

**Enhancing Avian Habitat by Developing Structural Diversity Through Native Shrub  
Installation in a Recently Restored Oak Woodland**

**Final Report**

**Submitted in Fulfillment of Requirements of:  
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## **Introduction**

A majority of the woodlands in northeastern woodlands are in various stages of degradation due to fragmentation, fire exclusion, and invasion by a variety of exotic shrub species. Invasion by non-native woody and herbaceous species has led to well-documented declines in floral diversity and loss of a number of ecosystem functions. More recently, researchers have noted several possible negative impacts of exotic shrub invasion on avian communities including increased susceptibility to nest predation, creation of “sink” populations, and possible loss of fitness due to nutritional deficiencies in the fruit of these species. These impacts have led to a widespread effort to remove non-native shrubs from woodlands throughout the region. However, this has led to woodlands devoid of any midstory structural diversity. Structural diversity has been shown to be an important determinant of avian diversity in a variety of ecosystems. Additionally, the establishment of native shrubs may help to create a competitive dynamic that limits the regeneration of non-native species.

Hannaford Woods contains approximately 30 acres of recently restored oak woodlands. Restoration treatments have focused primarily on removal of non-native shrubs (primarily *Lonicera* and *Rhamnus* spp.) from the mid- and understory, as well as thinning of native hardwoods (primarily *Prunus serotina* and *Ulmus americana*) from the canopy. Songbird monitoring within these woodlands has been conducted as a part of the Bird Conservation Network regional monitoring program for three years. This project will provide the opportunity to enhance avian habitat, document that enhancement’s effects, and possibly provide additional stability to a recently restored woodland. On 31 August 2009, the Forest Preserve District of Kane County (“District”) and the Illinois Department of Natural Resources entered a grant agreement through the Illinois Wildlife Preservation Fund (IWPF) to allow for the purchase of 125 native shrubs to begin the process of establishing species and structural diversity. Under the IWPF, the District was awarded \$2000 to offset costs of purchasing and installing these shrubs.

## **Project Area**

Hannaford Woods/Nickels Farm Forest Preserve (Sugar Grove, IL): Originally purchased in 1992, Hannaford Woods is a part of the Bliss Woods assemblage in Sugar Grove, parts of which are dedicated as Illinois State Nature Preserve. The majority of intact woodlands on the property were recently the subject of a large-scale restoration treatment aimed at removing invasive species, enhancing oak recruitment, and re-introducing a natural fire regime. Bird Conservation Network monitoring stations were also installed throughout the Preserve following the first year of restoration.

## **Primary Objective**

The primary objective of the project is to establish several species of native shrub (totaling approximately 125 individuals) to increase floral diversity and provide structural diversity for local avifauna within the under- and midstory of a recently restored woodland.

## **Methods**

A total of 125 shrubs (5-gallon size) were obtained from Possibility Place Nursery (Monee, IL) and JF New (Walkerton, IN). Twenty-five individuals of *Amelanchier arborea*, *Symphoricarpos orbiculatus*, and *Viburnum prunifolium* were planted along with 30 *Viburnum lentago* and 20 *Corylus americana* were planted within the project area. Shrubs were hand-planted in species-

specific groups of 5 with a 1' minimum spacing between each individual. Each group was located in areas where previous thinning efforts had created canopy gaps providing adequate sunshine and where competition from non-native shrubs would be minimal. Each individual was watered and mulched after installation. After installation, 8 of the groups were fenced using 4' steel fence posts and 3 strands of 14 gauge steel wire. The remaining groups were encircled with Plot Saver® deer repellent ribbon and Plot Saver® deer repellent was applied. Plot Saver® was then applied once per month and will continue to be applied until successful reproduction can be documented.

### **Accomplishments**

In the first growing season following planting, 100% of the shrubs have survived with only minimal evidence of deer browse. In addition, several of the groups were noted to have flowered and will hopefully produce seed to augment the initial planting. Assuming continued success, these shrubs will be a valuable first step in developing structural heterogeneity and increasing species diversity within this restored woodland.

Due to staff changes, bird monitoring for the 2010 growing season cannot be completed. However, a monitor will be assigned for subsequent growing seasons in order to determine impacts of adding additional structure.

### Total Project Expenditure Summary

Budget Category	Project Total	Grant Funds Requested	Cost Share
Personnel	\$2427.50	\$0	\$2427.50
Travel	\$210	\$0	\$210
Equipment	\$5000	\$0	\$5000
Materials/Supplies	\$2669.85	\$2000	\$2669.85
Contractual Services	\$0	\$0	\$0
Other	\$0	\$0	\$0
<b>Total</b>	\$10,307.35	\$2000	\$8,307.35

Project expenditures for personnel (\$2427.50) were \$327.50 more than the \$2100 originally projected for the project. Similarly, the cost of materials and supplies (\$2669.85) was \$669.85 more than the initially budgeted amount of \$2000. The increased cost of personnel was due to the involvement of the District Wildlife Biologist who assisted in planting. The increased cost of materials was due primarily to a shortage of *Viburnum prunifolium* requiring us to use a different vendor than was originally intended. Travel costs (\$210) and equipment costs (\$5000) were equal to the amount originally budgeted. The Polaris Ranger used on this project was purchased previously, thus the amount reflected here is for use on this project. In total, the project cost was \$10,307, a total of \$921.35 more than initially budgeted. All cost share funds were supplied by the Forest Preserve District of Kane County. Invoices for all materials and services purchased during the timeframe of the grant agreement are attached (Attachment B). The District respectfully requests payment of \$2000 to cover a portion of the shrubs purchased to complete this project.

## Project Expenditures Summary Tables

### Personnel

Title	Hourly Rate	Hours	Total
Restoration Ecologist	\$45.00	17.5	\$787.50
Wildlife Biologist	\$45.00	6	\$270.00
Senior Restoration Technician	\$35.00	19.5	\$682.50
Restoration Technician	\$25.00	27.5	\$687.50
<b>Total</b>			\$2427.50

### Travel

Title	Hourly Rate	Hours	Total
Restoration Ecologist	\$45.00	2	\$90.00
Senior Restoration Technician	\$35.00	2	\$70.00
Restoration Technician	\$25.00	2	\$50.00
<b>Total</b>			\$210.00

### Equipment

Description	Price/Item	Quantity	Total
Polaris Ranger 6x6 ATV	\$5000.0	1	\$5000.00
<b>Total</b>			\$5000.00

### Supplies

Description	Price/Item <sup>3</sup>	Quantity	Total
Amelanchier arborea (5 gallon potted) <sup>1</sup>	\$16.00	25	\$400.00
Corylus americana (5 gallon potted) <sup>1</sup>	\$13.00	20	\$260.00
Symphoricarpos orbiculatus (5 gallon potted) <sup>1</sup>	\$13.00	25	\$325.00
Viburnum lentago (5 gallon potted) <sup>1</sup>	\$13.00	30	\$390.00
Viburnum prunifolium (5 gallon potted) <sup>2</sup>	\$30.95	25	\$773.75
Delivery <sup>1</sup>	\$227.88	1	\$227.88
Delivery <sup>2</sup>	\$125.00	1	\$125.00
PlotSaver Deer Repellant	\$37.95/qt	2	\$75.90
Galvanized Wire (14 Gauge) <sup>3</sup>	\$2.99	7	\$20.93
Galvanized Wire (14 Gauge) <sup>4</sup>	\$6.49	11	\$71.39
<b>Total</b>			\$2669.85

<sup>1</sup>Purchased from: Possibility Place: 7548 W. Monee-Manhattan Rd., Monee, IL 60449

<sup>2</sup>Purchased from: JF New: 128 Sunset Dr, Walkerton, IN 46574

<sup>3</sup>Purchased from: Menard's: 300 N. Randall Rd, Batavia, IL 60510

<sup>4</sup>Purchased from: Ace Hardware: 2144 W Galena Blvd, Aurora, IL 60506

**Attachment A:**  
**Invoices for Materials Purchased During Grant Period**

**Attachment B: Photos from Enhancing Avian Habitat by Developing Structural Diversity  
Through Native Shrub Installation in a Recently Restored Oak Woodland**



Figure 1. Restoration Technicians Pete Dall (left) and Connie Cowan (right) apply mulch to newly planted *Corylus americana*.



Figure 4. Wildlife Biologist William Graser plants *Viburnum prunifolium* at Hannaford Woods Forest Preserve.



Figure 2. Fenced planting of *Corylus americana*



Figure 5. *Viburnum lentago* in April 2010 at Hannaford Woods.



Figure 3. *Corylus americana* planting surrounded by Plot Saver® deer repellent and ribbon.





**Figure 6. *Amelanchier arborea* in June 2010 at Hannaford Woods Forest Preserve.**



**Figure 7. *Corylus americana* in June 2010 at Hannaford Woods Forest Preserve.**