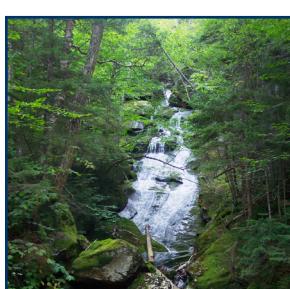
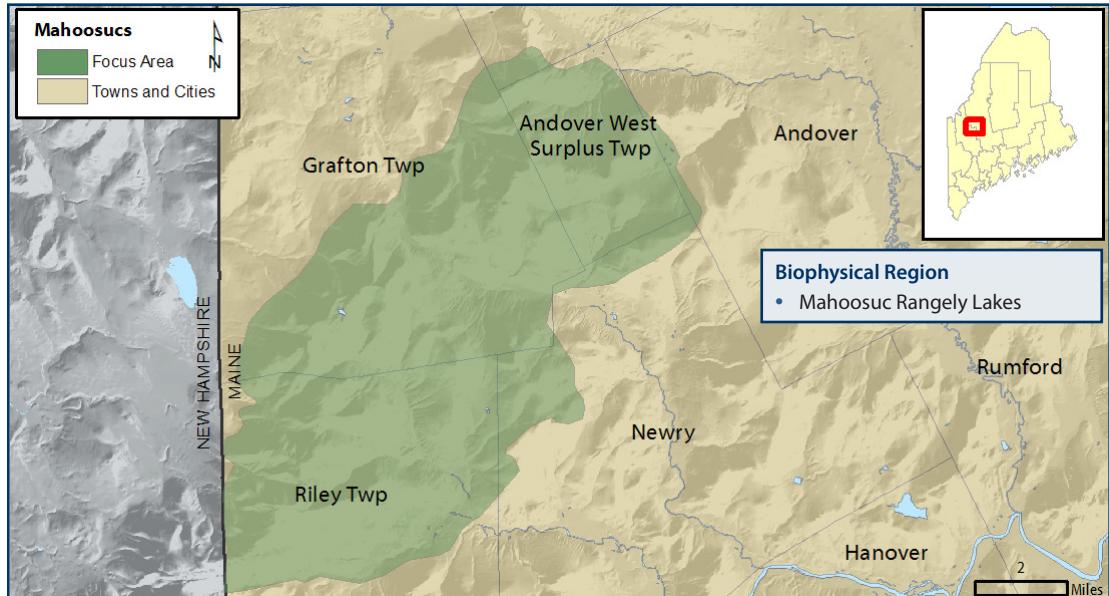


Mahoosucs



WHY IS THIS AREA SIGNIFICANT?

The Mahoosucs Focus Area encompasses roughly 45,000 acres of the rugged Mahoosuc Range, an extension of the White Mountains. This focus area stands out for its size, scenic beauty, recreational value, and unique alpine character. About 80% of the focus area is protected as state conservation land and includes one of the largest state Ecological Reserves. The Mahoosucs boast the most alpine habitat of any state Ecological Reserve, as well as several areas of scarce older forest. Spectacular ridgeline trails, including the Appalachian Trail, and scenic waterfalls combine to make this area a recreational treasure.

OPPORTUNITIES FOR CONSERVATION

- » Minimize recreational impacts on sensitive areas through careful siting and construction of trails, combined with hiker education and monitoring for overuse.
- » Work with landowners to encourage sustainable forest management practices on remaining privately owned lands.
- » Work with willing landowners to conserve private lands.
- » Monitor ledges for potential peregrine falcon nesting activity and implement appropriate conservation measures.
- » Monitor and manage motorized recreation to minimize impacts on sensitive resources.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Rare Animals

Peregrine Falcon

Rare Plants

Alpine Blueberry
Alpine Sweet-grass
Appalachian Fir-clubmoss
Bigelow's Sedge
Boreal Bentgrass
Cutler's Goldenrod
Dwarf Rattlesnake Root
Lapland Diapensia
Mountain Sandwort
Northern Comandra
Silverling

Rare and Exemplary Natural Communities

Acidic Cliff
Alpine Bog
Cold-air Talus Slope
Heath Alpine Ridge
Mid-elevation Bald
Northern Hardwoods Forest
Spruce - Fir Krumholz
Spruce - Pine Woodland
Subalpine Fir Forest
Upper Floodplain Hardwood Forest

Significant Wildlife Habitats

Inland Waterfowl and Wading Bird Habitat

Photo credits, top to bottom: Maine Natural Areas Program (all photos)



Mahoosuc Notch, Maine Natural Areas Program

FOCUS AREA OVERVIEW

The Mahoosucs Focus Area supports a variety of intact habitats that cover a broad elevational spectrum, including cascading waterfalls, precipitous cliffs, steep valleys, sub-alpine summits, and upland forests. Over 37,000 acres of the focus area fall within state ownership, including the Speck-Carlo Ecological Reserve and Grafton Notch State Park. The Appalachian Trail traverses the ridgetops of the focus area from the New Hampshire border to Baldpate Mountain. Other recreational trails access the ridgeline from several directions.

Nearly one quarter of the focus area is over 2700 feet in elevation and supports stunted treeline forest and alpine krummholz. At lower elevations, slopes are dominated by mature hardwood and mixed forests. Most of the forest stands have been actively managed for forest products in the past, but some areas, including a northern hardwood forest in Mahoosuc Notch, show no evidence of cutting and are late-successional to old growth. In addition, some mid-elevation conifer-dominated stands also show little signs of past harvesting, with trees over 245 years old.

Included within the focus area, the Speck-Carlo Ecological Reserve extends from 1120 feet to 3980 feet in elevation and

among state ecological reserves is second only to Bigelow in elevational gradient. Ecological Reserves are state-owned lands set aside from active management in order to protect and monitor the state's natural ecosystems.

Numerous headwater streams provide well oxygenated habitat for cold water fisheries, including brook trout, and aquatic insects. Other significant aquatic and wetland features include Speck Pond, a rare high elevation pond, or tarn, and three small areas of Significant Wildlife Habitat for Wading Birds and Waterfowl located near the edges of the focus area.

Public Access Opportunities

- » Grafton Notch State Park, BPL
- » Mahoosuc Public Reserve Land, BPL
- » Appalachian Trail Corridor, USNPS
- » Step Falls Preserve, TNC

RARE AND EXEMPLARY NATURAL COMMUNITIES

The **heath alpine ridge** is a varied community of dwarf evergreen shrubs and herbs found above treeline in Maine's central and western mountains. Though this is a frequent natural community type above treeline, it is very rare in Maine



Bigelow's Sedge, Maine Natural Areas Program

because of its restricted habitat. The community occurs on exposed, wind-swept ridges. Like other alpine community types, the heath alpine ridge can be sparsely vegetated, with up to 65% bare ground. Shrubs often found in this community include characteristically boreal species such as alpine bilberry, diapensia, and mountain cranberry. Typical herbs include the rare Bigelow's sedge and highland rush.

Subalpine fir forest generally occurs above 2700 feet but below treeline. This community is a patchy mixture of somewhat stunted trees, dominated by balsam fir and heart-leaved birch. Where wind, fire, or landslides have created openings, the canopy may be dominated by heart-leaved birch and mountain ash, with a dense shrub layer of mountain ash, hobblebush, and regenerating fir. Common herbs include wood ferns, blue-bead lily, northern wood-sorrel, and big-leaved aster. Disturbances, including landslides and frequent strong winds, can be important in shaping this community.

Subalpine fir forest provides nesting habitat for high elevation and coniferous forest specialist birds, such as the spruce grouse, dark-eyed junco, bay-breasted warbler, blackbacked woodpecker, white-throated sparrow, and blackpoll warbler. Other high elevation wildlife species that may be found here include the uncommon Bicknell's thrush, the rock vole, the long-tailed shrew and, in wet, mossy areas, the northern bog lemming. This community is considered rare in Maine because it is limited to higher elevation mountains. The Mahoosucs support one of the highest quality occurrences of this community type in the state: over 8000 acres of subalpine forest, much of which is protected as state conservation lands.

The **spruce-northern hardwoods forest** is one of the common forest types of Maine. It is found across large swaths of Maine, especially in northern and eastern regions and the western mountains. The dominant trees are red spruce and a mixture of hardwoods including yellow birch, sugar maple, red maple, and beech. This natural community also commonly includes paper birch, balsam fir, and sometimes scattered large white pines. Striped maple is a common component of the shrub layer, along with varied shrubs and saplings. Com-

mon herbs include wood ferns, northern wood-sorrel, and starflower. This community provides nesting habitat for many songbird species, as well as the sharp-shinned hawk and spruce grouse.

It is thought that the spruce-northern hardwoods forest type was more common in presettlement times, before selective harvesting of spruce converted many mixed stands into northern hardwood forests. The exemplary spruce northern hardwood forest identified in this focus area is unusually large and intact and includes some late-successional to old growth stands with spruce trees over 245 years old.

The **northern hardwoods forest** is the dominant hardwood forest community in Maine. It is characterized by a combination of beech, yellow birch, and sugar maple. Other common canopy trees include paper birch, red maple, red oak, and eastern hemlock. Shrubs and herbs are typically sparse, with wildflowers such as Canada mayflower, starflower, and blue-bead lily among the most common herbs. Although this community is very common in Maine, large undisturbed examples are scarce. Statewide, this forest type includes valuable timber species and has been extensively harvested over the past two centuries.

This broad type provides nesting habitat for a large number of songbird species, such as the black-throated green warbler, rose-breasted grosbeak, scarlet tanager, and ovenbird. A large proportion of the global population of black-throated blue warblers nest in this community type in Maine. The globally uncommon early hairstreak butterfly uses beech as its larval host plant.

CHARACTERISTIC SPECIES

The **peregrine falcon** (*Falco peregrinus*) is a sleek, streamlined bird of prey said to be the fastest animal on earth. It nests on cliffs and feeds on other birds.

Peregrines attack and kill their prey in flight, in high-speed dives that can reach 200 miles per hour. Although once broadly distributed in North America, this species was lost



Peregrine Falcon, Jonathan Mays

from much of its historic range, including the eastern United States, by the mid 1960s. Increased use of pesticides, especially DDT, after World War II was the primary cause of a drastic decline in peregrine populations worldwide.

Focus Areas of Statewide Ecological Significance: **Mahoosuc**

In the 1980s, Maine joined other states in a large-scale peregrine falcon reintroduction program. Young, captive-reared birds were gradually released at former nest sites in Maine between 1984 and 1997, and successful breeding began in 1987. With recovery of the species nationwide, the peregrine falcon was taken off the federal endangered species list in 1999, but its breeding population remains listed as Endangered in Maine, as its numbers here are still low. Current threats to this species include disturbance to nest sites and loss of habitat, including the wetlands and water bodies near nests where breeding falcons forage. Because the cliffs where peregrines nest are often near high-use recreational areas, careful management is necessary to avoid conflicts during the breeding season. Peregrines have nested at Eyebrow Ledge on Old Speck within the last decade, and Lightning Ledge on Mt. Hit-tie is a historic nest site.

Bicknell's thrush (*Catharus bicknelli*) is a rare and elusive songbird that breeds in isolated patches of montane habitat in New York, northern New England, and southeastern Canada. During the breeding season, the species prefers cool, damp subalpine forest habitat dominated by stunted balsam fir and red spruce thickets. It feeds primarily on insects gathered from the forest floor. It is the only thrush known to be polyandrous, with each female having multiple mates. Up to four males may breed with a female and help to raise the young from one nest. One of the rarest songbirds in North America, Bicknell's thrush appears to be declining in numbers across its range. The inherent patchiness of its breeding habitat, on widely separated mountain ranges and coastal areas, makes the species more vulnerable to local extinction. Its montane breeding habitat is threatened by recreational use, including ski resort development, wind power and telecommunications development, air pollution, and climate change. The species winters in the West Indies, primarily on the island of Hispaniola, where native forests have been decimated and remaining forested areas are under continued threat.

CONSERVATION CONSIDERATIONS

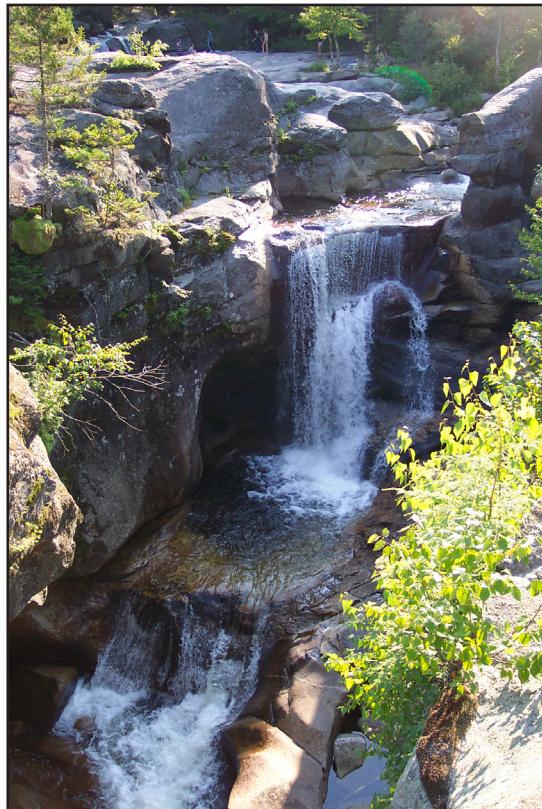
» Most of the rare features identified in the Mahoosuc Focus Area are associated with alpine and subalpine habitats. Although most of these high elevation lands have been protected as public or private conservation areas, recreational use can pose a threat to alpine plants and communities. In fact, hikers are considered a potential threat to each of the 10 rare plant species found in this focus area. Harsh environmental conditions severely limit the rate of vegetation growth in alpine areas, making these communities very sensitive to disturbance from hikers. The fact that these communities often occur on summits and ridges with high recreational and scenic value adds to the potential for overuse. Proper trail construction, monitoring, and hiker education to minimize off-trail use can help to minimize recreational impacts.

Ecological Services of the Focus Area

- Supports regional biodiversity by providing habitat for rare plants, animals, and communities.
- Headwater streams provide outstanding habitat for brook trout and other native fish.
- Large blocks of unfragmented forest provide important habitat for interior nesting birds, waterfowl and other wildlife with large home range needs.

Economic Contributions of the Focus Area

- Attracts tourism for hiking, skiing, wildlife observation, hunting, and angling.
- Provides scenic vistas that raise property values.
- Valuable open space for local residents.
- Managed lands provide long-term supply of timber for harvest.
- Provides opportunities for research and education.



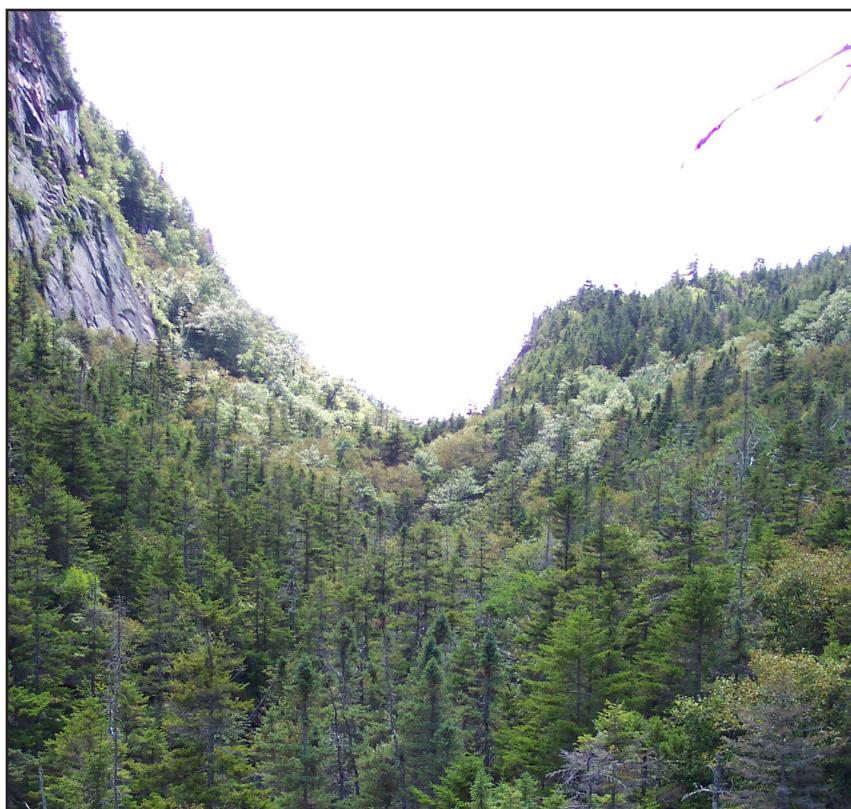
Screw Auger Falls, Maine Natural Areas Program

Focus Areas of Statewide Ecological Significance: **Mahoosuc**

- » While motorized vehicle use is not allowed within the Ecological Reserve, there is some indication that it is occurring, so further monitoring and enforcement may be needed.
- » Preserving the natural communities and other sensitive features within the focus area will be best achieved by working to conserve the integrity of the larger natural systems in which these features occur. This can be achieved through management planning on state-owned lands and encouraging sustainable forest management on remaining actively managed private lands. Where late successional and old growth stands remain, these should be conserved.
- » With expected changes in climate over the next century, the composition of alpine areas is likely to change, and boreal species may be lost from such locations. In contrast, these areas may become important as refuges for native species and communities currently found at lower elevations. Long term monitoring is needed to ascertain the impact and significance of climate-induced changes.
- » Human disturbance near peregrine falcon nest sites during the breeding season can cause nest failure. Peregrines are

especially sensitive to human activity on the nest cliff or on trails that are within line-of-sight from the nest or perches. Hiking on these trails and climbing on the cliff should be prohibited within $\frac{1}{4}$ mile of nest sites during the breeding season (March to August). Forestry activities in areas used by falcons should maintain some large trees and snags as perches for roosting and hunting.

- » Improperly sized culverts and other stream crossing structures can impede movement of fish and aquatic invertebrates effectively fragmenting local aquatic ecosystems and ultimately leading to local extirpation of some species. Future management should maintain or restore the sites natural hydrology.
- » The Mahoosucs Focus Area includes the Speck-Carbo Ecological Reserve. Research and education are actively encouraged on all state Ecological Reserves. The state has developed a long term ecological monitoring program for Reserves and seeks opportunities to promote research efforts that complement its monitoring program.



Mahoosuc Notch, Maine Natural Areas Program

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Peregrine Falcon	<i>Falco peregrinus</i>	E	S1S2N,S2B	G4
	Alpine Blueberry	<i>Vaccinium boreale</i>	SC	S2	G4
	Alpine Sweet-grass	<i>Hierochloe alpina</i>	T	S1	G5
	Appalachian Fir-clubmoss	<i>Huperzia appalachiana</i>	SC	S2	G4G5
	Bigelow's Sedge	<i>Carex bigelowii</i>	SC	S2	G5
	Boreal Bentgrass	<i>Agrostis mertensii</i>	T	S2	G5
	Cutler's Goldenrod	<i>Solidago multiradiata var. arctica</i>	T	S1	G5T4
	Dwarf Rattlesnake Root	<i>Prenanthes nana</i>	E	S1	G5
	Lapland Diapensia	<i>Diapensia lapponica</i>	SC	S2	G5
Plants	Mountain Sandwort	<i>Minuartia groenlandica</i>	SC	S3	G5
	Northern Comandra	<i>Geocaulon lividum</i>	SC	S3	G5
	Silverling	<i>Paronychia argyrocoma</i>	T	S1	G4
	Acidic Cliff	Acidic cliff - gorge	S4	GNR	
	Alpine Bog	Cotton-grass - heath alpine bog	S2	GNR	
	Cold-air Talus Slope	Labrador tea talus dwarf-shrubland	S2	G3G5	
	Heath Alpine Ridge	Dwarf heath - graminoid alpine ridge	S2	GNR	
	Mid-elevation Bald	Crowberry - bilberry summit bald	S3	G2G3	
	Northern Hardwoods Forest	Beech - birch - maple forest	S4	G3G5	
Natural Communities	Spruce - Fir Krummholz	Spruce - fir - birch krummholz	S3	GNR	
	Spruce - Pine Woodland	Red spruce - mixed conifer woodland	S4	G3G5	
	Subalpine Fir Forest	Fir - heart-leaved birch subalpine forest	S3	GNR	
	Upper Floodplain Hardwood Forest	Hardwood river terrace forest	S3	GNR	

State Status*

- | | |
|----|---|
| E | Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered. |
| T | Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened. |
| SC | Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered. |

**State status rankings are not assigned to natural communities.*

State Rarity Rank

- | | |
|----|--|
| S1 | Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres). |
| S2 | Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline. |
| S3 | Rare in Maine (on the order of 20–100 occurrences). |
| S4 | Apparently secure in Maine. |
| S5 | Demonstrably secure in Maine. |

Global Rarity Rank

- | | |
|----|--|
| G1 | Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation. |
| G2 | Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline. |
| G3 | Globally rare (on the order of 20–100 occurrences). |
| G4 | Apparently secure globally. |
| G5 | Demonstrably secure globally. |