MIAMI WOODS and PRAIRIE
2019 UPDATE

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2019 MIAMI WOODS and PRAIRIE RESTORATION UPDATE

Cover

The cover photos show portions of two deer exclosures and the impact of deer browsing outside of the fence. One shows the impact on asters and the other shows seedlings inside in contrast to their absence outside. The seedlings in the photo are ironwood (ostrya virginiana) but they illustrate the absence of all woody seedlings throughout Miami Woods resulting from excess browsing.

Tree invasion and succession

The biggest change in Miami Woods during 2019 involved the continuing and accelerated die-off hawthorn trees. This is one phase of a pattern of tree invasion and die-offs that has occurred since agricultural use ended in the 1920s. Pre agricultural vegetation was apparently mixed prairie, savanna, and open woodland based on records from the public land survey and the fact that soil in much of Miami Woods reflects development involving prairie vegetation. As in much of the North Branch watershed prairie fires limited the presence of trees resulting in their concentration near the river or in fire tolerant oak groves. During the period of agricultural use, trees were no doubt removed from some of the land to facilitate tillage, but much of the area was apparently used as pasture where trees were retained. Judging from the near absence of native shrubs, compared to their presence in nearby Harms Woods, use as pasture was relatively intense.

When the Forest Preserve District acquired the land and farming ended in the 1920s, very little of the preserve was covered with trees. The earliest available aerial photos from about 1925 show the non-cultivated areas with scattered trees or very open woods with very little crown closure. There were large trees along the riverbanks, many of which are still present and consist primarily of oaks together with a few hickories. With the end of farming, trees grew up throughout the area, primarily non-fire dependent species: elm, ash, maple, basswood and hawthorns. In some areas, hawthorns composed a high percentage of the stems. Later, buckthorn invaded the entire preserve as a result of seeds brought by birds. As the branches of the fire sensitive species grew and met, shade became denser than earlier times when the oaks and hickories provided filtered sunlight through their comparatively open crowns. Shade was further intensified with the growth of buckthorn. Also, ground level shade was further intensified as Asian honeysuckle displaced native shrubs already suppressed by grazing farm animals.

Eruption of Fire Sensitive Trees

The fire sensitive trees spread across all of the Preserve, except the main prairie and the small areas known as the indigo opening and the east side of cathedral oaks. The presently wooded areas contain only limited native herbaceous species. High quality woodland species such as blue cohosh and doll's eyes found in nearby Harms Woods are entirely absent. Whether they were never present or were eliminated by intensive use as pasture is unknown, but most of the site was probably originally a prairie.

The native fire sensitive trees that erupted in Miami at the end of the agricultural period were primarily elms, ashes, maples and basswoods, although hawthorns heavily invaded some old fields. Other less abundant fire sensitive trees include black cherry, hackberry, box elder and willows, none of which are a problem in Miami Woods. Elms were abundant for only a few decades before Dutch elm disease became common during the 1950s which resulted in the die-off of nearly all the elms, returning small sunny patches to the woodlands. Dutch elm disease is the result of a fungus transported by a non-native beetle. A few elms remain in the preserve and they continue to gradually die off showing signs of the disease. Whether some of the remaining elms are resistant to the disease is unknown.

Ash trees were the next to be decimated by a disease. The green ash borer arrived in about 2000 and has resulted in the rapid death of thousands of trees in Miami Woods, significantly reducing canopy cover in most of the preserve. Unlike Dutch Elm Disease death is not caused by a fungus, but by directly by the larval stage of the beetle which destroys the tree's inner bark. No resistant strains of white, green, red or black ash have been found.

Hawthorns are a relatively small tree and are not usually thought of as having a major ecological impact other than providing wildlife food in the form of their abundant little apples. However, when agricultural use stopped, hawthorns became abundant in disturbed areas, perhaps in part due to their ability to survive grazing in pastures. When agricultural use stopped, hawthorns rebounded. Also, a nursery cultivar was planted by the District in the picnic grove and elsewhere. In some cases, hawthorns are scattered, but elsewhere they are a high percentage of the trees. They are a relatively short-lived species, seldom reaching 100 years. During recent years, increasing numbers have been dying out. During the past two years the die-off has accelerated rapidly, with a substantial percentage of the surviving hawthorns dying during 2019. Whether this is the result of age, weather patterns or disease is uncertain, but the effect has been dramatic. One particularly visible area is in the northwestern corner of the prairie near the merging of Waukegan Road and Caldwell Avenue. Management unit SA05 had been heavily clogged with buckthorn which had apparently grown in under an initial invasion by hawthorn following the cessation of tillage. The buckthorn was removed by volunteers ten years ago leaving a "hawthorn savanna" of 4 to 12 inch DBH hawthorns. By the end of summer 2019 nearly all of them were dead. This fall, the North Branch Wednesday Woodchoppers spent 4 workdays, and 109 hours of work effort cutting and burning about 250 hawthorns from the unit which now has very few trees, and once more is part of the open prairie. Removal of the standing and fallen dead hawthorns was due to aesthetic considerations and to facilitate controlled burning of the unit. Elsewhere the dead hawthorns are less concentrated and visible so are being left to the woodpeckers and fungal populations. Vegetation in the management unit is returning to its origins as part of the Miami prairie.

Final Buckthorn Removal

Buckthorn & honeysuckle brush had been removed from virtually all of Miami in prior years. Remnant patches remained as a buffer along the Prairieview Shopping Center parking lot and in the northeast corner near Dempster Street and the RR tracks. Buckthorn in the parking lot buffer was removed during 5 springtime workdays: Chicago City Day School students (4,6,7 & 8

grades) during 3 days which included 4th graders being mentored by 8th graders (139 work hours); North Branch held 2 weekend workdays with 15 volunteers and 58 hours (joined by the FPD Resource Management crew which contributed 6 hours of effort); and North Branch Wednesday Woodchoppers 1 day with 10 volunteers and 42 hours. The patch in the northeast corner was removed by a North Branch workday with 14 volunteers who contributed 49 hours. The last remaining buckthorn is adjacent to the Caldwell/Oakton street intersection and is being left as a buffer shielding the picnic grove.

Thinning for sunlight

Increased sunlight reaching the herbaceous ground layer is essential to restoration of biodiversity within Miami Woods. To some extent this had occurred spontaneously as the massive die-off of elm and ash trees. It is also the result of systematic initial thinning of fire sensitive tree species and removal of buckthorn throughout most of Miami during the past 20 years. The objective in initial thinning is to obtain the minimum of 20% openings in the crown cover seen as sunlight on the ground at mid-day. For the most part this has been accomplished throughout Miami, although continuing effort is needed to limit closure of canopy gaps by remaining fire-sensitive trees. During 2019 thinning occurred during buckthorn removal days and one day spent thinning maples in the southeast corner (Unit FO03). The workday involved 12 volunteers who contributed 42 hours of effort.

1 Controlling Woody Seedlings and re-sprouts

Control of seedlings and re-sprouts of brush and fire sensitive trees remains a challenge, especially in areas cleared of brush in recent years, which includes much of southern Miami Woods. Eurasian honeysuckle poses a special problem due to its resistance to herbicide used on most other brush. Treatment with herbicide is the key control activity, and unfortunately, relatively few volunteers are certified and available to do the needed application. During 2019 essential assistance was provided by the Friends of the Forest Preserve crew which provided 123 hours applying herbicide to seedlings and re-sprouts.

Herbaceous Weed Control

Herbaceous weed populations in Miami have been reduced to nuisance levels (with one exception) by years of aggressive pulling of garlic mustard by students and spraying of other weeds by the stewards. The exception is celandine buttercup which continues to spread and impact spring ephemeral species, in spite of spraying. It has been virtually eliminated in some areas, but is difficult to eradicate, and appears in new areas each year. Our control strategy is early season spraying the steward. An overall strategy by the District to eliminate floating propagules from upstream preserves would be very welcome. No workdays were devoted to pulling garlic mustard during 2019, as previous years of effort combined with incidental pulling this year proved to be sufficient. Other herbaceous weed control consisted of spraying by the stewards on 15 occasions for a total of 55 hours.

Seed Gathering and Dispersal

There were two workdays entirely devoted to gathering seed plus incidental gathering during other workdays and by the stewards. One North Branch workday involved 9 volunteers and 32

hours, while in the other 13 Chicago City Day School 4th and 8th graders contributed 29 hours. Additionally, the Wednesday Seed Pickers spent 4 three hour days in Miami and individual pickers visited on several occasions.

Monitoring
No formal monitoring occurred although informal observation continued, and time was spent locating and marking North Branch transects and stations in preparation for future surveys.

Access to the Preserve
Access to the northern half of the Preserve was greatly reduced starting in the summer of 2019 by the closure of the "hole in the fence" adjacent to the Prairieview Shopping Center Shopping Center parking lot. The shopping center has been demolished and is in the process of redevelopment. The new facility is to be known as Sawmill Station in recognition of the historic presence of a sawmill on the river to the east. Ironically, the site plan does not reflect the presence of the Forest Preserve as an amenity or asset; and includes tall condominium buildings crowding the ancient oaks in the Preserve's "Cathedral Oaks" area to the east. The one bright spot is that the site plan provides for eventually reopening the connection from the bike path to the new parking lots.

Deer
Deer continue to be the largest destructive force in preventing the recovery of biodiversity in Miami Woods. They were not a factor 40 years ago when restoration began, but their impact has accelerated during the past 20 years. They continue to devastate most native broad-leafed plants including exterminating some species present at the start of restoration as well as some species reintroduced during the early years of restoration. Deer impact was most extreme during the dry years of 2011 & 2012 when plants such as round headed bush clover were eaten to the ground. Also, seldom eaten plants such as goldenrods were heavily browsed together with the new growth on invasive multiflora roses. Since then, favorable weather conditions have provided abundant alternative browse and some species such as round-headed bush clover have shown some recovery including producing seed. However some species survive only within cages and deer exclosures, while the ordinarily very hardy prairie dock has disappeared entirely.

Deer exclosures continued to perform their function of protecting the last remnants of some plant species and demonstrating the damage being done by the unmanaged deer herd. They sustained some damage from falling dead ash trees, and in the flood plain several Audubon protective cages were damaged by flood debris. All were repaired.

Studies by the Wisconsin Department of Natural Resources and others have found that pre-settlement deer populations were approximately 15 per square mile or 1 per 40 acres. At that density Miami Woods and prairie would support 3 deer. The present population is about 30. Until the deer herd is managed and approaches one per 40 acres, the vegetative quality and biodiversity of the Preserve will remain degraded.

2019 Workdays

During 2019 there were 14 group workdays involving 122 worker visits and 492 hours of work, primarily cutting and burning brush although 2 workdays were devoted to seed gathering. The Chicago City Day School days included 4 days, 94 visits and 167 hours of work. There were 4 North Branch weekend workdays which included 36 visits and 125 hours of work. The North Branch Wednesday Woodchoppers worked on 6 days involving 52 visits and 200 hours of work.

The site stewards worked on 18 days in addition to group workdays: spraying invasive species on 15 days, but also working to repair deer exclosures, plant seed, and locate transect points.

Group	Workdays	Volunteer Visits	Hours
North Branch	4	36	125
Woodchoppers	6	52	200
CCDS	4	94	167

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