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