



Field Visit to 0 Kate Downing Rd. in Plainfield

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Date of visit: 11/18/21

Observations

Property Delineation

This document refers to parcels #10-5-4, 18-5-8, & 10-5-9, located south of Kate Downing Rd and east of I-395. For the purposes of this document, we will refer to 4 distinct areas on these parcels: the oak hickory stands, the aspen stand, the oldfield cedar stands, and the wetlands. These are not formal stand delineations but will be a useful basis for discussion. Upon future management, the landowner is advised to consult with a professional forester to formally delineate stands on the property.

Tree Cover

A majority of the property is covered by oak hickory stands. They are heterogenous in size, structure, and species composition, but are all dominated by mature oaks and hickories. The stand of trees between Kate Downing Rd and the wetland is typical for the region, with canopy dominant oaks and hickories in the small sawtimber (12-16 inch) and large sawtimber (16+ inch) size classes. They are moderate quality. There is a midstory of red maple and black birch poles (5-11 inches) and small sawtimber trees, along with understory witch hazel and huckleberry. Moving south across the wetland, there is a similar oak hickory stand which differs in overstory tree size (small sawtimber), overstory tree mortality (25-50% oak mortality), and understory fern dominance. Elsewhere on the property are mature oak hickory stands with upwards of 75% overstory tree mortality, clusters of low density oak and hickory seedlings (<1 inch), and black birch and red maple reaching canopy dominance and sawtimber size.

The aspen stand is located to the south of the adjacent homes on Kate Downing Rd and north of the wetland. It is distinguished from its surroundings by smaller overstory dominant trees (large pole/small sawtimber), several clusters of bigtooth aspen poles, and the presence of a single red pine.

The oldfield cedar stands are located at the top of the hill in the center of the property. They are younger stands, with dominant trees in the large sapling (1-5 inch) and pole size classes. In some places, the cedars are still dominant, while elsewhere, they have been overtopped by oak, maple, and black birch poles. Elsewhere in this area, cedars have yielded completely to

the hardwoods, with some sites bearing savannah like characteristics including understory oak and hickory seedling development and patches of huckleberry.

The wetlands contain typical regional wetland tree species and conditions, namely red maple, ash, elm, and yellow birch in the pole/small sawtimber size classes. They are substantial, approaching 100 feet in width at their narrowest point. They have substantial understory development including sweet pepperbush, spicebush, and barberry.

Species	Latin (Scientific) Name
Red oak	<i>Quercus rubra</i>
Black oak	<i>Quercus velutina</i>
White oak	<i>Quercus alba</i>
Hickories	<i>Carya spp.</i>
American beech	<i>Fagus grandifolia</i>
Bigtooth aspen	<i>Populus grandidentata</i>
Black birch	<i>Betula lenta</i>
Yellow birch	<i>Betula alleghaniensis</i>
White ash	<i>Fraxinus americana</i>
American elm	<i>Ulmus americana</i>
Sugar maple	<i>Acer saccharum</i>
Red maple	<i>Acer rubrum</i>
Cedar	<i>Juniperus virginiana</i>
Red pine	<i>Pinus resinosa</i>

Understory

Native Species	Latin Name	Invasive Species	Latin Name
Huckleberry	<i>Gaylussacia baccata</i>	Bittersweet	<i>Celastrus orbiculatus</i>
Musclewood	<i>Carpinus caroliniana</i>	Barberry	<i>Berberis thunbergii</i>
Witch hazel	<i>Hamamelis virginiana</i>	Multiflora rose	<i>Rosa multiflora</i>
Spicebush	<i>Lindera benzoin</i>		

Wildlife Habitat

The mature, closed-canopy, high-stature forest on these parcels provides valuable generalist wildlife habitat. There are some large oaks and hickories with sizable crowns which will produce substantial hard mast, however most are below their potential masting size and many are dead. This disturbance has created conditions which will lead to a future forest dominated by black birch and red maple trees with little to no oaks and hickories present, which will be very detrimental to wildlife. Soft mast is rare. The contrast between upland and wetland stands provides adequate horizontal structure. The oldfield cedar stand has the potential to be a source of cover and soft mast, both of which are rare on this property, but in its current condition, the trees are receiving too much shade for either of these benefits. Similarly, there is potential for an oak hickory savannah, which provides cover in tall grass, soft mast, and hard mast, but the current conditions do not allow for these benefits. The aspen stand could also be

managed to create very valuable wildlife habitat conditions; in its current state, it provides generalist habitat.

Forest Health

This property was severely impacted by the 2016-2018 regional drought and gypsy moth (*Lymantria dispar*) outbreak. Oak mortality is patchy, ranging from 25-75%. Intensive management is required here in order to create a healthy oak hickory forest in the future – the alternative is a low quality black birch and red maple dominated forest. The cedars in the oldfield cedar stands will not survive without active management, but the resulting hardwood pole stand would still be relatively healthy. The ash trees on these parcels have been infested by the Emerald Ash borer (*Agilus planipennis*) and are unlikely to survive. The barberry infestation is moderate, but it is a concern, as it will contribute to the already difficult conditions for regenerating desirable trees on this property.

Forest Carbon

This healthy, mature, closed canopy forest is actively removing carbon dioxide from the atmosphere (sequestration) and storing it in live trees; standing dead trees; downed trees, logs, and branches (coarse woody material); and belowground material including living material like roots and fungi along with non-living material like dead and decaying plant and insect material. The oak hickory stands' carbon dynamics will react differently to the major mortality event depending on the degree of mortality. Areas with less than 50% mortality will most likely see increased sequestration rates, as the live trees' canopies grow to fill in the spaces left by those which died. On the other hand, areas with greater than 50% mortality will likely see decreases in sequestration rate and long term storage capacity, as the spaces left by the dead trees will be filled in by the undesirable midstory red maples and black birches. As the dead trees decay, some of their stored carbon will be absorbed into the soil and some will be emitted to the atmosphere. The regeneration treatment recommended below for these stands will prevent some of these carbon emissions by turning this wood into durable wood products. The treatment would decrease on-site carbon storage and sequestration rates (nominally, as most of the live trees cut will be suppressed midstory trees with very small crowns) but lead to high sequestration and storage rates in the future. The oldfield cedar stand is also at a pivot point. If it is left alone, its sequestration rate will continue to increase as the hardwood poles' canopies expand, and the long term storage potential will be great. If the hardwoods are removed in favor of the cedars, the sequestration rate will likely remain static, and long term storage potential will be much less, as these types of cedars are relatively short lived.

Recommendations

Hire consulting forester to write forest management plan

Wetland crossing

- Discuss ideas with wetlands agent in town

Regeneration treatment

- Areas with >50% overstory mortality
- Cut all stems 2 inches and above
 - Except for live oaks and hickories
 - Leave these, at least 50 ft spacing

Hazard tree mitigation

- Cut down all dead oaks
- Only necessary within 100 ft of any planned recreation areas
- Just need to get trees on the ground
 - Can remove/sell any material if desired/able
 - Some of the oak logs may still be valuable
- Can do this as part of timber harvest listed above

Treat invasive species

- Mechanical and chemical treatments in upland areas
- Mechanical treatments in wetlands

Maintain oldfield cedar stand

- Cut all trees that are competing with cedars

Restore oak hickory savannah

- Identify largest, healthiest oaks and hickories
 - Spacing = 3x average tree height
- Cut all other stems 2 inches and above
- Remove understory leaves
 - Prescribed fire
 - Leaf blower

Aspen stand

- Clearcut entire stand
 - All stems 2 inches and above
- Except for red pine
- Aspen will sprout back vigorously
- Only recommended if wildlife habitat is a priority