Forest Beach Migratory Preserve

Habitat Restoration and Enhancement Plan

INTRODUCTION

The Great Lakes basin is the largest freshwater ecosystem in the world and provides a variety of coastal habitats required by numerous species to complete their lifecycle. Wisconsin encompasses 17,500 square miles of the watershed and approximately 600 miles of shoreline. Over twenty-five percent of Wisconsin's human population resides in the watershed, where corresponding development, disturbance, and other anthropogenic factors such as climate change threaten the existence of many coastally-oriented species.

Located in Wisconsin on the shores of Lake Michigan near the town of Belgium (Figure 1), the Forest Beach Migratory Preserve started its existence as a golf course and country club. This 116 acre tract was purchased by the Ozaukee-Washington County Land Trust (OWLT) with the intention of restoring wetlands and native plant communities that will help protect Lake Michigan water quality and provide feeding habitat and refuge for native and migratory birds. The preserve is uniquely located along a vital migratory corridor, known as the Lake Michigan Flyway, which connects Canada and the Arctic Ocean to South America and is used by birds such as black-billed cuckoo, eastern meadowlark, solitary sandpiper and golden-winged warbler.

In partnership with state and local biologists, ornithologists, and restoration specialists, the OWLT and US Fish and Wildlife Service (USFWS) developed a restoration plan for Forest Beach Migratory Preserve. The plan is designed to provide a diversity of habitats of value to numerous migratory bird assemblages (see Appendix A), rather than concentrating on specific habitat needs for a single species. Based on habitat associations and conservation priorities described within the Wisconsin's Wildlife Action Plan, eight different assemblages consisting of more than 80 rare or declining bird species is expected to use habitats on the preserve during some period of their lifecycle.

PROJECT GOALS

1) Enhance the diversity and abundance of feeding and resting areas (i.e., stopover habitat) used by a myriad of migratory bird species, with an emphasis on those that are threatened, endangered, or species of concern.
2) Create and enhance landforms and vegetative characteristics that facilitate groundwater recharge and help protect water quality in Lake Michigan.
3) Plant vegetation types that will enhance carbon sequestration.
4) Provide education and outdoor recreation opportunities to increase awareness and appreciation for migratory birds and natural resource conservation.

PROJECT DESIGN

Nine habitat types are planned to be created or enhanced on the site (Figure 2). The Oak Savanna and Grassland habitats will be planted to native grasses and forbs, requiring herbicide treatment of these entire areas prior to planting. The first herbicide treatment of these areas is proposed for fall 2009, with an additional application in spring of 2010, prior to planting. All trees will be removed in those areas designated for open habitat types, such as Grassland and the group of wetland basins in the north part of the property, west of the existing forest. Most other trees will be allowed to remain for the habitat values they currently provide, with the exception of seed-bearing ash trees, which will be targeted for immediate removal to minimize future management problems. Wetland basin creation and enhancement will entail significant earth work, and is proposed to be completed by early fall of 2009. Herptile rescues and transplantation activities will occur prior to wetland excavation activities. Planting of trees, shrubs, and herbaceous species in most of the habitat areas will begin in spring 2010. Bird and herptile monitoring and survey work will be completed by local volunteers and will continue throughout the restoration process. When restoration is complete, the habitats at the site will represent a significant amount of critical migratory stopover habitat within a major migratory corridor. These habitats may be expected to make a significant contribution to the conservation of numerous migratory bird species.

Mixed Hardwood Forest - 32 acres

Future Desired Condition: A diverse closed-canopy deciduous upland forest providing dense cover and food sources for numerous forest bird species.

Current Status: The majority of the area is currently in cool-season grasses with scattered ash and spruce trees, with two smaller forest blocks already present.

Steps Required to Reach Desired Condition: Planting of a diverse assemblage of native trees and shrubs, to encourage rapid conversion to forest habitat. Spot herbicide treatment at individual planting sites. Introduction of forest herbs is desirable, but should be delayed until partial canopy coverage is attained.

Summary Description: This habitat will expand the two existing woodland blocks located in the northwest and southeast corners of this area, which currently total approximately 7 ½ acres. A diversity of native trees and shrubs will be planted throughout the delineated area, consisting of a mix of species appropriate for this community type. Major tree species will include red oak, white oak, yellow-bud hickory, basswood, sugar maple, black cherry, and beech. Additional shrub or small tree species will include service berry, round-leaved dogwood, pagoda dogwood, and blue beech. Existing trees within this area, consisting of mostly ash and spruce, will be left in place. Trees and shrubs will be planted at appropriate intervals, and the current grass sod would remain except for local treatment with herbicide at each planting location. Introduction of additional herbaceous plant species should probably be deferred to some future date when canopy closure is relatively complete.

Oak Savannah - 12 acres

Future Desired Condition: Scattered oaks, hickories and hackberries set in a matrix of warm-season grasses and seed-producing forbs.

Current Status: This area is currently dominated by cool-season grasses with scattered ash and spruce trees.

Steps Required to Reach Desired Condition: Removal of most trees, including all seed-bearing ash trees. Treat entire area with multiple herbicide treatments to remove the exotic grasses, and then plant with desired seed mixture, followed by trees and shrubs. Additional management through mowing and/or burning required during early establishment period.

Summary Description: This area will consist of consist of various oaks, hickories and hackberry, in a matrix of native shrubs, forbs and grasses. Shrubs and forbs will include a diversity of species whose seeds are of high value to seed-eating bird species. Many existing trees will be removed, with some trees retained to take advantage of the habitat values they currently provide. The entire site will be prepared through herbicide treatment, and then planted to a mixture of native grasses and forbs. Trees will be planted following establishment of the understory community.

Shrubland - 19 acres

Future Desired Condition: A heterogeneous mixture of dense patches of shrubs interspersed with grassy openings, to provide both food and cover for numerous migrating bird species.

Current Status: Currently in cool-season grasses with scattered ash and spruce trees.

Steps Required to Reach Desired Condition: Herbicide treatment in patches where shrubs would be planted, with some smaller patches planted to a mixture of grasses and forbs.

Summary Description: This area will be planted to a diversity of shrubs of high value to birds. Shrubs will be planted in dense patches with scattered openings and meandering margins producing a high edge ratio. Some patches will be located in close proximity to wetland basins to provide cover adjacent to aquatic insect food sources. At least some of the remaining open areas will be planted to various sedge/grass/forb mixtures appropriate for the site. Removal of all seed-bearing ash trees will be critical to minimize future tree invasion. Herbicide will be applied only in those selected areas proposed for shrubs and herbaceous species.

Conifer Area - 10 acres

Future Desired Condition: A mostly dense stand of native conifers providing resting and escape cover for migrant birds, and a food source for migrant and winter finches.

Current Status: Scattered fairly large spruce trees at varying densities, within a matrix of cool-season grasses.

Steps Required to Reach Desired Condition: Spot herbicide treatment at planting sites, and planting of additional conifers to fill existing gaps.

Summary Description: This habitat will consist of a mix of native conifers, with emphasis on species of highest food value, such as white spruce and red cedar. The largest patch of this habitat occurs in the northwest part of the property, where many large spruce already occur, and trees would be added to fill in existing gaps. At least five other smaller patches of conifers will also be retained, with selected additional plantings to fill existing gaps. Trees will be planted at sufficient intervals to allow for future growth (10+m), and the current grass sod will remain except for local treatment with herbicide at each planting location.

Grassland - 22 acres

Future Desired Condition: Open grassland consisting of a diverse mixture of warm-season grasses and seed-producing forbs.

Current Status: This area is currently dominated by cool-season grasses with scattered ash and spruce trees.

Steps Required to Reach Desired Condition: Remove all trees and treat entire area with multiple herbicide treatments to remove the exotic grasses, and then plant with desired seed mixture. Additional management through mowing and/or burning required during early establishment period.

Summary Description: This habitat area will consist of a mix of native grasses and forbs, with emphasis on seed-producing plants of high value to birds. The two areas selected for this habitat are located to facilitate management with fire and their current low density of trees. These entire areas will be treated with herbicides to remove the current exotic grasses, treated again in spring of 2010, and then planted in early summer 2010.

Savanna -17 acres

Future Desired Condition: A heterogeneous mixture of scattered trees interspersed with patches of shrubs and grassy openings with diverse forbs.

Current Status: Currently in cool-season grasses with scattered ash and spruce trees.

Steps Required to Reach Desired Condition: Herbicide treatment in patches where trees and shrubs are to be planted, with some smaller patches planted to a mixture of grasses and forbs.

Summary Description: This area has numerous scattered trees, most of which will remain with the exception of seed-bearing ash trees. Additional trees of high value to wildlife such as oaks, hickories, hackberries and cherries will be planted throughout this area, with scattered plantings of grasses, forbs, and shrubs. Selected seed-bearing ash trees will be removed to minimize future invasion of seedlings and saplings. Herbicide treatment would be used only in selected areas, with the majority allowed to succeed to a mix of forbs, shrubs and trees. The introduction of a diversity of native species in spots throughout this area will provide a seed source for the future spread of these species.

Wetland Habitats - 16 acres

Future Desired Condition: A number of wetland basins of various sizes and depths, offering a diversity of different habitat types for use by a wide array of bird species. All wetlands managed to prevent excessive invasion by shrubs and trees. Selected basins managed to provide seasonal mudflat conditions for use by migrating shorebirds and other waterbirds.

Current Status: Wetland basin sites for creation or enhancement occur throughout the property, and are mostly characterized by cool-season grasses with scattered ash and spruce trees.

Steps Required to Reach Desired Condition: Various scrapes and berms constructed to capture local surface runoff, with control structures to allow for water level management. Herbicide treatment may be necessary to assist desired plant establishment.

Summary Description: There are currently 6 separate small water bodies present on the property, of varying sizes and depths. These existing areas will all be enhanced through various means, and an additional 21 basins will be created through the strategic placement of scrapes and berms. These wetland areas are located throughout the site, with the greatest number occurring in open Grassland or Mowed habitats. At least some of these will flood an area to a sufficient depth to manage vegetation, allowing for drawdowns to expose mudflats for shorebird use. Areas in and around some basins will be planted with wetland plant species appropriate for the expected hydrologic regime and adjacent habitat types. In the absence of active management, all wetland basins will eventually progress to a mix of cattails, open water and shrubs.

<u>Mowed Cool Season Grasses</u> - 10 acres

Future Desired Condition: An open, closely mowed field for use by grassland and shorebird species that prefer such areas.

Current Status: Currently in cool-season grasses with few trees.

Steps Required to Reach Desired Condition: No specific treatment is required, other than initiation of a regular mowing regime to maintain in the desired condition.

Summary Description: This area is proposed to be retained in its current state, consisting of a continuous sod of cool-season grasses. Proposed management of this area will consist of periodic mowing to keep the vegetation short. This will make the site attractive to species that prefer these habitats, such as buff-breasted sandpiper and American golden plover. Several wetland basins within this area will be designed to allow capture and impoundment of surface runoff, but generally would be allowed to drain in late spring sufficiently to facilitate mowing during the growing season.

<u>Old Field</u> - 1 acre

Future Desired Condition: A diverse mixture of native and exotic grasses and forbs, to provide both food and cover for numerous migrating bird species.

Current Status: The area is currently consists of a mixture of cool-season grasses with scattered native and exotic forbs.

Steps Required to Reach Desired Condition: No treatment necessary, except for future management in conjunction with adjacent Grassland area.

Summary Description: This habitat area is located in the southwest corner of the property and consists of a mixture of native and exotic grasses and forbs. This area will be allowed to remain in its current state for the habitat values it currently provides, and is proposed to be managed with prescribed similar to the adjacent Grassland habitat.

PUBLIC USE AND EDUCATION

The location of the preserve in relation to Lake Michigan shoreline and its proximity to major population centers offers a unique opportunity for education and outdoor recreation. Forest Beach Migratory Preserve will likely to become a major Wisconsin birding destination, and will also be highly attractive to numerous other nature enthusiasts. Consequently, a trail system that leads users through the variety of planned habitats will be designed and constructed. Biologists and educators will work together to develop interpretative signs that describe each habitat type, highlight bird species likely seen in the habitat, and present bird life history information that explores habitat linkages and species needs. Viewing platforms will be constructed to provide views and guide visitors to best viewing opportunities, and develop venues for public education.

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APPENDIX A

Based on the Wisconsin Wildlife Action Plan, the following bird assemblages and species are expected to benefit from restoration and enhancement activities planned on the Forest Beach Migratory Preserve.

A) Species associated with small shallow or deep marshes, related wetlands, and on mudflats.

1) American Bittern
2) American Golden Plover
3) Bald Eagle
4) Black Tern
5) Blue-winged Teal
6) Buff-breasted Sandpiper
7) Canvasback
8) Dunlin
9) Forster's Tern
10) Great Egret
11) Hudsonian Godwit
12) King Rail
13) Lesser Scaup
14) Marbled Godwit
15) Rusty Blackbird
16) Short-billed Dowitcher
17) Solitary Sandpiper
18) Wilson's Phalarope

B) Species associated with lowland or upland shrub carr around wetlands.

1) American Woodcock
2) Black-billed Cuckoo
3) Yellow-billed Cuckoo
4) Blue-winged Warbler
5) Golden-winged Warbler
6) Rusty Blackbird
7) Short-eared Owl
8) Veery
9) Willow Flycatcher

C) Species associated with southern mesic forest.

1) Acadian Flycatcher
2) Blue-winged Warbler
3) Cerulean Warbler
4) Hooded Warbler
5) Red-headed Woodpecker
6) Veery
7) Whip-poor-will
8) Wood Thrush
9) Yellow-billed Cuckoo

D) Species associated with southern sedge meadow.

1) American Bittern
2) Blue-winged Teal
3) Bobolink
4) Eastern Meadowlark
5) Northern Harrier
6) Short-eared Owl
7) Willow Flycatcher

Species associated with surrogate grasslands.

1) American Golden Plover
2) Blue-winged Teal
3) Bobolink
4) Brown Thrasher
5) Buff-breasted Sandpiper
6) Dickcissel
7) Eastern Meadowlark
8) Field Sparrow
9) Grasshopper Sparrow
10) Henslow's Sparrow
11) Loggerhead Shrike
12) Marbled Godwit
13) Northern Harrier
14) Sedge Wren
15) Short-eared Owl
16) Upland Sandpiper
17) Western Meadowlark
18) Willow Flycatcher

E) Species associated with edge habitats, such as the edge of lowland shrub carr and the shrub-dominated edges of woodlands.

1) Blackburnian Warbler
2) Black-throated Blue Warbler
3) Black-throated Green Warbler
4) Blue-winged Warbler
5) Olive-sided Flycatcher
6) Yellow-bellied Sapsucker
7) Chestnut-sided Warbler
8) Clay-colored Sparrow
9) Connecticut Warbler
10) Rose-breasted Grosbeak
11) Eastern Kingbird
12) White-throated Sparrow
13) Golden-crowned Kinglet
14) Golden-winged Warbler
15) Le Conte's Sparrow
16) Yellow-throated Vireo
17) Lincoln's Sparrow
18) Magnolia Warbler
19) Marsh Wren
20) Mourning Warbler
21) Nashville Warbler
22) Northern Flicker
23) Bobolink
24) Purple Finch
25) Dickcissel
26) Swamp Sparrow
27) Warbling Vireo
28) Field Sparrow
29) Willow Flycatcher
30) Wood Thrush
31) Canada Warbler
32) Least Flycatcher

G) Aerial forager species that feed over open grasslands and wetlands.

1) Northern Rough-winged Swallow
2) Bank Swallow
3) Barn Swallow

H) Raptors

1) Broad-winged Hawk
2) Merlin
3) Red-shouldered Hawk
4) Northern Harrier
5) Peregrine Falcon
6) Northern Goshawk