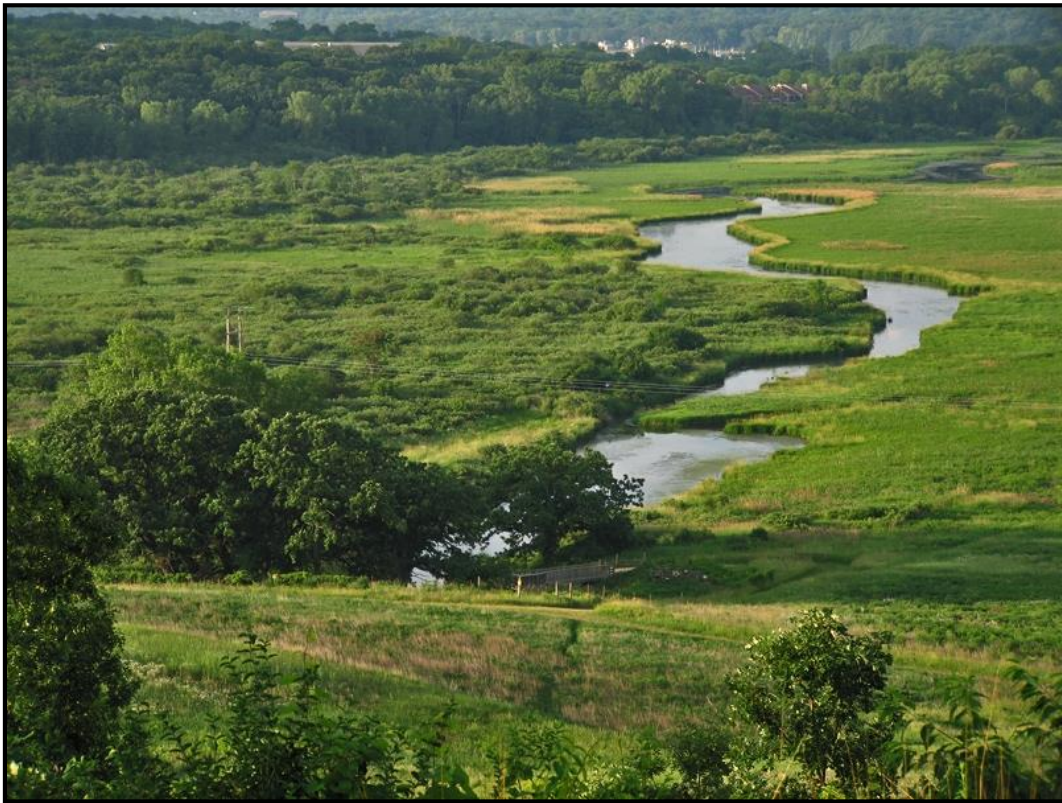


ACEI-114-12

Project Completion Report

“Aquatic Invasive Species Abatement and Wetland Enhancement at
Pheasant Branch Conservancy, Dane County Section”
(Project Duration: 1 July 2012 – 30 June 2015)

Funded through the DNR Aquatic Invasive Species Grants Program



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Overall Project Goals:

1. Restore remnant wetland plant communities to a reasonable facsimile of their presettlement condition (given the constraints of hydrological modifications that have occurred in this watershed since European settlement) to enhance the biological composition and ecological functioning of the Conservancy's wetland communities.
2. Enhance the Conservancy's aesthetic appeal, prevent or minimize the spread of AIS propagules throughout the lower Pheasant Branch Watershed and Lake Mendota system, and maximize the Conservancy's potential for contributing ecosystem services to the greater Madison metropolitan area.

Specific Project Objectives:

1. Thin red-osier and grey dogwood by 75 – 80% to maintain the open character of the herbaceous marsh complex, facilitate management with periodic prescribed fire, and mitigate a disturbance factor that is contributing to aquatic invasive species encroachments.
2. Reintroduce periodic prescribed fire regimes to the proposed project area.
3. Suppress or eradicate populations of high-impact aquatic invasive species, including reed canarygrass, watercress, *Phragmites*, hybrid and narrow-leaved cattail that threaten the biological and ecological integrity of the proposed project area.
4. Enhance sediment and nutrient capture and retention capacity of the retention ponds by establishing a diverse mixture of nutrient-absorbing native species in their basins.
5. Reestablish native vegetation into open niche space created by aquatic invasive species suppression to restore functional and compositional integrity to the proposed project area and resist future aquatic species invasions.
6. Restore prairie and sedge meadow plant communities into buffer zones to connect adjacent vegetation communities along a wetland to upland continuum and maximize habitat diversity.
7. Establish and maintain habitat structural elements (minor non-invasive shrub component, basking logs, and bird perches) to benefit wildlife.
8. Enhance habitat quality of remnant sedge meadow and associated wetland communities to increase the distribution and abundance of species of conservation concern and maintain these populations in a favorable conservation status (viable population sizes, metapopulations, and sufficient intraspecific genetic variability to avoid genetic bottlenecks).
9. Provide wetland resources for the general public to experience, enjoy, and learn from, as well as provide high-quality habitat for public recreation and education.

Management Activities (2012 – winter 2013)

APM Permit Number: 2008 PERMIT #SCR-12-13-09 (issued 28 March 2012)

(APM Herbicide Treatment Record Submitted 31 July 2012)

Management activities conducted during the time period consisted of 1) mowing and removing clippings of reed canarygrass within the Frederick Springs area, 2) treatment of the western *Phragmites* satellite population, 3) treatment of scattered *Typha angustifolia* and *T. x glauca* individuals within the ditch fill area, 4) scouting for additional aquatic invasive species throughout the Dane County Section of the Pheasant Branch Conservancy, and 5) removal of trees and shrubs from the sedge meadow remnant at PBC. Additional management activities were also carried out by FOPB volunteers during this time period.

Summary of Reed Canarygrass Suppression Activities in 2012

Reed Canarygrass rooted within Frederick Springs was mowed on 23 May 2012. Clippings were removed to facilitate light penetration to the soil/sediment surface and encourage germination and growth of native sedges and forbs occurring in this area. Herbicides were not applied to this area in 2012.

Summary of *Phragmites* Suppression Activities in 2012

The westernmost *Phragmites* clone was mowed to a stubble height of approximately ten inches (ca. 25 cm) on 25 June 2012. *Phragmites* regrowth was treated with a mixture of 1.15% (a.i.) imazapyr with 4% (v/v) Induce pH sticking additive and 2% (v/v) MSO-NIS on 11 July 2012. Mix water was enhanced with 0.25% (v/v) water conditioning agent to stabilize hard water cations and enhance herbicidal activity. It was observed that regrowth was minimal, possibly owing to the severe drought during the 2012 growing season, which is why only the westernmost clone was targeted in 2012.

Summary of Cattails Suppression Activities in 2012

Narrow-leaved and hybrid cattail individuals occurring within the ditch fill area were scouted and clipped to a height of approximately 10 cm from the plant/soil interface, and then treated with a mixture of 3.85% (a.i.) imazapyr and 5% (v/v) Induce pH sticking additive on 11 July 2012. Mix water was enhanced with 0.25% (v/v) water conditioning agent to stabilize hard water cations and enhance herbicidal activity.

Scouting in 2012

Scouting for additional aquatic invasive species took place 1 July through 16 November 2012. FOPB volunteer (and AIS project volunteer leader) Tom Klein discovered one small patch of *Lythrum salicaria* (purple loosestrife) and provided GPS coordinates to contractors for eradication during the 2013 growing season.

Tree and shrub removal

Tree and shrub removal began on 4 January 2013 and continued through mid-February. Contractors thinned red osier dogwood and removed buckthorn, honeysuckle, box elder, and black willow from approximately four acres of the project area during this time period. Cut stumps were treated with a mixture of 22% (a.i.) water-soluble

triclopyr and freezing point depressor. Tree and brush slash was piled and most piles were burned when there was adequate snow cover on the ground and pending permission from the local fire warden. A couple of brush piles were retained to provide habitat structural elements for wildlife (mice and voles).



**(Left) Contractors clear trees and shrubs from the sedge meadow remnant.
(Right) *Lythrum salicaria*.**

Management Activities (1 May 2013 through 1 March 2014)

APM Permit Number: SC-2013-13-454 (issued 13 May 2013)

(APM Herbicide Treatment Record Submitted 2 August 2013)

Management activities conducted during the time period consisted of 1) reed canarygrass scouting and suppression within the sedge meadow remnant, 2) scouting for the presence of additional aquatic invasive species throughout the Dane County Section of the Pheasant Branch Conservancy, and 3) removal of trees and shrubs from the sedge meadow remnant. Additional management activities were also carried out by Tom Klein and Friends of Pheasant Branch volunteers during this time period.

Summary of Reed Canarygrass Suppression Activities in 2013

North of the ditch fill topographical depression, reed canarygrass was limited in distribution to small clones widely scattered throughout the sedge meadow. Larger clones and patches of reed canarygrass occurred within the ditch fill zone itself. South of the ditch fill, reed canarygrass was distributed in large patches within the flood

margins of Pheasant Branch Creek and its tributaries. Standing water was present throughout the project area from late winter (snowmelt) through early spring 2013; as a consequence, reed canarygrass suppression efforts were postponed until the water receded. The area to the north of the ditch fill depression was scouted and spot treated with 0.5% clethodim on 31 May 2013 (Figure 1). Standing water had completely withdrew from the project area within and south of the ditch fill by early June, and reed canarygrass suppression treatments were resumed on 13 June 2013.



Figure 1: Reed canarygrass clones (foreground, necrotic brown) were scattered north of the ditch fill.

Subsequent post-treatment monitoring conducted in early August 2013 revealed that some of the treated clones had resprouted (Figure 2). Based on our experience and research, we anticipated that some degree of post-treatment resurgence would occur, especially considering that this was the initial suppression effort and reed canarygrass eradication requires follow up suppression efforts for several consecutive growing seasons to diminish the seed bank and dormant rhizome bud bank (refer to Annen (2008) and Annen (2010) for the physiological mechanism that underpins reed canarygrass resurgence capacity). The project area will be scouted and spot sprayed for reed canarygrass again during the 2014 growing season.



Figure 2: Post-treatment resurgence of reed canarygrass. Note how sedges and forbs (background) are invading this clone.

Summary of Phragmites and Typha Suppression Activities 2013

Clones of *Phragmites* that were mowed and treated with imazapyr during the 2012 growing season exhibited only minimal resurgence (less than four live culms per clone) in 2013. Scattered individuals of *Typha x glauca* (hybrid cattail) that were treated in 2012 appeared to have been eradicated, as none were observed within the project area in 2013. *Typha angustifolia* (narrow-leaved cattail) has expanded from the confines of the ditch fill area into the sedge meadow remnant to the north and south of the ditch fill (Figure 3). However, this species was distributed among dense stands of black willow, box elder, and grey dogwood, which would have made thorough treatment difficult. We opted to hold off on narrow-leaved cattail suppression until the ditch fill area could be cleared of trees and shrubs (which was completed during the winter of 2013-2014). *Typha angustifolia* suppression efforts will resume during the 2014 growing season.



Figure 3: *Typha angustifolia* is beginning to spread into the sedge meadow remnant.

Scouting for Additional Aquatic Invasive Species in 2013

Scouting for additional aquatic invasive species took place during the first week of August 2013. Contractors discovered a single individual of *Lythrum salicaria* (purple loosestrife) at N 43° 07.253' W 089° 29.350'. Contractors and FOPB volunteer (and AIS project volunteer leader) Tom Klein independently discovered a new *Phragmites* clone at N 43° 07.198' W 089° 29.133'. These pioneer clones will be eradicated during the 2014 growing season. Contractors searched for but did not observe any individuals of *Glyceria maxima* (tall manna grass), *Butomis umbellatus* (flowering rush), *Eichhornia crassipes* (water hyacinth), or *Pistia stratiotes* (water lettuce) during the 2013 survey. Additional scouting will take place during the 2014 growing season.

Summary of Tree and Shrub Removal Activities in 2014

Tree and shrub removal began on 8 January 2014 and continued through the end of February (Figure 4). Contractors thinned red osier dogwood and removed grey dogwood, buckthorn, honeysuckle, box elder, and black willow from approximately twelve acres of the project area during this time period. Cut stumps were treated with a mixture of 22% (a.i.) water-soluble triclopyr and freezing point depressor. Tree and brush slash was piled and burned when there was adequate snow cover on the ground and pending permission from the local fire warden (Figure 5).



Figures 4 & 5: Contractors clear trees and shrubs from the sedge meadow remnant and burn brush piles.

Management Activities (1 May 2014 through 20 January 2015)

APM Permit Number: SC-2014-13-356 (issued 6 June 2014)

(APM Herbicide Treatment Record Submitted 23 July 2014)

Management activities conducted during the time period consisted of 1) reed canarygrass scouting and suppression within the sedge meadow remnant, 2) scouting for the presence of additional aquatic invasive species throughout the Dane County Section of the Pheasant Branch Conservancy, and 3) removal of the large black willow clone from the northeast section of the sedge meadow remnant, near the Frederick

Springs, that was obscuring public view of the sedge meadow and the diversity of wildlife it supports. Additional management activities were also carried out by Tom Klein and Friends of Pheasant Branch volunteers during this time period (submitted separately by Tom Bernthal).

Summary of Reed Canarygrass Suppression Activities in 2014

North of the ditch fill topographical depression, reed canarygrass was limited in distribution to small clones widely scattered throughout the sedge meadow. The larger clones and patches of reed canarygrass that previously occurred within the ditch fill zone itself were reduced in area to about 10% of their pretreatment size by 2013 treatments. South of the ditch fill, reed canarygrass was still distributed in large patches within the flood margins of Pheasant Branch Creek and its tributaries, although native sedge meadow species had increased in abundance and density since the previous year. Standing water was present throughout the project area from late winter (snowmelt) through late spring 2014; as a consequence, reed canarygrass suppression efforts were postponed until the water receded. Standing water had completely withdrawn from the project area by late May 2014, and the entire area including the ditch fill depression was scouted and spot treated with 0.5% (v/v) clethodim on 6 June 2014. The project area will be scouted and spot sprayed for reed canarygrass again during the 2015 growing season. The 2015 APM permit has already been applied for.

Summary of *Typha x glauca* and *T. angustifolia* Suppression Activities in 2014

No culms of *Typha x glauca* (hybrid cattail) were observed within the project area in 2014. Small pioneer clones of *Typha angustifolia* (narrow-leaved cattail) had expanded from the confines of the ditch fill area into the sedge meadow remnant to the north and south of the ditch fill in 2012 and 2013; these clones were mowed and treated with 2.85% (v/v) imazapyr on 23 July 2014. Removal of the trees and shrubs within the ditch fill during the winter of 2013-14 greatly enhanced the efficiency of this effort. Subsequent scouting did not detect any post-treatment resurgence in 2014, but the ditch will be scouted again in 2015 to ensure eradication was successful.

Summary of *Phragmites* and Purple Loosestrife Suppression Activities in 2014

Scattered pioneer clones of *Phragmites* and purple loosestrife that were detected by 2013 scouting efforts were mowed and treated with 2.85% (v/v) imazapyr on 23 July 2014.

Scouting for Additional Aquatic Invasive Species in 2014

Scouting for additional aquatic invasive species took place during the second week of August 2014. Contractors discovered two *Lythrum salicaria* (purple loosestrife) plants at N 43° 07.207' W 089° 29.197' (near the recently-cleared ditch fill area) and N 43° 07.225' W 089° 29.292' (near the southern border of the project area) (Figure 1). Contractors also discovered that a clone of *Phragmites* at N 43° 07.213' W 089° 29.259' that was initially treated in 2013 had resprouted (Figure 2). These pioneer clones will be treated during the 2015 growing season. Contractors searched for but did not observe any

individuals of *Glyceria maxima* (tall manna grass), *Butomis umbellatus* (flowering rush), *Eichhornia crassipes* (water hyacinth), or *Pistia stratiotes* (water lettuce) during the 2014 survey. Additional scouting will take place during the 2015 growing season, concurrent with reed canarygrass and *Typha* suppression efforts.



Figures 1 & 2: Contractors discovered small pioneer individuals of purple loosestrife (left) and a resurged clone of *Phragmites* (right) during their 2014 annual AIS survey.

Removal of Visual Obstruction in 2015

For several years, a large-diameter clone of black willow had become established near the Frederick Springs, along the wetland to upland transition between the sedge meadow and prairie plantings. By 2014, this clone was at a point of rapidly expanding in diameter. Not only was this clone a threat to the ecological and functional integrity of the remnant sedge meadow wetland, it was also growing up into the large tension power lines that transverse the Conservancy and additionally acting as a barrier and visual obstruction that prevented the public from viewing wildlife attractions within the wetlands. Tom Bernthal made several attempts to contact American Transmission Company to have this clone removed (due to the presence of the power lines) yet unfortunately ATC did not take any action to remedy the problem.

Willow removal occurred between 9 January and 15 January 2015 (Figures 3 + 4). Contractors removed black willow from approximately 2.5 acres of the project area during this time period along with a large amount of honeysuckle that was in the understory of the willow. Cut stumps were treated with a mixture of 21% (a.i.) oil-soluble triclopyr and diluent. Slash was piled and burned when there was adequate snow cover on the ground and pending permission from the local fire warden and a burn permit from the town of Middleton.



Figure 3: Contractors clearing visual obstruction from the sedge meadow remnant and burning brush piles.



Figure 4: View of the sedge meadow remnant following removal of black willow clone.