



## New Jersey Audubon

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March 16, 2023

Closter Nature Center  
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Closter, NJ 07624

Greetings Mary,

It was a pleasure meeting with you and Closter Nature Center Staff, committee members, and volunteers earlier this year. I appreciate everyone taking the time to show me the current conditions of the forest and some of the challenges you are facing as you move forward with stewardship activities on the property.

After observing the current forest conditions at CNC, reviewing your Forest Stewardship Plan (FSP), and reviewing the study conducted by Jay Kelly, my overall recommendation for the site is to continue a focused implementation of the Forest Stewardship Plan as provided by New Jersey Audubon in 2017. As outlined throughout the plan, the prescriptions provided within it are meant to be adaptive to changing site conditions while following general guiding principles of forest management that include: deer management, invasive species control, reforestation efforts, and selective Forest Stand Improvement practices. These activities should be prioritized in the order listed above and I have provided additional recommendations upon each below. It is worth noting that the descriptions of activities described below are expanded upon in the original FSP and are still valid approaches to forest management on the property.

As discussed extensively in-person during our meeting, successful forest management is contingent upon the exclusion of deer from desirable management areas. Since hunting or culling of the deer population on the property and surrounding area is unlikely to any significant degree, individual plant protection and small-acreage deer exclosures are the most viable of options to protecting areas where tree and plant establishment will be conducted. CNC staff expressed concerns of the durability and on-going maintenance of the existing deer fencing located in different portions of the property. If the current deer fencing is deemed ineffective, the remaining options to alleviate deer browse (in relation to short term stewardship activities) include the following:

- 1.) Upgrading current fencing to a woven, galvanized strand wire fence that is more durable and may withstand impacts from sprinting deer or falling limbs. This type of fencing would be semi-permanent until understory conditions within the exclosure reach a point of maturity that are above browse-height (~5'). This is the most expensive option but affords the greatest protection of small acreage areas.
- 2.) Utilizing individual protection of desirable regrowth and planted vegetation. As described within the CNC FSP, individual tree tubes or wire caging is an effective means of deterring deer

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browse on individual stems until the plant has reached a point that it is above browse height. Larger diameter, wire fence cages are already being utilized on some trees on the property and have shown to be effective to date, making these a viable option. However, this technique is slightly more labor intensive and costly on larger scale reforestation efforts. Wire caging with smaller openings between the wiring is recommended as deer may still force their snout through a larger opening to browse plants.

- 3.) Protecting desirable clusters of plants is a viable option for repurposing existing plastic fencing, allowing for the creation of smaller deer exclosures around existing regeneration and/or planting efforts. Creating selective, small deer exclosures in the range of ¼-1 acre in size allows for **targeted** protection of a greater number of plants with less linear footage of fencing than individual cages. By breaking up the deer exclosures into numerous, smaller areas, if one fence is compromised by physical deer impacts, storm damage, or falling limbs, other areas will remain intact. Use of fencing in this manner requires a minimum height of 7-8 feet to discourage deer from jumping over the fence.

Invasive plants species are extensively discussed within the CNC FSP and all prescriptions and recommendations outlined within that document are still currently relevant. CNC staff discussed efforts to begin mitigation of invasive plants on the property and it is strongly recommended to continue ongoing invasive species management utilizing best practices for each plant. The most effective and efficient manner of controlling invasive plant species is through the use of herbicides as mechanical cutting and hand-pulling are not always effective (regrowth is common) and time-consuming. Since overall invasive species cover is relatively low for a site of this nature, small, targeted applications of herbicide through various methods would be extremely effective and worthwhile. Wetland approved chemicals are available for applications in ecologically sensitive areas and the use of low-impact treatment methods (such as cut-stump or basal-bark applications) can help further reduce the amount of chemical used. All appropriate application methods for this site are outlined further within the FSP.

Reforestation efforts were identified as a primary goal for the nature center in the upcoming years and the recent decline of ash and American beech on the property has expedited the need for these activities. The success of reforestation efforts on this property are contingent upon successful exclusion of deer herbivory, reduction of undesirable vegetative competition, and **adequate available light conditions**. As identified by CNC, an area in the western section of the property (known as Stand 2 within the CNC FSP and referenced as such throughout the rest of this report) is a preferred portion of the preserve to focus reforestation efforts. The area known as Stand 2 contains a more diverse overstory yet a much less diverse understory and regeneration layer which will benefit from planting efforts. Since the stand contains mature, desirable species of trees in the overstory (such as red oak and blackgum) that are capable of producing mast and providing some limited source of seeds, fostering some natural regeneration may be possible with increased light conditions. Additionally, Stand 2 is easily accessible from roadways, bordering properties, and a trail system, allowing staff and volunteers to access project areas easily.

Within Stand 2, a concentrated area of American beech has been identified with Beech leaf disease and is expected to experience mortality in the upcoming years. This loss of tree cover may provide ample light penetration to the forest floor allowing for some natural regeneration to occur and planted seedlings to establish and grow (contingent on protection from deer browse). Areas that are exposed to increased light conditions provide a good starting point for reforestation efforts. As noted in the FSP,

larger growing stock of seedlings (potted or whips) are recommended but may be limited to fewer species than tubeling stock carried by certain nurseries. A major objective and goal for the property, and this stand in particular, is to increase the diversity of tree species represented in all layers of the forest. If left untouched, this stand is projected to transition to limited shade-tolerant species dominating the overstory, primarily red maple. The expected loss of American beech in this portion of the property may provide enough future light conditions in which the next cohort of trees can become established through reforestation efforts and the monitoring of any naturally occurring regeneration. The following tree species are recommended to be planted and protected in areas where canopy openings have occurred or are expected to occur in the near future:

- Pin oak (*Quercus palustris*)
- Swamp white oak (*Quercus bicolor*)
- Blackgum (*Nyssa sylvatica*)
- American sycamore (*Platanus occidentalis*)
- Black cherry (*Prunus serotina*) – in slightly drier areas
- Northern red oak (*Prunus rubra*) - in slightly drier areas
- Hickory *spp.*

It is worth restating the importance of light availability at the ground level for the above species to grow vigorously enough to become well-established saplings, securing their place within the next cohort of trees as the existing canopy trees age-out or suffer mortality due to pest, disease, or storm impacts. As reforestation efforts are successful within Stand 2 and expand beyond the footprint of the declining beech, it is recommended to evaluate canopy conditions in areas where little to no canopy mortality is anticipated in the short term and identify less desirable tree species that should be culled through Forest Stand Improvement activities. Under the current conditions, it will be beneficial to cull weakened, diseased, or suppressed trees, predominantly those that are shade-intolerant such as red maple and birch.

The above information outlines specific areas and practices to begin reforestation efforts at CNC, all of which have been derived from information and data collected during the inventory process prior to the creation of CNC's Forest Stewardship Plan and more recent on-site inspections and monitoring. It is always worth emphasizing that successful forest management is the ongoing practice of adaptable and flexible stewardship practices that requires frequent observation and response to changing conditions. Maximizing available growing space to establish and perpetuate a diverse forest type will help Closter Nature Center's forest remain more sustainable and resilient as we face uncertain times as land managers.

Please feel free to reach out to me with any additional questions or clarifications.

Best,



Ryan Hasko  
Stewardship Project Director  
New Jersey Audubon