

MIAMI WOODS & PRAIRE &

ST PAUL WOODS

2015 RESTORATION UPDATE



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## **2015 MIAMI WOODS and ST PAUL WOODS RESTORATION ACTIVITIES**

### **History and Geography**

Miami Woods and St Paul Woods Preserves bracket the North Branch of the Chicago River for a mile between Dempster and Oakton Streets in the Village of Morton Grove. They contain approximately 265 acres and are part of the system of preserves that provides a corridor stretching along the river from within the City of Chicago northward to its headwaters in Lake County. All of the land in Miami and St Paul was used for agriculture for almost 100 years, either cultivated for crops or used for pasture. Additionally, a portion of St Paul was used as Klem's commercial picnic grove for many years before reverting to agriculture by the time of the first aerial photo in 1925. A remnant of Klem's grove can still be seen in the row of old catalpa trees lining the large open field in the north end of the preserve. The trees once lined the entrance drive from the Morton Grove train station used by visitors arriving by rail.

The watershed of the North Branch is part of the Lake Border Morainic system consisting of five north-south moraines formed primarily of clayey glacial till that form the shallow valleys of the Des Plaines River and the tributaries to the Chicago River. At their southern end, the moraines merge with the older Chicago Lake Plain formed by ancient Lake Chicago. Miami and St Paul are within the lake plain where it meets the Park Ridge moraine.

At the time of the original public land survey in 1839 the river wandered through shallow sloughs without a well defined channel and probably stopped flowing in dry seasons. Since then, much of it was dredged and straightened to provide drainage for farming and to accelerate storm drainage from urban areas. Runoff patterns have changed from absorption by natural vegetation to "flashy" peak flows from roofs and pavement. Dry weather flows are now augmented by a steady supply of used Lake Michigan water released from sewage treatment plants. Between Dempster and Oakton the river was straightened near the two streets leaving a dry oxbow near Dempster and a wet oxbow near Oakton. The middle portion does not appear to have been straightened although either dredging or increased flows have created a well defined channel which has eroding banks on the cutting side of the meanders. Restoration of floodplain areas remains an unsolved ecological puzzle. The 1925 aerial photo shows much of floodplain and surrounding area to be farm fields with some of the area in open woods with space between tree canopies.

The landscape is similar on both sides of the river having been shaped by the receding Wisconsin glacier a bit more than 100 centuries ago. Topography divides the site into three zones. The normal level of the river is at about 610 feet above sea level. The flood plain rises from about 610 to a bit less than 615 feet; relatively narrow transition slopes rise from about 615 to 620 feet; and the gently sloping uplands rise from about 620 to 625 feet. There is a riffle area approximately one third of the way south of Dempster which is currently used by middle and high school students for river studies. During the existence of Klem's picnic grove a low dam was constructed there to support boating on the river. It is thought that the riffle with its large glacial rocks was the site of a Native American fishing weir in earlier times.

### **Restoration Overview**

Full restoration is well underway in Miami following the restoration strategy of the North Branch Restoration Project. In general the strategy is to: rescue and protect remnant populations of native

species; control invasive species; return controlled fire to the landscape; thin young trees to return sunlight to the ground layer; and reintroduce seed of native plants gathered from within the North Branch watershed. Unfortunately recovery is limited to species not eaten by deer due to the excessive unmanaged deer herd.

Restoration activities in St Paul are limited to control of invasive species and thinning of excess fire sensitive trees. Recovery of the area is severely limited by both the deer herd and a ban on reintroduction of seed.

Restoration in Miami began in 1977 primarily in the Prairie. Restoration was stopped by an ill-advised moratorium on all restoration imposed in 1996 and continuing for five years. Late in 2001 work resumed with a major effort to restore woodlands, including work by school groups that had been conducting river studies in the riffle area and become interested in restoration. When buckthorn was eliminated from areas near the riffle area on the Miami Side of the river, work was expanded into St Paul in 2011.

**Miami Woods Restoration**

Miami Woods contains about 112 acres, nearly all of which is covered with natural vegetation and is being actively managed to restore it to full health. A few acres between the parking lot and the intersection of Caldwell Avenue and Oakton Street are being left as non-native brush to retain a visual and sound buffer. Additionally there are about three acres of turf grass area associated with the picnic shelter. Except for the Caldwell/Oakton buffer and a short stretch of brush northward along Oakton, invasive woody species have been removed from all of Miami Woods as of the close of 2015.

During 2015, the native plant communities continued to recover from decades of invasion by brush and other invasive species. However, recovery has been limited to species not eaten by deer. This has resulted in continuing recovery of grass and sedges and a few species of broad-leafed plants, but not most broad-leafed species.

Miami Workday Summary

Year	Workdays	Volunteer Visits	Cut Brush	Pull Garlic Mustard	Gather Seeds	Education	Total Hours
2015	19	555	915	221	210	399	1745
2001-15	382	9224	19189	3785	2397	5183	30554

Since resumption of restoration in 2001 there have been 382 workdays involving 9,224 volunteer visits. Volunteers have contributed 25,371 hours of stewardship work. 76% of the effort has been in cutting brush, 15% pulling garlic mustard, and 9% gathering seed. There have also been 30,554 hours of organized educational activity during the period, primarily devoted to river studies.

Workdays during 2015 were devoted to pulling garlic mustard, gathering seed and removing brush. Most of the brush removal was concentrated in the badly degraded area along Caldwell Avenue from the parking lot north to the prairie, and along Dempster Street. Elsewhere thinning of fire-sensitive trees is being continued to maintain the amount of sunlight reaching the herbaceous layer.

During 2015 there were 19 workdays where 555 volunteer visits contributed a total of 1,346 hours of work. Brush cutting accounted for 68% of the hours, garlic mustard removal for 16%, and seed gathering for 16%. The North Branch Wednesday Seed Team also gathered seed in Miami on two days involving 24 volunteer visits and 54 hours of work.

Groups working in Miami Woods during 2015 included: the Chicago City Day School on 4 days, Wright College on 6 days, and Carl Shurz High School 2 days, the North Branch Wednesday Woodchoppers 4 days. The remaining days were North Branch Restoration Project events which included North Branch volunteers plus students from a variety of schools.

Herbaceous invasive species and seedlings of woody invasives are being controlled using herbicide applied by the site stewards. One exception is garlic mustard which is pulled by hand. The invasive celandine buttercup, *ranunculus ficaria*, is continuing to emerge as a major threat to the riparian wetland, and is not fully controlled. Herbicide was applied by the stewards on seven days, primarily to control celandine buttercup and thistles, but also small populations of reed canary grass, the common reed, crown vetch, and bird's foot trefoil. The Audubon interns also assisted by applying herbicide to buckthorn seedlings on four days with a total of 106 hours of work. Garlic mustard was pulled during six workdays and the stewards pulled on two additional days.

Fire was reintroduced to the open areas beginning in 2008 after a hiatus of more than 10 years. The main prairie has been burned six times since 2008, most recently in November of 2014. The extent and intensity of prairie burns has varied greatly depending on weather conditions.

During 2015, controlled burning was conducted in the spring by a Forest Preserve contractor which resulted in the burning of 8 wooded units. The eastern tip of the prairie (PR01) was burned in the fall of this year, but the adjacent wooded areas did not burn.

### **DEER and the YEAR of the SHRUB**

The the near absence of native shrubs in Miami Woods, due to its agricultural history and the unmanaged deer herd, resulted in very limited nesting habitat for shrub-land birds. To address the problem, Audubon Chicago Region obtained a grant to reintroduce native shrubs to provide habitat for migratory and nesting birds. As a result, 2015 has been the Year of the Shrub in Miami Woods. Shrubs grown as nursery seedlings in 2014 were planted in Miami during 2015. 570 shrubs of 17 species were planted in deer-proof wire cages throughout the Preserve. Additionally the District provided materials for a large deer enclosure just north of the Caldwell Avenue parking lot which has been planted with 90 other shrubs grown by volunteer Ken Schaffer in the Oakton Community College greenhouse.

The District's Audubon interns assisted with the planting and placement of cages, and also erected the main Caldwell enclosure. They worked on four days contributing 269 hours of effort. Students from Wight College planted the shrubs from the Oakton greenhouse into the Caldwell enclosure.

As part of the shrub project, bird monitors are being recruited by Audubon to track the use of the new shrubs by birds as the plants mature in coming years.

The need for deer exclosures continued unabated during 2015 as the deer problem continued to have severe impact on uncaged woody plants and most other broad-leafed species. No woody seedlings

survived winter browsing as has been the case since the deer population erupted more than 10 years ago.



This early photo of Miami prairie shows a robust population of prairie doc. By summer of 2015 none could be found.

The three long term exclosures continued to protect species lost from unprotected areas. However, the woodland exclosure was impacted by deer on two occasions when trees fell, knocking down the fence. In both cases some browsing occurred before discovery and repair, but it is not clear whether it will have lasting effect.

The effects of excessive deer browsing are illustrated by conditions within, and outside of, the long term prairie and woodland exclosures. As discussed in our separated 2012 report on deer impacts, many species have been lost since the inventory reported in Susanne Masi's 1991 Mater of science thesis. And many more are threatened. The 2015 pictures below show the last remaining white trillium to be found within Miami Woods together with wild germanium which was formerly common but survives only within the woodland exclosure.



There are now many small exclosures scattered throughout the preserves as a result of the shrub initiative.

Work performed by the Audubon interns spraying invasive and planting shrubs added up to 8 days and 375 hours.

The Ecological State of Miami Woods is described in further detail in the separate *Miami Woods Ecological Health 2015 Edition*.

**ST PAUL WOODS ACTIVITIES 2015**

Year	Workdays	Volunteer Visits	Cut Brush	Education	Total Hours
2015	15	355	631	191	822
2011-15	72	1457	2819	1702	4521

St Paul is on the east side of the river and is similar to Miami with respect to topography, but does not contain prairie openings. The open areas visible in the 1925 aerial photo have been converted into turf grass playing fields or allowed to grow into dense areas of brush and fire sensitive trees.

St Paul contains about the same acreage of natural area as Miami, contains four shelter structures and large areas of turf grass. It is classified as a level IV grove which can be reserved for use by very large groups. A forest preserve drive extends north from Oakton Street through the Preserve to Lincoln Street to the north which provides a connection to Dempster Street.

Current ecological conditions are quite degraded, partly because of the history of land use with its physical disruption and prevention of fires; and partly due to the eruption of the deer population during the past 20 years. As in Miami Woods, the only surviving broad-leafed herbaceous species are those not eaten by deer, and native shrubs are virtually absent. There are some pre-agriculture oaks and hickories present, but the woodlands have been heavily invaded by buckthorn and fire sensitive trees that would

have been kept out by pre-settlement fires. The resulting dense shade has severely impacted the natural communities.

Restoration work in St Paul is occurring in three zones.

North: north of the Main Street right of way (not developed). The north half is being restored by stewards Kent and Jerry Fuller of the North Branch Restoration Project working with a variety of groups and is reported here.

Southeast: South end, east of the preserve drive. The southeast zone is being restored by steward Chris Parson of the North Branch Restoration Project and students from the Chicago Public School's Hawthorn School. Restoration began in 2004 and consists of brush removal and thinning of small trees, primarily buckthorn. Good progress is being made throughout management units UW02 and WO03 east of the drive.

Southwest: South end, west of the preserve drive. The southwest is being managed as a research project by the FPD where ground level sunlight has been substantially increased by tree removal.

## **NORTH ZONE**

The north zone includes Groves #1 and #2 and is about 56 acres in size.

The Grove #1 management unit is on the east side, and contains about 33 acres of woodland and 6 acres of playfield. Grove #1 still contains many widely spaced large old oaks, one of which fell and was cut up by a District crew which left a stump with 175 rings. An unusual feature is the presence of some very large black locusts which are about 75 years old. They are native further south in Illinois, but may have been planted to produce fence posts. The majority of the trees throughout the north half of St Paul are fire sensitive species less than 50 years old, primarily sugar maples. Grove #1 contains two management units. Unit # WO01 is north of the drive and the shelter. It contains about 8 acres of woodland and about 1,000 feet of streambank. It is separated from the drive by about 5 acres of playfield. Unit WO02 is south of the drive and contains about 19 acres of woodland.



One of the unusual features in St Paul is a legacy of old catalpa trees lining the drive that once served as the entry to Klem's picnic grove which once brought visitors from the Morton Grove rail station to the

river

The Grove #2 management area is to the west and contains about 11 acres of woods and an acre of turf grass adjacent to shelter #2. It provides access to the riffle area used by schools for river studies and contains about 1,400 feet of streambank. It forms approximately the northern one fourth of management unit #FO01.

In north St Paul restoration activities began in 2011 when permits were obtained to begin clearing brush in Grove #2 between the shelter and the river. Since then considerable progress has been made in removing brush and thinning fire sensitive trees to restore the availability of sunlight to the ground layer of herbaceous plants.

Limited restoration is occurring in the St Paul North because restoration is limited to removal and control of invasive species and thinning of excess fire sensitive trees. Introduction of seed is banned by the District. Work has been conducted by schools, The Veridian Energy Group, and the North Branch Woodchoppers. Because introduction of seed is banned by the District, no regularly scheduled North Branch workdays occur in the northern zone.

During 2015, 15 workdays were held involving 355 volunteer visits and 631 hours of work. The 2011-2015 totals are 72 workdays, 1,457 visits, and 2,819 hours of work.

In grove 1 the Wednesday Woodchoppers continued to thin the crowded invading fire-sensitive trees from under the very old oaks between the shelter and the river. Because of the dense shade there was virtually no herbaceous vegetation. The increased sunlight is stimulating growth of the few herbaceous species surviving in the area. The area also contains an old concrete dance floor and unusually large black locust trees. The locusts are nearly two feet in diameter, but at 75 years, they are far younger than the ancient oaks which are twice as old. The invading fire-sensitive trees are mostly younger than 50 years. A photo from within Grove #1 is shown on the cover of this report

In grove 2 in April the Veridian Energy group completed removal of buckthorn from the peninsula of brush dividing Groves 1 and 2. In November students from the Chicago City Day School removed buckthorn from a dense patch near the Shelter #1 and from the river bank north of the shelter. Relatively little buckthorn remains in either grove.



The Veridian Energy Group Removed buckthorn from the wooded peninsula between groves 1 and 2.



In addition to scheduled workdays, stewards applied herbicide on several days to control reed canary grass, the common red, Canada thistle, lily of the valley, and celandine buttercup. Of these five invasive species, the buttercup remains the greatest threat. It has massively invaded the floodplain in the southern half of the Preserve and is moving into the northern portion.

**Current Conditions**

In the Grove #1 north of the drive (unit WO01) nearly all buckthorn has been removed except for a buffer at the eastern end of the large playfield and along Lincoln Avenue. Initial thinning to restore herbaceous vegetation (wildflowers and grasses) and oak reproduction has been completed throughout the woodland north of the big field to the river. A wide un-thinned buffer is being left near Lincoln Street and the RR tracks, in part because there are few oaks or valued plants in the area. A large unrestored natural area of about 20 acres is located in management unit WO02 south of the drive.

Grove #2, (north and west of the drive) contains 11 acres of natural area where brush removal and initial tree thinning is nearing completion.

Current conditions are limited by the excessive unmanaged population of deer and the current prohibition on reintroduction of native seed. The result during the past four years has been the spread of a few early succession native species and large quantities of non-invasive, non-native weeds.

There is no record of controlled burning having been conducted in St Paul Woods, nor is any scheduled.

Miami and the northern portion of St Paul share many characteristics in terms of geography and original plant communities. But the state of restoration and ecological health is very different. On the Miami side of the river restoration has been underway since 1977 including controlled burning and reintroduction of local origin seed. In St Paul North, restoration began in 2011 and has been limited to controlling invasive species and thinning fire sensitive trees to return sunlight to the ground. Both areas have been substantially freed from invasive species, but portions of Miami have been free of invasives for a far longer period of time and have had the advantage of the reintroduction of diverse seed. The earlier control of invasive species in Miami also prevented some of the loss of native species that were rescued in Miami, but lost from St Paul.

Miami is far more diverse than St Paul and contains more conservative species, but both are suffering from the effects of the excessive and unmanaged population of white-tailed deer.

**Workdays in Miami & St Paul 1001 - 2015**

Year	Days		Volunteers		Stewardship Hours		Educational Activity	
	Mi	St P	Mi	St P	Mi	St P	Mi	StP
2015	<u>19</u>	<u>15</u>	<u>555</u>	<u>355</u>	<u>1,346</u>	<u>631</u>	<u>399</u>	<u>191</u>
2001-2015	382	72	9,224	1,457	35,371	2,819	5,183	1,702

### 2015 GROUPS WORKING IN MIAMI & ST PAUL (days)

	Miami	St Paul	Total
Wright College*	6	0	6
CCDS 4-8 grades**	4	3	7
Carl Shurz HS	2	0	2
NB Choppers***	4	11	15
North Branch	3*	0	3
Veridian Energy	0	1	1
N B Seed Pickers****	2	0	2
Total	21	15	36

\*Two Wright days were also regular North Branch Days, but are shown here as Wright days.

\*\* CCDS is the Chicago City Day School.

\*\*\* NB Woodchoppers are a group of experienced and highly proficient North Branch volunteers who work on Wednesday mornings cutting brush and thinning trees.

\*\*\*\* NB Seed Pickers are a group of North Branch volunteers who gather seed from various North Branch sites every Wednesday morning from May through November.

### Workdays in Miami & St Paul 1001 - 2015

Year	Days		Volunteers		Stewardship		Educational Activity	
	Mi	St P	Mi	St P	Mi	St P	Mi	StP
2001	1		40		120			
2002	16		373		976			
2003	17		497		1,078		450	
2004	22		736		1,927		560	
2005	24		776		1,984		542	
2006	32		1,013		2,563		637	
2007	31		909		2,803		712	
2008	33		850		2,739		471	
2009	29		844		2,067		368	
2010	42		879		2,625		488	
2011	46	6	642	186	1,878	297	165	313
2012	27	14	497	344	1,433	644	90	306
2013	18	22	281	477	724	1,095	153	533
2014	25	15	330	332	1,108	602	148	359
2015	<u>19</u>	<u>15</u>	<u>555</u>	<u>355</u>	<u>1,346</u>	<u>631</u>	<u>399</u>	<u>191</u>
	382	72	9,224	1,457	35,371	2,819	5,183	1,702
Combined								
	454 Days		10,681 Volunteers		38,190 Hours		6,885 Hours	