

Continuation of Wildlife Corridors in the Big Creek Estuary at The Cove

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As you arrive at the Cove, located on Crossroads at Big Creek property, you gaze towards the west. Your eyes draw first to the large and noticeable body of water that slowly slopes downhill from a prominent hill that is a potential host for many pollinators and sun-loving plants. The slope downhill collects the surrounding rainwater almost like a basin that feeds into the tributary that goes down into our Great Lake. Revitalization is a priority. The land spoken about here had surely been attractive to human beings for decades, as a body of water like this still to this day hosts many people just as it used to with the Native people as the original inhabitants of this sacred land.

Preface

Introduction

Crossroads at Big Creek is a non-profit organization that aims to restore and heal the natural landscape through community and knowledge. The Big Creek estuary of The Cove at Sturgeon Bay is a critical tributary and wildlife corridor. The ending of Crossroads is just as important to healing the landscape as the beginning, and this land is the transition and sanctuary that Crossroads offers to the wildlife present.

The large body of water adjacent to the area empties into Lake Michigan and plays a significant role in water body health. It is an important habitat for breeding fish. It provides natural area recreation for the people to enjoy, with an accessible kayak launch. It is also a zone of movement of wildlife and creatures, a continuation of the migration of many creatures. The continuation and connection of wildlife corridors such as this one is essential to keeping and preserving species

Wetlands are a major habitat that we should protect. Wisconsin had originally contained 10 million acres of wetlands and now we are at 5.3 million acres. The Wisconsin DNR has a stated goal of protecting and increasing the number of wetland habitats in order to achieve 3 primary things: protecting species, restoration of landscape, and enabling the recreational and educational use of this habitat. With this goal in mind, funding is big in terms of the protection of wetland habitats and grants are given out in consideration that approximately 75% of wetland habitats are privately owned. (2008, WI DNR)

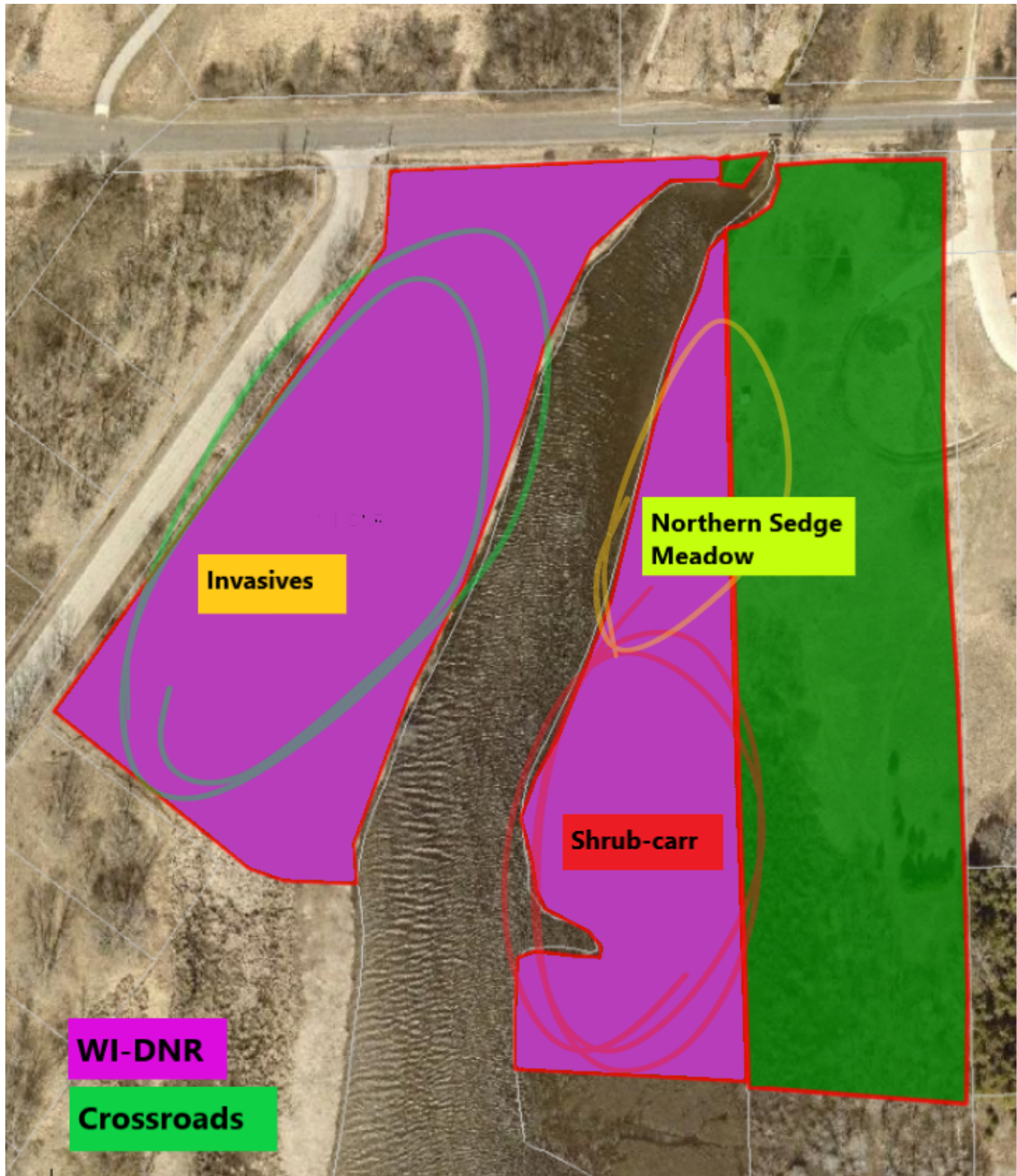
The dysfunctions of the site described in this paper will include three primary parts. First part being the disconnect we see between the DNR property on the western side of the water body. Next, the shrub-carr portion on the eastern side lacking new growth after the dying ash. Lastly, the lack of some significant native plants for this type of habitat on both sides of the estuary.

Site Location

Located on Township 27 North, Range 26 East Section 9, the specific site chosen is a combination of both Crossroads property and Wisconsin DNR property. While we could acknowledge the property lines that unnaturally put human constraints on a natural landscape, I would offer a more unconstrained,

open-minded perspective that can give us a more nature-centric view so that we can heal this landscape further.

Sections along the estuary were chosen as the site of concern for this restoration plan. The sections are indicated by figure 1 below. The parcels were also sectioned off by the property boundaries of each side, as this information will be relevant in this paper.



The dominant vegetation of the site are grasses, rushes, and sedges. In this diverse wetland you can clearly see the many creatures that rely on it, such as a hawk getting furiously attacked by three small Red-winged Blackbirds. While walking you notice many dragonflies all dancing through the field of Brown-eyed Susans, Goldenrods, and the many graminoids spread throughout. The many Bluets, Halloween Pennant, and Whitetails all indicate the good quality of this buffer to the body of water that is adjacent to the DNR property line. Albeit needing some work, this area has a potential of reaching a point where we see an increase in the diversity of general insects and birds.



(Widow Skimmer: Photo Credit Dan Collins)

Background/Historical Context

Aboriginal Inhabitants

I would like to formally acknowledge the original inhabitants of this site as the original stewards of this land. "Many maps and borders represent modern geopolitical divisions that have often been decided without the consultation, permission, or recognition of the land's original inhabitants. Many geographical place names also don't reflect the Indigenous or Aboriginal peoples languages." (CrashCourse 2021, 10:20) We want to acknowledge the Ho-Chunk Nation and the Menominee Nation, as the original stewards of this land in Wisconsin.

"Today, Wisconsin is home to 12 First Nations communities including the Oneida Nation of Wisconsin, Forest County Potawatomi, Ojibwe Nation communities, Stockbridge-Munsee Community Band of Mohican Indians, and the Brothertown Indian Nation." (UW-Green Bay, 2022)

Land Use

Previous images from 1832, compared to images of 2021, indicate that the body of water has drastically changed within these time periods. We can tell that the body of water has been channeled throughout the years, and along with that we can see fluctuations within the water level. These fluctuations play a significant role in the type of habitats that this site offers. As water levels rise some woody species may die. This in-turn creates new habitats that are conducive to wetland species in the Shrub-carr portion.

We can see that surrounding this site there was most likely a golf course of sorts on the south western side of the map. On the northeastern part, the land was previously used as agriculture and also includes new fill in recently.

1938



2022



Framework

Disruption

There are some primary distributions that are present within the site:

1. The most obvious being the disconnect we see between the west side of the creek and the east side of the creek. The western side of the property lacks in maintenance and hosts invasives that were not found on the eastern side that borders Crossroads property. Purple loosestrife, Daylilies, and most importantly phragmites are not found on the other end and have a potential to spread. The area of concern on the west side of the property is indicated by the map
2. Furthermore, we noticed a good amount of dead ash in the Shrub-Carr section of the property as indicated on the lower end of this map. This dead ash opens up a canopy of sunlight that could potentially enable the growth of unwanted exotic woody invasives.
3. Lastly, there is a lack of native species such as ninebark (*Physocarpus opulifolius*), elderberry (*Sambucus canadensis*), and swamp rose (*Rosa palustris*) in the shrub-carr section. In the Northern Sedge meadow there is a lack of panicled aster (*Symphyotrichum lanceolatum*), bulblet water-hemlock (*Cicuta bulbifera*), and more. The general C-value done on the eastern side of the property turned out to be 4.

Broad Vision

The ecological restoration plan includes the following primary goals:

The reference model used for the site would be a Northern sedge meadow as defined by the WI DNR. When you step in the area you would see many a variety of the seges that we currently see today including tussock sedge (*Carex stricta*), Canada bluejoint grass (*Calamagrostis canadensis*), and manna grasses (*Glyceria* spp.). In order to fix this dysfunction we will need to add other open wetland species not found from before such as wooly sedge (*Carex lasiocarpa*), wool-grass (*Scirpus cyperinus*), and marsh bellflower (*Campanula aparinoides*). (WI DNR)

The number of invasives such as the reed canary grass should greatly reduce and will be replaced with the native sedges and grasses listed previously. Along with that I would like to see an increase in the diversity of pollinator and insect species. Previously, I have seen halloween pendants, twelve spots, and whitetails. I had also observed the lack in diversity of native bumblebees, one of which would be *Bombus insularis* the Cuckoo Bumblebee (not to be confused with the lemon cuckoo). I see some two spots at the moment, and of course some common easterns, but this pollinator habitat would fit more ideal standards if it included more species of bumblebees

Repair

1. With this problem in mind, it is important to address the removal of the Phragmites and Purple Loosestrife especially due to running the risk of degrading the eastern side. The eastern side of the creek hosts many natives, as you can see from the list above. This includes Boneset, Little Bluestem, and Blue Flag Iris. The management strategy I would suggest here is beginning with cutting phragmites stem before seeds disperse. Mechanical digging out or spraying of purple loosestrife and the daylilies before it spreads even more.
2. In order to address the issue with the dead ash, I would suggest an initiative of preparation by planting more native shrubs and trees such as balsam poplar, and sandbar willow in that section, as a precautionary measure.
3. Lastly, the plan for dispersing more native seeds in order to improve diversity would include the planting of missing native species in the Northern Sedge Meadow portion and Shrub-carr portion as well. This would include the collection and dispersal of already existing natives into the western degraded side of the site.

Management

Monitoring

There are a few primary ecological focuses of the Big Creek Estuary that are of concern to the depleting wetland habitats:

The Odonata populations that currently exist on this property highly depend on the health of the estuary. Feedings around the northern sedge meadow portion includes the rushes and sedges currently present that allow this to happen. Also, parts of this wetland extend in and offer still water in order for the females to lay eggs. One thing to note is that the federally endangered Hine's Emerald is present approximately 2.5 miles away from this area of study.

Along with this, bird surveys done by Mike Grimm in June and September / October 2021 included the far southern part by the mouth of Big Creek. It was stated in his paper that "However, in some cases, especially at survey point 1, the time spent in the area lasted over an hour on several occasions due to the complexity of the habitat and the abundance of bird life." (2021, Mike Gimm) This also enforces the need for the restoration and preservation of this complex habitat.

The presence of the endangered Dwarf Lake Iris (*Iris lacustris* Nutt.) is a great asset to have and its presence adds to the value of this section. (Photo below)



(Photo Credit: Dan Collins)

Bat surveys have been done on this property, However this habitat is not as optimal for bat species.

The continuation of this monitoring will be part of the essential process of maintaining and keeping track of the restoration that will be constantly occurring on this property.

SITE NAME:		Crossroads at Big Creek	PLANT COMMUNITY:	Shrub-Carr and Northern Sedge Meadow
AREA NAME:		Estuary Section of the Cove	SURVEYORS:	Hanan Ali, Dan Collins, Jason Miller
Scientific Name	Common Name	C-Value	Wetland Ind. Status (MW/NCNE)	WI Status
<i>Spiraea alba</i>	white meadowsweet	4	FACW	Native
<i>Verbena hastata</i>	blue vervain, simpler's-joy, swamp verbena	3	FACW	Native
<i>Trifolium pratense</i>	red clover	0	FACU	Introduced
<i>Impatiens capensis</i>	orange jewelweed, orange touch-me-not, spotted tou	2	FACW	Native
<i>Cornus sericea</i>	red osier dogwood	3	FACW	Native
<i>Rhamnus cathartica</i>	common buckthorn, European buckthorn	0	FAC	Introduced
<i>Frangula alnus</i>	European alder buckthorn, glossy buckthorn	0	FACW/FAC	Introduced
<i>Rudbeckia triloba</i>	brown-eyed Susan, three-lobed coneflower	4	FACU	Native
<i>Solidago gigantea</i>	giant goldenrod	3	FACW	Native
<i>Viburnum lantana</i>	wayfaring-tree	0	0	Introduced
<i>Malus pumila</i>	cultivated apple	0	0	Introduced
<i>Phleum pratense</i>	timothy	0	FACU	Introduced
<i>Bromus erectus</i>	erect brome, European brome, smooth brome	0	0	Introduced
<i>Daucus carota</i>	Queen Anne's-lace, wild carrot	0	UPL	Introduced
<i>Centaurea stoebe</i>	spotted knapweed	0	0	Introduced
<i>Cirsium arvense</i>	Canada thistle, creeping thistle, field thistle	0	FACU	Introduced

<i>Stellaria media</i>	<i>common chickweed</i>	0	FACU	Introduced
<i>Iris lacustris</i>	<i>dwarf lake iris</i>	9	FAC	Native
<i>Toxicodendron radicans</i>	<i>common eastern poison-ivy</i>	4	FAC	Native
<i>Lonicera japonica</i>	<i>Japanese honeysuckle</i>	0	FACU	Introduced
<i>Lotus corniculatus</i>	<i>bird's-foot deer-vetch, bird's-foot trefoil</i>	0	FACU	Introduced
<i>Phalaris arundinacea</i>	<i>reed canary grass</i>	0	FACW	Introduced
<i>Anemone canadensis</i>	<i>Canada anemone, Canadian anemone, meadow anemone</i>	4	FACW	Native
<i>Populus balsamifera</i>	<i>balsam poplar, hackmatack</i>	4	FACW	Native
<i>Eutrochium maculatum</i>	<i>spotted Joe-Pye-weed</i>	4	OBL	Native
<i>Iris versicolor</i>	<i>harlequin blue flag, northern blue flag</i>	5	OBL	Native
<i>Calamagrostis canadensis</i>	<i>blue-joint grass</i>	5	OBL	Native
<i>Mimulus ringens</i>	<i>Allegheny monkey-flower, monkey-flower</i>	6	OBL	Native
<i>Carex vulpinoidea</i>	<i>brown fox sedge, fox sedge</i>	2	FACW/OBL	Native
<i>Mentha canadensis</i>	<i>field mint, wild mint</i>	3	FACW	Native
<i>Cirsium vulgare</i>	<i>bull thistle</i>	0	FACU	Introduced
<i>Brickellia eupatorioides</i>	<i>false boneset</i>	5	0	Native
<i>Rumex crispus</i>	<i>curly dock, sour dock</i>	0	FAC	Introduced
<i>Sagittaria latifolia</i>	<i>broad-leaved arrowhead</i>	3	OBL	Native
<i>Urtica dioica</i>	<i>stinging nettle</i>	1	FACW/FAC	Native
<i>Scirpus pendulus</i>	<i>rufous bulrush</i>	4	OBL	Native
<i>Scirpus atrovirens</i>	<i>black bulrush, dark-green bulrush</i>	3	OBL	Native

<i>Campanula aparinoides</i>	<i>marsh bellflower</i>	7	OBL	Native
<i>Achillea millefolium</i>	<i>common yarrow, milfoil</i>	1	FACU	Native
<i>Symphyotrichum novae-angliae</i>	<i>New England aster</i>	3	FACW	Native
<i>Potentilla anserina</i>	<i>silver-weed</i>	4	FACW	Native
<i>Alisma gramineum</i>	<i>grass-leaved water-plantain, narrow-leaved water-p</i>	5	OBL	Native
<i>Lysimachia ciliata</i>	<i>fringed loosestrife</i>	5	FACW	Native
<i>Asclepias incarnata</i>	<i>swamp milkweed</i>	5	OBL	Native
<i>Ribes americanum</i>	<i>American black currant, eastern black currant, wil</i>	4	FACW	Native
<i>Typha X glauca</i>	<i>hybrid cat-tail, white cat-tail</i>	0	OBL	Introduced
<i>Monarda sp.</i>	<i>Bee balm, horsemint species</i>	N/A	N/A	0
<i>Equisetum sp.</i>	<i>Horsetail species</i>	N/A	N/A	0
<i>Crataegus acutiserrata</i>	<i>Hawthorn</i>	N/A	N/A	Native
<i>Campanula sp.</i>	<i>Bellflower species</i>	N/A	N/A	0
<i>Oenothera sp.</i>	<i>evening-primrose</i>	N/A	N/A	0
<i>Asclepias sp.</i>	<i>Milkweed species</i>	N/A	N/A	Native
<i>Lycopus sp.</i>	<i>Bugleweed, Water-horehound species</i>	N/A	N/A	0
<i>Stachys sp.</i>	<i>hedge-nettle</i>	N/A	N/A	0
<i>Ranunculus sp.</i>	<i>buttercup species</i>	N/A	N/A	0

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(Jason Miller, personal communication, July 2022)

(Mike Grimm, personal communication, July 2022)

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