Frenchman Bay Community Forest Use by Migrating Birds

— Memo —

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Biodiversity Research Institute (BRI) is providing additional information on the value of the Frenchman Bay Community Forest for migrating birds. The 1,400-acre property is being used to mitigate the potential impacts to migratory songbirds from the five-turbine Silver Maple Wind Project located in Clifton, Maine. This memo is intended to (1) augment and clarify the report titled "An Assessment of the Frenchmen Bay Community Forest for Migratory Birds" provided to SWEB on December 22, 2020 (hereafter 'BRI Report'), and provide additional information on the extrinsic value of the property, (2) discuss further how intermediate forest and wetlands can be used by migrating birds, (3) provide detail on how areas currently mowed will transition to early successional forest, and (4) highlight that some species that migrate through the property will also use the property for breeding. The BRI Report, and this memo, consider property value in a relative manner with two primary components. The first is the relative value of the property in the broader landscape (i.e., the extrinsic value due to the location of the site or the condition of the migrants), and the second is the relative value of each habitat type present on the property (i.e., the intrinsic value of the habitat).

Clarification of Management Activity

The BRI Report stated that the Frenchman Bay Community Forest would initially have limited forest thinning, then passive management afterward. The Frenchman Bay Conservancy (FBC) has subsequently decided against thinning, but does intend to allow fields that are currently mowed to convert to early successional forest (discussed below).

Extrinsic Value

The Frenchman Bay Community Forest is located in an important area for migrating birds. The broader landscape context of the property, the weather patterns, position relative to migratory routes and barriers, and energetic condition of migrants, all combine to describe extrinsic value. In evaluating the Frenchman Bay Community Forest's extrinsic value for migrating birds, geography is the primary consideration. The Frenchman Bay Community Forest's proximity to the coast offers habitat to birds at the beginning or end of an overwater migration across the Gulf of Maine. Rest and fuel are important for starting or completing any overwater migration and will likely promote consistent use of coastal habitats in Maine year after year. A recent study by Buler et al. (2017) generally describes the area around the site as either in a medium or high importance category, based on NEXRAD estimates of migratory activity. Given that similar habitats are found throughout Maine, extrinsic value is likely an explanation for the observed pattern. These results suggest medium to high migratory passage rates in the context of the entire United States, likely due to the importance of the Gulf of Maine to bird migration. Further, birds often stop for longer periods when fueling for, or recovering from, an overwater flight. The Gulf of Maine will remain an important constraint to Atlantic coast migrants; thus, we do not expect the extrinsic value of this site to change over time.

Intrinsic Value of Intermediate Forests and Wetlands

The habitat on the property also has intrinsic value for migrants, providing areas for birds to refuel for a period. While the amount of time spent on the site is condition-dependent, it also depends on the resources present. Sites provide resources for both shorter stopover (i.e., the 'convenience store' examples in the BRI Report) or a more extended stopover (i.e., the 'full-service hotel' example). While it is unclear how long the migrant community will use the habitats at this site, we expect this site to be useful to birds. The comparison of habitats conducted in the BRI Report was based on the relative value of habitats to migratory birds. It was not meant to be a comparison with habitats minimally useful to migrating birds (i.e., developed habitats).

Similarly, when assessing changes over time, we compared expected changes to the site's current habitat composition. Thus, while early successional forests provide the greatest foraging opportunity for migrating birds, the intermediate forests (comprising 84% of the Frenchman Bay Community Forest) also provide important habitat. The BRI Report found that 61% of the intermediate forest was deciduous or mixed forest, and literature review suggests that these forest types have the highest migrant use. Additionally, Buler & Dawson (2014) documented that, at the landscape scale, deciduous forest along agricultural edges and riparian woodlands are habitats of high migratory activity. And while that value will change due to habitat succession, we expect this site to continue to have the medium to high value seen in Buler et al. (2017). Long-term, the late successional forest is likely to have higher relative use than most other habitats, and high intrinsic value to migrants.

The Frenchman Bay Community Forest has 161 acres of woody wetlands that represent 11% of the property. These wetlands can be considered high-quality habitat for migrating landbirds. Persistent wetlands on the landscape contain fruits and insects, provide some cover depending on the amount of woody vegetation present, and abundant forest edge habitats when adjacent to forests. During the spring, wetland complexes often provide the earliest insects available, and during the summer and fall, fruiting plants such as mountain holly (Ilex mucronata), withe-rod (Viburnum nudum), and chokeberry (Aronia melanocarpa). While these habitats may change over time, due to the effects of beaver activity (may expand wetland areas) and climate change-related changes in precipitation patterns, we would expect these high-quality habitats to continue providing the attributes that migratory birds prefer for stopover use (high availability and density of food and cover).

Intrinsic Value of the Transition of Mowed Fields to Early Successional Forest

Currently, there are approximately 50 acres (3.5% of the property) of fields that have been maintained through mowing, which are spread throughout the property (see letter from FBC dated January 18, 2021). FBC will stop annual mowing and allow these fields to transition to early successional forest, which are commonly identified as providing significant value to migrants because they support insects and fruiting plans. These fields are expected to transition to shrubs, and then to early successional forest over 25 years, and are likely to provide refueling locations for migrating birds for a majority of the time the Silver Maple Wind Project is operational. As noted in the FBC letter, species such as raspberries (Rubus

spp), serviceberry (Amelanchier spp.), cherries (Prunus spp), chokeberries (Aronia spp,) and staghorn sumac (Rhus typhina) are expected to colonize these fields.

Furthermore, the property has approximately four miles of road, roughly 25 feet across, which have abundant fruit-bearing shrubs on both sides of the road. The main road will be maintained, and the shrub habitat will be retained on the edges of the roads. The side roads will re-wild but currently have compacted soils and may take some time to convert to early successional forest.

Intrinsic Value to Breeding Birds

While Neotropical migratory birds are going to use the property differently during migration and breeding, it is important to note that individuals of many of the species that will stop at the property during migration will also breed on the property. Many of the frequently detected species during the breeding bird survey (e.g., Ovenbird [Seiurus aurocapilla], Black-throated Green Warbler [Setophaga virens], and Black-and-white Warbler [Mniotilta varia]) are also common migratory species identified in the eBird database. Thus, the Frenchman Bay Community Forest can compensate for potential mortality at the Silver Maple Wind Project by maintaining breeding habitat and providing useful habitat during migration.

Conclusion

Overall, the Frenchman Bay Community Forest provides medium to high quality habitat for migrating birds (Buler et al. 2017) and breeding habitat for many of the species passing through. The property has extrinsic value because it is located in the Downeast Coastal Plain, and birds use it before and after crossing the Gulf of Maine or other land-based migratory routes. This extrinsic value is not likely to change over time; the site's location will continue to be important over the next 50 years. The property has current intrinsic value because of the existing early successional forest, wetlands, and the mixed and deciduous forest that dominates the property. While some of these habitats have more relative value than others, they each have value and receive use during migration. Through time, the wetlands are expected to be maintained, and the mowed areas will transition to high quality early successional forest. While early successional habitat will transition to intermediate forest, the long-term gains of intermediate to late succession transitions are significant and will likely support a large and diverse migrant community.

In sum, while the property will change through time, it is expected to continue to be an important site for migrating birds throughout the Silver Maple Wind Project's lifetime.

Literature Cited

Buler, J.J., & D.K. Dawson. 2014. Radar analysis of fall bird migration stopover sites in the northeastern U.S. Condor 116: 357–370.

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