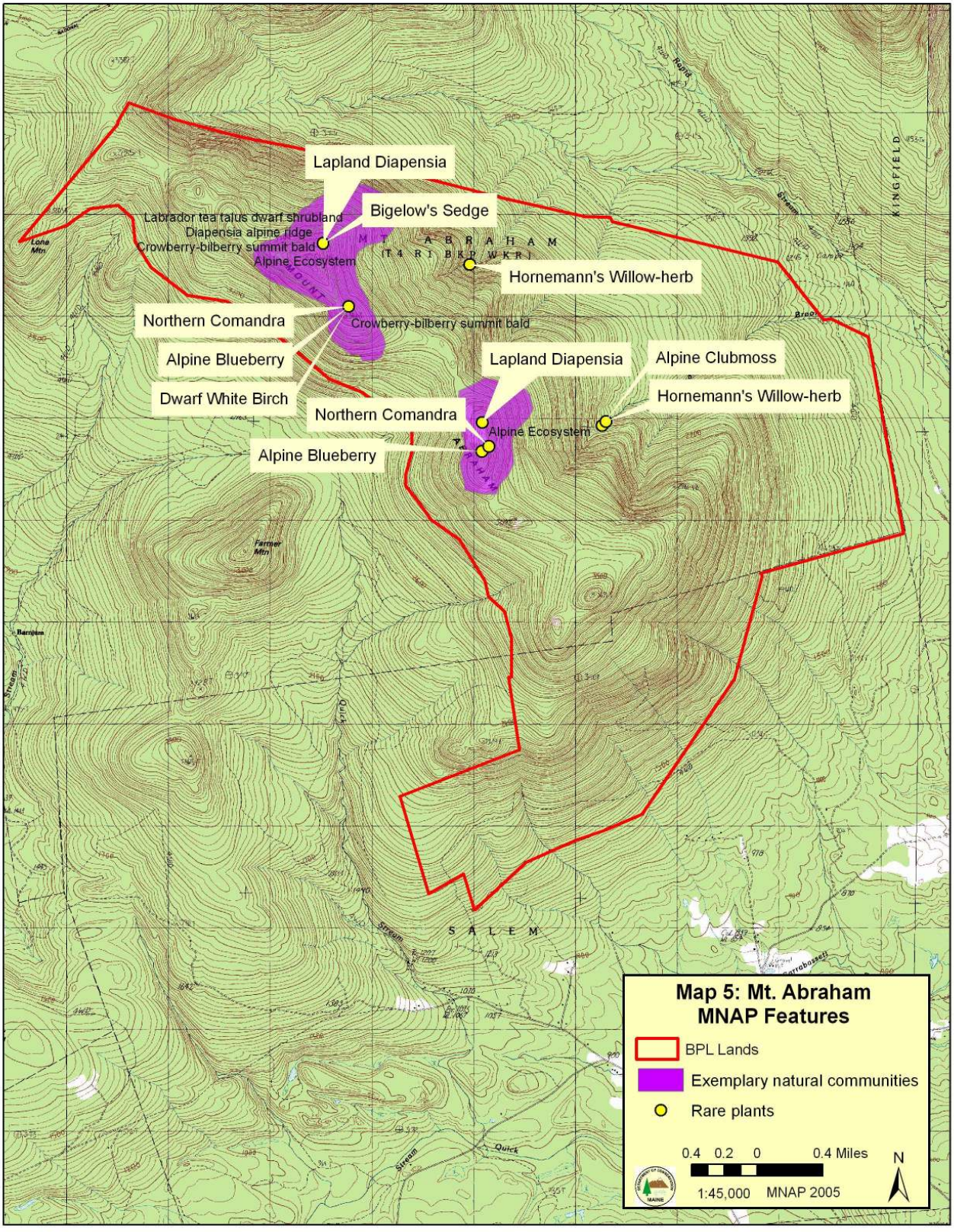
- Exemplary Alpine Ecosystem. All of the communities described below are considered exemplary and collectively they form an exemplary Alpine Ecosystem.

- The majority of the northwest alpine area can be classified as a Crowberry-Bilberry Summit Bald. Alpine bilberry (*Vaccinium uliginosum*), Labrador tea (*Rhododendron groenlandicum*), sheep laurel (*Kalmia angustifolia*), low sweet blueberry (*Vaccinium angustifolium*), mountain cranberry (*Vaccinium vitis-idea*), heart-leaved birch (*Betula cordifolia*), and fruiticose lichens dominate the treeless area. Patches of Spruce – Fir – Krummholz, with black spruce (*Picea mariana*) and balsam fir (*Abies balsamea*), are common in this area and form a lower elevation apron around the exposed alpine habitat.

- A small example of a Diapensia Alpine Ridge occurs on the northeast slope along either side of the Fire Wardens Trail. Abundant amounts of *Diapensia lapponica* and purple crowberry (*Empetrum eamesii*) are characteristic of this area.

- The southeast summit of Mt. Abraham is much like the main summit. Steep talus slopes dominate the alpine zone with beds of ericaceous vegetation and krummholtz mixed throughout the community. The area above treeline is again a Crowberry-Bilberry Summit Bald, with alpine bilberry (*Vaccinium uliginosum*), Labrador tea (*Ledum groenlandicum*), mountain cranberry, black spruce, and heart-leaved birch. Spruce-Fir-Birch Krummholtz is found at the bottom of the talus slopes and in the saddle between knolls. A dense thicket of stunted black spruce, balsam fir, and heart-leaved birch characterize these areas. The substrate is organic with peat and lichens. A line of cairns passed through this area and a small amount of trampling was noted.

- The base of the talus slope along the Fire Wardens trail on the north slope has a one to two acre *Labrador Tea Talus Dwarf-Shrubland*. Dense patches of Labrador tea (*Rhododendron groenlandicum*), black crowberry (*Empetrum nigrum*), and sheep laurel (*Kalmia angustifolia*) with six to ten foot tall black spruce (*Picea mariana*) characterize this area.


Lapland Diapensia
Bigelow's Sedge
Labrador tea talus dwarf shrubland
Diapensia alpine ridge
Crowberry-bilberry summit bald
Alpine Ecosystem
Hornemann's Willow-herb
Northern Comandra
Crowberry-bilberry summit bald
Alpine Blueberry
Dwarf White Birch
Lapland Diapensia
Alpine Clubmoss
Hornemann's Willow-herb
Northern Comandra
Alpine Ecosystem
Alpine Blueberry
Map 5: Mt. Abraham
MNAP Features
BPL Lands
Exemplary natural communities
Rare plants
0.4 0.2 0 0.4 Miles
1:45,000 MNAP 2005
N

Fisheries and Wildlife Resources: The Bureau has conducted two high elevation bird surveys along the old Warden's Trail on the east side of Mt. Abraham and along the Appalachian Trail on Spaulding Mountain in cooperation with the Vermont Institute of Natural Science. The focus of these surveys is Bicknells thrush. Because this thrush breeds in alpine and subalpine habitat, an area quite limited in Maine and the northeast, it is a species of special concern. Observations of a number of other high elevation birds, such as winter wren, Swainson's thrush, red-breasted nuthatch, black-capped chickadee and brown creeper have also been recorded from the survey.

The extensive talus slopes on all sides of the mountain provide optimal habitat for rock voles.

Historic and Cultural Resources

Logging in the area was accelerated in 1871 by the arrival of the Sandy River Railroad to the region. According to Austin Cary's survey in 1895, of the 335 square miles in the drainages of the Sandy and Carrabassett Rivers, only 15% of the total land remained uncut. Mt. Abram Township was settled only in the late 1800s, with a logging camp at the settlement of Barnjum near the Madrid line west of the mountain. The townships in this area tended to have medium sized parcels owned by small companies. In the 1950s, 15,000 acres surrounding Barnjum was purchased as a country estate. Much of this and other land was then acquired by Boise Cascade after 1979, and thereafter by Mead Corp. (Cogbill 1998).

A 20 foot steel fire tower was erected on the summit in 1924, and rebuilt in 1936, presumably because of ice damage. What remains of the tower is located on the portion of the property recently acquired from Mead Westvaco in 2004. The warden's camp, located on the hiking trail along the east side of the mountain was probably constructed about the time of the tower. The "L" shaped log addition was built onto the camp in 1956 or 1957, to provide more living space for Warden Harris and his wife.

Recreation and Visual Resources

Facilities and Opportunities: The principal recreational use of the property is the hiking trail system to the summit of Mt. Abraham. There are no overnight camping facilities on the property, although hikers have been known to utilize the cab remains of the fire tower on the summit for that purpose. The trail to the summit has been informally maintained over the years by the Bates Outing Club.

There are essentially two trailheads on the property; the traditional trailhead along the main access road where it first comes onto the property from the West Kingfield Road, and a second, informal trailhead along the same trail but closer to the summit. This second area resulted from road improvements made by the previous landowner. The trail from here leads directly to the old fire warden's cabin, which has been open and available for use by the public for many years. The cabin is considered unsafe, however, due to a general lack of maintenance. From the cabin the trial ascends steeply to the summit.

From the northwest summit of the mountain, a blue-blazed side trial connects to The Appalachian Trail, which is managed as part of the AT system.

The Salem Snowmobile Club maintains a trail that passes along old roads skirting the southern and eastern boundary of the property. Sporadic bootleg use does occur between Mt. Abraham and Spaulding Mountain (east to west) and attempts (by ATV's also) to climb the summit of Abraham from the southwest have become more frequent.

Visual Considerations: Visual concerns on this parcel will include the foreground views from the hiking trail and trailhead. If any of the road constructed by the previous owner for timber management purposes is to be retained for public access as a road or trail ,it will require some visual improvements over time. Some portion of the non-reserve parcel is also visible from the mountain; visual considerations will need to be included in any planned timber harvesting on this parcel.

Timber Resources

The majority of Mount Abraham is designated as an Ecological Reserve and will not be managed for timber. The Reserve forest includes considerable steep and/or infertile land that has never been harvested. However, it also includes some 1,500 acres in late successional stands, mostly northern hardwoods and northern hardwood/spruce-fir, all on the east slope above the softwood plantations. One pocket of extremely large and old red spruce, showing recent mortality, was noted southwest of the warden's cabin, on operable terrain that is now part of the Reserve. Depending on the extent of this pocket, it may qualify as an old growth stand.

The area outside Ecological Reserve status is a 1,028-acre parcel purchased from Plum Creek. It lies on the east edge of the overall tract, and is the area lowest in elevation. This forest is not appropriate for Ecological Reserve designation due to several hundred acres of softwood plantations (mostly red pine and white spruce, with a bit of black spruce), and hundreds more acres of recent and heavy partial cuts within the past 20 years. The remainder of this parcel is mostly low quality and understocked hardwood over dense hardwood regeneration. Naturally occurring softwoods (mostly spruce) are found mainly in small areas not recently harvested. This parcel will be managed in similar fashion to Bureau forest land elsewhere, with the plantations being replaced by natural regeneration as the trees mature and are harvested.

Other than one road built into the Reserve from the east, the area has no issues in regards to old roads for timber management purposes.

Administrative Concerns

Public Use and Management Roads, Gates and Road Control: The access road into the property is from the West Kingfield Road, its primary purpose being a timber management road under the previous landowner. Efforts will need to be made to determine the drive-to end point of this road. The road currently does not meet Bureau standards for public vehicular use.

Fire Control : The Bureau is working with the Maine Forest Service to develop a fire control plan for this area.

Mt. Abraham

February, 2007

LEGEND

Bureau of Parks and Lands

- Easement Reserved Lands
- Parks
- Ecoreserve Boundary
- Appalachian Corridor
- ATV Trails
- Snowmobile Trails
- The Appalachian & Hiking Trails
- Country or Town Roads (OGIS 24K)
- 100 Foot Contour Interval (OGIS)
- D O T Maintained Highway
- Scenic Highway
- Gate
- Boat Launch Hand Carry
- Trailhead
- Dam
- Tower
- Day Use Area
- Boat Launch Trailerable
- Border Checkpoint
- IF&W Fee
- IF&W Easement
- New England Forestry Foundation Easement
- U.S. Fish & Wildlife Service
- Maine Audobon Society
- Wetland Areas (OGIS 24 K)
- Primitive Campsite
- Fire Warden's Cabin
- Commercial Campground
- Sugarloaf Ski Touring Center
- Sugarloaf/USA
- Utility Line
- Active Rail Line
- Abandoned Rail Line

N

0 2.5 5 miles

All information depicted on this map is as accurate as available data allows. The property boundaries are an estimation. Base layers 1:24 K are from the State of Maine OGIS website. This is not a survey product. Map Created by G.Denis

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Management Issues and Concerns

Natural Resource Management Issues

- Fragile alpine areas can be trampled by hikers who stray off trail.
- Snowmobile and ATV use has been noted in the subalpine forest and even into the alpine zone. Vegetation (including rare plants) in these areas grows slowly and is slow to recover from damage; this area is within the Ecological Reserve.
- Roads on the property have some rutting and erosion. A decision must be made on how and where to block any roads now within the Ecological Reserve (unless they serve as part of an ATV or snowmobile trail system that cannot be reasonably relocated), and how much effort needs to be made to put these roads to bed.

Wildlife Management Issues

- Recreational uses of the mountain need to be monitored to minimize impacts to high elevation bird habitat.

Recreation/Visual Management Issues

- The original Mt. Abraham trailhead has been used little since a timber management road improved by the previous landowner has provided hikers with an ad hoc parking and trailhead area 1 ½-2 miles closer to the summit.
- The future of the current road into the property needs to be determined. In particular, will any of it be maintained for public vehicular access, or will it become a management road that is also a hiking trail?
- The old camp Fire Wardens camp is unsafe, but is still utilized. It's future needs to be determined.
- The remains of the old fire tower on the summit may be a safety hazard and needs to be removed. It also may concentrate use in this area, which includes a rare patch of Bigelow sedge.
- Snowmobiles and ATV's are able to access the summit from the west side of the mountain on the recent Mead-Westvaco acquisition, which is causing damage to the fragile alpine vegetation.
- The Bureau does not have a formal trail maintenance agreement with the Bates Outing Club.
- The hiking trail is poorly located; relocation needs to be explored.
- Determine what public uses will be allowed in the existing gravel roads within the non-ecoreserve portion of the property.

Timber Management Issues

- Management of the plantations needs to be planned, though there is little to do silviculturally over the next 15 years.

Administrative Management Issues

- Determine the end point of the current gravel management road.

Chain of Ponds

Character of the Land Base

This highly scenic 1,041-acre parcel in Chain of Ponds Township consists mostly of the eastern and northern shoreline of a chain of ponds including from northwest to southeast, Round, Natanis, Long, Bag, and Lower Ponds. The basins form numerous coves and small wetlands, which then empty into the North Branch of the Dead River south of the public reserved lands. A description of Chain of Ponds in the Portland Press Herald by an outdoors writer captures the beauty of this area: "There are few places in Maine with as rugged a landscape.. . Mountain summits and ridges surround the narrow ribbon of water and create a fjord-like setting. On the western edge of the ponds, gray blocks of granite plunge down into the clear waters. Fragrant cedars line many portions of the ponds." (Michael Perry, September 2, 2001).

Route 27, a designated scenic byway, runs along the eastern side of the Ponds. The road is an arterial route used by logging trucks, and to increase safety, DOT recently realigned and rebuilt the road. The rebuild included a scenic overlook that provides good views of the ponds and will be installing interpretive panels about the Arnold Trail.

At the North end of Natanis Pond the Bureau leases land to a commercial campground that predates the Bureau's acquisition of the property.

Inland Fisheries and Wildlife owns and maintains a dam at Lower Pond at the outlet which functions to maintain the trout and salmon fishery habitat within the chain. The dam was reconstructed in 1991. The ponds are known for their good fishing.

Upland portions of the property include a field and forest complex known as Upper Farm, located mostly east of Route 27. Management of the fields has been directed towards maintaining its openness and value for wildlife habitat.

The upland area north of Natanis and Round Ponds is a mix of forest, wetland, and forested wetland, and is prone to flooding from nearby beaver activity.

Natural Resources

Geology and Soils: Chain of Ponds is underlain by acidic granite, most of which was deposited during the Devonian period, 354 to 417 million years ago. These igneous intrusions formed during one of the three major mountain building events in New England. As plates collided, magma welled up and cooled slowly beneath the earth's surface. After millennia of erosion, the rock that was once buried beneath hundreds of feet of bedrock is now at the earth's surface.

A small portion of the property at its southern end is underlain by the oldest bedrock in Maine - gneiss originating 1.6 billion years ago prior to the emergence of life from the sea (David Kendall, 1987, "Glaciers and Granite, A Guide to Maine's Landscape and Geology).

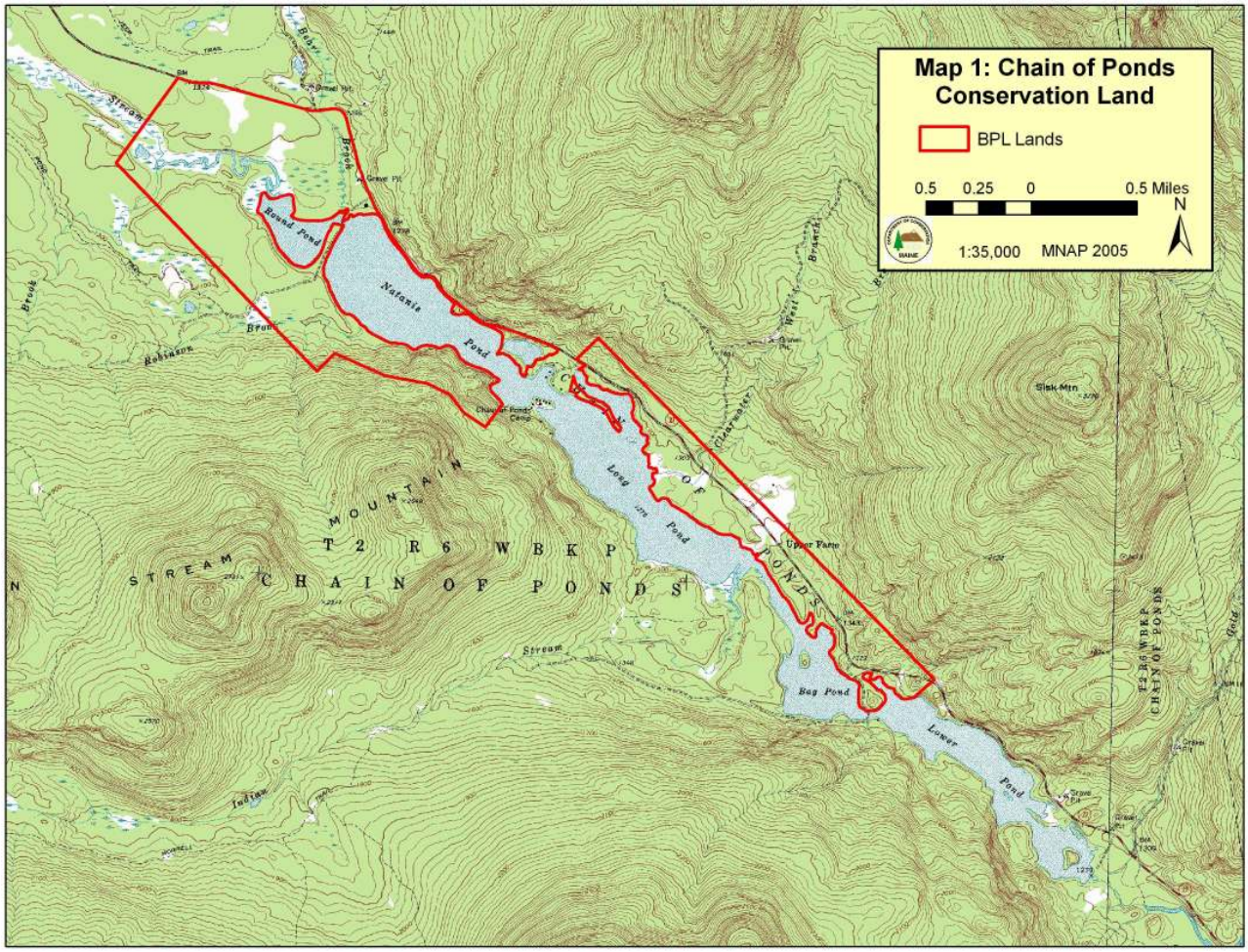
The north end of Chain of Ponds is underlain by glacial outwash deposits (such as glacial deltas). Along the east side of the ponds some esker deposits are found. In other areas – including most of the property – till is the dominant glacial deposit. The soils on Chain of Ponds have not been mapped.

Hydrology and Water Quality: The five ponds cover 700 acres and drain 64.5 square miles. The maximum depth is 106 feet, while the average depth is 24 feet.

Wetlands: The Chain of Ponds property has 132 acres of wetlands, only 20 of which are forested. Much of the wetlands consist of shrub-lined tributaries to the ponds. The property also has 180 acres of wading bird habitat, most of which is concentrated around Round Pond and its tributaries.

Natural Communities: There are no exemplary natural communities documented on the Chain of Ponds property, though the area does contain a diverse collection of wetlands and uplands in good condition.

The western edge of Natanis Pond is characterized by steep slopes with several rocky outcrops covered with rock polypody (*Polypodium* sp.). A Spruce-Northern Hardwoods forest dominates these steep slopes down to the pond edge. The understory is open with hobblebush (*Viburnum lantanoides*), spinulose wood fern (*Dryopteris carthusiana*), and other common forest herbs including painted trillium (*Trillium undulatum*), common wood-sorrel (*Oxalis montana*), bunchberry (*Cornus canadensis*), and bluebead lily (*Clintonia borealis*). Canopy species include white cedar (*Thuja occidentalis*), red spruce (*Picea rubens*), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), and hemlock (*Tsuga canadensis*), with spruce as the most abundant tree. Tree ages include a 133 year old cedar, a 77 year old spruce, and a 130 year old yellow birch.



A small Mixed Graminoid – Shrub Marsh is found along the northwestern edge of the property. This is characterized by several graminoid species (including species of *Scirpus*, *Carex*, *Eleocharis*, *Glyceria*, and *Calamagrostis canadensis*). Black bulrush (*Scirpus atrovirens*) and inflated sedge (*Carex vesicaria*) are dominant. Old beaver dams are evident here (the marsh appears to be an abandoned impoundment), but no recent activity was noted. Species diversity is very high in this area.

The northern end of Round Pond is characterized by a Sweet Gale-Mixed Shrub Fen. This small open fen is dominated by sweet gale (*Myrica gale*) and speckled alder (*Alnus incana*). Meadowsweet (*Spiraea alba*) and star sedge (*Carex echinata*) are frequently encountered. Slender sedge (*Carex lasiocarpa*) and marsh-potentilla (*Comarum palustre*) are scattered throughout the community.

A Spruce-Larch Wooded Bog is found on the eastern edge of the fen at the northern edge of the pond. This is characterized by black spruce (*Picea mariana*) up to 30’ and an understory of sheep laurel (*Kalmia angustifolia*), leatherleaf (*Chamaedaphne calyculata*), three-seeded sedge (*Carex trisperma*), and Labrador tea (*Rhododendron groenlandicum*) with hummocks of sphagnum.

Fisheries and Wildlife Resources: The five interconnected ponds contained and the narrow valley surrounding them are the primary natural features. The ponds all have suitable coldwater game fish habitat with Natanis Pond having the deepest water. The Maine Department of Inland Fisheries and Wildlife has stocked lake trout in the ponds to supplement a slow growing salmon population. Brook trout and salmon populations maintain themselves by natural spawning in tributaries to the ponds.

There have been reports of low numbers of deer wintering along Horseshoe Stream and north of Round Pond but this activity has not been verified by ground surveys.

The fields associated with an abandoned farm (Upper Farm) adjacent to the east side of Route 27 have been mowed to maintain the open habitat, in what is otherwise a heavily forested area. Scattered apple trees are found along the old foundation and at the edges of the field. The alders along Upper Farm Brook south of the field have been managed for woodcock by clearing five 30-foot wide strips perpendicular to the brook to rejuvenate the decadent alder. The uplands away from the ponds and Route 27 are forested, but steep and narrow in most places.

Both active and abandoned beaver impoundments have been observed on the property, many of which have been created and abandoned over time, resulting in the mosaic of habitats along the stream course.

Historic and Cultural Resources

Arnold Trail Historic District: The Chain of Ponds were part of the route for the 1775 Arnold Expedition, which headed northward following a portage trail around Horseshoe Stream to Arnold Pond, and on to Canada. Although many of the Expedition's provisions and possessions had been discarded or lost prior to reaching the Chain of Ponds, it is possible that Bureau lands in the vicinity of Natanis and Round Ponds, and Horseshoe Stream may contain some artifacts. (See also the Overview in Section IV for additional details).

Recreation and Visual Resources

Facilities and Opportunities: Recreational use of this area consists of camping at the Bureau's primitive campsites on Long Pond and Bag Pond, and at the commercial campground (under a lease from the Bureau) on Natanis Pond, canoeing and kayaking, and fishing. All campsites are presently accessible by vehicle. A network of ATV trails now extends from Stratton to the commercial campground. Ice fishing is a popular winter activity with parking available north of the Natanis Campground entrance along Route 27.

Boat access to the ponds presently consists of an informal boat access from a beach at the north end of Natanis Pond, which is part of the commercial lease and requires payment of a small fee; two hand carry launch sites at the Bureau's campsite locations on Long Pond, and from a gravel road that runs down across an old (now submerged) road crossing between Bag and Lower Pond. There is also a steep gravel ramp off of Route 27 on Lower Pond. Reconstruction of Route 27 eliminated an existing formally-designated boat access site to Natanis Pond on Route 27, and has removed a stretch of road that ran close to the shores of Natanis Pond and provided informal access sites which were used in the winter to gain access to the lake for ice fishing. Because these access points were eliminated, and because access to this chain of ponds from lower ponds can be difficult when water levels are low, the Bureau's Boating Facilities Division has been

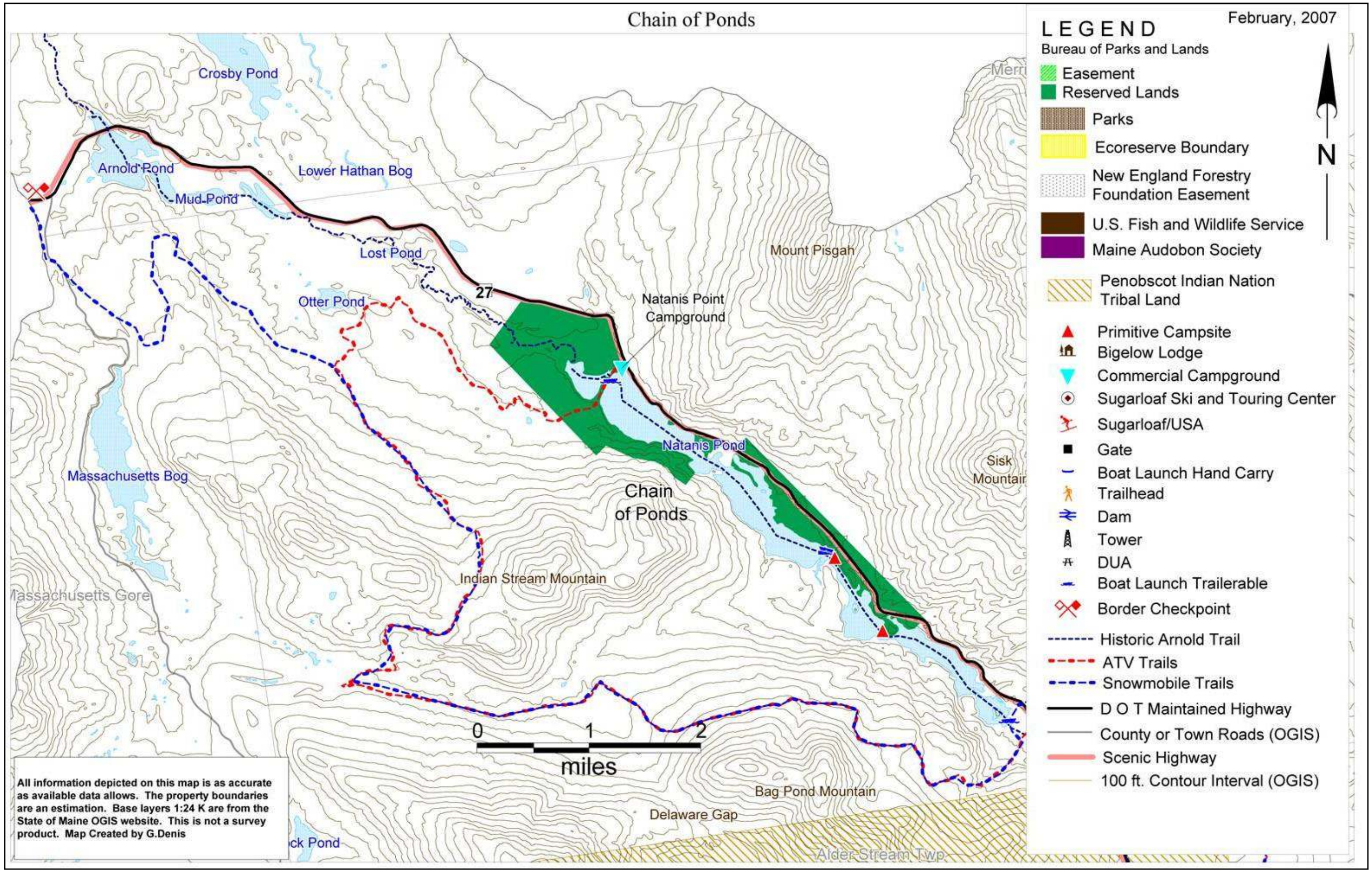
working with the Public Lands Regional staff and MDOT to provide improved boat access. MDOT will upgrade the existing steep gravel launch on Lower Pond to an improved trailerable boat access facility. Boat access to Natanis Pond will also be improved in conjunction with other improvements to the commercial campground lease site, including a reconstructed bridge over the narrows between Round Pond and Natanis Pond, and a designated boat access parking area funded by MDOT. Carry-in access to the two middle ponds within the chain will be formalized and signage provided to identify their locations.

Primitive camping is available at several locations on the ponds. Two campsites with toilet facilities are found off the old road that connects Bag and Lower Ponds, near the informal boat launch site. There are three other sites within the Upper Farm area, where toilet facilities are also available. These sites, however, are in need of upgrading.

There has been discussion over the years of a motorized, international multi-use trail from Stratton to the U.S./Canadian customs gate in Coburn Gore. More recent efforts have been in combination with other efforts to establish an ATV trail system on private lands, that would include Natanis Point Wilderness Campground. A number of visitors come to the campground to take advantage of these ATV trail opportunities. At present, the international trail system has been designated, but is only authorized for snowmobile use at this time – mostly because landowner permission for use of ATV's on the Canadian side has not been secured. A spur from the ATV trail to the campground is maintained specifically for ATV's, and provides access from the campground to Stratton.

Through a cooperative agreement with the Arnold Expedition Historical Society, a footpath skirting Round Pond has been established on Bureau lands which retraces the route of the 1775 Arnold Expedition. The Arnold Expedition Historical Society is proposing to work with private landowners to extend the present footpath beyond Bureau lands, following the historic route as closely as possible to Arnold Pond. This trail will be named the "Height of Land Portage Trail."

Visual Considerations: Most of the land surrounding the ponds is steep and hilly with considerable slopes visible from the water. This does not impose special concerns relative to timber management, as most of the terrain is inoperable. RV's and other camping setups along the shoreline of Natanis Pond are easily seen from Route 27 and from the Pond, although the campground lessee has worked to make this less visible in recent years.


Chain of Ponds
February, 2007
LEGEND
Bureau of Parks and Lands
Easement
Reserved Lands
Parks
Ecoreserve Boundary
New England Forestry Foundation Easement
U.S. Fish and Wildlife Service
Maine Audobon Society
Penobscot Indian Nation Tribal Land
Primitive Campsite
Bigelow Lodge
Commercial Campground
Sugarloaf Ski and Touring Center
Sugarloaf/USA
Gate
Boat Launch Hand Carry
Trailhead
Dam
Tower
DUA
Boat Launch Trailerable
Border Checkpoint
Historic Arnold Trail
ATV Trails
Snowmobile Trails
D O T Maintained Highway
County or Town Roads (OGIS)
Scenic Highway
100 ft. Contour Interval (OGIS)
N
Crosby Pond
Arnold Pond
Mud Pond
Lower Hathan Bog
Lost Pond
Otter Pond
27
Natanis Point Campground
Mount Pisgah
Natanis Pond
Sisk Mountain
Massachusetts Bog
Chain of Ponds
Indian Stream Mountain
Massachusetts Gore
0
1
2
miles
Bag Pond Mountain
Delaware Gap
Alder Stream Twp
All information depicted on this map is as accurate as available data allows. The property boundaries are an estimation. Base layers 1:24 K are from the State of Maine OGIS website. This is not a survey product. Map Created by G.Denis

Timber Resources

The terrain throughout the property is mostly steep, with timber management greatly constrained both by slope and proximity to water, public highway, and recreational use. Only about 240 acres, less than 25% of the forest area, is considered manageable (regulated, in forestry terms) and is located in two separate areas. The first is a strip in the Upper Farm area east of Route 27, with some located behind the fields, and another accessed by a gravel road that runs through the property. This parcel contains mainly well-stocked northern hardwoods, uncut for the past 30+ years, but with an extensive harvest history before that. The second area lies behind and west of Natanis Point Wilderness Campground, on either side of Horseshoe Stream and associated wetlands. This land is not quite as steep as the first parcel and is mainly mixedwood, northern hardwood/spruce-fir, with a similar cutting history. Any timber management would be geared towards wildlife and retaining the existing forest types in most cases.

Administrative Concerns

Leases and Agreements: Natanis Point Wilderness Campground has a 7-acre commercial lease with the Bureau, which includes approximately 1,500' of frontage along the northwestern shoreline of Natanis Pond. The current lease is a continuation of an agreement begun with the Brown Company prior to state ownership in 1978.

There are five residential camplot leases on the property, all of which were in place prior to acquisition of the property in 1978. A one-acre lease is located south of the Upper Farm area along the east side of Route 27, and has road access; three other one-acre leases are located along the eastern shoreline between Long and Bag ponds, and have road access; a fifth lease includes a one half-acre lot on Long Pond, and is water accessible only. These leases have been established on a five-year renewable basis, are for residential and seasonal use only, and contain conditions that limit improvements to both structures and lots.

Public Use and Management Roads, Gates, and Road Controls: The campground area contains the only public access road into the northern end of the property, although visitors are required to check-in prior to its use. The bridge over the outlet between Round and Natanis Pond was reconstructed in the 1990's, and replaced in 2005 with assistance from the Department of Transportation. The bridge replacement is part of a two-phase project that will include replacing the old boat launching facility on Route 27 with a new one within the campground.

Fire Control: Plan in progress.

Management Issues and Concerns

Natural Resource Management Issues

- Potential impacts to the lake environment due to the campground's proximity to the shoreline should be monitored.
- Invasive aquatic species are a concern from use of the boat launches.

Wildlife Management Issues

- The old fields and apple trees are in need of periodic management to maintain their habitat attributes.
- The Horseshoe Stream area holds good potential as a deer wintering area, and will require further monitoring and evaluation regarding its future suitability.

Historic-Cultural Management Issues

- Any management in the northern end of the property should take into consideration the historic significance of the Arnold Trail.
- Explore opportunities to provide interpretive resources for this portion of the Arnold Trail. A cooperative agreement with the campground may an option for distributing information and housing interpretive displays describing the exploits of the Expedition in this area and northward to Quebec.

Recreation/visual Management Issues

- Providing adequate boat launching continues to be an area of concern.
- Areas authorized for camping require further redesign and construction.
- Additional primitive campsites may be appropriate on Long and Bag Ponds.
- The Bureau should work with the commercial campground lessee to ensure the campground is in character with the scenic and primitive nature of the surroundings and provides adequate access for day-users and short-term camping parties.

Timber Management Issues

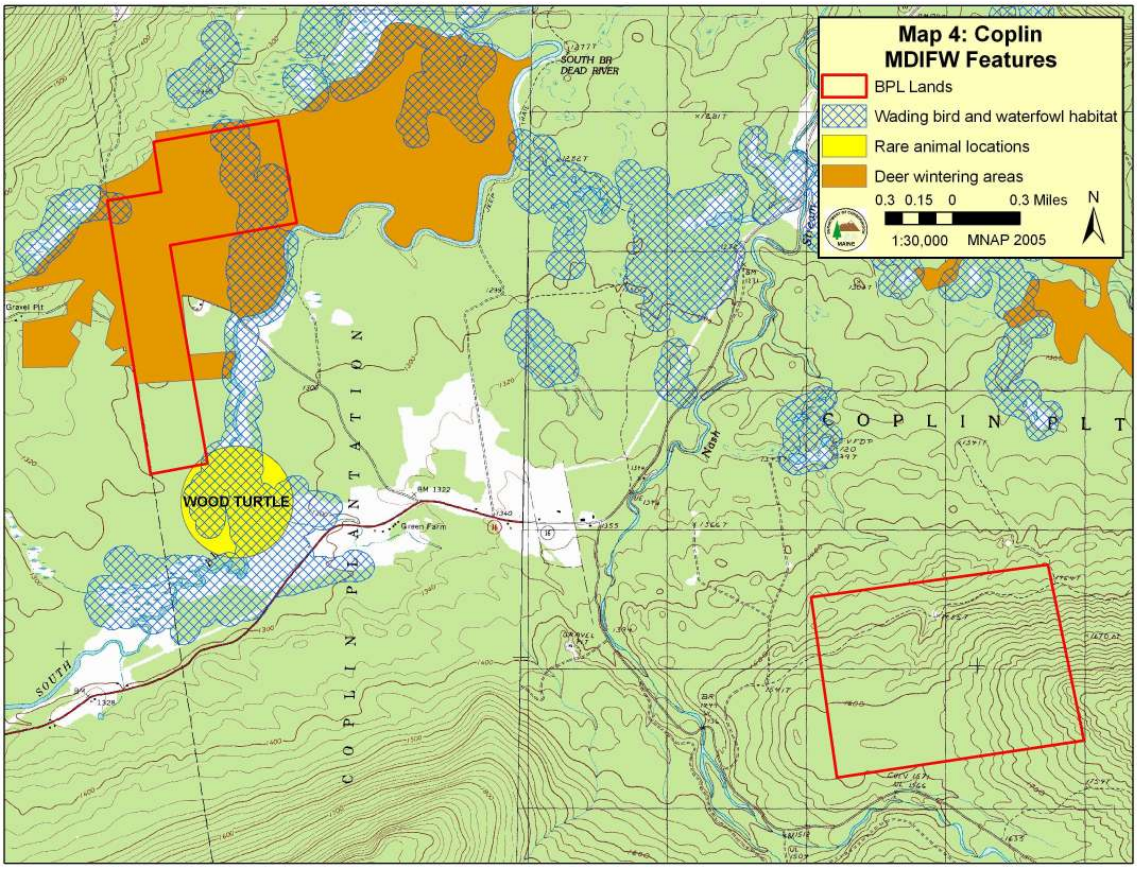
- Due to terrain limitations, visual considerations, wildlife habitat values, the modest acreage of this property, any harvests should be secondary to recreation and wildlife habitat management.

Other Public Lots

The numerous small holdings in the Flagstaff region are presently managed primarily for timber management with secondary uses of wildlife management and dispersed recreation. Lands included in this category are: Coplin Plantation Central, Coplin Plantation West (DWA), Freeman, Highland Plantation Double, Highland Plantation Southeast, Highland Plantation West, King and Bartlett, and Redington. Most of these lands are original public lots, and they range in size from 52 acres (King and Bartlett) to 1,020 acres (Redington). There are no known exemplary natural communities, rare plants, or rare animals on these lands.

Coplin Plantation

The two Coplin Plantation public lots include the 400-acre West or Deeryard lot, which abuts the plantation boundary to the west, just west of the south branch of the Dead River. The lot provides excellent deer wintering habitat and is managed for this use in cooperation with the Department of Inland Fisheries and Wildlife. A second parcel, the 500-acre Center lot, is primarily managed for timber, and is entirely surrounded by industrial forestland.



Coplin Plantation West Lot (Deeryard Lot):

Natural Resources

Geology and Soils: The area is underlain by mafic (igneous, chiefly iron-magnesium) and intermediate granite bedrock; the surficial geology includes till and ice contact glaciofluvial deposits. Soils are very stony, well to poorly drained, and formed in dense till.

Wetlands: The parcel is rich in wetlands, including 140 acres of forested wetlands and 29 acres of non-forested wetlands. IFW has used the parcel as a study site to research the influence of timber harvests on deer habitat preferences.

Fisheries and Wildlife: Nearly the entire lot is zoned as a Deer Wintering Area (DWA), which is part of the larger yard along the Dead River. Extensive measurements of deer cover and use took place here during the earlier harvest and for a number of years afterward, documenting a very high number of deer per square mile wintering in the yard. The DWA was the focus of a long-term study of the relationship of softwood cover to deer movement and use by IFW from 1984 to 1991. Results so far have been inconclusive because the data could not be analyzed statistically.

Past harvesting has focused on managing the softwood component for wintering deer. A harvest conducted in 2005 and 2006 released patches of advanced softwood regeneration from large overstory hardwoods to promote this development.

Several small wetlands occur on the lot; one has been in use by a nesting pair of Canada geese for about 10 years. Woodpeckers are abundant due to the copious supply of dead and dying balsam fir and the abundance of over mature aspen. Beaver occasionally dam the streams until their preferred food is gone. A small dense white cedar stand is also found on the north line of the lot.

Timber Resources: Most of the non-forest and unregulated forest is poorly drained bog land. Except for its lack of significant pine, the forest here resembles that on Dead River Peninsula. Forest types are 50% softwood, 35% mixedwood, and 15% hardwood. Leading softwood species are spruce, fir, and cedar. The southern part of the parcel was harvested in 1985 in response to a spruce budworm outbreak. This area currently has an overstory of poplar with a softwood understory. The northern part of the parcel is characterized as forested wetland and lowland areas punctuated by forested knolls. The 1986-1988 harvest targeted fir and some mature spruce, as well as aspen and red maple - the major hardwood species found on this lot. In early 2005 a few hundred cords of mostly (90%) aspen were harvested to help release the softwood understory. Management of this lot has been pointed toward maintaining and enhancing its winter value for deer.

Coplin Plantation Center Lot:

Natural Resources

Geology and Soils: The portion of this parcel north of the road is underlain by mafic (see above) and intermediate granite, while south of the road is underlain by acidic sediments. The entire parcel is also underlain by glacial till. Very stony, deep soils that formed in glacial till characterize the parcel.

Wetlands: A small wetland is located in the north-central portion of the parcel, on the south side of the logging road. This wooded swamp is characterized by northern white cedar and three-seeded sedge with red baneberry occasional along the edge.

Wildlife Resources: Moose, deer, bear, coyote and red fox are common on the lot. Several small streams bisect the lot, but it is not known if these streams support viable fish populations

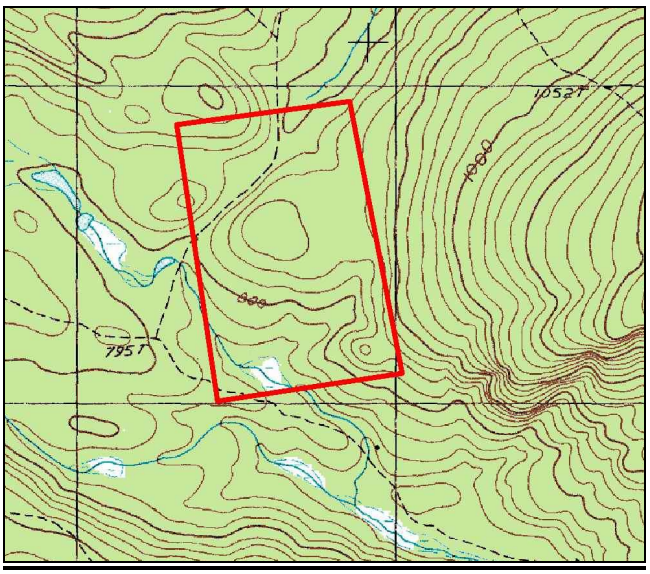
Natural Communities: This lot is composed mostly of hardwood species with some older trees despite a history of multiple harvests. The lot has often been described as an "island" as it is surrounded entirely by commercial forestland. Towards the eastern and central parts of the parcel, the woods are relatively mature. A Beech-Birch-Maple Forest is found throughout the northeastern quadrant of the parcel. Two different age classes are evident here suggesting a selective harvest at least 75 years ago (based on tree size and age). Several mature trees are present including a 36 inch diameter sugar maple and a 29 inch diameter yellow birch. Several other birch, maples, and basswoods were aged to over 130 years. During the prescription process, a late successional index of 6 was applied to the hardwood area which indicates a presence of old growth trees within the stand (old growth component) but overall not a single stand of old growth. Several beech trees are infected with *Nectria*. The understory is abundant with sugar maple and beech regeneration as well as hobblebush and oak fern, as well as a number of other species of ferns. Several small, seepy drainages flow through the forest. Species diversity is high throughout the area.

Timber Resources: This lot has been managed mostly for timber, with good soils and mostly well-stocked stands similar to those found at Bigelow. Timber types are 15% softwood, 25% mixedwood, 60% hardwood. The mixedwood type is an exception to the "well stocked". The spruce/fir/aspen stand had narrow stripcuts made as part of the 1984-85 harvest, which also treated (selection harvest) about 1/3 the hardwood acres while thinning much of the softwood type. The mixedwood area suffered significant windthrow post-harvest, especially on the south lot line adjacent to a large clearcut made by the abutter. This stand also had rather poor drainage, as does some of the softwood. The hardwood stands are mostly on well-drained fertile ground.

This lot offers the opportunity, especially in its hardwood stands, to manage late successional forest for high quality timber. It has recently been re-prescribed, and was harvested in 2005 and 2006.

Freeman Township

The 122-acre Freeman lot came to the State for nonpayment of taxes, and lies in the northeast part of Freeman Township, on the east side of Freeman Hill adjacent to a town maintained road.



Natural Resources

Geology and Soils: The parcel is underlain by acidic sedimentary bedrock and glacial till. Soils tend to be very deep and well drained with some wet runs. The terrain is gently to moderately sloping.

Natural Communities/Wetlands: The west side of the parcel hosts a two acre Red Maple Sensitive Fern Swamp. This forested wetland is dominated by red maple with paper birch, balsam fir, green ash, and cedar also present. The shrub layer is sparse, and the abundant herbaceous layer includes common woodland plants. Basal area in this location is 120 ft^2/acre.

A wetland in the southwest corner of the property graded from a small area of cedar swamp to an Alder Shrub Thicket and includes four acres of open wetlands. One cedar cored had a diameter of 14 inches and was 125 years old. There was evidence of beaver in the area.

Fisheries and Wildlife: This lot contains a beaver flowage at the southwest corner, and good quality pole sized oak component important for mast (nut) production.

Timber Resources: The land is nearly all forest, consisting mostly of well-stocked second growth hardwood, typical of the surrounding area. Portions of this lot were heavily harvested 25-30 years ago (prior to BPL's ownership). Old cellar holes and the even-aged character of the timber indicate grown up pasture or farmland on other portions of the lot. The key species appear to be spruce, oak and sugar maple, with white pine occasionally important. Most acres would benefit from an improvement harvest.

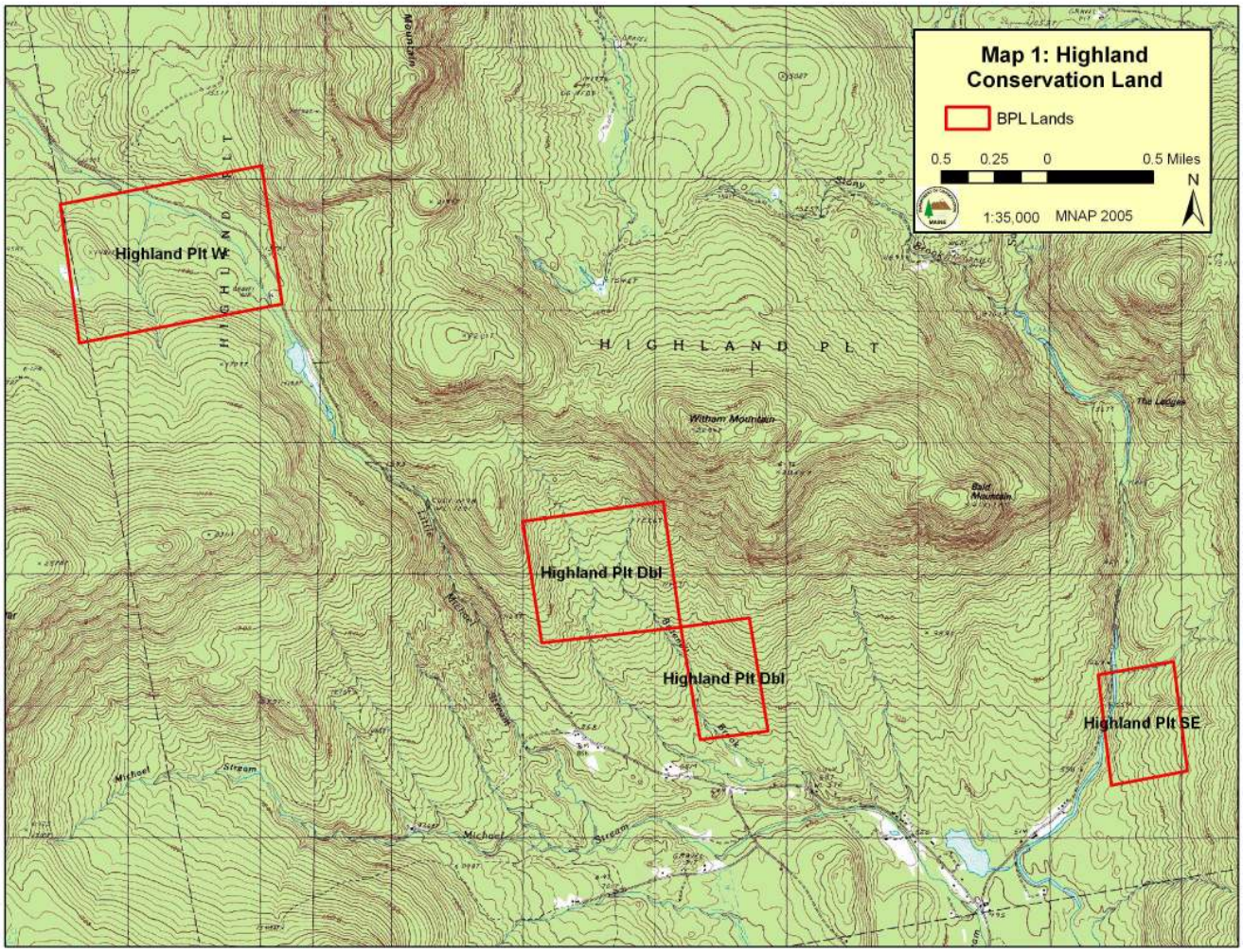
The ridge in the center of the property appears to be regenerating. Basal area averages 60 ft^2/acre. Aspen and balsam fir dominate. Red spruce, paper birch, and northern white cedar are also present in the canopy. Most trees are pole-sized, though there are occasional larger spruce. One small area of blowdown was observed near the top of the ridge.

A harvest prescription was completed in 2006, and harvesting began in the fall and is expected to be completed during the winter of 2007.

The Alder Shrub Thicket at Freeman.

Highland Plantation

Four of the five Highland Plantation lots are included in this Plan. A fifth lot to the east will be considered in a separate regional plan that addresses properties within the Kennebec valley area. Though none of the four lots lie on this township's mountainous northern end, all have considerable steep ground. Soils are generally well to moderately well drained, and fertile except on the steepest land. The forest is well stocked with quality stems, with volumes and competition similar to those found on Bigelow Preserve. The lots are described in three sections: (1) the two-parcel Double lot (300 acres) which connect at their north/south corners, lies in the southwest part of the plantation; (2) the Southeast or Oak lot (125 acres) which is smallest of the parcels, and is located on the southeastern portion of the plantation; Sandy Stream separates all but 10 acres in the northwest corner from easy access, though the larger portion is accessible from the uphill side; and (3) the West or Long Falls Dam lot (325 acres), named because of the one mile of county road located on the property. The West lot is the most diverse of the lots discussed in this section.



Highland Plantation Double Lot:

Natural Resources

Geology and soils: The parcel is underlain by acidic granite bedrock and till and glacio-marine surficial deposits. Soils on the parcel tend to be well to somewhat excessively drained.

Fisheries and Wildlife: This 362 acre primarily hardwood forest lot has the usual mix of wildlife species found in this area of Maine.

Timber Resources: Both lots are occupied mainly by good quality northern hardwood stands, and all but a few steep and rocky acres at the north end of the larger lot are managed (regulated) forest. Hardwood type covers 88% of the lot, with mixedwood at 5%, and softwood at 7%. Over half of the total acres on this lot have sugar maple as the lead species with beech being next. Some hardwood stands are beech dominant. The one mixedwood area has large hemlock along with spruce and hardwoods within a riparian buffer. Half the softwood acres are hemlock dominated within a riparian buffer; the other is mostly spruce on relatively steep but operable land. These lots were selection harvested in 1987-90. A trespass cut of several acres occurred at on the larger of the two lots in 2003.

Highland Plantation Southeast Lot:

Geology and Soils: The area is underlain by acidic granite and glacial till, and soils on the parcel formed in loamy glacial till and tend to be well to somewhat excessively drained. The soil is acidic (pH of 3.5) and rocky, with occasional small granitic cliffs along the terraces. There are several ravines and seeps on the lower slopes. If the area is harvested in the future, these will need to be flagged and adequately buffered.

Fisheries and Wildlife: This 121 acre primarily hardwood forest lot has the usual mix of wildlife species found in this area of Maine. Sandy Stream in the Southeast lot supports a limited brook trout fishery.

Natural Communities: Sandy Stream runs through the eastern half of the property, and a series of hardwood and hemlock dominated small terraces lead down to the water. A small (three to four acre) Hardwood River Terrace Forest occurs on the east side of Sandy Stream. This area was cut 30+ years ago and is characterized by pole-sized red oak (40%), and a remainder of sugar maple (20%), hemlock (20%) with scattered cedar, beech, red maple, and white ash. Further up the slope, the tree layer is dominated by hemlock with beech, yellow birch, and red oak also present. Basal area is 170 ft^2/acre. The shrub layer is sparse, consisting of small amounts of striped maple and hobblebush. The herb layer is patchy, dense in some places and sparse in others.

Timber Resources: This tract holds high volumes of late successional species, and has unofficially been excluded from harvest consideration, in part as a small but intact LS example. Except for some possible cuts 30+ years ago (before the bridge went out) right next to the old road along the south line, this lot appears uncut for at least 50 years, though it had some significant cutting at some time before that. Forest types are roughly 60% mixedwood, 35% hardwood, with the small component of softwood being hemlock within a steep ravine. The key

species are sugar maple, hemlock, and beech, though the beech component has been halved over the past 20 years, probably due to the beech bark syndrome. There are also 3-4 acres in the southeast corner where 15-25 inch diameter red oak is the primary species. Oak is otherwise scattered throughout much of the lot.

Highland Plantation Highland Plantation West Lot:

Geology and Soils: Bedrock types on this 408 acre lot include acidic sedimentary rock, moderately calcareous sedimentary rock, and mafic and intermediate granite. Glacial till is the dominant surficial deposit.

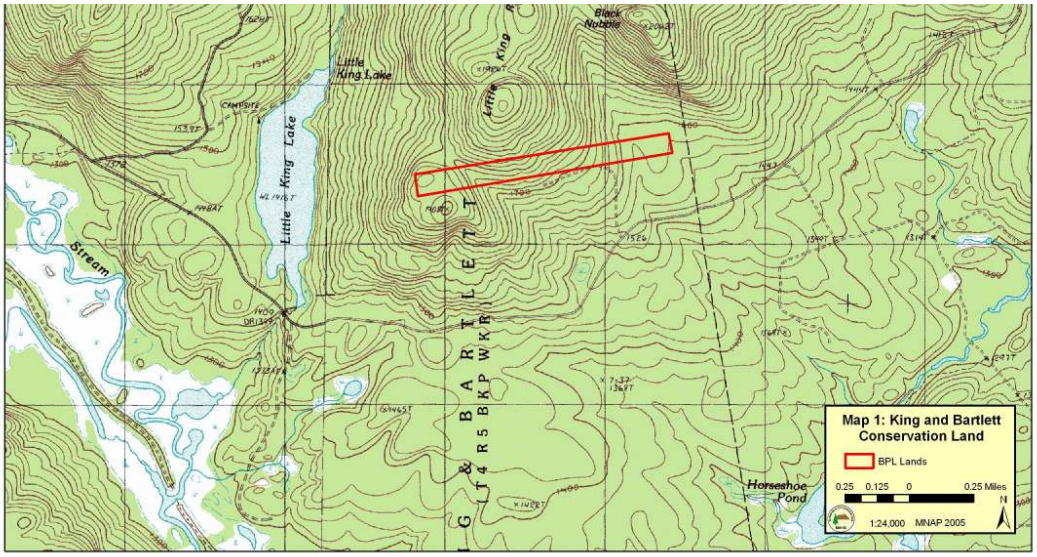
Fisheries and Wildlife: This forest lot has the usual mix of wildlife species found in this area of Maine. Several apple trees were released and pruned on this lot, which is transected by the Long Falls Dam Road, at the time of the most recent harvest by the Bureau.

Timber Resources: Due to previous harvesting activities, this lot is dominated by regenerating spruce .The parcel contains seven acres of non-forested wetlands and seven acres of forested wetlands. It appears to have an even mix of hardwood, softwood, and mixedwood types with hardwood concentrated on the drier slopes and softwood found in ravines and wetter areas.

Twenty-two acres on the parcel are unregulated due to steepness and the presence of a 7-acre semi-open swamp. Forest types are roughly 34% softwood, 25% mixedwood, and 41% hardwood. Sugar maple is by far the most important hardwood species, followed by beech and yellow birch. In the softwoods, the fir and spruce components had been about equal prior to harvesting from 1988 to 1991, which took considerably more of the fir. However, spruce still holds a strong second position and is relatively healthy, with most of the older high-risk trees removed. The lot is considered to be mostly late successional forest of high quality.

King and Bartlett Township

The 143-acre King and Bartlett parcel is the remainder of an original public lot and is the smallest parcel within the Flagstaff region. It lies several miles behind a tight gate and is surrounded by a large area of industrial forest ownership. The location of the lot was recently confirmed.



Natural Resources

Geology and Soils: The parcel is underlain by acidic sedimentary bedrock and glacial till. Soils on the parcel formed in dense till and tend to be shallow and excessively drained. Colonel-Dixfield-Lyman is the dominant soil type.

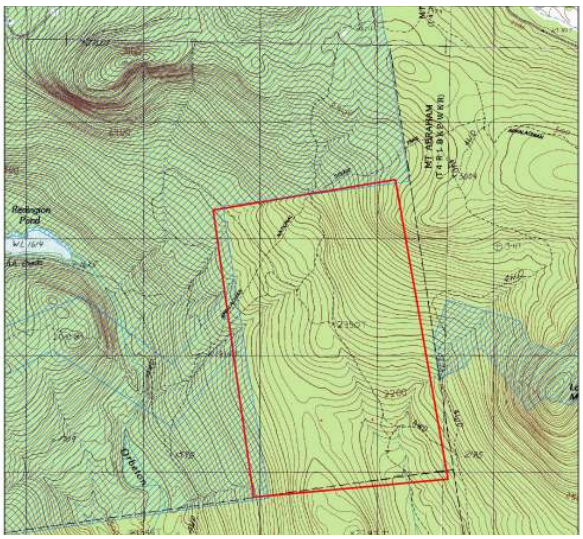
Natural Communities: Though older stumps were noted at the site, portions of the lot have an old growth component with some trees more than 100 years old and possibly as much as 200 years old. The lot includes Beech – Birch –Maple Forest and Spruce – Northern Hardwood Forest natural communities.

Wildlife Resources: Evidence of deer, moose, and coyote has been observed throughout the lot. Snowshoe hare have been seen in areas with heavy softwood cover. The mature forest structure found on the lot, including snags and coarse woody debris, likely provides denning and nesting sites for a variety of wildlife.

Timber Resources: This lot is well-stocked with high quality timber on a productive site. During the prescription process in 2006 the lot was evaluated by MNAP and was determined to have an old growth component. The lot was harvested in 2006.

Redington Township

The 1,000-acre Redington parcel is an original public lot located on the southeast corner of the township, two miles west of Mt. Abraham.



Natural Resources

Geology and Soils: The parcel is underlain by acidic granite and glacial till. Soils are very stony and somewhat poorly to somewhat excessively well drained.

Timber Resources: The parcel is dominated by mixedwood stands with hardwoods on the lower southwesterly slopes and softwood in the northeast and central portions of the parcel.

In 2001, timber harvests were conducted during winter months north and south of the AT, with some large fir found in the higher elevations. Much of this parcel is strongly sloping, although most of it is operable timberland. The lot's unregulated forest is either related to the 200 foot wide AT crossing just south of the lot's midpoint, or the 46 acres (P-MA) between the 2,700 (P-MA), and 3,000 foot elevations. The lowest point on the lot, at the south line, is about 2,000 feet in elevation. This relatively high elevation has a major effect on the species and character of the timber. Trees tend to be short-bodied throughout most of the lot, their "carrot (or lollypop on birch) character" becoming more pronounced as elevation is gained, especially on fir. The high elevation birch often has one nice straight log, topped by a spray of branches unmerchantible even for pulp. The lot's species diversity is relatively low. Two northern hardwood stands on the south (and lower elevation) half of the lot cover 241 acres and are the only acres with enough sugar maple (about 55% of the volume) to be worth noting. The other hardwood stand is 32 acres of white birch and red maple saplings and poles resulting from a 1960's clearcut. None of these stands were entered during the 1998-2001 harvests.

The lot holds only 117 acres of softwoods, nearly half being another sapling-pole stand (spruce-fir about 50-50) from a 1960s clearcut. Most of the other 60 acres, including much of the P-MA, had fir and some spruce cut by the Bureau. The softwoods probably still hold more fir than spruce despite fir being targeted during the recent harvest, with much smaller amounts of white and yellow birch present. Over 60% of the lot holds mixedwood forest, and this type is about 25% each fir, yellow birch and spruce, 18% white birch, and the rest red maple. Nearly 2/3 of this type had harvesting in the recent operation, with fir the major species removed – it was 1/3 of the stand pre-cut. The untreated mixedwood type was land, which had been cut more heavily in the 1960s. Fir, spruce, and the birches within the softwood/mixedwood types are the species best suited for the soils and elevation, with spruce and yellow birch being the more valuable and longer lived species.

Recreational Resources

Approximately 6,000 feet of the Appalachian Trail runs east/west through the center of the parcel.

Pierce Pond Easement

In the late 1990's, conservation easements were acquired on three properties totaling 9,812 acres comprising much of the land within the Pierce Pond watershed including the shorelands of Pierce Pond and numerous smaller ponds. At the time that the easements were acquired, the lands were owned by S.D.Warren Company (now owned by Plum Creek), Maine Wilderness Watershed Trust, and Charles Valentine. Funding for the purchase of the easements was provided through the U.S. Forest Service Forest Legacy Program. The conservation easements prohibit future development while allowing for continued forest management and providing foot access to the public for traditional recreational uses including hunting and fishing. Public vehicular access to Pierce Pond is via a woods road from the Long Falls Dam Road to Lindsay Cove (road use fee charged). Within the easement area access is primarily by small boat and foot. The Appalachian Trail crosses a portion of the property.

The Bureau is responsible for monitoring and enforcing the Pierce Pond conservation easements. The Maine Wilderness Watershed Trust, a local land trust, owns lands and holds additional easements in the area. The Trust provides seasonal recreation management on some of the Pierce Pond lands.