

Flowering Rush

Past, Present, and Future Efforts to Manage Flowering Rush (*Butomus umbellatus*) in Minnesota



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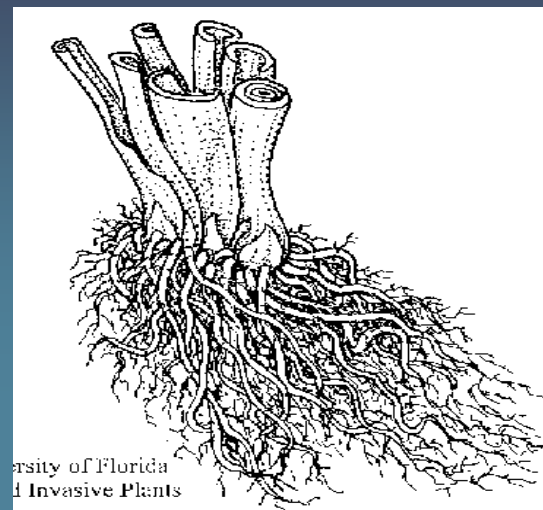
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Flowering Rush (*Butomus umbellatus*)



Flowering rush umbel, cross-section of a leaf, and rhizomes



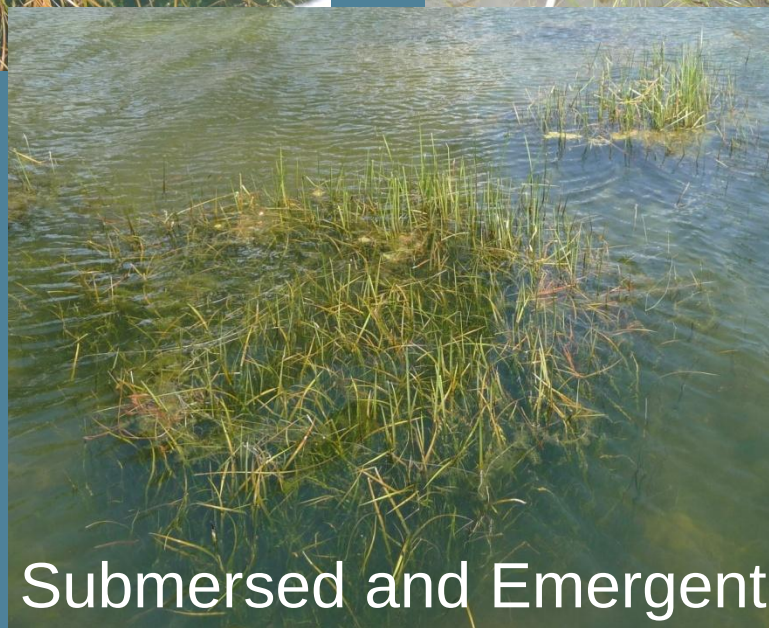
Flowering Rush (*Butomus umbellatus*)



Submersed Form

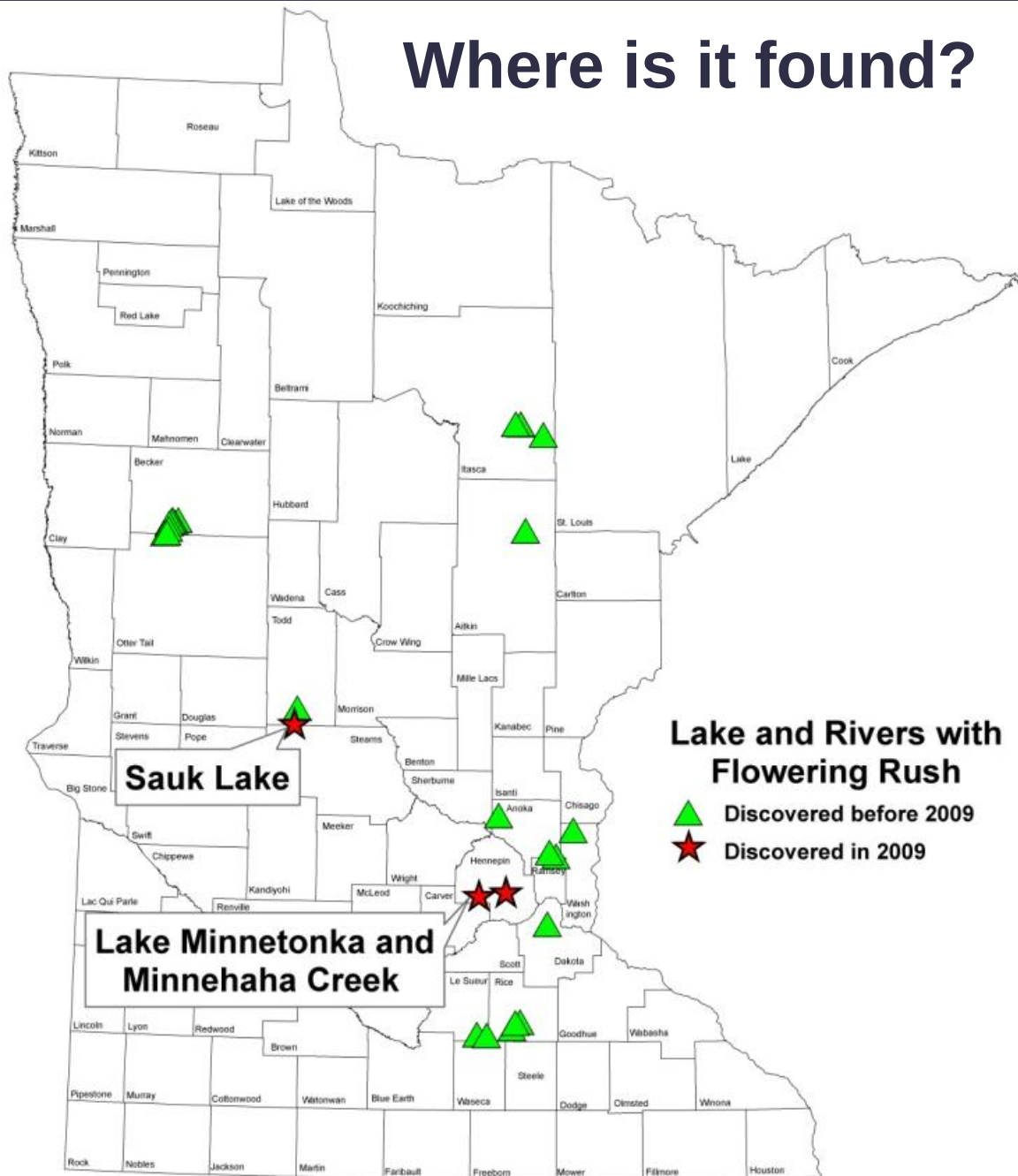


Emergent Form



Submersed and Emergent

Where is it found?



First recorded in 1968
-Anoka County

Has since been located
in 27 other waterbodies
including

- Detroit Lakes area lakes
- Lake Minnetonka
 - 2009,1976 (Maxwell)
- Minnehaha Creek
- Sauk Lake
- Waterville area lakes
- Forest Lake
- Holman's Lake
- North and South Twin
- Cannon River

How it may spread.....

Others.....



DNR Goals that apply to Flowering Rush Management

- 1) To Prevent the spread of Flowering Rush with Minnesota.
- 2) To Reduce the Impacts caused by Flowering rush to Minnesota's ecology, society, and economy.



Strategies to attain these goals...

- 1) Prohibit the sale of Flowering Rush
- 2) Monitor current distribution and assess changes
- 3) Support Research to develop and implement better management methods
- 4) Provide information to interested in how to best manage Flowering Rus.



History of FLR in Minnesota

- 1) Prohibited Invasive
- 2) DNR Management Plan in 1994
- 3) First identified in 1968
- 4) Populations variable around state
- 5) Identified in DL1976 and residents and PRWD been managing actively since 80's and 90's
- 6) Mechanical harvesting was recommended for many years 90's - early 2000's



Herbicides are currently being used with mechanical methods

Management Options

1) Mechanical Control (lot size)

- Mechanical Harvester
- Hand or Hand Tool Removal



Management Options

2) Herbicide Control (lot size / lake size)

- Emergent Treatment
- Submersed Treatment
- Dual Emergent/ Submersed Treatment



Management Options

3) Combination of options

- Herbicides / Mechanical / Hand Removal
- Detroit Lakes area



Case 1. Approach at DL City Beach

1. Two Liquid Hydrothol applications to city beach
2. (2007-2009) emergent stem herbicide app
3. Mechanical Harvesting
4. Hand Removal



DL city beach – 2009 and 2010

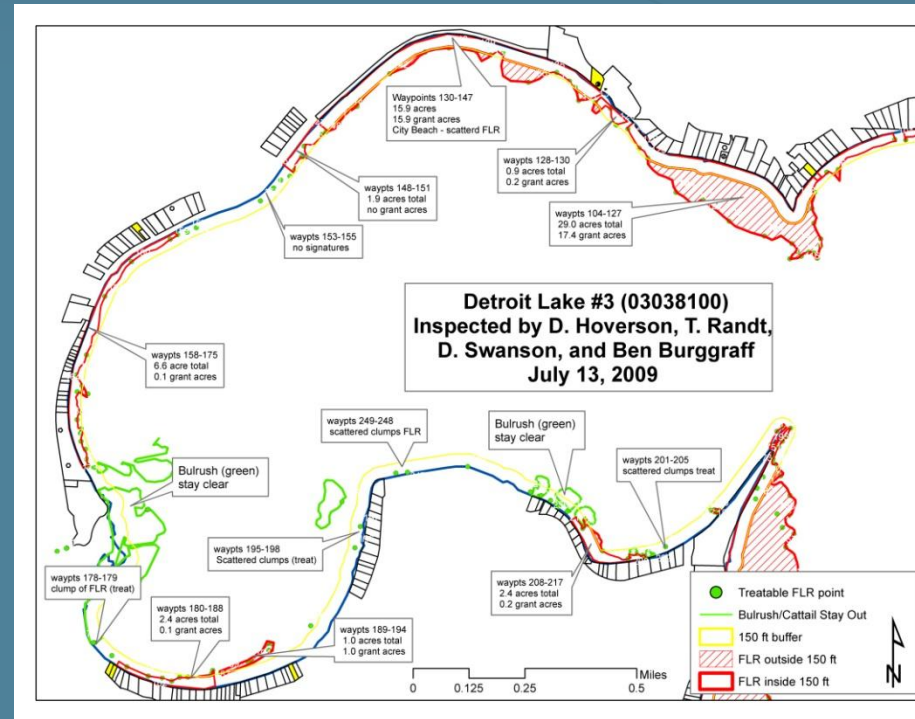
Herbicide – liquid application



- effectiveness unknown ??
- plants continued to grow for a week or so
- FLR was then harvested from the city beach

Case 2. Emergent stem Imazapyr application DL area Lakes for four years

- All lakes except Curfman were Imazamox was used



Efficacy of lakewide treatments

- FLR continues to spread
- Possible density decreases due to less emergent growth
- A lot of FLR remains below the surface
- Acreage is not significantly changing

	Detroit & Curfman	Muskrat	Sallie	Melissa	Mill
2006	93				
2007	74				
2008	160	> 1	43	12	> 1
2009	188	4	35	10	6

Making it difficult to control



What about the Future

- Research

- Herbicide Trials
 - In lake
 - Laboratory studies (small tank)
 - Large tanks (mesocosms)
- Mississippi State (Madsen and Chesnier) with Concordia College (Marko)
- Montana State (Rice)
- USACOE (Skogerboe)

