Rapid Ecological Assessment of Bockes and Heald Reservations and Identification of Potential Impacts from Proposed Northeast Direct Pipeline

Produced by Kane Conservation, 9/2015
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Background and Introduction

The Society for the Protection of New Hampshire Forests (the “SPNHF”) has secured the services of Kane Conservation for the purpose of conducting landscape analysis and field surveys for portions of the Bockes Reservation in Hudson, NH and the Heald Reservation in Mason/Greenville, NH (the “Properties”) that are situated along the proposed route of the Northeast Direct natural gas pipeline (the “NED”). The area studied is the actual proposed route of the Wright Dracut pipeline route plus a 200 foot buffer on both sides of these routes (the “Study Area”). The Wright Dracut route is currently planned to be located at the southern edge of an existing cleared power line corridor on both properties. The resources pertinent to this study are plants and plant communities, wildlife species, wildlife habitat and wetlands. The prime purpose was to locate potentially significant features which might warrant a more full documentation, and have some legal status for protection and consideration in the pipeline licensing process. This report summarizes the findings of this assessment.

Landscape Analysis

As a preliminary step, GIS data for the study area were compiled and reviewed to prioritize habitat areas based on their likelihood of supporting significant botanical or wildlife features. Data reviewed include 2010 1ft resolution color orthophotos, NWI wetlands, bedrock geology, soils, topography, hydrography and roads. Sources of information on rare species / communities by municipality and other sources also informed this phase. Field maps were also produced.

GIS data indicated no wetlands or streams in the Heald and Bockes study areas. The soil underlying Heald is Lyman-Tunbridge-rock outcrop complex, 3 to 15 percent slopes. The soil underlying Bockes is Scituate stony fine sandy loam, 3 to 8 percent slopes. The bedrock underlying Heald are Rangley Formation and NH Plutonic Suite – Spaulding tonalite, which are both of relatively acidic pH. Bedrock underlying Bockes is the Merrimack Group – Berwick Formation, which can include moderately calcareous composition. Botanical targets identified as potentially occurring on the study area included dry open habitat, peatland natural communities, open upland habitat rare plants including Solidago odora, Hudsonia ericoides, Liatris scariosa var. novae angliae, Asclepias amplexicaulis, Lupinus perennis, Viola pedata and Asclepias...
tuberosa, Aureolaria peridularia, Quercus prinoides and Lespedeza virginica, and open wetland habitat rare plants including Eupatorium pubescens, Carex bullata and Euthamia carolinana.

**Wildlife targets** included species of conservation concern with an emphasis on reptiles, vernal pools, wetlands, turtle habitat, snake habitat and uncommon bird habitat. All wetlands of which a portion occurred in the study area were delineated by interpretation of infrared aerial photography, and in many cases field verification.

**Maps**

Two maps were produced to display results of the study. These maps appear as attachments to this report. NOTE: Wetland boundaries shown on the attached maps do not constitute jurisdictional wetland delineations.

**Field Surveys**

Wildlife resources and botanical resources were surveyed independently between 8/18/15 and 9/12/15. All targets developed in the landscape analysis phase were visited, and a significant portion of all other areas in the study area were also inspected. All wetlands, potential vernal pools, potentially significant wildlife habitat, wildlife species/sign, dominant vegetation, unusual plants or natural communities, cultural features and invasive plant species encountered were preliminarily documented by GPS, text and photographs.

**Results, Discussion and Recommendations**

**Heald Forest**

Plants and Natural Communities

Powerline Corridor

The powerline corridor right-of-way is vegetated most prominently by a suite of tree and shrub species, which are for the most part in a state of root-sprouting after periodic cutting by equipment. This periodic management creates shrub habitat, which is a critical wildlife habitat as it is limited in its distribution and abundance in NH. Prominent species include gray birch, red oak, black oak, white pine, red maple, sweet birch, white ash, mountain laurel, black huckleberry, sweetfern, lowbush blueberry, common juniper and prickly dewberry. Sparse grasses, goldenrods, sedges, ferns and mosses also occur in wet depressions and around exposed bedrock ledges and surface boulders. The soil is generally well drained and in many areas shallow to bedrock. Sloped areas and trails tend to be moister, with several trail areas eroded by rainwater flow. No invasive plant species were observed in this study area.

Forest
The forest in the southeast of Study Area is an unmanaged semi-mature stand of hemlock and red oak. Westerly of this stand the forest is hemlock/white pine/red oak with mountain laurel and witch-hazel in the understory. Mature pines were apparently selectively harvested twice in the past 50 years or so. North of the power line the forest is similar, but with red maple and beech, and less pine. A small stand of pure beech occurs at the eastern end of this forest stand (photo 5). In terms of natural plant communities, the forest portions include variants and intergrades of Hemlock forest, Hemlock – white pine forest, Oak – mountain laurel forest, Hemlock – beech – oak – pine forest, and Dry red oak – white pine forest. All these forest communities are relatively common in New Hampshire, although high quality, large examples can be uncommon and significant. In addition, at least 2 large pasture pines (3+ feet in diameter) and a large beech (2 feet in diameter) were observed.

Photo 1. View to WNW of eastern end of Heald powerline corridor
These trees provide complex canopies not found in younger trees, providing perching and nesting sites for large birds of prey such as Cooper’s hawk, sharp-shinned hawks, and barred owls.
Wetlands, Streams and other Natural Features

GIS data indicated no wetlands or streams in the study area. In the field, however, a perennial stream which is a direct tributary to the Souhegan River was documented (photo 6). This stream has produced an incised ravine through bedrock on the south side of the powerline corridor. A variety of stream habitats are present, including falls, pools, and riffles (photo 6 and 7). These habitats are important for many aquatic species such as brook trout, aquatic
Photo 6. Stream ravine at western end of Heald

Photo 7. Perennial stream with falls (background) and pool (mid ground).
macroinvertebrates, and stream salamanders. Stream pools are especially significant for these species during summer months when water levels are low. Another smaller channelized, probably intermittent stream was observed in the middle of the property running south to north.

A total of seven probable wetlands were also documented in the study area (photo 7). These mainly represent small, isolated depressions with saturated soils and potentially some ponded water in the spring or during heavy rain events. One of these small wetlands is a potential vernal pool (photo 10). The function of the potential vernal pool could not be definitively determined to provide habitat for vernal pool obligates due to the time of the season, as the site was visited too late for most species, but too early for the marbled salamander. Wetlands and vernal pools comprise some of the most sensitive wildlife habitats in New Hampshire.

Photo 8. Two-lined salamanders were observed in the perennial stream.
Wildlife and Species of Conservation Concern

Mammals such as moose, deer, and coyote were observed. Common birds such as chickadee, blue jay, white-breasted nuthatch, and hairy woodpecker were also observed. Two-lined salamander, American toad, red-spotted newt, and redback salamander represent the amphibian community observed. Based on the field wildlife / habitat survey, habitat exists in the study area for wildlife species of conservation concern, including:
**Vertebrates – Reptiles**

<table>
<thead>
<tr>
<th>Species</th>
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<tbody>
<tr>
<td>Blanding's Turtle (<em>Emydoidea blandingii</em>)</td>
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<td>Eastern Hognose Snake (<em>Heterodon platirhinos</em>)</td>
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<tr>
<td>Northern Black Racer (<em>Coluber constrictor constrictor</em>)</td>
<td>T</td>
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<tr>
<td>Spotted Turtle (<em>Clemmys guttata</em>)</td>
<td>T</td>
</tr>
<tr>
<td>Wood Turtle (<em>Glyptemys insculpta</em>)</td>
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<td>Eastern Box Turtle (<em>Terrapene carolina</em>)</td>
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*(E = State Endangered;  T = State Threatened;  SC = Species of Special Concern)*

**Bockes Forest**

**Plants and Natural Communities**

**Powerline Corridor**

The powerline corridor right-of-way is vegetated most prominently by a suite of tree and shrub species, which are for the most part in a state of root-sprouting after periodic cutting by equipment. Regrowth over a period of years has resulted in a dense and in places virtually impenetrable expanse of shrubby growth. This periodic management creates shrub habitat, which is a critical wildlife habitat as it is limited in its distribution and abundance in NH. Prominent species in drier portions include gray birch, red oak, black oak, scrub oak, dwarf chestnut oak, American hazelnut, red maple, sweetfern, common juniper, silky dogwood and blackberry along with assorted goldenrods. Sparse grasses, goldenrods, asters, sedges, ferns and mosses also occur in scattered openings in the otherwise dense shrub growth. Three distinct areas support hydrophytic species, including tussock sedge, swamp candles, bulrushes, meadowsweet, rice cut grass, bluejoint, cattails, Joe-pye weed, silky dogwood, speckled alder, cinnamon fern and flat-topped aster among many others.
Rare Plants

Three plant species that are tracked by the NH Natural Heritage Bureau were observed on or near the study area. Skydrop aster (*Symphiotrichum patens*) is ranked State-Threatened (S2). Dwarf chestnut oak (*Quercus prinoides*) and Canada burnet (*Sanguisorba canadensis*) are both ranked as Watch species (S3). See photos below.
Photo 10. State-Threatened species Skydrop aster (*Symphiotrichum patens*)

Photo 11. State-Watch list species Dwarf chestnut oak (*Quercus prinoides*)
Photo 12. State-Watch list species Canada burnet (*Sanguisorba canadensis*) with purple loosestrife in background.

Forest

North of the powerline corridor right-of-way the property is forested. Fairly recent harvesting / management was evident, with large white pine stumps and slash present. Along with white pine, the forest is composed of red oak, white ash and paper birch, with witch-hazel and hop-hornbeam in the understory. To the west the forest has not been recently managed, the white pine is more dominant, and hemlocks become common. A drainage zone flows north from the wet areas of the right-of-way into the forest. Wetland species are present here, including some swamp white oaks (photo 13). The forest of the study area would be classified as a managed example of *Hemlock-beech-oak-pine forest*, augmented with some southerly-associated elements including swamp white oak and sweet birch.

Invasive Species

Purple loosestrife is established to some degree in the wetland areas, and in some areas it has become pervasive, especially along the north side of the corridor (photo 14). Also of concern
Photo 13. Large swamp white oak.

is an outbreak of oriental bittersweet and common buckthorn where an old road enters the forest on the north side of the corridor (photo 15). Autumn olive is also present on drier portions of the right-of-way. Disturbance by construction equipment is likely to cause the spread of these species.
Wetlands, Streams and other Natural Features

A complex of wetlands occur in the powerline corridor, and drain to the north into the forest. These wetlands were not included or mapped by the National Wetlands Inventory, the standard stock GIS data source. These wetlands comprise mostly emergent marsh habitat lined with shrubs on the outer edge (photo 16). This wetland complex provides habitat for
amphibians and potentially turtles. These wetlands are not present in the National Wetland Inventory GIS data. A somewhat defined intermittent stream was observed where the wetland drainage occurs.

![Emergent marsh dominated by wool grass and other graminoids.](image)

**Wildlife and Species of Conservation Concern**

Mammals such as deer were observed. Common birds such as chickadee, blue jay, white-breasted nuthatch, eastern wood-pewee, and downy woodpecker were also observed. Based on the field wildlife / habitat survey, habitat exists in the study area for wildlife species of conservation concern, including:

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Recommendations for Further Study

- Potential vernal pools should be documented in the spring. This time of the year would also afford an opportunity to survey for the reptiles listed above, as well as identify incidental observations of mammals, amphibians, and breeding birds.

- Further field investigation of the vegetation in the powerline corridor would be necessary to determine the full range of the three State-listed plant species observed, to what extent they occur on SPNHF property, and specifically what would be the specific impacts of the proposed pipeline construction.
Attachments

- Heald Reservation; Findings of Field Assessment Map
- Bockes Reservation; Findings of Field Assessment Map
Heald Reservation, Greenville and Mason, NH

Findings of Ecological Field Assessment
Bockes Reservation, Hudson, NH

Findings of Ecological Field Assessment