

# Bear Brook Management Plan

## Chapter 5: Ecological Assessment

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# Ecological Assessment Chapter

- ◇ Physical setting: Geology and Soils
- ◇ Vegetation patterns: Natural Communities and Systems

# NH Natural Heritage Bureau (NHB)

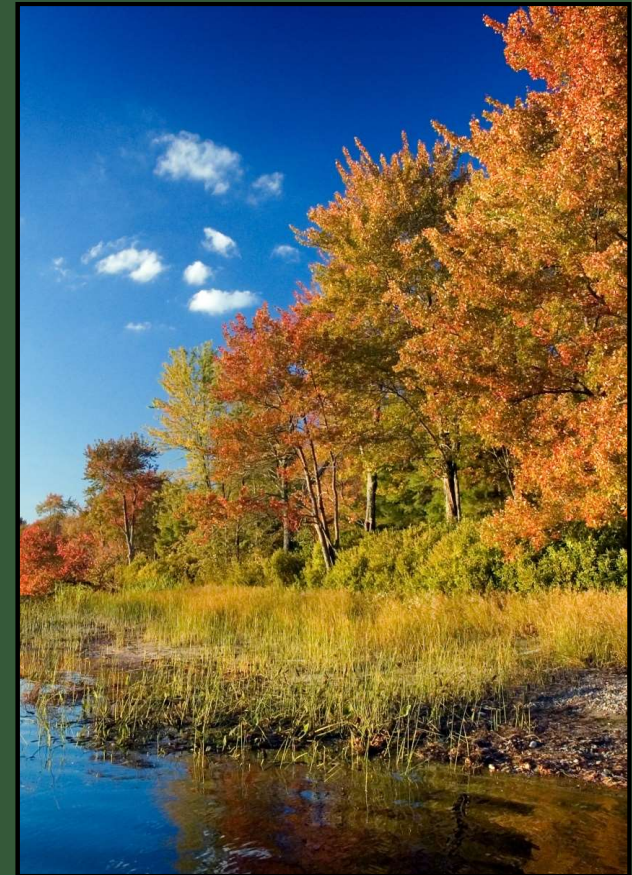


- ◇ Office within the Division of Forests & Lands, DNCR
- ◇ Mission is mandated by the NH Native Plant Protection Act (1987) RSA 217-A  
“...to protect and conserve native plants”
- ◇ NHB finds, tracks, and facilitates the protection of New Hampshire’s rare plants and exemplary natural communities



# NHB Database

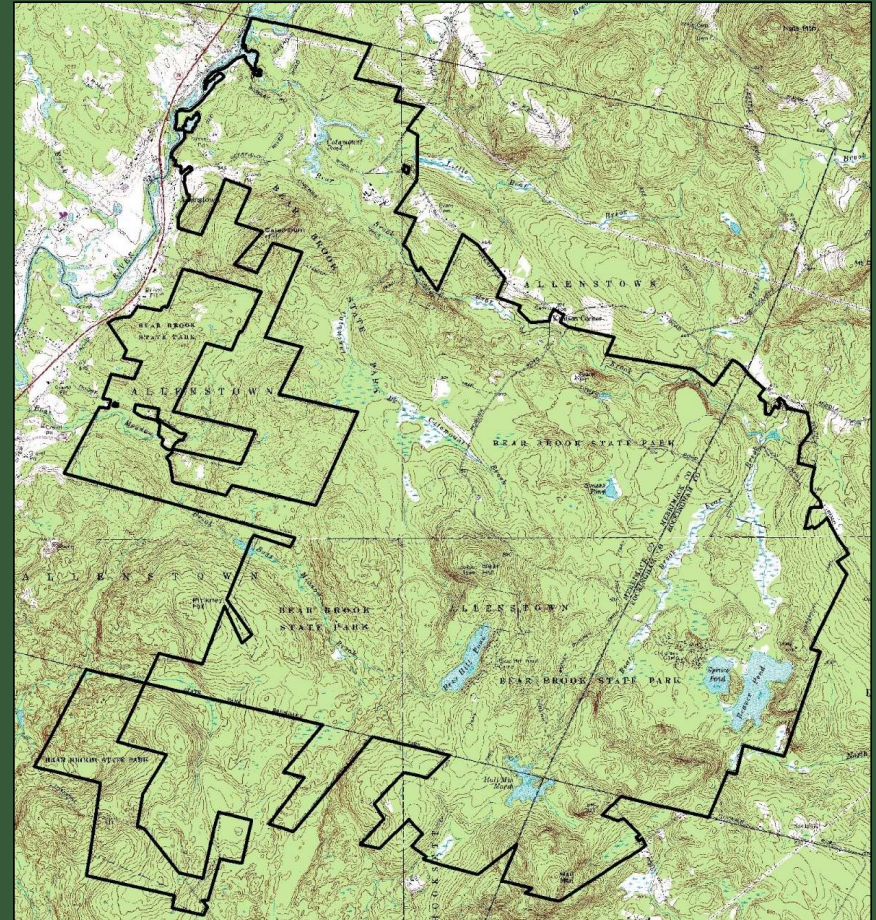
- ◇ State & Federally listed plant species
- ◇ Exemplary natural communities
- ◇ State & Federally listed wildlife species, and Species of Special Concern





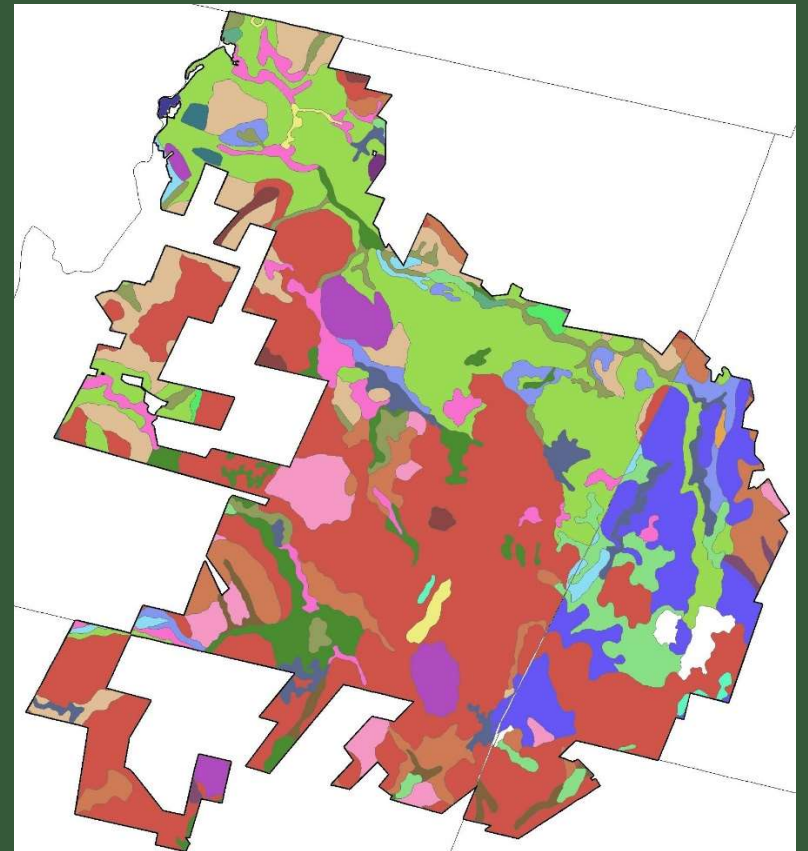
# Topography and Bedrock Geology

- ◆ Nearly 10,000 acres, primarily in the Suncook River watershed
- ◆ Rolling terrain, with elevations between 300' and 930'
- ◆ Bedrock geology is mapped as a single unit of Concord granite
- ◆ May be finer scale variation in bedrock not captured in geology map



# Glacial History and Soils

- ◊ Glacial Till – Unsorted mass of fine particles, pebbles, cobbles, and boulders
- ◊ Soils are mostly sandy loams – Canton, Chatfield, Hollis, Montauk, and Paxton
- ◊ Glacial Outwash – Sandy deposits from draining of glacial lake; Windsor series
- ◊ Muck and peat soils in wetlands





# Natural Communities and Systems

- ◇ Natural Communities –  
Recurring assemblages of plants and animals found in particular physical environments
- ◇ Natural Community Systems –  
Associations of natural communities linked by a common set of driving forces, such as landform, flooding, soils, and nutrient regime



# How are natural communities distinguished from one another?

## Each has a specific:

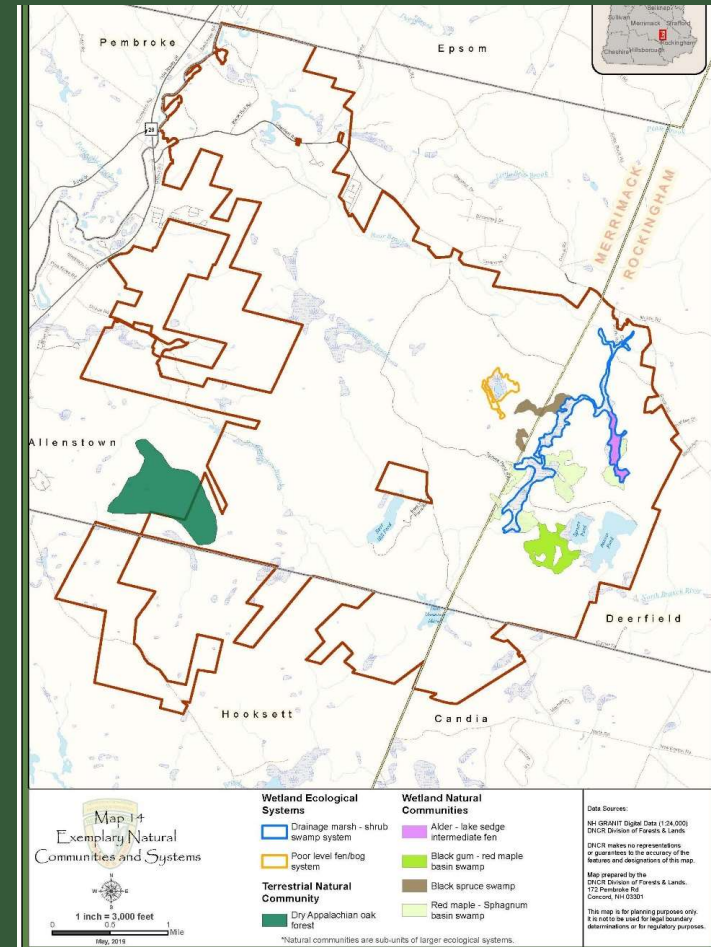
- ◇ Plant species composition
- ◇ Vegetation structure
- ◇ Combination of physical conditions (such as water, light, nutrient levels, climate) and disturbance regime





# Exemplary Natural Communities

- ◆ Highest quality examples in NH of the various natural community types
- ◆ Exemplary occurrences are tracked in the NHB database along with occurrences of rare plant and animal species
- ◆ 4 exemplary natural communities and 3 exemplary natural community systems at BBSP



# Upland Natural Community Systems

- ◇ Two primary matrix forest types:
  - ◇ **Appalachian oak – pine forest system**
  - ◇ **Hemlock – hardwood – pine forest system**
- ◇ Serve as the “default” vegetation types on the landscape
- ◇ These systems occupy almost all of the upland acreage at BBSP





# Appalachian oak – pine forest

- ◇ Dominated by species with an “Appalachian” distribution: white oak, black oak, scarlet oak, pignut hickory, shagbark hickory, pitch pine
- ◇ Occurs primarily in southern, particularly southeastern, New Hampshire
- ◇ Typically found on warm, dry, south-facing slopes
- ◇ An exemplary occurrence of this forest type can be found on the west side of BBSP, and extends onto adjacent property





# Hemlock – hardwood – pine forest

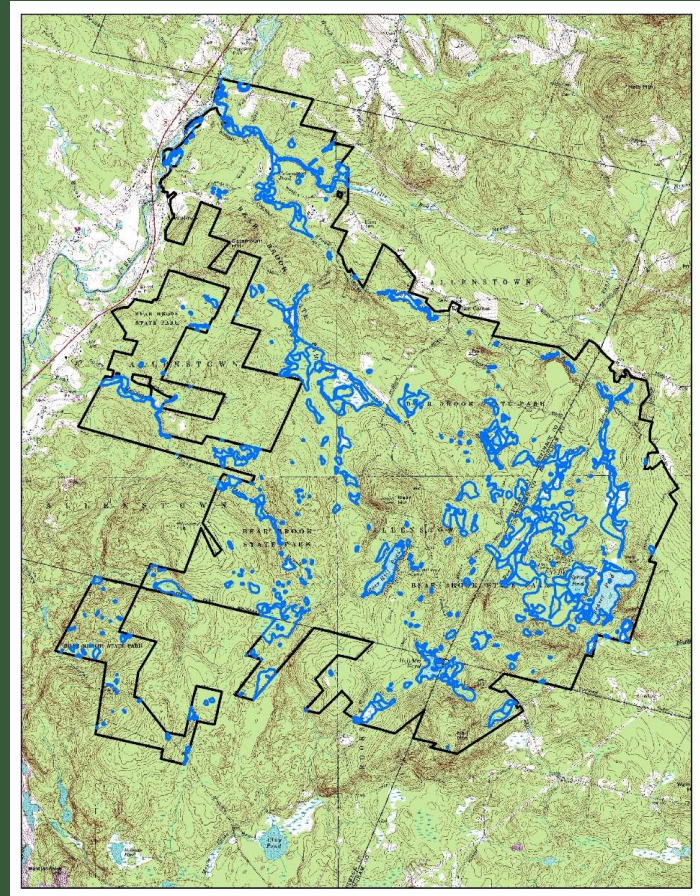
- ◇ Primary natural community is *hemlock – beech – oak – pine forest*; dominated by some mix of red oak, white pine, beech, and hemlock
- ◇ Dominant forest type of central and southern NH below 1,500'





# Wetland Natural Community Systems

- ◆ Nearly 1,100 acres at BBSP mapped as wetlands (including lakes and ponds)
- ◆ Marshes
- ◆ Open peatlands
- ◆ Forested wetlands



# Drainage marsh – shrub swamp system

- ◇ Herbaceous and shrub dominated wetlands on mineral soils
- ◇ Low-gradient streams, often associated with beaver activity
- ◇ Found throughout BBSP
- ◇ Exemplary occurrence along the upper reaches of Bear Brook





# Open Peatlands

- ◇ **Medium and Poor level fen systems**
- ◇ Stagnant or slow-moving waters and organic soils (peat)
- ◇ Often with abundant sphagnum mosses
- ◇ Dominated by sedges and heath shrubs
- ◇ Exemplary **poor level fen/bog system** has been documented at Smith Pond





# Forested Wetlands – Temperate Peat Swamps

- ◇ **Temperate peat swamp system**
- ◇ ***Red maple – Sphagnum basin swamp***
- ◇ Usually occur in isolated basins
- ◇ ***Black gum – red maple basin swamp***
- ◇ Black gums frequently reach over 300 years old
- ◇ Largest exemplary occurrence in NH is at BBSP





# Forested Wetlands – Black Spruce Peat Swamp

- ◇ *Black spruce swamp* community
- ◇ Typically occurs in central and northern NH
- ◇ Unusual southern occurrence at BBSP is exemplary



## Rare Plant Species

- ◇ Prior to 2019, no rare plant occurrences were known from BBSP
- ◇ In 2019, licorice goldenrod (*Solidago odora*) was documented in a power line near the northern edge of the park





# Recommendations

- ◇ Conduct targeted surveys for rare plants and exemplary natural communities
- ◇ Documented exemplary natural communities should be excluded from commercial timber management
- ◇ Invasive plants should be documented and controlled whenever possible
- ◇ Entire property should be evaluated for the suitability of prescribed fire

