



State University of New York
College of Environmental Science and Forestry
Department of Forest and Natural Resources Management

March 14, 2011

Mariko Yamasaki, Silviculture/Wildlife Team Leader
Forest Sciences Laboratory
271 Mast Road
Durham, NH 03824

Dear Dr. Yamasaki.

I am requesting NEPA categorical exclusion for our study of Nutrient co-limitation in young and mature northern hardwood forests.

Proposed Project:

Although temperate forests are generally thought of as N-limited, resource optimization theory predicts that ecosystem productivity should be co-limited by multiple nutrients. These ideas are represented in the Multi-Element Limitation ([MEL](#)) model, developed by Ed Rastetter at the Marine Biological Laboratory in Woods Hole, Massachusetts. To test the patterns of resource limitation predicted by MEL, we are conducting nutrient manipulations in northern hardwood forest stands of varying ages.

Location (admin. units, county(s), and state):

There are eight sites at Bartlett Experimental Forest, and 1 in the Saco Ranger District.

Site	USFS Designation	Age in 2004	Elevation (m)	Aspect	GIS Coordinates
C1	Davis Brook West Timber Sale	12	570	flat to SE	C1-1: 44.042824,-71.320720 C1-2: 44.042538,-71.321201 C1-3: 44.041931,-71.321822 C1-4: 44.042574,-71.321958
C2	Saco RD Cmpt 51	14	340	NE	C2-1: 44.059038,-71.269333 C2-2: 44.059480,-71.268800 C2-3: 44.059813,-71.269119 C2-4: 44.059526,-71.269901
C3	Saco RD Cmpt 52 stand 17	19	590	NNE	C3-1: 44.038185,-71.291325 C3-2: 44.037742,-71.291219 C3-3: 44.037665,-71.291834 C3-4: 44.037222,-71.291729
C4	Saco RD Cmpt 52 stand 8	26	410	NE	C4-1: 44.053436,-71.268748 C4-2: 44.053117,-71.268069 C4-3: 44.053147,-71.267087 C4-4: 44.052826,-71.266443
C5	no stand # on map	28	550	flat to NW	C5-1: 44.039193,-71.316669 C5-2: 44.039836,-71.315839 C5-3: 44.040121,-71.315342 C5-4: 44.040463,-71.314936
C6	Saco RD Cmpt 51 stand 6	29	460	NNW	C6-1: 44.040352,-71.275200 C6-2: 44.039902,-71.275202

C6					C6-3: 44.040350,-71.274576 C6-4: 44.039900,-71.274579
C7	BEF cmpt 33/34	mature	440	ENE	C7-1: 44.052278,-71.302577 C7-2: 44.052730,-71.303198 C7-3: 44.053180,-71.303195 C7-4: 44.053908,-71.303122
C8	BEF cmpt 33/29	mature	330	NE	C8-1: 44.054080,-71.297186 C8-2: 44.053793,-71.297666 C8-3: 44.053333,-71.297457 C8-4: 44.054807,-71.299769
C9	Saco RD Cmpt 52 stand ?	mature	440	NE	C9-1: 44.043814,-71.278167 C9-2: 44.043933,-71.278769 C9-3: 44.043340,-71.279463 C9-4: 44.044128,-71.279415

Length of study:

This will build upon existing work on those sites. We began pre-treatment measurements last year and hope to keep the treatments going beyond the current funding cycle (5 years).

Number and timing of nutrient applications:

Nitrogen is to be applied at 30 kg/ha/year in the form of urea; phosphorus at 10 kg/ha/yr, in the form of monosodium phosphate. Plots are 50 m by 50 m, and in each stand, 2 get N and 2 get P (control, N, P, and N+P). So the amount of area being treated is 0.5 ha in each stand. The amount of N is thus 15 kg per year (or 33 lbs/year) and P is thus 5 kg per year (11 lbs/yr) at each stand.

Here we evaluate the proposed project in terms of it's possible effects on the seven extraordinary circumstances (as stipulated in FSH1909.15_30.4 as listed below):

(1) *Federally listed T and E species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species:*

Please see table beginning on the next page.

(2) *Floodplains, wetlands, or municipal watersheds:* None.

(3) *Congressionally designated areas, such as wilderness, wilderness study areas, or national recreation areas:* None.

(4) *Inventoried roadless areas or potential wilderness areas:* None.

(5) *Research natural areas:* None.

(6) *American Indians and Alaska Native religious or cultural sites:* Forest Archaeologist Terry Fifield compared the plot locations to the locations of recorded historic and prehistoric sites in the Bartlett Experimental Forest, and found no instances where the study plots are on or near known historic or prehistoric sites. It was his opinion that the project has no potential to adversely affect cultural resources in the study area. Further, he advised that as this is not considered an undertaking for the purposes of cultural resources, there is no need to formally consult with the NH State Historic Preservation Officer.

(7) *Archaeological sites, or historic properties or area:* See above.

Please let me know if you have any further questions. Thank you for your help in this process.

Sincerely,



Ruth D. Yanai
Professor

Table 1. Biological Evaluation Table: Bartlett Experimental Forest Nutrient Addition Plots
Pre-field review of federally endangered, threatened, and proposed species and Regional Forester sensitive species within the Town of Bartlett, Carroll County, New Hampshire.

Species	Habitat Requirements	Sightings (Present/Historic)	Suitable Habitat in Project Area	Surveys Conducted in Project Area*	Potential Impact on Species or Habitat
FEDERALLY ENDANGERED AND THREATENED SPECIES					
MAMMALS					
Indiana Bat <i>Myotis sodalis</i>	Roost under exfoliating bark or in cavities of dead or partially dead trees in partially open upland and riparian forests at lower elevations. Use a number of roost sites through the summer. Forage along rivers, lakes, and open areas. Winter hibernacula include caves and mine shafts in NY and VT. Recent research indicates that most Indiana bats that hibernate in northern New England spend the non-hibernation season in the Champlain and Connecticut River Valleys (Appendix G. USFS 2005b).	Transient documented in Swift R. drainage (Krusic 1995).	Marginal. No low elevation riparian forest in project area, only upland forest	None documented in BEF surveys to date.	Indiana bat is no longer included on the USFWS list of federally-listed and/or proposed endangered or threatened species on the WMNF (USFWS letter, 2006a). USFWS states that implementation of WMNF Forest Plan standards and guides are considered sufficient for “no effect” determinations on timber harvest projects (USFWS letter 2005). Recent research in northern New England indicates most of the WMNF is unsuitable for Indiana bat due to high canopy closure of forested habitat, cooler temperatures and steep terrain between and distance from known winter hibernacula. Female bats emerging from hibernacula in New York traveled less than 40 miles to summer habitat (USDA Forest Service 2005b, Appendix G, pages 35-44). The project area is closed canopy forest. Bats would have to cross steep terrain and travel approximately 100 miles to reach the project area.
**Gray Wolf <i>Canis lupus</i>	Large expanses of forest habitat with adequate prey base.	None	May provide suitable habitat in conjunction with surrounding forest areas.	None documented in BEF surveys to date.	USFWS considers gray wolf extirpated from the WMNF (5/6/03 letter from USFWS). No impact to wolf habitat is expected with project implementation.
**Eastern Cougar <i>Puma concolor cougar</i>	Large expanses of forest habitat with adequate prey base.	None	May provide suitable habitat in conjunction with surrounding forest areas.	None documented in BEF surveys to date.	USFWS considers gray wolf extirpated from the WMNF (5/6/03 letter from USFWS). No impact to cougar habitat is expected with project implementation.

Species	Habitat Requirements	Sightings (Present/Historic)	Suitable Habitat in Project Area	Surveys Conducted in Project Area*	Potential Impact on Species or Habitat
FEDERALLY ENDANGERED AND THREATENED SPECIES					
Lynx <i>Lynx canadensis</i>	Conifer and mixedwood forests where plentiful snowshoe hare populations exist.	None	Extensive forest available.	None documented in BEF surveys to date.	Two sets of lynx tracks have been reported from the northern section of the WMNF (NHFG 2006). These are the only two confirmed reports of lynx on the WMNF in the past several decades (USFWS 2006a). According to USFWS, there is currently not enough information to determine number of individuals, transient/resident status, and whether or not they occur elsewhere on the WMNF. No evidence of lynx occurring within the project area has been found to date. Thus no direct effects would be anticipated in any alternative. USFWS has stated lynx are not considered to exist south of Rt. 2 in NH (USFWS 2006). Project implementation will maintain if not increase the suitable snowshoe hare and lynx habitat based on the WMNF definition of Canada lynx habitat.
PLANTS					
Small-whorled Pogonia <i>Isotria medeoloides</i>	Open woods with an oak component. Less than 1500' elevation. Enriched hardpan soils or presence of ledge.	None	None.	N/A	None. No impact expected as no potential habitat is within project area (Sperduto model and Sperduto and Congalton 1996).
REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
REPTILES					
Wood Turtle <i>Clemmys insculpta</i>	Perennial, low-gradient flowages; sandy gravelly substrates and upland sites for egg-laying; forested riparian areas and adjacent wet meadows and fields for foraging. Hibernates on stream bottoms or muddy banks.	None	No such stream courses in project area.	N/A	None. No impact expected as there is no habitat in the project area. Streams in the project area are too rocky and fast moving to be considered habitat.
BIRDS					
Common Loon <i>Gavia immer</i>	Large lakes and ponds. Nests at water's edge and requires adequate prey base of small fish and amphibians to feed young.	None	No large bodies of water in project area.	N/A	None. No breeding habitat is present in the project area.
Pied-billed Grebe <i>Podilymbus podiceps</i>	Waterbodies usually ≥ 12 acres with both open water and emergent vegetation.	None	No large bodies of water in project area.	N/A	None. No breeding habitat is present in the project area.

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
BIRDS					
Osprey <i>Pandion haliaetus</i>	Nests in dead snags, living trees, cliffs, utility poles, wooden platforms on poles, etc. usually near or above rivers, lakes, ponds, and other waterbodies.	None	No large bodies of water in project area.	None documented in BEF surveys to date.	None. No breeding habitat is present in the project area.
Bald Eagle <i>Haliaeetus leucocephalus</i>	Large water bodies with plentiful fish populations and large supracanopy trees for nesting. Wintering habitat includes open water for waterfowl/fish (prey), hunting perch sites and large white pine nearby as night roosts.	None	No large water bodies present within the project area.	None documented in BEF surveys to date.	None. No breeding habitat is present in or near the project area. Federally de-listed in 2007 (50 CFR Part 17). WMNF will retain on the RFSS for a minimum of 5 years.
Peregrine Falcon <i>Falco peregrinus</i>	High rocky cliffs often near water. Forages in open areas.	One aerie located within 5 mi of project area.	No cliffs present in project area.	None documented in BEF surveys to date.	None. No breeding habitat (southerly-facing cliffs) is present in the project area.
Bicknell's Thrush <i>Catharus minimus bicknelli</i>	Spruce, fir, birch, and krummholz communities at higher elevations (>3000')	None	None.	None documented in BEF surveys to date.	None. The project area is below the 3000' elevation zone.
MAMMALS					
Eastern Small-footed Bat <i>Myotis leibii</i>	Winter hibernacula include caves, mines and possibly old buildings. Roost sites include rocky ridge tops and outcrops; cliff faces, buildings, and bridges.	One individual trapped in mist net in C-45 in 1999.	Yes	Yes	Regeneration openings and riparian habitat in project area provides foraging habitat for forest bats; rocky outcrops, buildings, and cliff faces in project area may be suitable non-hibernacula roosts.
Northern Bog Lemming <i>Synaptomys borealis</i>	Prefers sedge meadows and bogs. Other habitats include riparian areas, openings, krummholz, and softwoods. Requires moist to wet loose soils. Prefers dense herbaceous or mossy understory (Clough and Albright 1987).	None documented to date.	No sedge meadows or bogs in project area. Soils well-drained.	None documented in BEF surveys to date.	None. Long-term small mammal sampling across BEF has not found any individuals to date. No habitat present in the project area.

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
INSECTS					
Brown's Ameletus Mayfly <i>Ameletus browni</i>	Larvae prefer erosional areas in cold, fast-moving headwater streams that usually are well-oxygenated, of relatively high pH, with canopy cover and rocks or boulders present. Adults typically remain along streambanks near emergence sites.	None	Possibly	None documented to date.	None. Barr's invertebrate sampling (pers. comm.) in the first and second order streams in the Bartlett watershed did not document presence. Typically prefers colder headwater streams than exist in project area (Chandler 2008). Standards & Guidelines protect streams from disturbance during harvest.
Third Ameletus Mayfly <i>Ameletus tertius</i>	Larvae found in small and large streams in secondary depositional areas and on submerged grasses and detritus along margins of riffles and transitional areas. Adults typically remain along streambanks near emergence site. Streams usually well-oxygenated, of relatively high pH, with canopy cover and rocks or eroding banks present.	None	Possibly	None documented to date.	None. Barr's invertebrate sampling (pers. comm.) in the first and second order streams in the Bartlett watershed did not document presence. Typically prefers colder headwater streams than exist in project area (Chandler 2008). Standards & Guidelines protect streams from disturbance during harvest.
Boulder Beach Tiger Beetle <i>Cicindela ancocisconensis</i>	Open sand or mix of sand and cobble along permanent streams of mid-sized rivers; feed and live on the sandy areas exposed by receding rivers.	None	None	No	None. No such habitat present in the project area. Proposed project will not create any open sandy areas along first and second order streams either.
Warpaint Emerald <i>Somatochlora incurvata</i>	Breeds in bogs, fens, and similar peatlands, usually in sphagnum moss. The only occurrence documented on the WMNF came from the Church Pond area in 2001 (SVE 8/2006).	None	None	No	None. No such habitat present in the project area.
White Mountain Fritillary <i>Boloria chariclea montina</i> (= <i>Boloria titania montinus</i>)	Alpine habitat. Wet meadows, springs, and streamside alpine communities in Presidential Range. Host plant unknown; may be <i>Salix</i> , <i>Vaccinium</i> , or <i>Solidago</i> sp.	None	None	NA	None. Project area is not in the alpine zone.

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
White Mountain Butterfly <i>Oenesis melissa semidae</i>	Alpine habitat. Prefers sedge meadows. Host plant unknown. Larvae feed on Bigelow's sedge. .	None	None	NA	None. Project area is not in the alpine zone.
PLANTS					
Missouri Rock-cress <i>Arabis missouriensis</i>	In the WMNF, probably restricted to semi-open conditions of richer sites. Typically south or west-facing slopes below 1500'. Associated species include red oak, ash, basswood, sugar maple.	None		Not observed in any of our sampling plots	
Alpine Bearberry <i>Arctostaphylos alpina</i>	Typically on the exposed end of the dry/mesic heath meadow system of alpine communities. <i>Arctostaphylos alpina</i> is usually found in small, isolated populations on ridgelines of the Presidentials	None		Not observed in any of our sampling plots	
Arnica <i>Arnica lanceolata</i>	Alpine ravines, damp banks and rock ledges.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Robbins' milkvetch <i>Astragalus robbinsii var. minor</i>	In northern New England, this species is found on calcareous cliffs and ledges	None		Not observed in any of our sampling plots	
Dwarf White Birch <i>Betula minor</i>	Common in alpine zone bogs, wet slopes and summits	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Alpine Bitter-cress <i>Cardamine bellidifolia</i>	Cold ravines or wet mossy rocks in the alpine zone.	None		Not observed in any of our sampling plots	
Bailey's Sedge <i>Carex baileyii</i>	Wet meadows, rich swamps, and rich fens and seeps (http://www.nhdfl.org/library/pdf/Plantha_bitatlists_2008_web.pdf).	None		Not observed in any of our sampling plots	
Head-like Sedge <i>Carex capitata ssp. arctogena</i>	Wet, acidic, rocky or gravelly soil in the alpine. May also occur in similar dry habitats.	None		Not observed in any of our sampling plots	

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
Piled-up Sedge <i>Carex cumulata</i>	Open ledges, dry sandy soils, bogs, open woods, clearings.	None		Not observed in any of our sampling plots	
Scirpus-like Sedge <i>Carex scirpoidea</i>	Strongly associated with circumneutral or calcareous rocky summits, outcrops, and cliffs. In NH, only known from open ledges and subalpine habitats.	None		Not observed in any of our sampling plots	
Wiegand's Sedge <i>Carex wiegandii</i>	Boggy or peaty soils, boreal bogs.	None		Not observed in any of our sampling plots	
Fogg's Goosefoot <i>Chenopodium foggii</i>	At cliff bases, on rocky slopes and outcrops, and in sparsely wooded areas; apparently associated with circumneutral habitats	None		Not observed in any of our sampling plots	
Goldie's Woodfern <i>Dryopteris goldiana</i>	Rich, damp woods on calcareous soils. Rich mesic forests.	None		Not observed in any of our sampling plots	
Autumn Coralroot <i>Corallorhiza odororhiza</i>	Rich woods and talus; and acidic mesic forests. (http://www.nhdf.org/library/pdf/Plantha_bitatlists_2008_web.pdf).	None		Not observed in any of our sampling plots	
Oakes' Eyebright <i>Euphrasia oakesii</i>	Alpine. Exposed gravelly slopes or ledges or open ledgy areas.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Proliferous Red Fescue <i>Festuca rubra ssp arctica</i> (=var <i>prolifera</i>)	Alpine. Occurs on rocky or peat soils.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Boreal Bedstraw <i>Galium kamtschaticum</i>	Prefers somewhat rich seep habitats with non-channelized flowing surface water; found in cool, wet hardwood, mixed, or conifer woods, swamps, and streambanks.	None		Not observed in any of our sampling plots	
Northern Comandra <i>Geocaulon lividum</i>	Peat bogs at high elevations. Damp humus at medium to high elevations in fir waves.	None		Not observed in any of our sampling plots	
Mountain Avens <i>Geum peckii</i>	Moist alpine areas. Occurs rarely at low elevations in rocky streams.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
Moss Bell-heather <i>Harrimanella hypnoides</i>	Snowbank communities, wet seeps, and crevices in alpine habitats.	None		Not observed in any of our sampling plots	
Butternut <i>Juglans cinerea</i>	Rich, moist, alluvial soils, and dry rocky hillsides with limestone, old farmsteads.	None		Not observed in any of our sampling plots	
Auricled Twayblade <i>Listera auriculata</i>	Temporarily flooded and seasonally ice-scoured riverbanks with calcareous soils. Stream banks, mossy woods, alder thickets, boggy alluvial woods, cedar swamps, gravel riverbank, and lake and pond shores.	None		Not observed in any of our sampling plots	
Broad-leaved Twayblade <i>Listera convallarioides</i>	Wet shaded woods; peaty glades, spruce/fir woods; nutrient-poor, mossy forested seeps.	None		Not observed in any of our sampling plots	
Heartleaf Twayblade <i>Listera cordata</i>	Wet cold woods and bogs; sub-alpine scrub; bases of wet seepy ledges; spruce/fir woods on limestone.	None		Not observed in any of our sampling plots	
Prairie Goldenrod <i>Oligoneuron album</i>	Occurs primarily on dry, calcareous cliffs and ledges. May also occur in open fields and roadsides. All known NH occurrences are on calcareous soil or bedrock.	None		Not observed in any of our sampling plots	
Alpine Cudweed <i>Omalotheca supine</i>	Gravelly slopes and ravines at high elevations; exposed alpine areas and snowbank communities..	None		Not observed in any of our sampling plots	
Northern Adder's Tongue <i>Ophioglossum pusillum</i>	Variety of early-successional, seasonally moist to wet habitats, including open fens, bogs, marsh edges, pastures, old fields, grassy shores, wet thickets, cedar and hardwood swamps, floodplain woods, wet swales, damp sand, and roadside ditches. (http://www.nhdf.org/library/pdf/Planthabitatlists_2008_web.pdf).	None		Not observed in any of our sampling plots	

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
Mountain Sweet-Cicely <i>Osmorhiza berteroi</i>	Rich, moist deciduous woods.	None		Not observed in any of our sampling plots	
Mountain Sorrel <i>Oxyria digyna</i>	Typically occurs in snowbank communities and on rocky slopes and ledges of headwalls. May occur near alpine streambanks. Above 3500' in northern New England.	None		Not observed in any of our sampling plots	
American Ginseng <i>Panax quinquefolius</i>	Rich, rocky deciduous woods with thick humus of colluvial soils.	None		Not observed in any of our sampling plots	
White Mountain Silverling <i>Paronychia argyrocoma</i>	Mid-elevation rocky summits, ledges, and cliffs; sand/gravel barrens of Saco River between Bartlett and Fryeburg.	None		Not observed in any of our sampling plots	
Sweet Coltsfoot <i>Petasites frigidus</i> var <i>palmatus</i>	Swampy woods, especially white cedar swamps; meadows on calcareous soils.	None		Not observed in any of our sampling plots	
Wavy Bluegrass <i>Poa laxa</i> ssp. <i>fernaldiana</i>	Alpine gardens in Presidential and Franconia Mountains	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Alpine Meadow Grass <i>Poa pratensis</i> ssp. <i>alpigena</i>	In NH, uses nutrient-poor soils in alpine/subalpine dry-mesic heath and meadow communities.	None		Not observed in any of our sampling plots	
Douglas Knotweed <i>Polygonum douglasii</i>	Prefers exposed rocky slopes and hillside ledges in well-drained soil where little other vegetation grows. Can also grow in nutrient-enriched hardwood forests if the canopy is open enough; often associated with rocks even in forest.	None		Not observed in any of our sampling plots	
Viviparous Knotweed <i>Polygonum viviparum</i>	Snowbank communities, wet mossy rocks and seeps, and near streams in alpine and subalpine areas.	None		Not observed in any of our sampling plots	
Robbins's Cinquefoil <i>Potentilla robbinsiana</i>	Alpine zone in Presidential Range of WMNF.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.

Species	Habitat Requirements	Sightings (Present/Historic)	Suitable Habitat in Project Area	Surveys Conducted in Project Area*	Potential Impact on Species or Habitat
REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
Boott's Rattlesnake Root <i>Prenanthes boottii</i>	Alpine meadows, moist tundra, steep cirque ledges and crests, and disturbed alpine sites such as trailsides and hut areas	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Pink Wintergreen <i>Pyrola asarifolia</i>	Rich moist woods and meadows on calcareous soils. Moist alluvial soil of lower river terrace forests including spruce/fir.	None		Not observed in any of our sampling plots	
Silverleaf Willow <i>Salix argyrocarpa</i>	Moist soils in alpine or subalpine streamside and ravine.	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Dwarf Willow <i>Salix herbacea</i>	In NH, typically occurs in cool, wet ravines, snowbank communities, and along alpine brooks. Grassy, sandy, or rocky places in alpine areas; often on thinner soils than other snowbank/wet ravine species.	None		Not observed in any of our sampling plots	
Three-leaved Black Snake Root <i>Sanicula trifoliata</i>	Limy deciduous woods below 1500' often on steep slopes. Appears associated with dense, lush ground cover and relatively closed canopy but has been found near clearcuts and cliffs which may indicate it can take advantage of sunny conditions.	None		Not observed in any of our sampling plots	
Alpine Brook Saxifrage <i>Saxifraga rivularis</i>	Alpine ravines, wet and mossy areas, wet cliffs, and some dry-mesic heath alpine/subalpine communities. May benefit from reduced competition associated with moderate disturbance. May be a nitrophile.	None		Not observed in any of our sampling plots	
Arizona Cinquefoil <i>Sibbaldia procumbens</i>	Snowbank/wet meadow/streamside alpine communities; only occurrence is at bottom of a snowfield.	None		Not observed in any of our sampling plots	

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REGIONAL FORESTER'S SENSITIVE SPECIES – R-9					
Anderson's sphagnum <i>Sphagnum andersonianum</i>	Low hummocks in very poor ericaceous fens.	None		Not observed in any of our sampling plots	
Angerman's Sphagnum <i>S. angermanicum</i>	Poor fens, including at edges of ponds	None		Not observed in any of our sampling plots	
A Sphagnum <i>Sphagnum flavicomans</i>	Medium to tall hummocks in bogs and poor fens. An indicator species for the <i>Sphagnum rubellum/Vaccinium oxycoccus</i> dwarf heath moss lawn in New Hampshire	None		Not observed in any of our sampling plots	
Alpine Meadow-sweet <i>Spiraea septentrionalis</i>	Cool wet ravines and snowbank communities in alpine and subalpine habitats. Needs open habitats where forest cannot get established.	None		Not observed in any of our sampling plots	
Nodding Pogonia <i>Triphora trianthophora</i>	Mid-elevation beech hardwoods usually on south-facing slopes. Rich, deep humus layer.	None		Not observed in any of our sampling plots	
Boreal Blueberry <i>Vaccinium boreale</i>	Alpine bogs and meadows in the Presidential and Franconia Mountains	None		Not observed in any of our sampling plots	None. Project area is not in the alpine zone.
Mountain Hairgrass <i>Vahlodea atropurpurea</i>	In northern New England, is limited to the alpine/subalpine zone, especially herbaceous snowbank communities.	None		Not observed in any of our sampling plots	