



Natural Mount Abraham Public Lands

Heritage Hikes

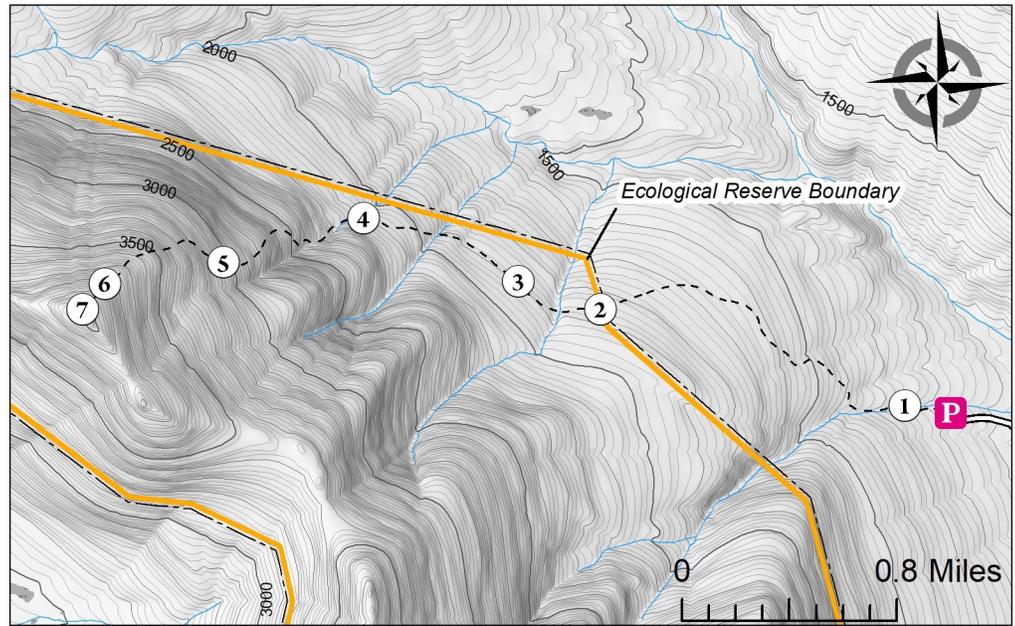
Fire Warden's Trail - 8 miles round trip, strenuous

At 4,049' elevation, Mount Abraham (or locally, Mt. Abram) is one of only 13 Maine peaks over 4,000' elevation. Evidence of radical processes are on display here, including fire, windthrow, and crumbling bedrock. The Maine Natural Areas Program is tasked with ecological monitoring of Mt. Abraham — an Ecological Reserve owned by the Maine Bureau of Parks and Lands— and the role these natural disturbances play in maintaining these ecosystems. In this guided Heritage Hike, we will discuss how natural disturbance processes may be affecting the habitats that occur here.

Getting There

Follow the Rapid Stream Road (a dirt road) in Kingfield for 2.5 miles until you reach the first major fork in the road. Take the left fork and cross two bridges over Rapid Stream. After the second bridge, follow the right fork for approximately 1 mile until the trail-head, where parking is also available .

Please visit mainetrailfinder.org for more information.



Large logs improve structural diversity of the stream.

① Cold streams and big logs - 70.26373, 44.968411

Wood jams provide essential stream habitat for cold water fish.

A short distance from the parking area, the trail crosses Norton Stream. Here we get our first lesson in the ecological importance of coarse woody material. Once thought to be a waste of wood fiber, large dead logs are now recognized for providing important habitat values. During the river driving era that lasted into the 1970s, many streams were cleared of woody debris and large boulders to facilitate passage of logs on their way downstream to mills. This effect homogenized streams, reducing suitable habitat for cold water species, such as brook trout. Large logs now wedged into the stream bank at this trail crossing improve the structural diversity of the stream. This coarse woody material traps nutrients that help form the base of the food web, and modifies streamflow patterns, allowing scour pools to form that may become trout spawning habitat. Many land managers are now intentionally placing logs like these in streams to improve cold-water habitat!



Large dead yellow birch tree, with excavations from pileated woodpecker.

Naturalist's Notes

The pileated woodpecker creates cavities in dead or decaying trees as they build nests and search for insects. These cavities are used by many other mammal and bird species, including flying squirrels, owls, tree swallows, wood ducks, and goldeneye ducks.



A decaying log "nursing" red spruce, balsam fir, and yellow birch seedlings.

② Ecological Reserve boundary - 70.286996, 44.973354

A stand of white ash is all that marks the entrance to the state ecological reserve.

A stand of white ash occurs at the entrance to the state Ecological Reserve. The Mount Abraham Public Reserve lands contains one of 19 state Ecological Reserves managed by the Bureau of Parks and Lands. More than 90,000 acres of Public Reserve Land are now designated as Ecological Reserves in Maine. These areas are set aside to protect and monitor Maine's natural ecosystems. At Mount Abraham, the Maine Natural Areas Program tracks occurrences of rare plants and ecosystems, and has established 35 long term forest monitoring plots to track changes to the forest. [A recent study](#) on ecological reserves has found that they are older and more structurally complex than managed forest in Maine. Forest structure elements highlighted in this study include large diameter living and dead trees, and volume of decaying coarse woody material. These elements of the forest are important for wildlife species, soil development, and tree regeneration.

③ Wildlife trees - 70.293243, 44.974796

The importance of tree cavities.

Here, a large yellow birch tree provides important wildlife habitat. In hardwood forests in New England, [41 species of birds and mammals depend on cavity trees with standing dead or live trees with decay present](#) for nesting, roosting or feeding. The Maine Natural Areas Program's forest monitoring data indicates that there are significantly more large diameter standing dead trees in ecological reserves than in managed forest. Large standing dead trees are necessary to sustain breeding, roosting and feeding sites for large cavity dwelling species such as fisher and pileated woodpeckers¹. The average number of large standing dead trees (16" in diameter or greater) per acre in unmanaged forest (1.33/acre) is nearly twice that of managed forest (0.7/acre).

④ Nurse log - 70.305085, 44.978037

A rotting log helps forest renewal.

We already saw how a rotting log (otherwise known as coarse woody material) can improve stream habitat, but down woody material is important for many other functions in Maine's forests. Large diameter coarse woody material provides habitat for a variety of terrestrial species, including providing cover and feeding habitat for redback salamander, red-backed vole, woodland jumping mouse, American marten, black bear and many others. More than 30% of mammals, 45% of amphibians and 50% of reptiles use coarse woody material². Coarse woody material is also an important carbon sink, holding

¹Tubbs, DeGraaf, Yamasaki and Healy. 1987. Guide to Wildlife Tree Management in New England Northern Hardwoods. Northeastern Forest Experiment Station, General Technical Report NE-118.

²DeGraaf, R., M. Yamasaki, W. B. Leak, and A. M. Lester. 2006. Technical Guide to Forest Wildlife Habitat Management in New England. University of Vermont Press and University Press of New England, Burlington, Vt. 305 p.



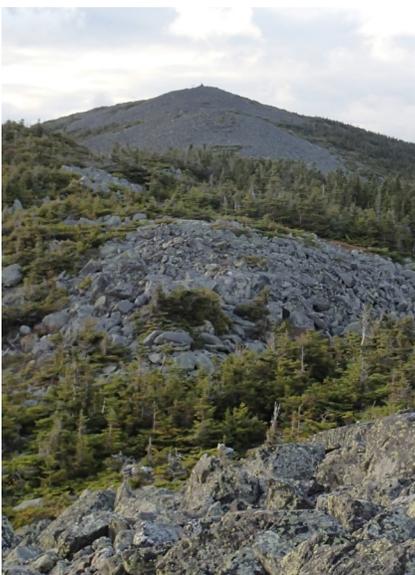
Balsam fir 'waves' on nearby Crocker Mountain are visible from Mount Abraham.

approximately 2.3% of the forest's carbon in the northeast¹. Coarse woody material can also be an important seedbed for forest regeneration. The rotting log elevates tree seedlings from herbaceous vegetation and is fertilized by slowly releasing nutrients.

⑤ **Subalpine fir forest** - 70.315682, 44.975548

High elevation forests are highly vulnerable to wind and other disturbances.

The Subalpine –Fir Forest is a natural community that is typically found at high elevations (>2,700') in Maine. This habitat is characterized by cold and disturbance tolerant tree species including balsam fir, mountain paper birch, and mountain ash. Trees rarely exceed 30' tall, as wind and harsh weather conditions will break tree tops or cause forest stand-level disturbance events. 'Fir waves' on Crocker Mountain are visible from the Mt. Abraham summit. This patterned vegetation, or waves, is caused by successive bands of tree mortality. As a band of older firs die, the trees behind are no longer protected from the wind. These dead zones are quickly re-colonized by fir saplings. The 'wave' of dying fir and subsequent regeneration will typically progress upslope, and will be repeated on an interval of ~60 years. While fir waves are not present on Mt. Abraham, subalpine fir forest on Mt. Abraham is highly prone to patchy wind disturbance. Subalpine fir forests provide essential habitats for a number of high elevation/conifer forest specialists including spruce grouse, dark eyed junco, rock vole, northern bog lemmings and Bicknell's thrush.



Rocky summit of Mt. Abraham, viewed from the north

⑥ **Alpine felsenmeer** - 70.324671, 44.974291

At the summit, we scramble across a boulder field.

Mount Abraham has the second-largest above treeline habitat, after Katahdin, of any mountain in Maine. However, very little of the summit is vegetated. One term for this rocky habitat is felsenmeer, German for "sea of rock". The bedrock on Mount Abraham is porous. Freeze-thaw cycles cause the rock to be broken apart, limiting soil development. This "sea" of bedrock provides substrate for numerous of lichen species. Stress tolerant heath shrubs grow in areas between the rocks including bilberry (*Vaccinium uliginosum*), Labrador tea (*Rhododendron groenlandicum*). Several rare alpine plants including Bigelow's sedge (*Carex bigelowii*) and pincushion plant (*Diapensia lapponica*) also occur here.



Central summit of Mt. Abraham, shortly after 2016 wildfire, with primary summit in background.

⑦ **Alpine fire** - 70.326338, 44.972904

From Mt. Abraham's main summit, the evidence of the unusual alpine fire that recently burned the mountain's central summit is visible.

In 2016 lightning struck the central summit of Mt. Abraham, setting the al-

pine habitat and subalpine forest ablaze. Approximately 40 acres burned before the fire was put out by the Maine Forest Service. Natural fires are uncommon on summits in the Northeast, and though we know many open summit balds in Maine have a fire history, vegetation response to wildfire in alpine areas is poorly understood. Since 2016, the Maine Natural Areas Program has been monitoring the vegetation on the central summit of Mt. Abraham to track how alpine environments recover from fire disturbance. By 2018, blueberries and other heath shrubs had vigorously re-sprouted, and mountain birches were seeding into areas previously dominated by balsam fir.

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Natural Heritage Hikes is a project of the [Maine Natural Areas Program](#) in partnership with the [Maine Trail Finder](#) website.

For more Natural Heritage Hikes, please visit www.mainetrailfinder.com.

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Map sources: Maine Office of GIS, Esri