

Afforestation

Converting a farm field to forest



Project Goal

To establish a forest habitat on 20 acres of former agricultural fields at Binky Lee Preserve to enhance wildlife values and protect slopes from erosion.

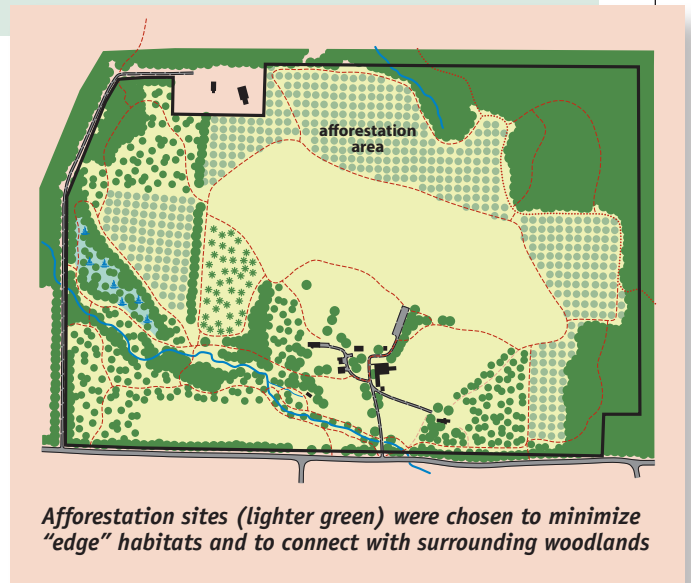
Site

Binky Lee Preserve, owned by Natural Lands Trust West Pikeland Township, Chester County, PA

Site History and Installation

The fields at Binky Lee were planted in row crops until Natural Lands Trust (NLT) acquired the property in 1989. NLT initially converted the fields to hay agriculture, but by the spring of 1992, the Trust decided to re-establish forests and meadows on the preserve to diversify the habitat available for wildlife and protect slopes from erosion. By designing our restoration to connect the 20 acres of newly forested areas to existing neighboring forests, we minimized potential “edge” effects. The interface between fields and forests, known as “edge” habitat, often encourages invasive plant species and attracts common or generalist animals such as white-tailed deer, raccoons or cowbirds. Many of our forest interior species (wood thrushes, ovenbirds) are suffering declines as our increasingly fragmented landscape favors species better adapted to live in these edge habitats.

NLT staff planted 10,000 seedlings (18”–24”) of white and green ash, red and white oak, sugar maple, white pine, and tulip trees in rows with 10-foot spacing. Five-foot tall tree shelters were



Afforestation sites (lighter green) were chosen to minimize “edge” habitats and to connect with surrounding woodlands

installed around half of the planted seedlings and propped up using wooden stakes. Tree shelters protect seedlings from deer browse and create a greenhouse environment that provides optimal growing conditions for young trees.

Maintenance and Monitoring

After seedlings were planted, the site was maintained to encourage tree growth and to control competition from invasive species and grasses. For 5–8 years, NLT staff mowed areas between the shelters in the late spring and fall. Herbicide (glyphosate) was also sprayed within 2’–3’ of the



Darin Groff

saplings (tree shelters protected the planted trees from herbicide exposure) once or twice each year to limit weedy competition. After 8 years, the trees were large enough for shelters to be sliced and removed. We continue to monitor competition near the growing trees and occasionally spot spray with herbicide to control undesirable species.

Results and Lessons Learned

- 95% of seedlings growing inside tree shelters survived in the Binky Lee afforestation project. Seedlings planted without protection from shelters did not survive due to the high intensity of deer browsing at the preserve. NLT now uses tree shelters to protect all planted seedlings in our afforestation projects.
- NLT is in the process of planting native understory and shrub species in the Binky Lee afforestation area to diversify forest structure below the canopy and to enhance wildlife benefits. Understory trees (protected with tree shelters) include dogwood, hornbeam, and redbud and shrubs include nannyberry and arrowwood.
- To ensure continued success of afforestation projects and to promote regeneration



1992



1997



2007

Darin Groff (top, middle), Andrea Stevens (bottom)

and survival of native herbaceous forest species, NLT has instituted a deer management program (regulated hunting) at 14 of its preserves that focuses on reducing deer populations to a level that will sustain healthy forests.

Estimated Project Cost

Installation Cost:

~\$32,000, including cost of trees, tree shelters with stakes, but excluding labor costs. This cost will vary depending on availability and source of trees.

Yearly Maintenance Cost:

\$500–\$2,000, including cost of herbicide and labor for mowing and herbicide treatment. The early establishment phase of the project may require higher maintenance costs.

Funding

This project was funded in part by the USDA Conservation Reserve Program, a 10-year lease agreement that removes highly erodible soils from agricultural production. The Program provides up to 50% cost-share assistance to implement approved conservation practices (e.g. tree plantings) on retired fields.

Case studies describe stewardship projects completed by Natural Lands Trust in its 50-year history of managing natural areas. We hope these case studies inspire landowners to consider opportunities for land stewardship on their own properties.

The Center for Conservation Landowners was established to share Natural Lands Trust's knowledge and experience in land stewardship by offering educational outreach and consulting services to landowners.

For more information, contact:

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