

A NATURAL HERITAGE INVENTORY OF THE APPALACHIAN TRAIL IN MAINE

FINAL REPORT

Submitted to the
APPALACHIAN TRAIL CONFERENCE
AND
APPALACHIAN TRAIL PROJECT OFFICE, NATIONAL PARK SERVICE

by



THE MAINE NATURAL AREAS PROGRAM
MAINE DEPARTMENT OF CONSERVATION

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- A MNAP Standard Field Forms
- B Explanation of Ranks and Statuses for Community Types and Plant Species
- C Explanation of Element Ranks
- D Natural Community Type Descriptions
- E Rare Plant Fact Sheets for plants along the trail, when available
- F Supplemental Information for Baxter State Park Area

APPENDICES PROVIDED SEPARATELY to Appalachian Trail Conference

- Element Occurrence Records
- Digital data of point and polygon locations for rare, threatened, and endangered plants and exemplary natural communities
- Full color map of entire Appalachian Trail showing sites and public lands

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INTRODUCTION

The Appalachian Trail (AT) extends for approximately 270 miles in Maine and covers thousands of acres of private, state, and federally owned land. The Trail wanders through rugged and scenic terrain and provides some of the most beautiful views of the Maine landscape available.

This project is intended to identify significant botanical and ecological resources along the trail and augments other such projects performed in states through which the AT passes. This report combines the results of recent field survey information along with information from publications and past surveys, and it focuses on rare, exemplary, and otherwise noteworthy natural features along the AT. Our specific objectives were to conduct rare species and natural community surveys, and to compile the information for the purpose of guiding land management activities to ensure that natural features are not adversely impacted by development, maintenance, and operation of the AT and associated Corridor lands.

The report is organized so that it is meaningful on a site-by-site basis. Volunteers, managers, and trail guides can remove and use each section separately, focusing on that section's unique habitats. Therefore, please excuse the repetition that occurs in many of the site texts. This was done intentionally so that the section could be removed and still contain complete information for purposes of survey and management.

METHODS

The AT project was a multiple stage process: landscape analysis; field surveys; compilation, interpretation, and mapping of field data; and drafting final report. The Maine Natural Areas Program (MNAP) finds that the choice of botanists and ecologists for the landscape analysis and subsequent field surveys for rare species and exemplary natural communities is critical for ensuring thorough and reliable field information. Trained, proven botanists, including Josh Royte, John Lortie, Georgia Hall, and Arthur Haines of Woodlot Alternatives, Inc., and independent contractors including Sally Rooney and Jill Weber were contracted to perform several stages of the project. In addition, members of a team of qualified botanists working on the Ecological Reserves Inventory Project also contributed field data to the report.

The landscape analysis stage was contracted to Woodlot Alternatives, Inc., a qualified ecological team. The landscape analysis involved reviewing historic and existing data on rare features and exemplary natural communities along the AT, timber harvest records, spruce budworm spraying records, fire history, published and unpublished data reports, aerial photographs, and geologic and topographic maps. Areas identified through landscape analysis included those with the potential for rare species or exemplary natural communities, the term "exemplary" denoting large contiguous units, assemblages of smaller units, and undisturbed or relatively undisturbed sites.

Data collected during the AT inventories included any rare plant or animal species, *i.e.*, those ranked S1-S3, SH or SX in Maine; any rare natural community type, *i.e.*, those ranked S1-S3; or any exemplary occurrence of a more common natural community type, *i.e.*, an occurrence judged to be of "A" -"B" quality according to ranking standards being developed by MNAP¹.

Additional information has come from the Maine Forest Biodiversity Project. This is a cooperative effort among state and federal agencies, environmental groups, commercial foresters, scientists and other concerned individuals to maintain the biological diversity of Maine's forested lands. A major goal of the project is to develop a system of ecological reserves on public and private conservation lands in order to represent all native ecosystem types in Maine. Individual reserves would serve as benchmarks against which environmental changes in both managed and unmanaged ecosystems could be measured, and as sites for scientific research, long-term monitoring, and education. A multi-year inventory and assessment effort is now being concluded, and some of the sites targeted as part of the Ecological Reserves Inventory (ERI) are located along the AT. Several publicly-owned areas, including sites in the Mahoosucs Management Unit, Grafton Notch State Park, Nahmakanta, Baxter State Park, Bigelow, and Redington Twp, were identified during the landscape analysis stage of the AT project and inventoried as part of the Ecological Reserves Inventory.

Natural community names follow MNAP's classification of terrestrial and palustrine communities and ecosystems in Maine (Maine Natural Areas Program 1991, Gawler, S.C. *et al.* 1996). Brief descriptions of natural community types are given in Appendix D. Plant species names follow the 1995 *Checklist of the Vascular Plants of Maine* (Campbell, C.S. *et al.* 3rd revision).

Small mammal trapping was an important component of the AT project. Habitat for the rare yellow-nosed vole exists at different places along the trail, and efforts were made to verify the presence of the vole. Small mammal traps were set in potential habitats at Black Brook Notch, Old Blue Mountain, Spruce Mountain, Moxie Pond, and Bemis Mountain as well as Crocker Mountain

In addition to the small mammal work, a Boreal Owl study was included as part of the project. Boreal Owls were previously unknown in the United States except as occasional winter visitors. Recently, breeding pairs have been confirmed in the Rocky Mountains, and ornithologists believe that they are likely to occur in Maine as well. Potential habitat for the species was identified through landscape analysis by Woodlot Alternatives, Inc., and surveys along the AT were conducted in April and June of 1996. Surveys consisted of 3 minute playback calling for a period of 3 to 5 hours along the trail at 1/2 mile intervals (approximately) along transects. Maps were submitted for 11 survey routes along or near the AT.

Scenic and geologic features such as waterfalls and eskers have been incorporated into the report, although such features were not targeted during inventory efforts. Information

¹ Appendices B and C reference state rarity ranks and element occurrence ranks.

on scenic and geologic features originated primarily from the former Critical Areas Program.

In addition to rare species and exemplary natural communities, potentially exemplary natural communities are listed in the "of note" section of the site tables. These communities require more information to determine their statewide significance. These communities may be high-quality community occurrences, but data are insufficient to judge. In some cases, more data about the particular site are required; in other cases, especially where assessing whether an occurrence of a common community is exemplary, we need more information from around the state for comparison.

Data were collected using standard MNAP field forms. Inventory methodology at the ERI project sites included more detailed quantitative information on the natural communities for the purposes of the ERI project final site analysis. Copies of standard field forms are included in Appendix A.

Standard methodology was used to incorporate the information into the Biological and Conservation Data System (BCD). Incoming data were transcribed and mapped onto a comprehensive set of USGS topographic maps and incorporated into the BCD. BCD which includes a sophisticated database which serves as the central location for computerized rare species and exemplary natural community information for the entire state of Maine, as well as manual files which include the source material to substantiate the computerized records.

For this project, the elements included in the report were digitized into a GIS data layer. Maps using the GIS layer are included in the report, and the digital version of the data is being provided to the AT Conference as a supplement to the report. For the public land boundaries, the GIS maps represent the best available data at the time of printing. There may be lands acquired, but not yet incorporated into the GIS data layer used to generate the maps. Please note that corridor boundaries within the public land parcels are meant to represent study areas for the purposes of this project only, and not as a formal management boundary recognized by the AT Conference.

After information from past field surveys and recent field surveys, articles, and management plans was integrated into the BCD, site tables were developed according to geographical groupings of rare plants and exemplary natural communities.

Site tables list elements by scientific name, common name, state and global rarity ranks, state and federal statuses, element occurrence ranks, and the date of last observation. Explanations of rarity ranks and statuses are listed in Appendices B and C, respectively.

RESULTS

One hundred two areas were initially identified during the landscape analysis stage of the project. Eighty-one of the 102 areas identified during the landscape analysis were surveyed during the 1995 and 1996 field season while the remaining twenty-one areas identified were excluded. Reasons for excluding the twenty-one identified areas are, that the area was not located along the AT Corridor, that the area was located on privately-owned lands, that the area was recently harvested, or that the area was already well-documented from existing reports and prior surveys.

The 81 areas identified during the landscape analysis phase and not excluded for the above-mentioned reasons, were visited by botanists Sally Rooney and Jill Weber and botanists at Woodlot Alternatives, Inc. In addition, many of the publicly-owned areas were visited by a team of botanists working as part of the Maine Forest Biodiversity Project's Ecological Reserves Inventory project. Data compilation encompassed a number of sources including previous field surveys, articles, and management plans as well as the current field survey data.

After compiling the data, distinct areas with rare, exemplary, or noteworthy features or areas with concentrations of features were identified as sites. In all, 157 rare, exemplary or noteworthy features were identified and geographically grouped into 46 distinct sites. Each site is listed (from south to north) according to its segment number. Of the 157 elements identified along the trail, surveyors identified 64 rare plant occurrences, 48 rare or exemplary natural community occurrences, 12 rare animal occurrences, 9 geologic features, and 24 community occurrences of note.

817 (48+24+9)
54
A total of 80 rare, exemplary, or noteworthy features along the AT were field-verified during the project period, 54 of which were newly discovered. The 56 newly discovered features included 7 rare plant populations, 29 rare or exemplary natural communities, 16 communities of note, and 2 newly documented rare animal populations.

In addition to the number of rare features documented within the corridor, the rarity of the features located along the trail is significant. Within the Trail's corridor, there are 5 globally rare species. Globally rare species are those species with a rarity ranking of G1, G2, or G3 (see Appendix B). Each of these 5 species - Boott's rattlesnake root (*Prenanthes boottii*), Bicknell's thrush (*Catharus bicknelli*), alpine blueberry (*Vaccinium boreale*), alga-like pondweed (*Potamogeton confervoides*), and Appalachian fir-club-moss (*Huperzia appalachiana*) -- are known to have fewer than 100 populations worldwide. In addition to these globally rare features, ninety-two of the features presently or historically occurring along the trail are significant due to their state-wide rarity. The summary tables listed for each site reference both state and global rarity.

State and federal legal statuses are also noted in the tables. The peregrine falcon, which is listed as federally endangered, is the only federally listed element along the trail. There are 15 species documented along the trail which are protected on the state level, 7 of which are animals and 8 which are plants.

Despite concentrated survey efforts for the yellow-nosed vole and the boreal owl, the presence of the vole was verified only at the Crocker Mountain site and no boreal owls were found along any survey route at any time. A competing species (saw-whet owl) was reported at some locations. The researcher remains optimistic about the presence of boreal owls in certain areas (Mahoosuc, Bigelow Mountain, Baxter State Park), and calls for additional surveys in succeeding years to more completely document possible occurrences.

After the inventory portion of the project was completed, all element information along the trail was incorporated into the BCD, and groupings of rare and exemplary elements were noted. These groupings were the basis of the site reports which follow the discussion and recommendations section.

DISCUSSION and RECOMMENDATIONS

The Maine portion of the AT encompasses a wide variety of natural communities, which include numerous rare or unusual plant and animal species. The alpine features of the AT have been fairly well documented in earlier inventories (May and Davis 1978, Caljouw and Roeske 1981, Burke 1982, CAP 1981); this inventory extended our knowledge of the natural diversity of the AT by examining other areas of the trail corridor that were of potential ecological interest.

Alpine and subalpine features predominate on the more well-known portions of the AT in Maine. These features include true alpine habitats above treeline, such as krummholz and alpine ridge communities, as well as the extensive subalpine spruce-fir forests found on many mountains. Elsewhere, the AT Corridor includes good examples of lower-elevation forests such as spruce slope forests, northern hardwood (beech-birch-maple) forests, and mixed spruce - northern hardwood forests typical of this region of Maine. Additional diversity is provided by smaller communities related to particular landscape conditions: acidic rocky summits or spruce woodlands on lower-elevation balds, streamshore and pondshore wetlands, or damp rocky outcrops along steeply-pitched streams. As would be expected for a corridor running through mountainous terrain, the AT does not include extensive wetlands; however, the small wetlands associated with streams or ponds along the AT include good examples of several Maine wetland communities (Table 1).

Community surveys have focused on terrestrial and palustrine habitats. Aquatic habitats (streams, lakes, and ponds) have been noted where we know of exemplary occurrences, but have not been thoroughly surveyed or characterized. Aquatic habitats require a very different inventory methodology (because they are not dominated by vascular plants) and should be the subject of separate inventory if further information on them is desired.

Geologic features along the AT were not addressed in the present inventory although information from our files and from secondary sources was included. These features, including waterfalls, gorges, and eskers, were listed in the previous survey of features along the AT (CAP 1981), and are listed in the individual segment descriptions in this report.

Table 1. Rare and exemplary communities documented within the AT. Descriptions of these types may be found in Appendix D.

Community Type	State Rank	Exemplary Sites
FORESTS		
Hardwood Floodplain Forest	S3	West Branch Piscataquis River
Northern White Cedar Seepage Forest	S3	Pollywog Gorge
Hemlock Slope Forest	S4	Cooper Brook
Spruce-fir Flats Forest	S5	East Branch Pleasant River
Spruce Slope Forest	S4	Southern Saddleback Mtn Nesuntabunt Mtn Elephant Mtn Whitecap Mtn
Subalpine Spruce-fir Forest - (* denotes one continuous occurrence)	S3	Katahdin Little Bigelow Mtn Bigelow Mtn Old Speck * Fulling Mill Mtn * Goose Eye Mtn * Mount Carlo * Mahoosuc Mtn * Mahoosuc Notch * Mahoosuc Arm * Baldpate Mtn Poplar Ridge Columbus Mtn Whitecap Mtn Sugarloaf Mtn, W Ravine Crocker Mtn
Mixed Hardwood-Conifer Forest (Spruce - Northern Hardwoods)	S5	Northern Nahmakanta
Beech-Birch-Maple Forest	S5	Sawyer Brook Mahoosuc Mtn Grafton Notch
WOODLANDS (trees widely spaced, canopy cover < 60%)		
Cold-air Talus Woodland	S2	Mahoosuc Notch
Spruce Woodland	S3	Potaywadjo Ridge Mahoosuc Mtn
ALPINE		
Krummholz	S3	Saddleback Mtn Whitecap Mtn
Alpine Ridge	S2	Katahdin Bigelow Mtn Baldpate Mtn Goose Eye Mtn Saddleback
Tarn	S2	Bigelow, The Horns Mahoosuc Arm, Speck Pond

Community Type (continued)	State Rank	Exemplary Sites
OPEN UPLANDS (below treeline)		
Acidic Rocky Summit	S4	✓ Moxie Bald Mtn (summit and north bald) ✓
Boreal Circumneutral Outcrop	S1	✓ Sugarloaf Mtn, W Ravine ✓
Acidic Shoreline Outcrop	S4	✓ Dunn Falls ✓
OPEN WETLANDS		
Dwarf Shrub Bog / Cold-Air Talus Woodland	S4/ S2	✓ Crocker Mtn ✓
Acidic Fen	S4	Jones Pond ✓
Beaver Flowage	S5	✓ East Branch Pleasant River ✓
Graminoid Swale	S4	✓ Kennebec Crossing ✓
STREAMS AND PONDS		
Streamshore Ecosystem	S4	✓ E Branch Pleasant River ✓
Monomictic Mesotrophic Lake	SU	Crescent Pond Eddy Pond ✓ Ethel Pond
Dimictic Oligotrophic Lake	SU	✓ Crawford Pond ✓
Rocky Headwater Stream	SU	✓ Dunn Falls ✓
Midreach Stream	SU	Nahmakanta Stream ✓

Rare plant species are found in several of the alpine and subalpine areas within the AT Corridor. Certain falls and gorges provide habitat for a few additional rare plant species. Table 2 lists rare plant species known from the AT Corridor. Most rare plant species along the AT have been relocated within the last twenty years, and can be considered current records; however, two have been noted historically but have not been recently relocated. The continued occurrence of these, dwarf rattlesnake root (*Prenanthes nana*) and mountain hairgrass (*Vahlodea atropurpurea*), within the AT Corridor remains unknown.

Table 2. Rare plant species documented within the AT Corridor in Maine. (Additional species from Katahdin may be within the AT Corridor there, but specific locations on Katahdin were not determined for this project. See the site description for details.)

Scientific name	Common Name	Rarity Rank ²	habitat category
<i>Agrostis mertensii</i>	Boreal Bentgrass	S2	alpine
<i>Carex atratiformis</i>	Black Sedge	S2	boreal circumneutral
<i>Carex bigelowii</i>	Bigelow's Sedge	S2	alpine
<i>Carex scirpoidea</i>	Bulrush Sedge	S1	boreal circumneutral
<i>Diapensia lapponica</i>	Lapland Diapensia	S2	alpine
<i>Dryopteris fragrans</i>	Fragrant Cliff-fern	S3	gorges/cliffs
<i>Geocaulon lividum</i>	Northern Comandra	S2	subalpine

² State ranks (S#) are given for all species. Global ranks (G#) are given only for those species that are considered globally rare (G1-G3), not for those common somewhere outside of Maine.

(Table 2 continued)			
<i>Hierochloe alpina</i>	Alpine Sweet-Grass	S1	alpine
<i>Huperzia appalachiana</i>	Appalachian Fir-clubmoss	G3/S2	alpine
<i>Juncus vaseyi</i>	Vasey's rush	G3G5/ S1	aquatic
<i>Minuartia glabra</i>	Smooth Sandwort	S1S2	subalpine
<i>Minuartia groenlandica</i>	Mountain Sandwort	S3	alpine/subalpine
<i>Paronychia argyrocoma</i>	Silverling	S1S2	subalpine
<i>Pinguicula vulgaris</i>	Butterwort	S1	boreal circumneutral
<i>Potamogeton confervoides</i>	Alga-like Pondweed	G3G4/ S2	aquatic
<i>Prenanthes boottii</i>	Boott's Rattlesnake Root	G2/S1	alpine
<i>Prenanthes nana</i>	Dwarf Rattlesnake Root	S1	alpine
<i>Solidago multiradiata</i>	Cutler's Goldenrod	S1S2	alpine
<i>Vaccinium boreale</i>	Northern Blueberry	G3/S1	alpine
<i>Vahlodea atropurpurea</i>	Mountain Hairgrass	SH	alpine
<i>Viburnum edule</i>	Squashberry	S2	subalpine

The present inventory resulted in three particularly exciting finds:

- the discovery of a plant entirely new to Maine (but suspected and searched for for years), butterwort (*Pinguicula vulgaris*). This is a small, insectivorous plant of circumboreal distribution that is restricted to cool, wet, calcium-bearing rocks. Elsewhere in New England, it is known from only one spot in Vermont and two in New Hampshire, and is listed as regionally rare (Brumback and Mehrhoff, *et al.* 1996).
- the documentation of a community type that appears distinct from other subalpine vegetation in Maine, the shrubby bog-like vegetation on the slopes of Crocker Mountain. Except for its landscape position, this resembles a Dwarf Shrub Bog community (and is currently being tracked as such), but it is definitely not a standard peatland community. It also resembles a cold-air talus slope community. Further information, or at least comparison with other sites in New England, may help clarify how distinctive this community is. Current information suggests that the Crocker Mountain occurrence is unique or at least very uncommon.
- the rediscovery of a rare rush, vasey rush (*Juncus vaseyi*). Vasey's rush had been documented in Maine only twice before, in 1890 and 1882. The discovery of a small population at Little Wilson Falls was an entirely new record for this rush.

Management Recommendations

Management of the important natural features within the AT Corridor in Maine should focus on recreational use. From a natural areas point of view, there is no need for active management of particular habitats to promote or control certain ecological characteristics. (Exotic plant species may be problematic on portions of the AT outside of Maine, for example, but do not appear to be threats here at this time.) Thus, aside from recreational management, a "leave-it-alone" policy would allow most ecological processes within the AT Corridor to continue.

Lower-elevation forest sites (i.e., those below 2700') require special mention. Where the AT Corridor is narrow and forested, it may not encompass enough of the forest for the AT portion to be viable as a stand-alone entity. (Minimum viability acreage estimates for forests depend on the type of forest, its shape and position on the landscape, and other factors and is a matter still being investigated by forest ecologists, forest managers, and conservationists.) In some cases, where the AT runs through other public land, additional inventories (particularly those for potential Ecological Reserves) provide information on the forest community as a whole, and opportunities exist to ensure the continued quality of the occurrence. For forest sites that abut private lands, which largely have not been inventoried, we cannot assess the quality of the entire natural community based on the present inventory.

Recreational management is a major concern in Maine as it is elsewhere on the AT. Existing trail use that has the potential to impact particular natural features is noted in the individual site descriptions.

Education of trail workers could help conservation of the rare features along the AT. Not only could their own work be improved by becoming aware of which plants and plant communities in particular are most sensitive, but they also often serve as *de facto* interpretive specialists when hikers encounter them on the trail, and could widen the circle of educational outreach.

Continued inventory for certain rare plant occurrences which have not been relocated, or for natural communities which need additional documentation, could help focus conservation efforts further. Periodic monitoring (3-5 years) of rare features, to document their continued presence and notable changes in quality or quantity, can help keep conservation priorities up-to-date. Monitoring need not be intensive; MNAP can be consulted for monitoring guidelines for specific features.

Botanists and ecologists could be contracted to provide technical expertise in the field with regard to site-specific or element-specific recommendations or to hold workshops on the specific identification cues and ecological needs of features along the trail.

Segment 116: Mahoosuc Arm

Quad: Old Speck Mountain

Rare Plants:

- 1 *Geocaulon lividum*
- 2 *Minuartia groenlandica*
- 3 *Viburnum edule*

Rare and Exemplary Natural Communities:

- 4 Subalpine Spruce-Fir Forest
- 13 Tarn

Segment 116: Old Speck Mountain

Quad: Old Speck Mountain

Rare Plants:

- 5 *Minuartia groenlandica*
- 6 *Carex bigelowii*
- 6 *Geocaulon lividum*

Rare and Exemplary Natural Communities:

- 4 Subalpine Spruce-Fir Forest

Segment 116: Grafton Notch State Park

Quad: Old Speck Mountain

Rare Plants:

- 7 *Paronychia argyrocoma*
- 8 *Betula x caerulea*

Animals:

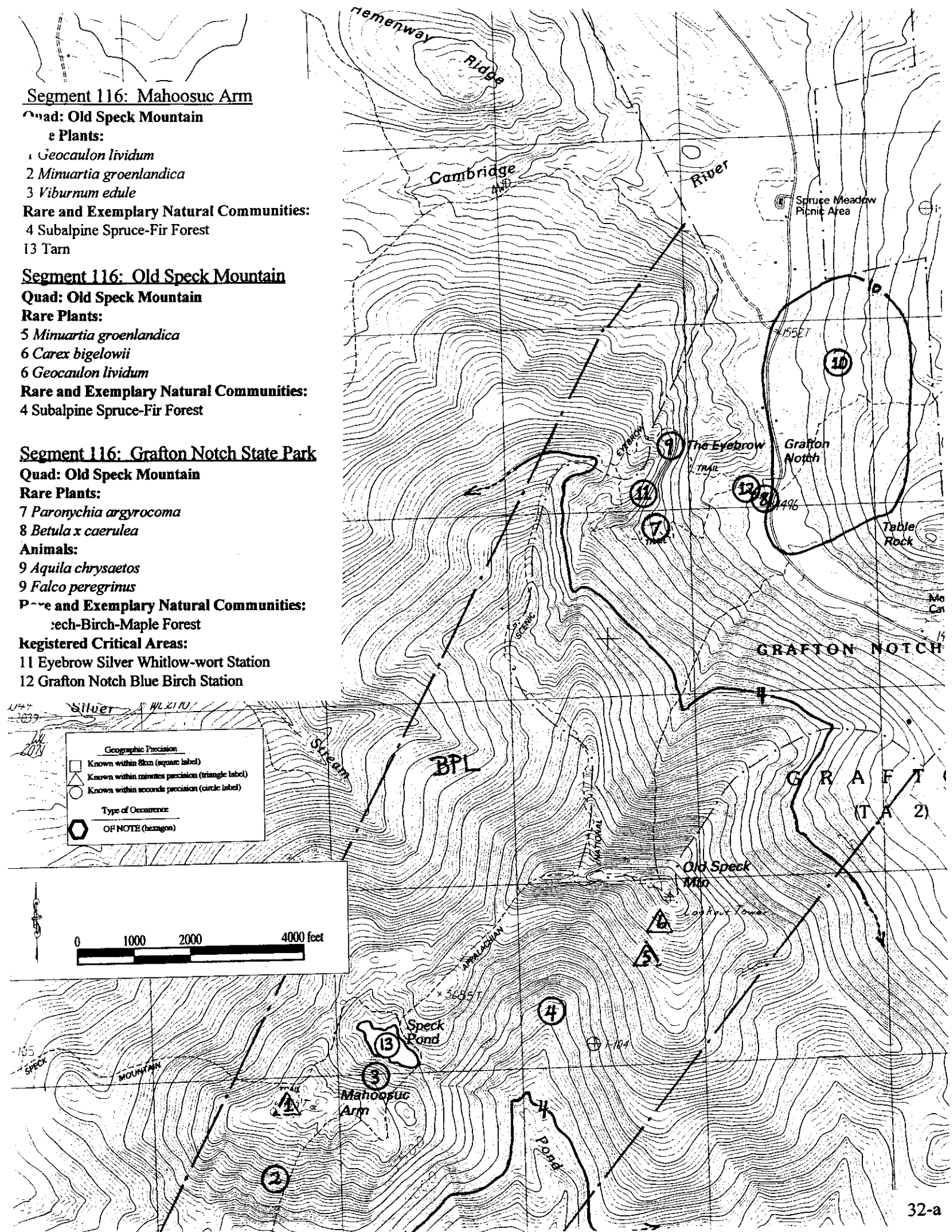
- 9 *Aquila chrysaetos*
- 9 *Falco peregrinus*

Rare and Exemplary Natural Communities:

- 10 Birch-Maple Forest

Registered Critical Areas:

- 11 Eyebrow Silver Whitlow-wort Station
- 12 Grafton Notch Blue Birch Station



Segment 116: Grafton Notch State Park

Locality: Oxford County
Quadrangle: Old Speck Mtn

Ownership: Bureau of Parks and Lands
Quadrangle Code: 4407058

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Rare Plants:							
<i>Betula x caerulea</i>	Blue Birch	HYB	S3				1988
<i>Paronychia argyrocoma</i>	Silverling	G4	~~S1S2~~ S1		T		1982
Animals:							
<i>Aquila chrysaetos</i>	Golden Eagle	G5	S1		E	H	1896
<i>Falco peregrinus</i>	Peregrine Falcon	G4	S1	E (S/A)	E	E	1992
Rare or Exemplary Natural Communities:							
Beech-Birch-Maple Forest			S5			B	1996

Site description:

The site includes the area known as Grafton Notch and its surrounding slopes including the Eyebrow and the Bear River valley. The area is located within the Grafton Notch State Park owned by the Maine Bureau of Parks and Lands.

Grafton Notch State Park is a parcel of public land that is being evaluated by the Maine Forest Biodiversity Project as a potential Ecological Reserve. The Nature Conservancy, which has been overseeing the inventory and analysis of the Ecological Reserves Project, has surveyed specific areas within Grafton Notch State Park and along the AT to determine their significance as part of this large-scale conservation initiative. Analysis of the many sites surveyed during the Ecological Reserves inventory is incomplete at the time of this writing.

what is a rare plant station

The Eyebrow Silver Whitlow-wort (silverling) Station is one of two Critical Areas registered in Grafton Notch State Park in the vicinity of the AT. The Critical Area includes the southeast-facing ledges near the top of the Eyebrow overlooking Grafton Notch and is noted for the presence of silverling (*Paronychia argyrocoma*) which is a low-growing perennial with small white flowers clustered at the tops of its stems. In this area, the plant

is usually in association with a tuft of grass, lichens, or moss, where small amounts of soil have accumulated on the flatter parts of the ledges. The ledges of the Eyebrow Silver Whitlow-wort Station are generally bare, although large crevices harbor a few small trees and shrubs.

Also within this area is the Grafton Notch Blue Birch Stand, registered as a Critical Area in 1991. The Critical Area was noted for the presence of the rare blue birch (*Betula x caerulea*). The blue birch is a hybrid between mountain paper birch (*Betula cordifolia*) and gray birch (*Betula populifolia*). In recent years, several populations of blue birch have been found in Maine in areas where both parent species occur, causing it to be 'downlisted' by the MNAP. The species is currently listed as an S3 in rarity and is no longer 'tracked' by the Program due to recent discoveries.

In addition to the two registered Critical Areas, Old Speck Falls is located north of the parking area for the Old Speck trails. The area is notable for the height of the falls which includes two 50 foot drops. Although it was nominated for registry, the area was not formally listed as a Critical Area.

Just east of Grafton Notch the AT rises to an unnamed summit just south of Hedgehog Hill. On both sides of the trail is an exemplary occurrence of a beech-birch-maple forest community which was documented in 1996 as part of the AT survey. The community is composed of sugar maple (*Acer saccharum*) and yellow birch (*Betula alleghaniensis*), with individuals over 100 years old. Hobblebush (*Viburnum lantanoides*) is dominant within the well-developed shrub layer.

The peregrine falcon (*Falco peregrins*) has been sighted in the Eyebrow Ledge area, but has not been confirmed as a nester. Golden eagles (*Aquila chrysaetos*) have been confirmed to nest historically in that area. However, nesting for the golden eagle has not been documented here since 1896. Ravens have been noted nesting in the area.

Threats:

A few colonies of silverling (*Paronychia argyrocoma*) have suffered damage from trampling where hiking trails cross the habitat. In the past, plants in the Eyebrow area have grown well off the trail in an area made fairly inaccessible by the precipitous drop-offs. Silverling populations are usually quite small in number and extent, so any degradation tends to be significant within the population.

Several blue birch trees (*Betula x caerulea*) had carvings in their bark with some having their bark partially removed. Bark removal girdles and eventually kills birch trees. However, heavy hiker traffic during the summer may promote disturbance which is favorable to the establishment of this early successional species.

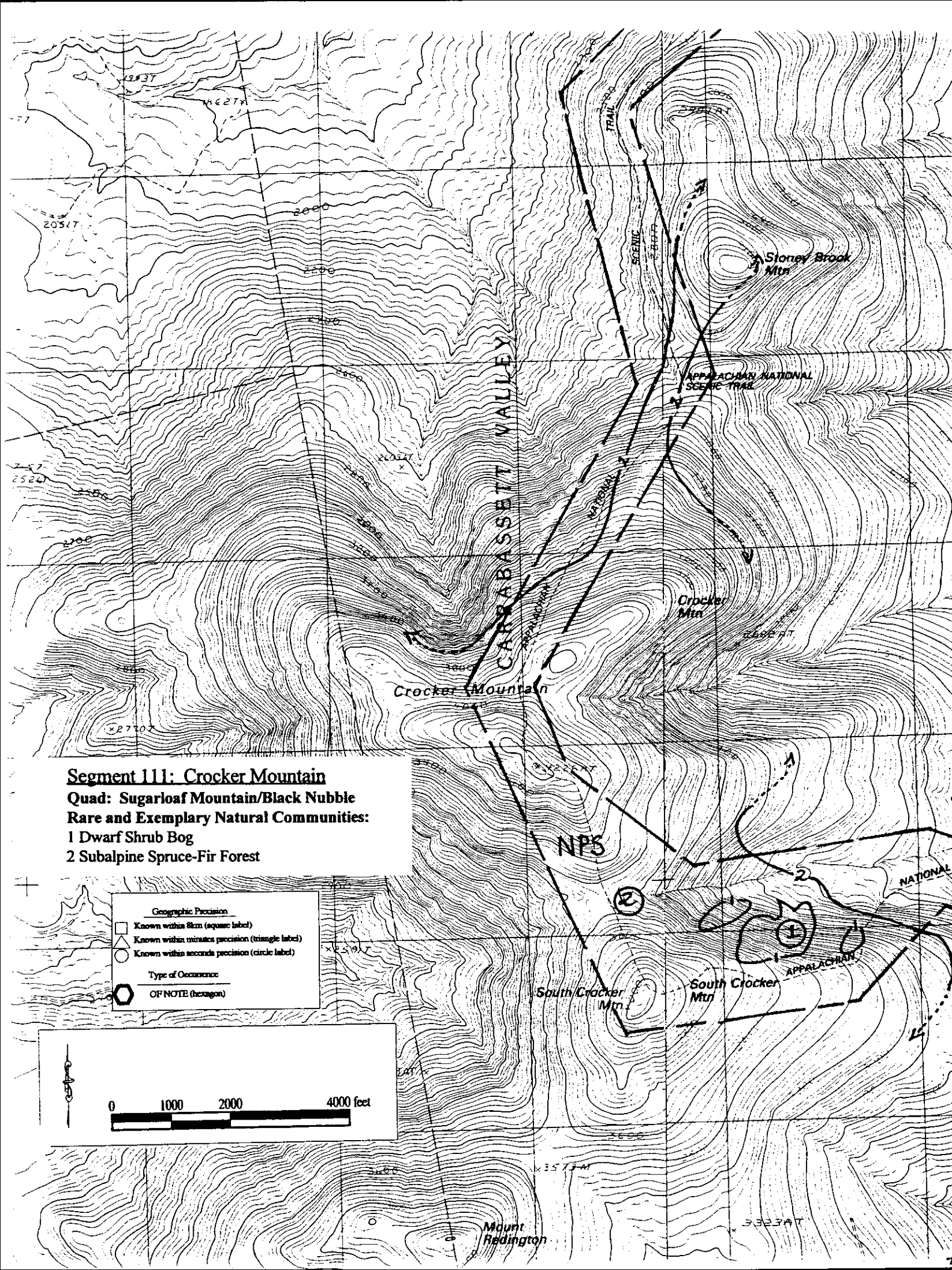
Protection and management recommendations:

As noted, two Critical Areas have been registered in the area. By having these areas registered, the Maine Bureau of Parks and Lands has agreed to voluntarily conserve the rare plant station and its associated species and the blue birch (*Betula x caerulea*) population in the area.

Hiker traffic does not pose a significant threat to stands of blue birch and, in fact, may help establishment of new saplings.

Trail workers should be aware of the rare species while maintaining trails and the MNAP should be contacted prior to relocation of any trails.

Periodic monitoring of the silverling should include the areal extent (or number of clumps/tufts) and an overall assessment of health, quality, and conditions of the plants. Appendix A includes standard MNAP field forms. These can assist with the monitoring of plant populations. Providing a copy of the completed field forms to MNAP will allow MNAP to maintain current data on the rare species occurring along the AT and to assess that data in relation to rare plant populations throughout the state.



Segment 111: Crocker Mountain
Quad: Sugarloaf Mountain/Black Nubble
Rare and Exemplary Natural Communities:
1 Dwarf Shrub Bog
2 Subalpine Spruce-Fir Forest

Geographic Precision	
	Known within 8km (square label)
	Known within minutes precision (triangle label)
	Known within seconds precision (circle label)
Type of Occurrence	
	OF NOTE (hexagon)



Segment 111: Crocker Mountain

Locality: Franklin County
 Quadrangle: Sugarloaf Mountain
 Black Nubble

Ownership: National Park Service
 Quadrangle Code: 4507013
 4507014

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Rare or Exemplary Natural Communities:							
Dwarf Shrub Bog			S4			AB	1996
Subalpine Spruce-fir Forest			S3			AB	1996

Site description:

This site includes the area west of the Caribou Valley, west across the summit of South Crocker Mountain, and north across Crocker Mountain to the west slope of Stony Brook Mountain. The site is owned by the National Park Service.

Subalpine spruce-fir forest occurs along the ridgelines throughout the AT Corridor in this area, and is continuous with the subalpine forest of the Redington Pond Range. The forest is of exemplary quality and appears never to have been cut at elevations above 2700 feet, although heavy cutting has occurred at lower elevations. Old-growth red spruce (*Picea rubens*) occurs in several parts of the forest, and the understory of this community has a well developed bryophyte layer growing on a dense accumulation of dead wood and leaf litter. Fir waves, which are wind-induced cyclic bands of dead trees, regenerating trees, and mature forest, are present.

wildlife (black-bear, red-fox, etc.)
 A trio of dwarf shrub bog communities occurs on the steep north to northeast side of South Crocker Mountain. Dense hummocks of sphagnum support low shrubby growth of Labrador tea (*Rhododendron groenlandicum*), red spruce (*Picea rubens*), and pale laurel (*Kalmia polifolia*). While the species composition is typical of dwarf shrub bogs, the location on a steep slope makes these occurrences distinct from true bogs and is highly unusual in Maine. This special community occurrence will probably be segregated as a distinct community type in the upcoming revision of Maine's natural community classification.

See Appendix B, Table 1 (1996)
 The yellow-nosed vole (*Microtus chrotorrhinus*) has been noted as occurring on the southeast side of Crocker Mountain, but not specifically from the AT. Recent targeted field surveys for this species in 1996 have verified their presence in the vicinity. Voles were

trapped in the mixed hardwood-conifer forest on the north side of South Crocker just upslope of the beaver flowage. The forest in this area is not unique or exemplary and appears to have been cut in the past, although no stumps were encountered.

Threats:

The lack of accessibility and merchantable timber has deterred cutting at higher elevations. Logging within the AT Corridor would diminish the quality of the forest here as a relatively undisturbed natural community.

Protection and management:

Except for minor cutting needed for trail management, the forest communities within the AT Corridor should remain intact. Where natural community boundaries extend beyond the AT corridor, Appalachian Trail Conference staff should work with adjacent landowners to ensure the quality of the community.

Searches for the unusual subalpine slope dwarf shrub bog community elsewhere in the area could help determine how restricted this community really is.

Surveys for the yellow-nosed vole were performed to verify its presence/absence; more surveys should follow.

Segment III: Bigelow Mountain

Quad: The Horns

Rare Plants:

1 *Prenanthes nana*

2 *Potamogeton confervoides*

2 *Viburnum edule*

5 *Diapensia lapponica*

6 *Carex bigelowii*

7 *Hieracium alpinum*

7 *Mimularia groenlandica*

7 *Prenanthes boottii*

7 *Vaccinium boreale*

7 *Vahlodea atropurpurea*

Animals:

7 *Catharus bicknelli*

10 *Aquila chrysaetos*

10 *Falco peregrinus*

11 *Falco columbarius*

8 *Microtus chrotorrhinus*

Rare and Exemplary Natural Communities:

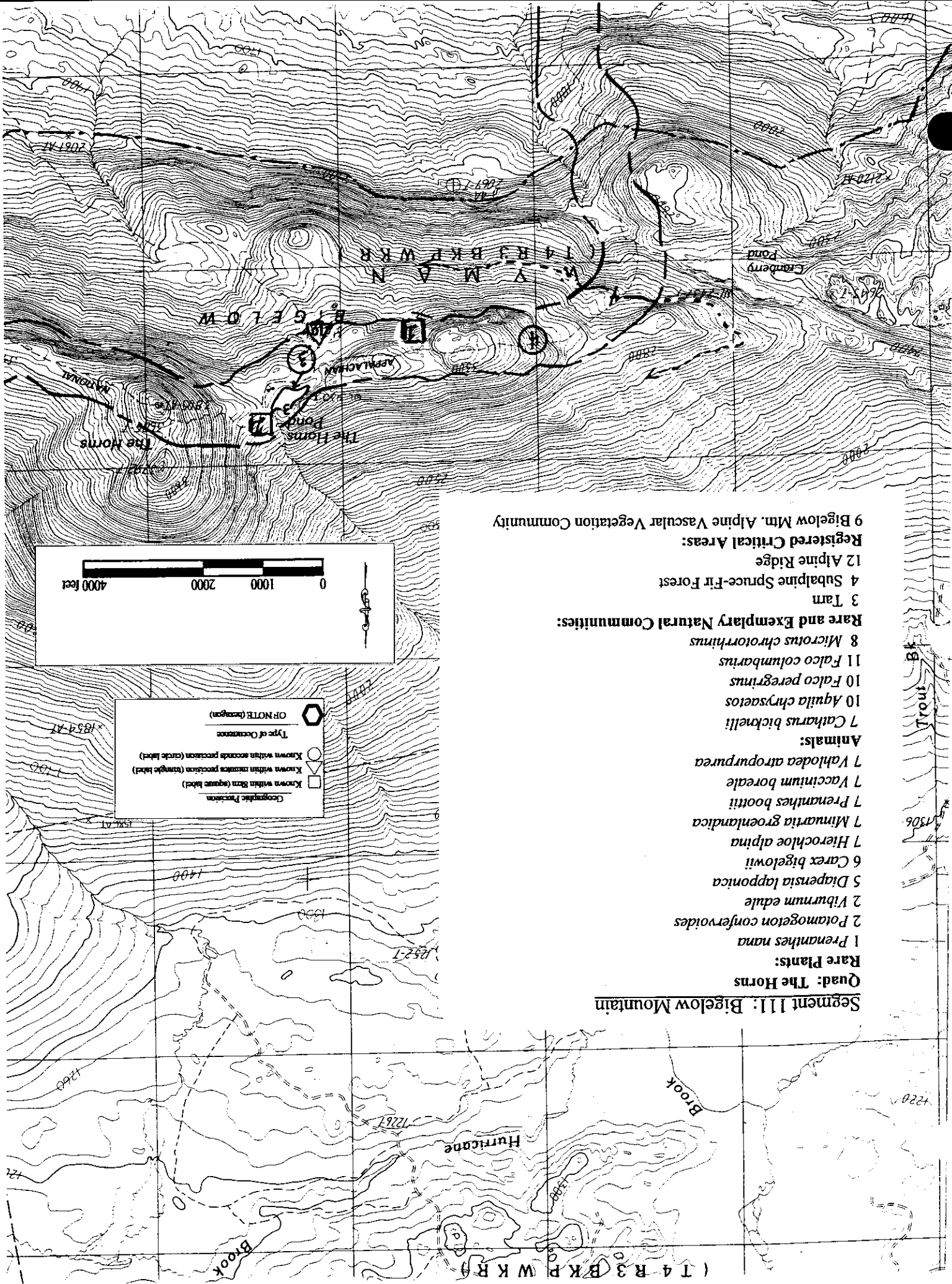
3 Tarn

4 Subalpine Spruce-Fir Forest

12 Alpine Ridge

Registered Critical Areas:

9 Bigelow Mtn. Alpine Vascular Vegetation Community



Segment 111: Bigelow Mountain

Locality: Somerset County
 Quadrangle: The Horns

Ownership: Bureau of Parks and Lands
 Quadrangle Code: 4507023

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Rare Plants:							
<i>Carex bigelowii</i>	Bigelow's Sedge	G5	S2		SL	E	1980
<i>Diapensia lapponica</i>	Lapland Diapensia	G5	S2		SC	E	1982
<i>Hierochloa alpina</i>	Alpine Sweet-Grass	G5	S1		T	E	1980
<i>Minuartia groenlandica</i>	Mountain Sandwort	G5	S3		SC	H	1976
<i>Potamogeton confervoides</i>	Alga-like Pondweed	G3G4	~~S1~~ S3		~~F~~ SC	E	1992
<i>Prenanthes boottii</i>	Boott's Rattlesnake Root	G2	S1		~~F~~ E	C	1991
<i>Prenanthes nana</i>	Dwarf Rattlesnake Root	G5	S1		~~E~~ E ~~F~~	H	1896
<i>Vaccinium boreale</i>	Alpine Blueberry	~~G3~~ G4	~~S1~~ S1S2		~~FE~~ T	H	1915
<i>Vahlodea atropurpurea</i>	Mountain Hairgrass	G5	SH		FE	H	1919
<i>Viburnum edule</i>	Squashberry	G5	S2		SC	E	1980
Animals:							
<i>Aquila chrysaetos</i>	Golden Eagle	G5	S1		E		1896
<i>Catharus bicknelli</i>	Bicknell's Thrush	G3G4	S?		SC	E	1997
<i>Falco columbarius</i>	Merlin	G5	S2			E	1990
<i>Falco peregrinus</i>	Peregrine Falcon	G4	S1	E(S/A)	E	E	1991
<i>Microtus chrotorrhinus</i>	Yellow-nosed Vole	G4	S3		SC		1977
Rare or Exemplary Natural Communities:							
Alpine Ridge			S2			B	1996
Subalpine Spruce-fir Forest			S3			A/B	1996
Tarn			S2			A	1996

Site description (Bigelow Mountain):

This site extends from east of Cranberry Pond along the ridgeline of Bigelow Mountain, and includes The Horns Pond, West Peak, and Avery Peak. It is contained within the Bigelow Preserve, which encompasses the entire Bigelow Range and is owned by the Maine Bureau of Parks and Lands. Stratton Brook Esker, Jones Pond, and Little Bigelow Mountain are also contained within the Preserve, but are treated elsewhere as separate sites. This site contains a unique mosaic of alpine and subalpine communities, rare plants, and glacial geologic features.

The Bigelow Preserve is a parcel of public land that is being evaluated by the Maine Forest Biodiversity Project as a Ecological Reserve. The Nature Conservancy, which has been overseeing the inventory and analysis of the Ecological Reserves Project, has surveyed specific areas within the Bigelow Preserve and along the AT to determine their significance as part of this large-scale conservation initiative. Analysis of the many sites surveyed during the Ecological Reserves inventory is incomplete at the time of this writing.

The Bigelow Range consists of a long wind-swept ridge with several high peaks. Two, Avery Peak and West Peak, are treeless and have alpine tundra plant communities containing small numbers of arctic-alpine species in the small open areas (May and Davis, 1978).

Avery Peak is rocky and dry. The leeward side has large boulders, moist soil depressions, and disturbed areas near the abandoned fire tower and along the trail that support arctic-alpine vegetation. Dwarf shrub heath communities are dominant, and the spruce-fir forest is interspersed with tundra vegetation. Spruce-fir krummholz is the dominant cover type in several areas with dwarf shrub heath forming the understory (May and Davis, 1978).

During the summer of 1997 two surveys for high elevation birds were conducted on Bigelow near the Avery Peak section of the AT by the Department of Inland Fisheries and Wildlife. Bicknell's thrush (*Catharus bicknelli*) was documented during both surveys. Bigelow Preserve is considered to be a source population from which other smaller high elevation patches of habitat can be recolonized (Hodgman, 1997).

West Peak has a smaller treeless area than Avery Peak. Arctic-alpine vegetation occurs along the bare gravelly substrate of the hiking trail. Mountain sandwort (*Minuartia groenlandica*) is dominant in dry, disturbed areas along the trail, whereas Highland rush (*Juncus trifidus*) is found in moist soil depressions and adjacent to large rocks. Both species also occur along the trails on Avery Peak (May and Davis, 1978).

The number of arctic-alpine species on Bigelow Mountain is small compared to the other alpine sites in Maine because of the relatively dry, wind-swept terrain. Vogelmann (1976)

evaluated the flora on Bigelow and commented that the treeless ridges support an extensive arctic-alpine vegetation with many rare arctic-alpine species, but no rare or unusual arctic-alpine species have recently been observed on Bigelow. Although once documented to occur on the leeward side of boulders, if they still occur there, they are nowhere obvious along the ridges. Populations may have shifted locations since originally documented, the original locations may not have been specifically documented or surveyed, or the populations may no longer occur on Bigelow. The arctic-alpine communities on Bigelow are composed of common arctic-alpine species. However, arctic-alpine communities occur at only a small number of sites in the state and therefore, the community types themselves are uncommon in Maine.

Species documented from Bigelow Mountain include Bigelow's sedge (*Carex bigelowii*), Lapland diaspensia (*Diapensia lapponica*), alpine sweet-grass (*Hierochloe alpina*), and Boott's rattlesnake root (*Prenanthes boottii*). Alpine sweet-grass generally grows in damp slides and moist gravel and moss; Bigelow's sedge and Boott's rattlesnake root have occurred on the leeward side of boulders, the latter species preferring moist or disturbed areas in or near the krummholz. Some taxonomic question exists as to whether or not Boott's rattlesnake root is distinct from dwarf rattlesnake root.

Mountain sandwort (*Minuartia groenlandica*), mountain hairgrass (*Vahlodea atropurpurea*), alpine blueberry (*Vaccinium boreale*) and dwarf rattlesnake root (*Prenanthes nana*) were all recorded historically in the summit area of Bigelow Mountain, but none of these species appears to be present at this time.

Squashberry (*Viburnum edule*) was noted in 1980 occurring in the subalpine forests of Bigelow Mountain and at The Horns Pond, and is likely to still persist there.

Auricled twayblade (*Listera auriculata*) was reported from the Fire Warden's Trail in 1978, but the habitat is uncharacteristic and no specimen was collected. Searches for *Listera* species in this area could confirm if auricled twayblade or the more common broad-lipped twayblade (*Listera convallarioides*) occurs here.

Golden eagles (*Aquila chrysaetos*) have been reported on the southwest slope as viewed from South Horn Summit and in the general vicinity of Bigelow Mountain, but nesting has not been documented. Historically an eyrie was occupied from 1879 to 1896 and was inhabited as early as 1859. Peregrine falcons (*Falco peregrinus*) have been sighted in the vicinity of Old Man's Head and at other sites within Bigelow Preserve. Territorial behavior was observed but nesting has not been confirmed. Merlins (*Falco columbarius*) have been sighted in the vicinity of Old Man's Head and Avery Peak, and two adults with juveniles were noted on one occasion. Local nesting by any of these species has not been confirmed.

The yellow-nosed vole (*Microtus chrotorrhinus*) was trapped in the vicinity of Western and Avery Peak in 1977. The exact location of the trap was not recorded, but was very likely along the AT Corridor.

The subalpine spruce-fir forest of Bigelow Mountain is largely undisturbed, having experienced little recent cutting. Balsam fir (*Abies balsamea*) occurs as stunted to moderate-sized trees, depending largely on exposure. The understory is dimly lit and is dominated by a dense carpet of mosses, goldthread (*Coptis trifolia* ssp. *gruenlandica*), and creeping snowberry (*Gaultheria procumbens*). An exemplary old-growth red spruce stand (*Picea rubens*) occurs along The Horns Pond cutoff trail.

Although not within the corridor, Cranberry Pond has been noted as a monomictic mesotrophic lake, characterized by a bouldery shoreline and very shallow, organic lake bed. In the past it has been influenced by beaver damming. The shallow grade creates large areas which alternate from emergent beds to emergent aquatics or mucky unconsolidated pond bottom with fluctuating pond levels. Close to the Cranberry Pond recreational trail, the pond offers scenic views of the Bigelow Range. The pond is not stocked, nor are there any plans to do so in the future.

The Horns Pond is an outstanding example of an alpine pond or tarn, with steep sides and a shallow outlet lip which creates fairly stable water levels. Alga-like pondweed (*Potamogeton confervoides*) has been found on flotsam on the shore. The pond is periodically stocked with fingerling brook trout by the Department of Inland Fisheries and Wildlife. Increased human traffic around the shoreline resulting from this fishing opportunity is being monitored, and restocking will be discontinued if negative impacts are detected (BPL, 1989). Some damage due to trampling has occurred on a portion of the subalpine bog plant community along the shore (Lepisto, 1994).

The alpine ridge community has been researched extensively and is discussed in detail in the report "A natural resource inventory of Bigelow Preserve" (C. Caljouw and S. Roarke, 1981). The area was surveyed in 1996 and characteristic alpine species noted.

Threats:

Damage from trampling, erosion due to heavy trail use, logging, and enhancements to current Preserve facilities, and/or creation of new facilities all have potential negative impacts on this site if not carefully managed.

Bicknell's thrush (*Catharus bicknelli*) is a habitat specialist tied, apparently to the forest structure rather than altitude. For example, the thrush uses very dense regenerating fir in northern New Brunswick. Further research is necessary to fully understand the habitat requirements and life history this species.

Human interaction with the thrush is a concern in heavily used areas, but hiking is most likely not causing significant impacts to populations of the thrush in Maine. Forest fragmentation, ski trails, communication towers, wind power, and power lines are the greatest threats to this species in the northeast and in Maine such cumulative impacts to high elevation habitats should be considered a threat to this species (Hodgman, 1997).

Protection and management:

The Bigelow Mountain Alpine Vascular Vegetation Community was registered as a Critical Area by the Maine State Planning Office in cooperation with the Bureau of Parks and Lands in 1979. By registering the site, the Bureau has agreed to voluntarily conserve the alpine community and its rare plant associations.

The Bigelow Preserve was established in 1976 and is managed by the Maine Bureau of Parks and Lands, which is responsible for developing and carrying out an ongoing management plan for the Preserve.

Of particular significance at the Bigelow Mountain site is Boott's rattlesnake root (*Prenanthes boottii*), which is the rarest feature, from a global rarity perspective, documented along the entire AT in Maine. This species is considered globally rare with fewer than 20 populations documented worldwide. In Maine, there are three known populations. In addition, alpine blueberry (*Vaccinium boreale*) and alga-like pondweed (*Potamogeton confervoides*) are also state and globally rare species, making both state- and global-level protection of this area particularly important.

Monitoring plans for the old-growth red spruce (*Picea rubens*) along The Horns Pond cutoff trail, and rare plant and animal populations should be written and implemented. BPL management recommendations to leave Cranberry Pond undeveloped, and to refrain from construction of any intensely developed recreational facilities should be upheld. Fish stocking at The Horns Pond should be discontinued if further negative impacts are documented.

Logging within the AT Corridor is prohibited and should remain so. Logging would diminish the quality of the forests here as relatively undisturbed natural communities.

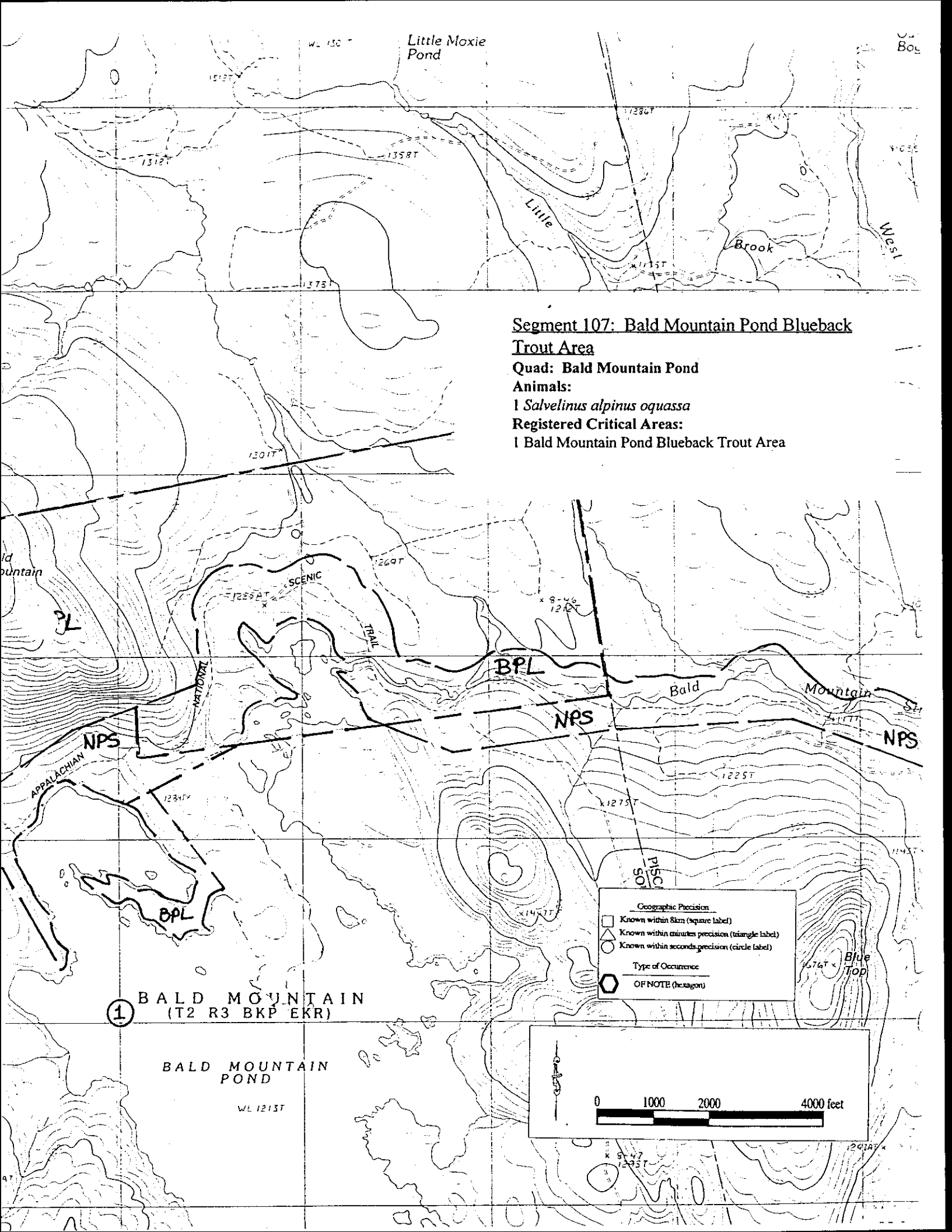
The trail in this area may require additional maintenance and/or rerouting to lessen erosion impacts. The trail should be well-marked to discourage increased traffic beyond the trail, and the trailhead should include educational information regarding the fragile nature of the arctic-alpine community and its associated rare species. BPL and Appalachian Trail Conference staff should work in conjunction with MNAP to determine the most appropriate measures to protect the arctic-alpine species.

Trail workers should be aware of the fragile nature of the alpine species, and the Natural Areas Program should be consulted prior to any trail relocation.

In particular, this area should be carefully monitored due to the confirmed presence of three globally rare species: Boott's rattlesnake root (*Prenanthes boottii*), alga-like pondweed (*Potamogeton confervoides*), and the historic presence of alpine blueberry (*Vaccinium boreale*). The populations should be monitored/surveyed yearly to assess their presence, size, and health, and human impacts should be carefully assessed.

Appendix A includes standard MNAP field forms. These can assist with the monitoring of plant populations. Providing a copy of the completed field forms to MNAP will allow MNAP to maintain current data on the rare species occurring along the AT and to assess that data in relation to rare plant populations throughout the state.

Alpine areas in general are disturbance adapted. High winds and cold temperatures provide a low-moisture, low-nutrient environment for the plants which inhabit these seemingly inhospitable areas. Short of direct destruction from trampling or collecting, the plants inhabiting alpine areas are adapted to, and thrive within, the extremes of their surroundings. Therefore, for the other rare alpine plant species, as long as they are not being directly affected by trampling, we recommend that they be left alone. Periodic monitoring of overall areal extent, health, and condition of the species will allow the Appalachian Trail Conference and MNAP to note changes to the populations. While it is inevitable that some plants will be destroyed by hikers, whether intentionally or not, colonization of other less disturbed areas is also likely as long as the populations remain viable.



Segment 107: Bald Mountain Pond Blueback Trout Area

Quad: Bald Mountain Pond

Animals:

1 *Salvelinus alpinus oquassa*

Registered Critical Areas:

1 Bald Mountain Pond Blueback Trout Area

**1 BALD MOUNTAIN
(T2 R3 BKP EKR)**

**BALD MOUNTAIN
POND**

WL 1213T

Geographic Precision
□ Known within 8km (square label)
△ Known within minutes precision (triangle label)
○ Known within seconds precision (circle label)
Type of Occurrence
⬡ OF NOTE (hexagon)

0 1000 2000 4000 feet

Segment 107: Bald Mountain Pond Blueback Trout Area

Locality: Somerset County

Ownership: National Park Service
Bureau of Parks and Lands

Quadrangle: Bald Mountain Pond

Quadrangle Code: 4506936

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Animals:							
<i>Salvelinus alpinus</i> <i>oquassa</i>	Arctic Charr	G5T2Q	S2		SC	A	1994

Site description:

This site consists of Bald Mountain Pond and those segments of the AT which skirt the pond's northern shoreline and follow the outlet stream eastward. The area is owned, in part, by the National Park Service, and, in part, by the Maine Bureau of Parks and Lands.

Bald Mountain Pond is a deep oligotrophic lake with a shallow, marshy outlet to the northeast. It supports moderate to high numbers of arctic charr (*Salvelinus alpinus oquassa*) (formerly known as blueback trout). The species is globally common but rare in the state of Maine. It is a relict charr species isolated in Maine since the retreat of the last glaciers. Charr spawn in the late fall, the eggs hatch in early spring, and the young move to deep water shortly after hatching. The young feed on aquatic insects and benthic organisms until they reach a size when they can begin to feed upon fish. Where a suitable forage fish is present (smelt, for instance), charr may reach a size of 15 to 20 inches.

The pond is managed by the Maine Department of Inland Fisheries and Wildlife. Private camps occupy the eastern shoreline.

Threats:

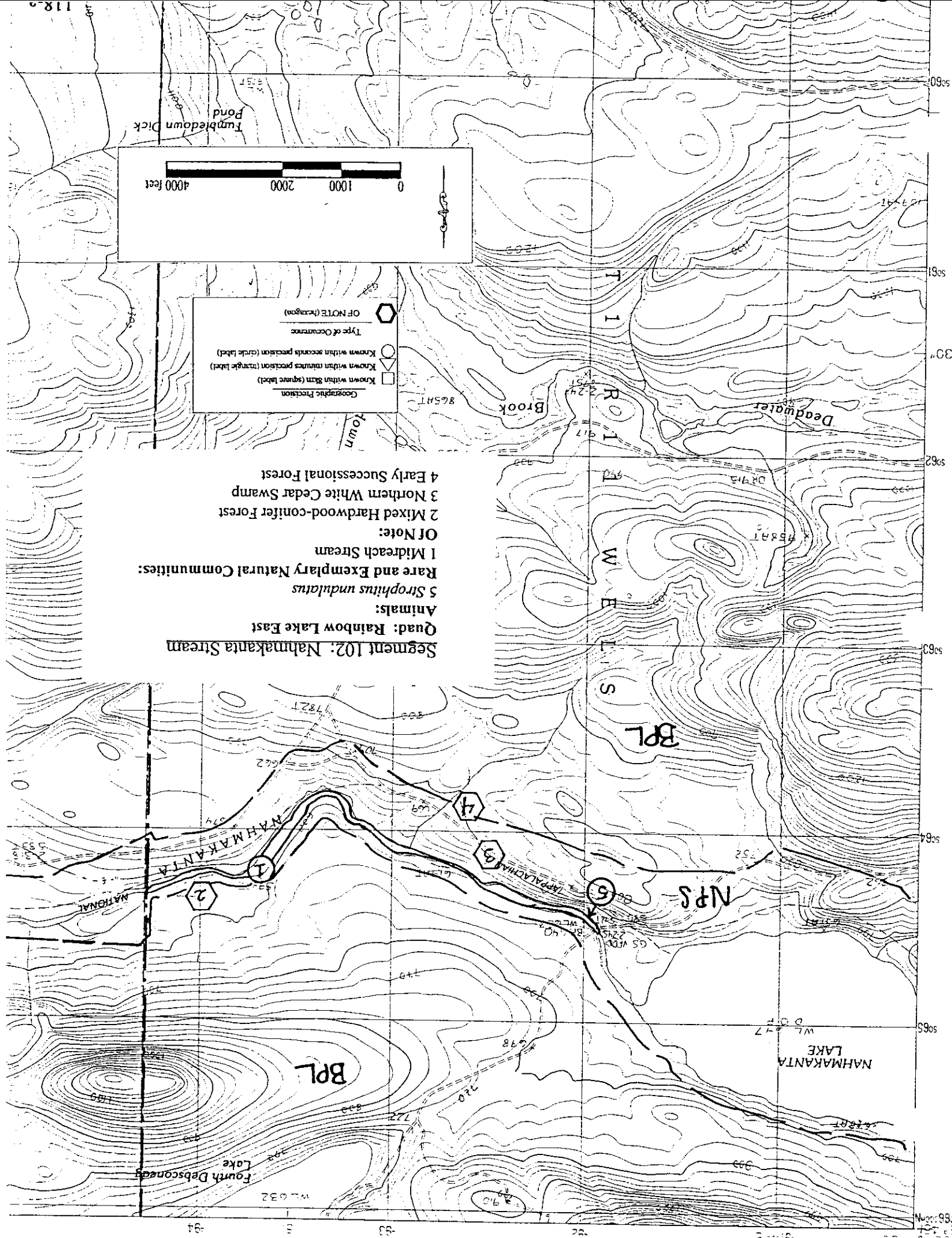
Eutrophication of the lake caused by increased nutrient loading is a possible threat. Overfishing or taking out of season could negatively impact the arctic charr (*Salvelinus alpinus oquassa*) population.

Protection and management:

In cooperation with the Maine Bureau of Parks and Lands, the Maine State Planning Office registered the Bald Mountain Pond Blueback Trout Area as a Critical Area in 1985.

By registering the site, the Bureau has agreed to voluntarily conserve the quality of this oligotrophic lake system and the rare species it supports.

Development along the lakeshore should be carefully monitored to prevent eutrophication.

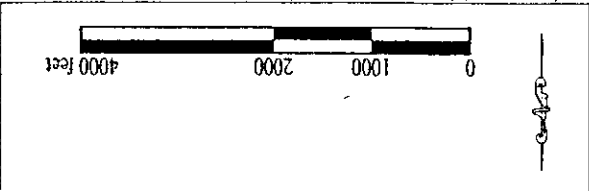


Segment 102: Nahmakanta Stream

- Quad: Rainbow Lake East**
Animals:
Strophitus undulatus
Rare and Exemplary Natural Communities:
 1 Midreach Stream
 2 Mixed Hardwood-conifer Forest
 3 Northern White Cedar Swamp
 4 Early Successional Forest

Geographic Precision
 Known within stream (square label)
 Known within minutes precision (triangle label)
 Known within seconds precision (circle label)

Type of Occurrence
 OF NOTE (hexagon)



Tumbledown Dick Pond

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Deadwater

T 1

R 0 1

W E L S

BPL

NPS

NAHMAKANTA LAKE

BPL

Fourth Debsconed Lake

Brook

Segment 102: Nahmakanta Stream

Locality: Piscataquis County
 Quadrangle: Rainbow Lake East

Ownership: National Park Service
 Quadrangle Code: 4506971

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Animals:							
<i>Strophitus undulatus</i>	Squawfoot mussel	G5	S?		SC	E	1996
Rare or Exemplary Natural Communities:							
Midreach Stream			SU			E	1992
Of Note:							
Early Successional Forest			S5			E	1995
Mixed Hardwood-conifer Forest			S5			E	1992
Northern White Cedar Swamp			S4			E	1992

Site description:

The Nahmakanta Stream site contains the reach of Nahmakanta Stream from just below Nahmakanta Lake to approximately 2 miles downstream of the lake, and the Corridor on either side of the stream. The Corridor is owned by the National Park Service but it lies within land owned by the Maine Bureau of Public Lands.

In 1990 the State of Maine purchased 29,000 acres of land within Townships T1R11 WELS and T2R11 WELS in Piscataquis County. This land, in addition to 13,000 acres in T1R12 WELS, is managed by the Maine Bureau of Parks and Lands, and is known as the Nahmakanta Management Unit. In 1996 the Bureau completed a multiple use management plan for the Unit.

The Nahmakanta Management Unit is a parcel of public land that is being evaluated by the Maine Forest Biodiversity Project as a potential Ecological Reserve. The Nature Conservancy, which has been overseeing the inventory and analysis of the Ecological Reserves Project, has surveyed specific areas within the Nahmakanta Management Unit and along the AT to determine their significance as part of this large-scale conservation

initiative. Analysis of the many sites surveyed during the Ecological Reserves inventory is incomplete at the time of this writing.

The Nahmakanta Management Unit has several features which present interesting management opportunities: large unfragmented tracts of land, a mosaic of forest communities shaped largely by natural processes, and a diverse and largely pristine array of aquatic ecosystems (Lortie *et al.* 1992).

Nahmakanta Stream is a variable-flow midreach stream with sandy gravel-cobble substrate. A series of pools and riffles occur, providing good trout and salmon habitat.

The squawfoot mussel (*Strophitus undulatus*) occurs in Nahmakanta Stream downstream of the logging road below Nahmakanta Lake.

A mixed hardwood-conifer forest community is noted. The forest on the north side of Nahmakanta Stream is a mixture of previously cut and slightly 'high' graded forest. Old logging roads and a few stumps were observed as well as a few fire scars. Parts of the forest contain large white pine (*Pinus strobus*) that tower over large hemlock (*Tsuga canadensis*), red maple (*Acer rubrum*), northern white cedar (*Thuja occidentalis*), and yellow birch (*Betula alleghaniensis*). This community occurrence requires further documentation to determine its statewide significance.

A northern white cedar swamp (*Thuja occidentalis*) is noted. The floodplain forest next to the stream contains some cedar but only scattered large trees. Good examples of streamside vernal pool communities are found here with salamander eggs and patches of silvery spleenwort (*Deparia acrostichoides*), indicating the presence of deep, rich soils. The steep slope area next to the floodplain contains mature forest dominated by hemlock (10-25 inches diameter at breast height) (*Tsuga canadensis*), red spruce (*Picea rubens*), paper birch (*Betula papyrifera*), sugar maple (*Acer saccharum*), and northern white cedar; the understory is thin in these areas. Historically, logging has occurred but no recent signs of disturbance are seen. This community occurrence requires further documentation to determine its statewide significance.

A burn-origin early successional forest community comprised of red maple, paper birch, and yellow birch is noted and shows evidence of cutting. This community occurrence also requires further documentation.

Threats:

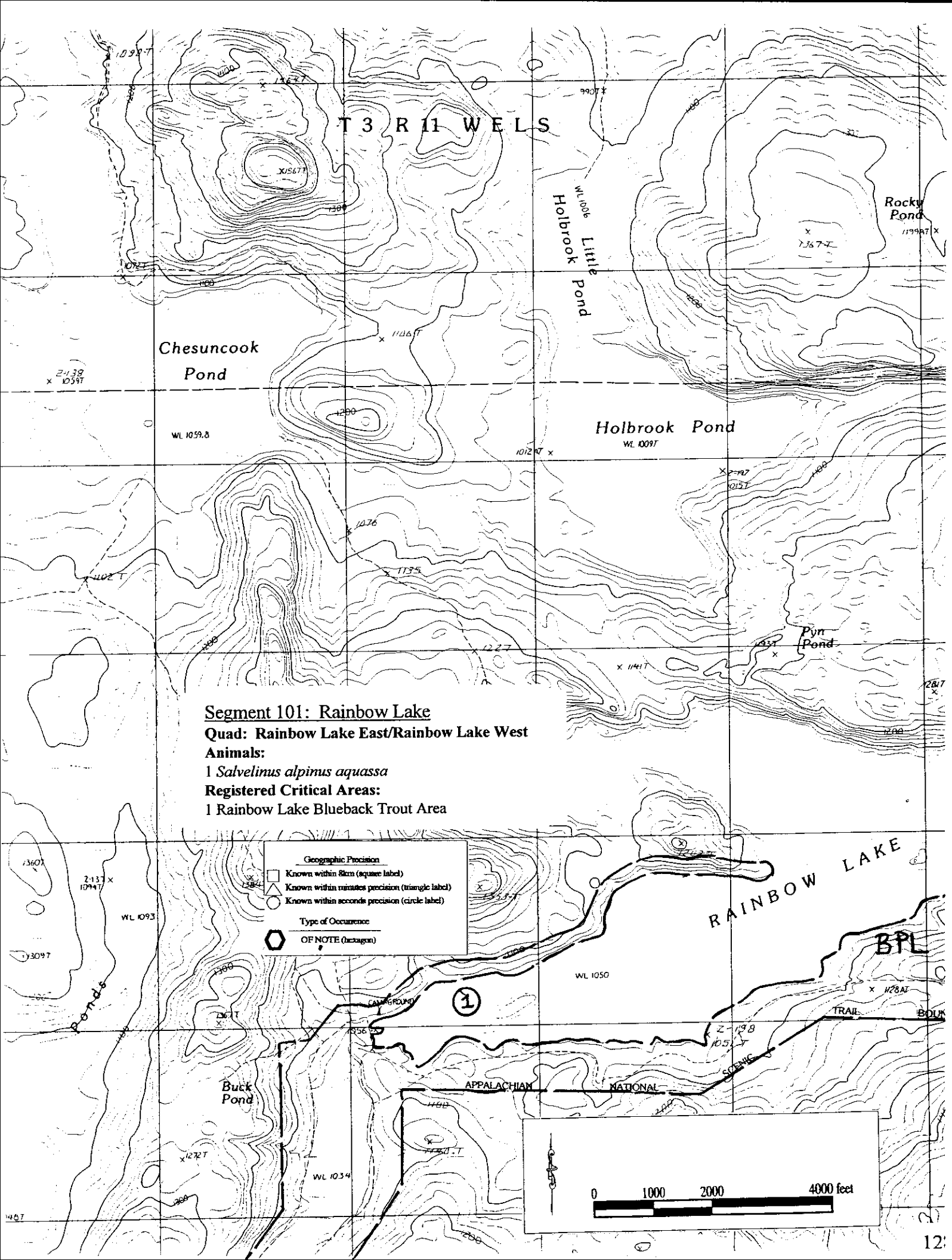
Logging within the AT Corridor is prohibited and should remain so. Logging would diminish the quality of the forest here as a relatively undisturbed natural community. Logging or other anthropogenic disturbances which impact water quality in the stream could have adverse effects on the squawfoot mussel (*Strophitus undulatus*) population.

Protection and management:

Except for minor cutting needed for trail management, the forest communities within the AT Corridor should be allowed to remain intact.

Further information on the three noted community occurrences would enable a better assessment of their value on a statewide basis.

Further monitoring of squawfoot mussel (*Strohitus undulatus*) populations is advisable. Important management considerations for mussels include maintaining water quality and habitat integrity (i.e., substrate, fish community, flow rate, water levels) and preventing physical destruction of mussels.



T3 R11 WELS

Chesuncook Pond

Holbrook Little Pond

Rocky Pond

Holbrook Pond

Pyn Pond

Segment 101: Rainbow Lake
Quad: Rainbow Lake East/Rainbow Lake West
Animals:
1 *Salvelinus alpinus aquassa*
Registered Critical Areas:
1 Rainbow Lake Blueback Trout Area

Geographic Precision

- Known within 8km (square label)
- Known within minutes precision (triangle label)
- Known within seconds precision (circle label)

Type of Occurrence

- OF NOTE (hexagon)

RAINBOW LAKE

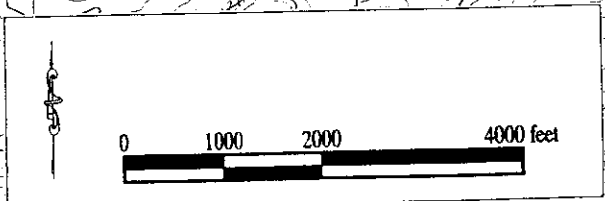
BPL

TRAIL

APPALACHIAN

NATIONAL

SCENIC



Segment 101: Rainbow Lake

Locality: Piscataquis County
Quadrangle: Rainbow Lake East
Rainbow Lake West

Ownership: Bureau of Parks and Lands
Quadrangle Code: 4506971
4506972

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Animals:							
<i>Salvelinus alpinus</i> <i>oquassa</i>	Arctic charr	G5T2Q	S2		SC	E	1990

Site description:

This site consists of Rainbow Lake in its entirety and is state owned and managed by the Maine Bureau of Parks and Lands. The lake lies to the north of Rainbow Mountain at an elevation of 1046 feet. It is the deepest of all the lakes known to contain arctic charr (*Salvelinus alpinus oquassa*), with a maximum depth of about 130 feet.

Arctic charr (formerly known as blueback trout) occur in Rainbow Lake and Rainbow Deadwater. Ledges above the dam at the outlet and 0.5 miles below the outlet are likely spawning locations. The species is globally common, but rare in the state of Maine. It is a relict charr species isolated in Maine since the retreat of the last glaciers. Charr spawn in the late fall, the eggs hatch in early spring and the young move to deep water shortly after hatching. The young feed on aquatic insects and benthic organisms until they reach a size when they can begin to feed upon fish. Where a suitable forage fish is present (smelt, for instance), charr may reach a size of 15 to 20 inches.

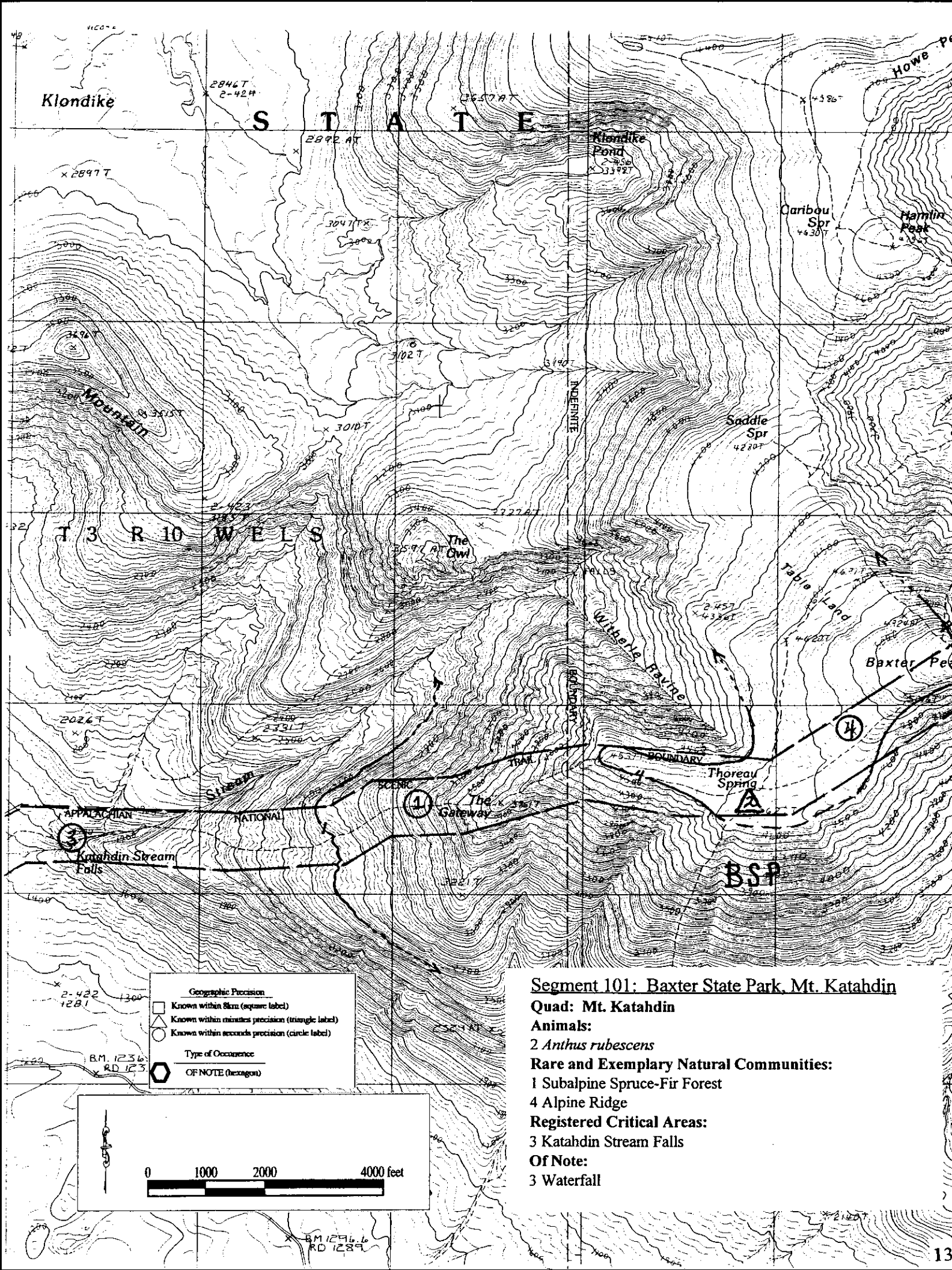
Threats:

Eutrophication of the lake from heavy use/development, overfishing and taking out of season could all potentially threaten the charr.

Protection and management:

In 1985, the Rainbow Lake Blueback Trout Area was registered as a Critical Area. By registering this site, the Bureau has agreed to voluntarily preserve the arctic charr (*Salvelinus alpinus oquassa*) population and its habitat. The Department of Inland Fisheries and Wildlife should be consulted to determine the best management plan for the arctic charr.

Periodic monitoring of the impacts associated with the campgrounds and general use of the lake may help prevent deterioration of the water quality of the lake.



Segment 101: Baxter State Park, Katahdin

Locality: Piscataquis County
Quadrangle: Mt. Katahdin

Ownership: Baxter State Park Authority
Quadrangle Code: 4506888

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Animals:							
<i>Anthus rubescens</i>	American Pipit	G5	S1		E	E	1996
Rare or Exemplary Natural Communities:							
Alpine Ridge			S2			A	1994
Subalpine Spruce-fir Forest			S3			A	1984
Of Note:							
Waterfall							

Site description:

This site includes the AT Corridor from the vicinity of Katahdin Stream Falls to the northern terminus of the AT and lies entirely within lands owned and managed by the Baxter State Park Authority. Please note that this site only refers to features documented within the AT Corridor. Appendix F includes a supplemental section that lists features known to occur in the park proper. Many of those listed features may occur along the AT Corridor but have not been documented there.

A subalpine spruce-fir forest occurs at elevations above 2500 feet on mountains ringing the Klondike, including Katahdin, The Brothers, Fort Mountain, Mount Coe, Oji Mountain, Barren Mountain, The Owl and Russell Mountain. Some areas have experienced severe spruce budworm attack, but are naturally regenerating. Examples of fir waves, the patterned dieback of subalpine fir trees, and patches of old-growth red spruce (*Picea rubens*) and fir (*Abies balsamea*) are found within the community. Windthrow occurs on some of the steeper slopes, and some areas have been logged in the past.

The alpine ridge community on Katahdin is the largest, most diverse, and most pristine example of this community type in Maine. The tablelands and ridges include the largest natural arctic vegetation zone in Maine. The community which occurs from 3200 feet in

the North Basin to 5267 feet at Baxter Peak, includes over 30 arctic/alpine plant species, many of which are found nowhere else in Maine.

The American pipit nests on the Tablelands of Katahdin, from the vicinity of Thoreau Springs to North Peak. It is the only nesting site known for this species in Maine.

Katahdin Stream Falls is a scenic waterfall along the Appalachian Trail with a series of drops totaling 65 feet.

Threats:

The area is not considered a 'forever wild' section of the park due to the presence of the trails, although threats here are few as logging and development are prohibited.

Disturbance by hikers may have a negative impact on breeding pipit (*Anthus rubescens*) pairs.

Protection and management:

Katahdin Stream Falls was registered as a Critical Area in 1981. By registering this site, Baxter State Park has agreed to voluntarily preserve the Falls.

Although this seems to be a well-established breeding population for the American pipit (*Anthus rubescens*), information on the size, extent of habitat, breeding success, and disturbance are not well-known, and should be researched.

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Supplemental Information: Baxter State Park

The following table is provided as a supplement to information for the Appalachian Trail within Baxter State Park, and includes rare features known from Katahdin and the surrounding area. Many rare species have been noted from this area, and although not documented specifically from the Appalachian Trail, there is good potential for the listed species to also occur along the trail. In particular, those species noted with an asterisk in the table are widespread on Katahdin. The unique alpine environment, the geomorphological history, and the presence of old-growth in the subalpine forests have drawn researchers, geologists, and naturalists to this area and have resulted in a wealth of information. The authors felt that this information should not be excluded from the report.

Baxter State Park (species list for general area)

Locality: Piscataquis County

Quadrangle: Mt. Katahdin

Quadrangle Code: 4506888

NATURAL HERITAGE RESOURCE SUMMARY TABLE

Scientific Name	Common Name	Global Rarity Rank	State Rarity Rank	Federal Status	Maine Status	Element Rank	Last Observed
Rare Plants:							
* <i>Agrostis mertensii</i>	Boreal Bentgrass	G5	S2			E	1994
* <i>Arctostaphylos alpina</i>	Alpine Bearberry	G5	S1		T	E	1994
<i>Arnica lanceolata</i>	Hairy Arnica	G3	S2			E	1994
<i>Betula x minor</i>	Dwarf White Birch	G3G4Q	S1		E	E	1994
* <i>Betula nana</i>	Tundra Dwarf Birch	G5	S1		E	E	1994
<i>Cardamine bellidifolia</i>	Alpine Bitter-Cress	G5	S1		E	E	1995
<i>Carex atratiformis</i>	Black Sedge	G5	S2			E	1995
* <i>Carex bigelowii</i>	Bigelow's Sedge	G5	S2			A	1994
<i>Carex rariflora</i>	Loose-Flowered Sedge	G5	SH			H	1861
<i>Carex saxatilis</i>	Russett Sedge	G5	SH			E	1994
<i>Carex scirpoidea</i>	Bulrush Sedge	G5	S1		T	E	1995
<i>Carex x mainensis</i>	Maine Sedge	HYB	S1			E	1988
<i>Calamagrostis stricta ssp stricta</i>	Northern Reedgrass	G5T5	S1				1985
<i>Castilleja septentrionalis</i>	Northern Painted Cup	G5	S3			E	1994

<i>*Diapensia lapponica</i>	Lapland Diapensia	G5	S2			A	1988
<i>Diphasiastrum sitchense</i>	Alaskan Clubmoss	G5	S1		E	E	1989
<i>Epilobium anagallidifolium</i>	Alpine Willow-Herb	G5	S1		T	E	1995
<i>Epilobium hornemannii</i>	Hornemann's Willow-Herb	G5	S1		T	E	1985
<i>Euphrasia oakesii</i>	Oakes' Eyebright	G4	S1		E	E	1994
<i>Festuca rubra ssp arctica</i>	Arctic Red Fescue	G5T4	S1		E	E	1995
<i>Geocaulon lividum</i>	Northern Comandra	G5	S2			BC	1978
<i>*Harrimanella hypnoides</i>	Moss Bell- Heather	G5	S1		E	E	1995
<i>*Hierochloe alpina</i>	Alpine Sweet- Grass	G5	S1		T	E	1994
<i>Huperzia appalachiana</i>	Appalachian Fir-Clubmoss	G3	S2			E	1980
<i>Listera auriculata</i>	Auriculed Twayblade	G3	S1			H	1920
<i>*Loiseleuria procumbens</i>	Alpine Azalea	G5	S1		E	A	1994
<i>Luzula confusa</i>	Northern Wood-Rush	G5	S1		E	E	1989
<i>Luzula spicata</i>	Spiked Wood- Rush	G5	S1			E	1988
<i>*Minuartia groenlandica</i>	Mountain Sandwort	G5	S3			E	1980
<i>Omalotheca supina</i>	Alpine Cudweed	G5	S1		E	E	1989
<i>Persicaria vivipara</i>	Alpine Bistort	G5	S1		E	E	1995
<i>Phleum alpinum</i>	Mountain Timothy	G5	S1		T	E	1985
<i>*Phyllodoce caerulea</i>	Mountain Heath	G5	S1		E	E	1989
<i>Poa fernaldiana</i>	Wavy Bluegrass	G2G3	S1		E	E	1988
<i>Prenanthes boottii</i>	Boott's Rattlesnake Root	G2	S1		T	A	1994
<i>*Prenanthes nana</i>	Dwarf Rattlesnake Root	G5	S1		E	E	1994
<i>*Rhododendron lapponicum</i>	Lapland Rosebay	G5	S1		E	E	1989
<i>Salix arctophila</i>	Arctic Willow	G5	S1		E	E	1978
<i>Salix argyrocarpa</i>	Northern Willow	G4	S1			H	1940
<i>*Salix herbacea</i>	Dwarf Willow	G5	S1		E	E	1995
<i>Salix planifolia</i>	Tea-Leaved Willow	G5	S1		E	A	1988

<i>*Salix uva-ursi</i>	Bearberry Willow	G5	S1			E	1994
<i>Saxifraga foliolosa</i>	Star Saxifrage	G4	S1		E	E	1989
<i>Saxifraga paniculata</i>	Livelong Saxifrage	G5	S1		T	E	1978
<i>Silene acaulis</i>	Moss Campion	G5T?	SX			H	1860
<i>*Solidago multiradiata</i>	Cutler's Goldenrod	G4	S1S2			E	1988
<i>Spiraea septentrionalis</i>	Northern Meadow-Sweet	G3?	SH			H	1967
<i>*Vaccinium boreale</i>	Northern Blueberry	G3	S1			E	1994
<i>Vahlodea atropurpurea</i>	Mountain Hairgrass	G5	SH		E	H	1967
<i>Veronica wormskjoldii</i>	Alpine Speedwell	G4G5	S1		E	E	1995
<i>Viburnum edule</i>	Squashberry	G5	S2			E	1994
Animals:							
<i>Falco peregrinus</i>	Peregrine Falcon	G4	S1			H	1949
<i>Microtus chrotorrhinus</i>	Yellow-nosed Vole	G4	S3			H	1952
<i>Oeneis polixenes katahdin</i>	Katahdin Arctic (butterfly)	G5T1	S1		PE	E	1995
<i>Sorex dispar</i>	Long-Tailed Shrew	G4	S4		SC	H	1951
<i>Synaptomys borealis</i>	Northern Bog Lemming	G4	S1			A	1985
Rare or Exemplary Natural Communities:							
Alpine Cliff			S1			A	1995
Alpine Ridge			S2			A	1976
Alpine Pondshore			S1S2			B	1985
Krummholz			S3			A	1985
Snowbank Community			S1			A	1977
Subalpine Spruce-fir Forest			S3			A	1984
Of Note:							
Waterfall							