

1514 Menomonee Ave.
South Milwaukee, WI 53172
414.571.8383
414.571.8384 fax

**Early Detection Grant- *Typha domingensis*, Southern cattail removal
AIRR 128-23**

City of Middleton, WI

Final Report December 18, 2013

City of Middleton Conservancy Lands Committee
Penni Klein, CLC Manager
City of Middleton
7426 Hubbard Ave.
Middleton, WI 53562

Consultants:

Alice Thompson
Thompson and Associates Wetland Services
1514 Menomonee Ave.
South Milwaukee, WI 53172

Mike Healy
Biologic Environmental
1882 State Road 92
Mt Horeb, WI 53572

Project Deliverables:

The City of Middleton obtained an AIRR grant (128-13) to work with consultants and volunteers to find and eradicate the new invasive, Southern cattail-*Typha domingensis*, from Middleton wetlands. This species has the potential to be invasive, and to hybridize with other cattail species and become even more invasive. On this assumption, immediate and effective control was undertaken. All locations of this species were documented. A final report documenting the monitoring, mapping, control efforts, as well as evaluation of the need for future efforts, will be shared with local wetland plant experts and local friends groups.

Project Area:

Typha domingensis or Southern Cattail has been identified in multiple locations associated with the Costco drainage swales, an area tributary to Pheasant Branch Creek, and at a stormwater outlet adjacent Esser Pond. The swale locations are in Dane County, WI, City of Middleton, T 7N, R 8E, NE ¼ of Section 10, E ¼ Section 11 and the Esser Pond location is Dane County, City of Middleton, T 7N, R 8E, SE ¼ Section 10.

The swale location runs parallel to a large Costco parking lot and Medical Center building and then connects to Pheasant Branch Creek at the Confluence Pond, then flowing to Lake Mendota.

The Esser Pond location of Southern cattail is adjacent a stormwater feature on the SW side of the pond adjacent a Hammon's Drive parking lot.

Project Problem:



Dr. Galen Smith and southern cattail, Esser Pond, 2011

In August 2011, Dr. Galen Smith, Professor Emeritus at UW Whitewater and a life long expert of the genus *Typha* noted a stand of *Typha domingensis* on the SW edge of Esser Pond. At that time we located the stand with GPS, and Dr. Smith took a number of herbarium samples for the UW Whitewater herbarium. He also published a scientific poster at the Wisconsin Wetlands Association Annual Conference titled: "*Typha domingensis* Southern Cattail new to Wisconsin" in February, 2012 (see attached).

After the Esser Pond cattail stand had been well documented we cut the seed heads so that no seed could be spread and decided to wait until 2012 to decide what to do with the stand.

Dr. Galen Smith is of the opinion that *Typha domingensis* is a native cattail and should be left alone.

In October, 2011 we found additional stands of *Typha domingensis* in the Costco swale area while searching for purple loosestrife. At that time the *Typha* was late in the season and already distributing seed. The southern cattail is mixed in with *Typha augustifolia* in the swales. Because it was late in the season to eradicate, we decided also to wait until 2012 to decide what the best course of action is.



Pale cinnamon color spikes of southern cattail, 2011

The closest recorded stand of *Typha domingensis* is in a power cooling plant pond 150 miles south in Illinois. We believe origin of the Middleton southern cattail stands is the result of construction between 2003- 2008 in the business and commercial park adjacent Deming Way. Possibly southern cattail roots or seeds were brought in by construction equipment.

We are not sure if all the Southern Cattail stands have been located, but a volunteer survey last year documented several other areas to at least rule out at this point.

The most pressing question is if Southern Cattail should be left alone or controlled. Dr Galen Smith has stated that the plant is native to the US and the presence of a healthy seed bearing population in Middleton in an indication of climate warming. He advocates leaving it alone.

I discussed the problem with Dr. Don Waller of University of Wisconsin who immediately warned me of the invasiveness of Southern Cattail elsewhere in the US and felt that if it were a newly arrived, still small population that it should be controlled. He also asked me to discuss this with Dr. Joy Zedler and that he would defer to her opinion.

Dr. Joy Zedler of UW Madison emailed me the following:

“I know *T. domingensis* from San Diego (and have published on its invasion down the San Diego River where it overgrew the salt marsh following prolonged river flooding). It can also be quite salt tolerant, so I would expect it to follow in Phrag(mites)’s footsteps in places that accumulate road salt. It can be very aggressive and much taller than Wisconsin’s native cattail. I think if T.d. had entered a natural undisturbed wetland, it might be considered “just moving with the climate,” but I believe you said it was in stormwater ponds; certainly it is in disturbed wetlands if the wetlands are in Middleton. I would envision 3-way hybrids at some point, which might happen eventually anyway, but I don’t think we should encourage such a course of events. So, my advice is to eliminate it early and often.”

Because Dr. Waller, Dr. Zedler and Dr. Paul Zedler as well advised the City to remove the Southern Cattail stands, the Conservancy Land Committee sought and obtained an early detection grant to control this plant.

Project Goals and Objectives:

The goal of the project is to control the multiple stands of *Typha domingensis* in Middleton located around Esser Pond and the Costco swale. We also intend to continue to monitor the area for additional stands of Southern cattail. We will continue to focus citizen awareness on invasive species through reports to the Middleton CLC, Friends of Pheasant Branch, Friends of Kettle Ponds, Middleton High School Biology Teachers and others.



Pale cinnamon color spikes of southern cattail, narrow leaved cattail in background with darker heads, 2011

Methods:

Southern cattail is easiest to identify by the bright cinnamon colored fruiting spikes, and the green chlorophyll bodies within the spikes. In the accompanying photo these green bodies distinguish it from the native Wisconsin cattail. Southern cattail was found mixed in with narrow leaved cattail, but the pale fruiting head is obvious in contrast to the darker Wisconsin cattails (*T.latifolia*, *T.angustifolia*). In 2012 large crews were trained in southern cattail identification to locate stands. Because the seed head is the quickest way to identify the plant, later season control was necessary once the plants had flowered. In 2012 all southern cattail locations were documented with GPS, the seed heads were cut, bagged and land-filled, and all leafy surfaces controlled with 2% AquaNeet. In 2013 the locations of southern cattail were documented with GPS, and the plants were sprayed with 2% AquaNeet. The seed heads were not cut in 2013.



Green chlorophyll bodies found within the Pale cinnamon color spikes of southern cattail are diagnostic. 2012

Results:

Field Season 2012:

A crew of up to 7 worked five full days, September 25, 2012 and October 2, 2012 and a smaller crew of two worked an additional day, October 3, 2013. Stands of southern cattail were identified in Esser Pond, Costco stormwater swales, Pheasant Branch Creek, Confluence Pond and stormwater swales associated with the Deming Way bike trail and the large marsh adjacent Fireman's Park. The attached map shows the extent of Southern cattail in 2012 and 2013.

In general the southern cattail appeared associated with stormwater features, within swales, and at outfalls of culverts.

All seed heads were removed and bagged and land-filled. All plants were sprayed with 2% AquaNeet with 1% Liberate as a surfactant.

A follow-up search was made to locate and clarify the limits of Southern cattail and to inspect other stormwater features in the vicinity. The map of the maximum extent of Southern cattail showing areas clear of cattail is attached.

Field Season 2013:

In October 2-3, 2013 a 1-2 person crew was able to walk and control Southern cattail stands that remained. In general there was a significant decline in the numbers of plants compared to last year. Some stands were eliminated entirely; we noted that stands along Pheasant Branch creek were replaced with fast growing sandbar willow that apparently

assisted in out competing the plants that were herbicided in 2012. The attached maps document the locations of southern cattail in 2012 compared to 2013. Several other ponds were reviewed as well to determine they were free of southern cattail including those at Walgreens on Century Ave, and those in the vicinity of Middleton Hills.

Enough pockets of Southern cattail were present this year to warrant follow up control in the future.



Southern cattail spikes cut and bagged prior to control, September, 2012

Discussion:

Due to the sharp eyes of Dr. Galen Smith, Southern Cattail, or *Typha domingensis* was identified at a single location at Esser Pond, Middleton in 2011, to our knowledge the first occurrence in Wisconsin. By the following year, 2012 we located dozens of stands of the plants located within the stormwater swales at the “Costco” lot and UW Health Medical Building, on Pheasant Branch creek, the confluence pond, Fireman’s park marsh and associated drainage swales within that area.

The first year control was very labor intensive and expensive, the second year was a relatively modest effort. We believe the interaction of winter kill and herbicide kill caused the population to dramatically drop from 2012 to 2013. However, the possibility that plants, or seeds within the soil remains high and we recommend a follow up effort in the next several years to eliminate the plants from the area.

Because the current population is low and scattered, instead of inventorying the plants, and returning to control them, we recommend that a crew of 1-2 persons walks the corridor and controls plants as they are located, and then record the data by GPS. This would minimize future costs to the City, but allow us to continue to control the plant.

Although the location of southern cattail appears to be associated with stormwater swales and outfalls of culverts, it is difficult to predict which plants were the initial colonizers as there are plants rather far flung from one another, however the likely culprit appears to have been seeds or plants hitchhiking on construction equipment. The plants are not winter killing either due to milder weather conditions, or Dr. Galen Smith theorizes that some hybridization that has already taken place that allows the plants to survive. We intend to share this report with partners at the DNR, Friends of Pheasant Branch, Friends of Kettle Ponds and the City of Middleton.

**City of Middleton
 AIS Grant /
 Southern Cattail
 Removal**

**2012 Red Areas:
 Locations of
 Southern Cattail
 (*Typha domingensis*)
 9-25-12 & 10-2-12**

**2013 Yellow Areas:
 Locations of
 Southern cattail
 10-2-13 & 10-3-13**

**Treated with 2%
 AquaNeat**

**Image Source:
 Wisconsin View**



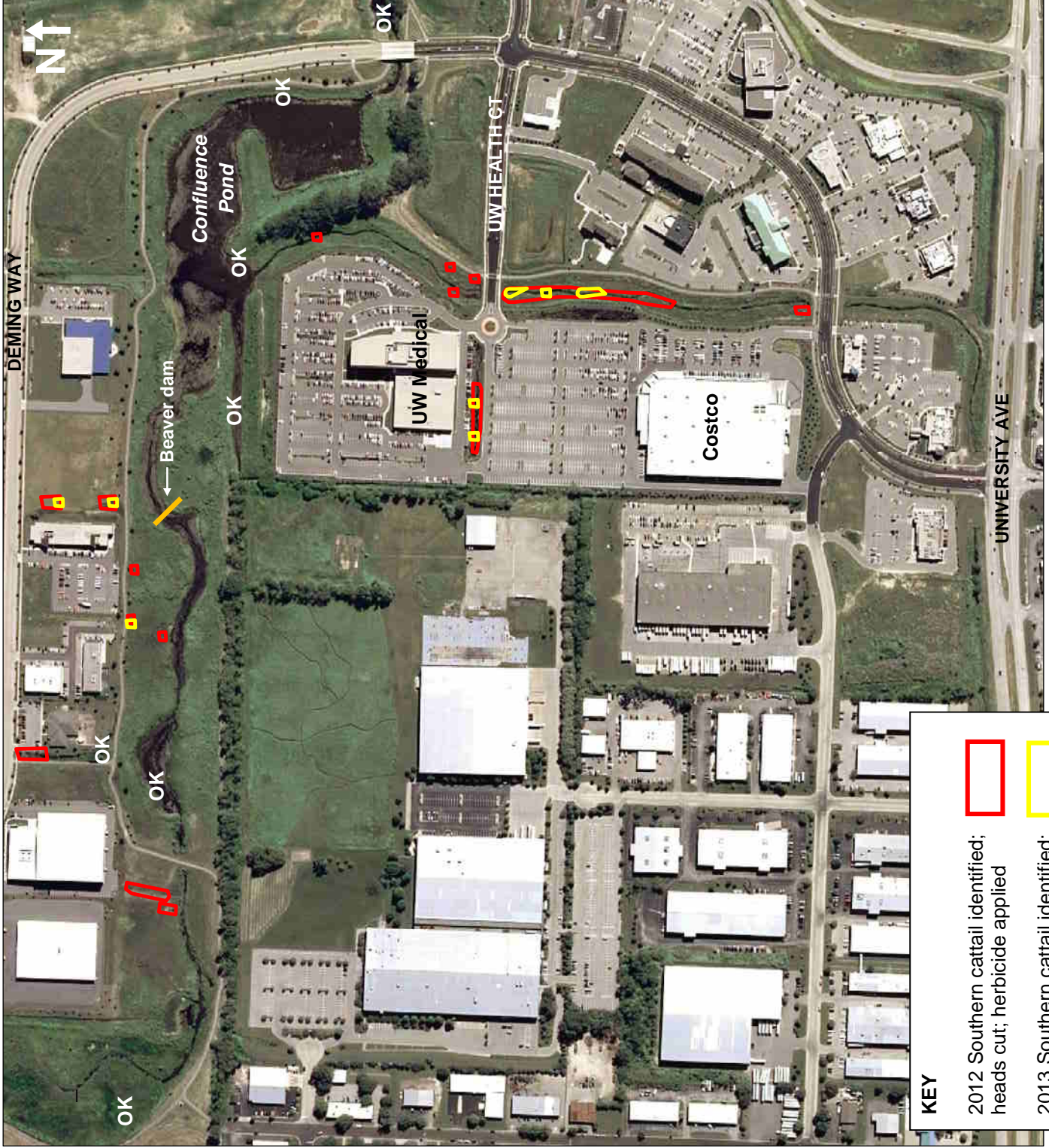
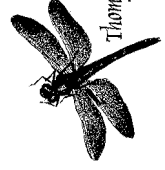
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**2013 Yellow
Areas: Locations
of Southern
cattail
10-2-13 & 10-3-13**

**Treated with 2%
AquaNeat**



KEY

	2012 Southern cattail identified; heads cut; herbicide applied
	2013 Southern cattail identified; Herbicide applied

