HUBBARD COUNTY
Soil & Water
Conservation District

Services from Hubbard SWCD

Key Points:

The more clients that are signed up for one or more of our services the more money everyone will save!

We can create a customized plan with more or less service then the package estimates below (within reason), give us a call to find out more!

What Will We Cover Today?

- Services that Hubbard SWCD is offering currently
- Talk about why these services are important to do relating to our shared natural resources
- We will discuss a couple of terrestrial invasive species that I have personal experience with
- We will discuss noxious weeds in Hubbard County and who to contact if they are found
- We will go over a MN DNR list and PDF of the newly arrived terrestrial invasive species so we can get ahead of these new species spreading

Zebra Mussel Veliger Sampling

- Three vertical/horizontal seine hauls at three sites per lake – composite sample
- We typically sample the first and third week in July. Recent research suggests veligers may be present earlier, if RMBEL changes their SOPs, we will to.
- We will make copies of the certified lab results for the client.

Picture Source: https://twin-cities.umn.edu/news-events/umn-launches-research-help-reduce-zebra-mussel-spread

Cost Breakdown:

Veliger Sampling **Breakdown**

Service				Rate for 1 Trip	
RMB Lab Analysis	3 sampling sites per composite sample			$80, per composite sample	
Boat Rental				$125, per day	
Supplies	91% Alcohol - 16 oz.	$2.50			
	White vinegar - 2 gal	$5.00		$7.50	$212.50
Staff Time	One staff member hourly rate	$45	x 2 staff	$90, per additional hour	
Vehicle Mileage			federal mileage rate	$0.58, per mile	
Administration				20% of the total, additional	

Veliger Sampling **Estimate Examples**

This includes Zebra Mussel Veliger sampling using seines to perform vertical and horizontal seine hauls at three sites per lake. We sample for veligers during two weeks in the middle of the summer, with a week in between. We will make copies of the certified lab results for the client to keep, that indicate a presence or absence of Zebra Mussel Veligers.

If a client wants to volunteer time and their own boat, we will have one staff member sampling with a volunteer and will not have to rent a boat, making the cost go down considerably.

Local Lake Cost Estimate Examples	Average Cost Per Trip		Final Total Using District Equipment	Final Total Using Client Boat With a Volunteer (One SWCD Staff)
Long Lake	$490 per trip	Multiplied by 2 trips per summer	**$980**	**$464**
Big Mantrap Lake	$622 per trip	Multiplied by 2 trips per summer	**$1,244**	**$620**
Lake George	$554 per trip	Multiplied by 2 trips per summer	**$1,108**	**$538**
Kabekona Lake	$622 per trip	Multiplied by 2 trips per summer	**$1,244**	**$620**
Lake Plantagenet	$688 per trip	Multiplied by 2 trips per summer	**$1,377**	**$700**
		** Plus Administrative Cost*		

RMBEL has increased their prices for processing veliger samples when they process smaller numbers. The more samples that are submitted the lower cost will become.

Item	Annual Sample Qty	Total Cost
Zebra mussel veliger identification Presence/Absence	0-10	$93/sample
Zebra mussel veliger identification Presence/Absence	11-20	$88/sample
Zebra mussel veliger identification Presence/Absence	21+	$83/sample
Zebra mussel veliger identification #/Liter Counts	any	$93/sample
Zebra mussel veliger identification and Spiny water-flea identification Presence/Absence	any	$30/sample added to quantity rate

**A $2 hazardous waste fee will be applied to each sample*

Water Chemistry Monitoring

Monitors the entire water column and reads the following water chemistry parameters:

- Temperature
- pH
- Dissolved Oxygen
  - Concentration
  - Saturation
- Specific Conductivity
- Oxidation-Reduction Potential
- Salinity
- Resistivity
- Total Dissolved Solids

We can provide a variety of reports or graphs it depends on what the client wants. We can also supply just the raw data, or both.

Why Are These Important?

- Temperature - Measured in degrees Fahrenheit
  - It effects water chemistry, the rate of chemical reactions increases when temperature increases
  - Especially important when discussed with its relationship with Oxygen.
  - Important to know for fish populations
- pH – pH is the unit
  - Definition - how acidic or alkaline water is
  - Important because organisms can only live within a certain pH range.
  - Most water is in the 6.5 to 8.5 pH range, and fish can't live very much outside of that range on either side. Generally in water is pH <3 or >9 all fish/organisms will die.
- Dissolved Oxygen (Concentration (ppm) & Saturation (%))
  - Don't really need to get into it to deeply, organisms need oxygen to live
  - In the summer could be as high as around 10 ppm at the surface to 0 ppm at the bottom, depends of various factors (polymictic vs dimictic etc).
  - Important to monitor regarding fish populations
- Specific Conductivity - Measured in microsiemens.
  - Definition - the ability of water to conduct an electrical current
  - Tells us the relative concentration of ions in a solution.
  - Higher than average conductivity means more chemicals are dissolved in the water
  - Reciprocal of resistance
  - More salts and inorganic chemicals are in a water body the more conductive it becomes due to higher ion concentrations. Sodium, chloride, calcium, and magnesium are common ion bases.
  - Increases proportionally with salinity.
  - sugars, oils, and alcohols. Organism can only live within a certain conductivity range.
  - Freshwater system can range from 50 – 1500 µs saltwater can be as much as 50,000 µs

Continued

- Oxidation-Reduction Potential (ORP) – measured in millivolts
  - Definition – measures the ability of a water body to cleanse itself or break down contaminants, dead organisms and plants. Ability of a waterbody to have redox reactions – electron transfer.
  - We see these reactions in everyday life.
    - Example - It gives gems their colors (Iron and Titanium in sapphires and Chromium in rubies).
    - Example - municipalities add chlorine, in the correct and safe amounts, into drinking water to cleanse it. Chorine has a high ORP (400+) value. That makes it a good cleanser for drinking water. Chlorine is a strong oxidizing agent (creates a reduction reaction). It can take electrons from bacteria's DNA. In simple terms it kills bacteria because it has a high ORP value.
- Salinity – ppt (part per trillion)
  - Definition - the amount of salt dissolved in water
  - This is calculated using algorithms in our software through the temperature and conductivity inputs.
  - Increases proportionally with conductivity.
- Resistivity - Ohms of resistance
  - Measures the ability of a water body to resist an electrical current.
  - reciprocal of conductivity.
  - The higher the concentrations of salts the lower the resistivity.
- Total Dissolved Solids – ppm (parts per million)
  - Definition – sum of all ion particles that are smaller than 2 microns. Includes salinity inputs, often similar to the salinity number (once you unit convert) but can be higher if organic solutes are present like hydrocarbons (examples – petroleum products) or urea.
  - This is calculated by the software using conductivity information, by multiplying conductivity valves by an empirical (supported by experiment or observation) factor. Suitable for field measurements and monitoring.
  - Can also be gained by using an evaporation process,

Cost Breakdown

Water Chemistry Monitoring **Breakdown**

Service				Rate	
Boat Rental				$125, per day	
Supplies	Calibration solutions				
	Equipment maintenance			$22	$147
Staff Time	One staff member hourly rate	$45	x 2 staff	$90, per additional hour	
Vehicle Mileage			federal mileage rate	$0.58, per mile	
Administration				20% of the total, additional	

Water Chemistry Monitoring **Estimate Examples**

This includes monitoring for the following parameters: temperature, pH, dissolved oxygen concentration and saturation, specific conductivity, oxidation-reduction potential, salinity, resistivity, and total dissolved solids throughout the water column. After sampling is complete we provide a basic data report, advanced reports will take more time and cost more to create. We typically sample once per month May through September. We usually monitor the deepest point of the lake, or the site(s) that has been historically monitored.

If a client wants to volunteer time and their own boat, we will have one staff member sample with a volunteer, making the cost go down considerably.

Local Lake Cost Estimate Examples	Average Cost Per Trip		Final Total Using District Equipment	Final Total Using Client Boat With a Volunteer
Long Lake	$396 per trip	Multiplied by 5 trips per summer	**$1,984**	**$694**
Big Mantrap Lake	$573 per trip	Multiplied by 5 trips per summer	**$2,866**	**$1,171**
Lake George	$637 per trip	Multiplied by 5 trips per summer	**$3,187**	**$1,357**
Kabekona Lake	$718 per trip	Multiplied by 5 trips per summer	**$3,592**	**$1,564**
Lake Plantagenet	$772 per trip	Multiplied by 5 trips per summer	**$3,860**	**$1,760**
		** Plus Administrative Cost*		

Water Chemistry Sampling

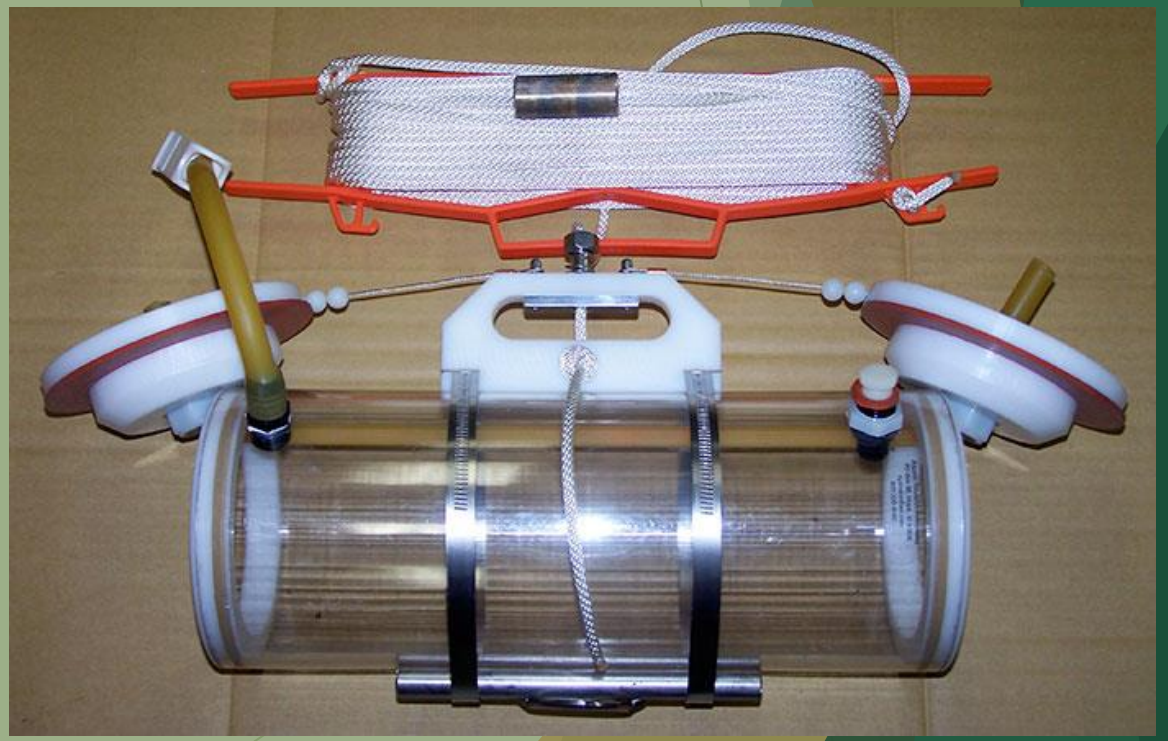
Basic lake package includes sampling of the following:

- Chlorophyll-A
  - Is a green pigment in all plants that allows them to convert sunlight in energy (photosynthesis)
  - It measures the concentration and distribution of microscopic living plant matter (phytoplankton and algae)

- Total Phosphorus
  - This is a measure of the sum of all phosphorus compounds (most common in water system in orthophosphate)
  - Important for plant growth
  - Commonly the limiting factor in plant growth
  - Important to monitor and can come from human waste, animal wastes, erosion (bound to soil particles), detergents, septic systems, agricultural runoff and runoff from fertilized lawns.

- Turbidity
  - How “clear” water is (secchi dish)

Typically sample once per month for five months May - September



http://www.aquaticresearch.com/discrete_point_water_samplers.htm

Cost Breakdown

Water Chemistry Sampling **Breakdown**

Service				Rate	
RMB Lab Analysis				$44, per sample	
Boat Rental				$125, per day	$169
Staff Time	One staff member hourly rate	$45	x 2 staff	$90, per additional hour	
Vehicle Mileage			federal mileage rate	$0.58, per mile	
Administration				20% of the total, additional	

Water Chemistry Sampling **Estimate Examples**

The Basic Lake Package consists of sampling for chlorophyll-A, total phosphorus, turbidity and we measure for clarity. Please contact our office about adding additional sampling parameters. After sampling is complete we provide a data report. We typically sample once per month May through September.

If a client wants to volunteer time and their own boat, we will have one staff member sample with a volunteer, making the cost go down considerably.

Local Lake Cost Estimate Examples	Average Cost Per Trip		Final Total Using District Equipment	Final Total Using Client Boat With a Volunteer (One SWCD Staff)
Long Lake	$369 per trip	Multiplied by 5 trips per summer	**$1,845**	**$690**
Big Mantrap Lake	$437 per trip	Multiplied by 5 trips per summer	**$2,188**	**$898**
Lake George	$502 per trip	Multiplied by 5 trips per summer	**$2,509**	**$1,015**
Kabekona Lake	$570 per trip	Multiplied by 5 trips per summer	**$2,851**	**$1,291**
Lake Plantagenet	$636 per trip	Multiplied by 5 trips per summer	**$3,182**	**$1,487**
		** Plus Administrative Cost*		

TrafX County Systems

We offer full TrafX vehicle counting systems services. If there was interest we could look into purchasing trail counter equipment.

Full service includes:

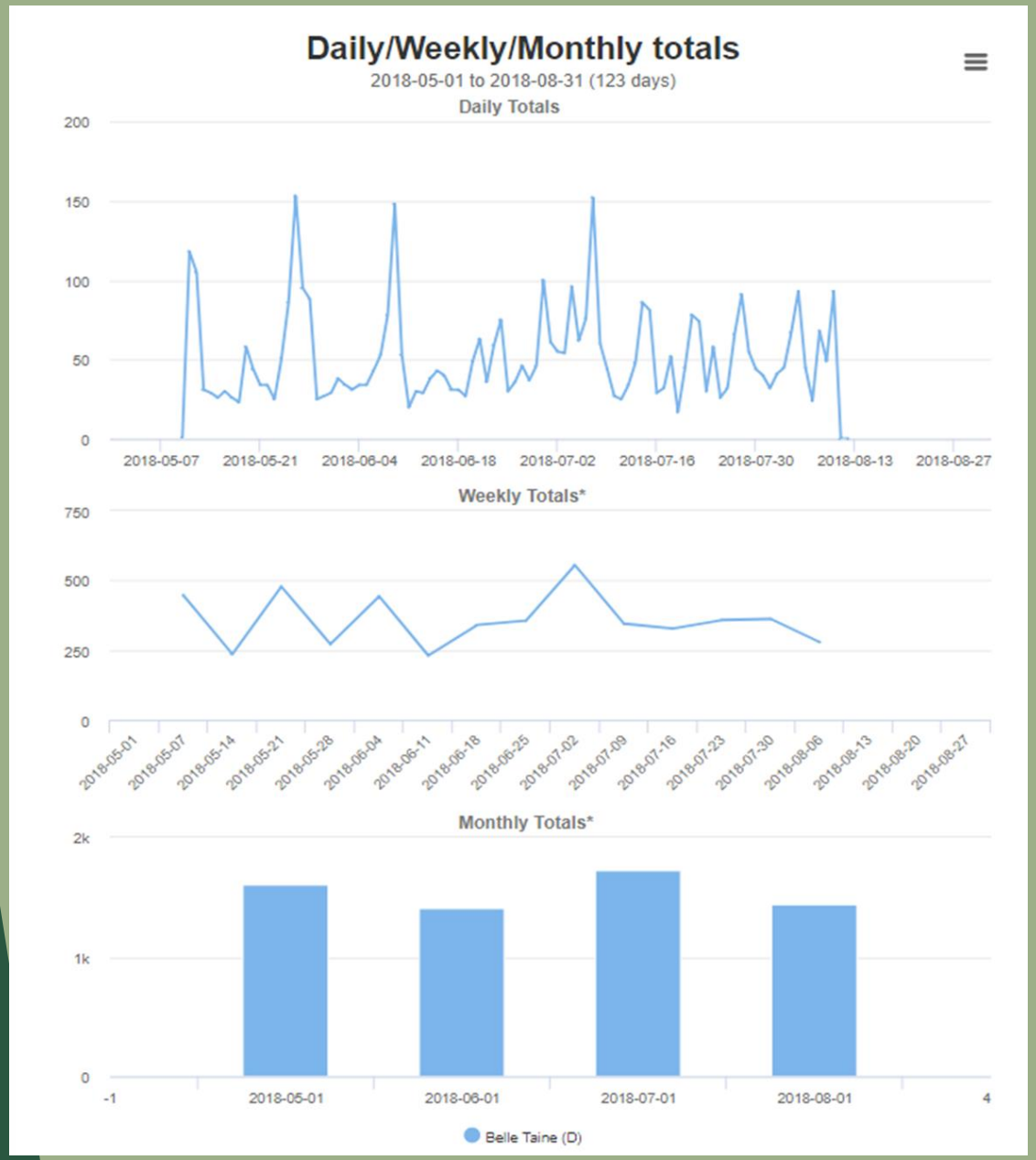
- We can install the unit
- Check one month after installation to ensure they are working correctly
- Remove the unit at the end of the summer for the final data gathering
- We will create reports including data results on trends for a daily/weekly/monthly basis, average use for each day of the week throughout the summer, and the average use for each hour of the day.
- We will also send you a spreadsheet with the raw data allowing the client to process the data on their own as well.

These systems are most commonly used at public water access areas to get an idea of relative use. These can be used to count any large objects with some metal components, as they pass by the unit.

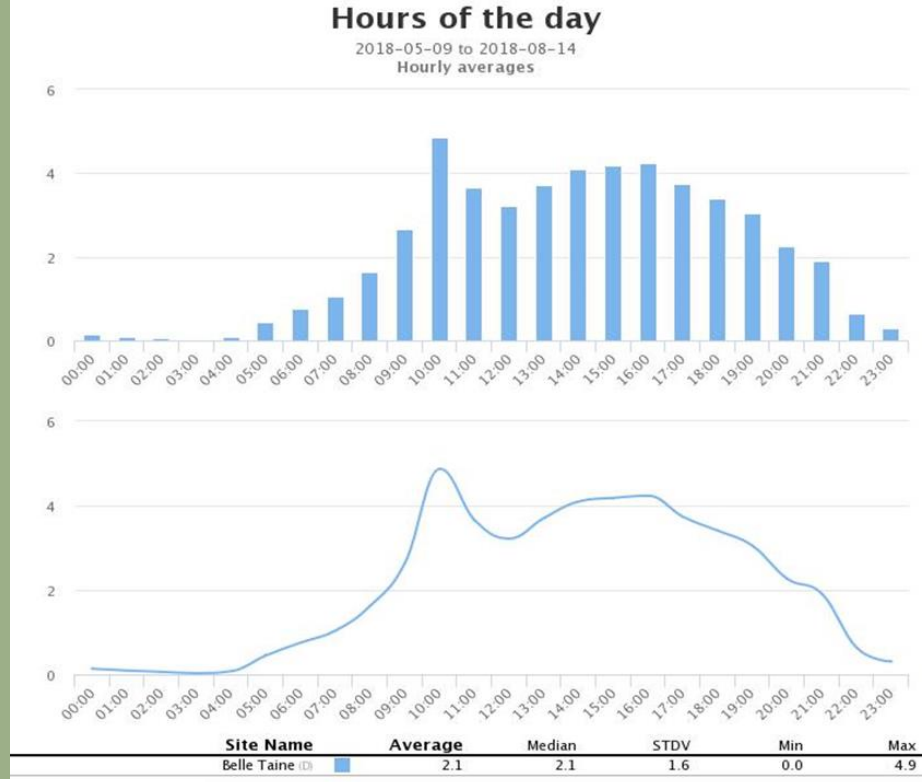
If a client wants to buy a unit and volunteer their time, a client can do all the work described above and just bring their unit into our office because we have the hardware to extract the data. We have a flat rate for this if folks are interested.

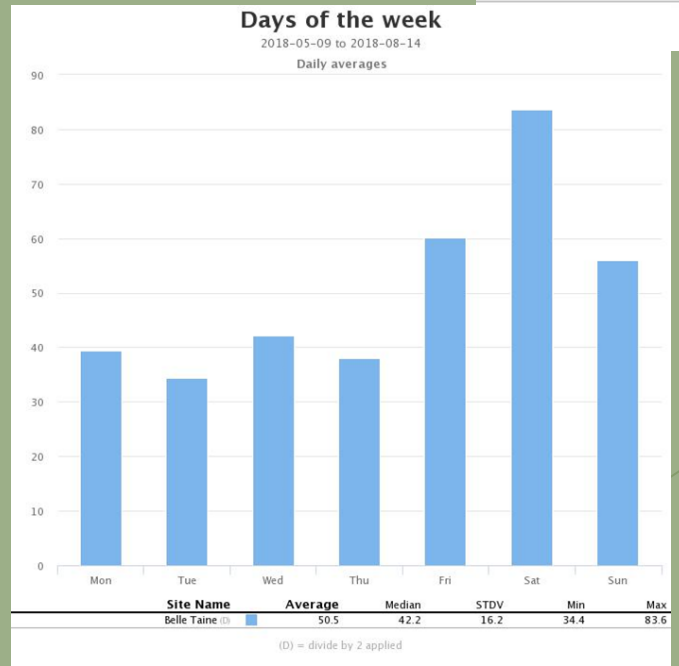
https://www.trafx.net/products.htm#vehicle-counter

Reports



Example -
Belle Taine Lake





Raw Data

Column1	Column2	Column3
Date (Y-M-D)	Time of Day	Transactions
18-05-11	10:00:00 AM	144
18-05-11	11:00:00 AM	52
18-05-11	12:00:00 PM	0
18-05-11	1:00:00 PM	3
18-05-11	2:00:00 PM	3
18-05-11	3:00:00 PM	8
18-05-11	4:00:00 PM	6
18-05-11	5:00:00 PM	10
18-05-11	6:00:00 PM	10
18-05-11	7:00:00 PM	0
18-05-11	8:00:00 PM	0
18-05-11	9:00:00 PM	0
18-05-11	10:00:00 PM	0
18-05-11	11:00:00 PM	0
18-05-12	12:00:00 AM	0
18-05-12	1:00:00 AM	0
18-05-12	2:00:00 AM	0
18-05-12	3:00:00 AM	0
18-05-12	4:00:00 AM	2
18-05-12	5:00:00 AM	0
18-05-12	6:00:00 AM	0
18-05-12	7:00:00 AM	19
18-05-12	8:00:00 AM	2
18-05-12	9:00:00 AM	45
18-05-12	10:00:00 AM	12
18-05-12	11:00:00 AM	10
18-05-12	12:00:00 PM	13
18-05-12	1:00:00 PM	9
18-05-12	2:00:00 PM	7
18-05-12	3:00:00 PM	20
18-05-12	4:00:00 PM	17

We can also provide the raw data so the client will be able to manipulate the data in any way they want, or if you want to see a specific time window on a specific day.

Cost Breakdown

TrafX Counting Systems **Breakdown**				
Service				**Rate**
Creating TrafX Reports	One staff member hourly rate	$45		$45, per hour
Rental of TrafX unit				
If the District Places and Retrieves the Unit(s)				$50, per month
Vehicle Mileage			federal mileage rate	$0.58, per mile
Staff Time	One staff member hourly rate	$45		$45

TrafX Counting Systems **Estimate Examples**

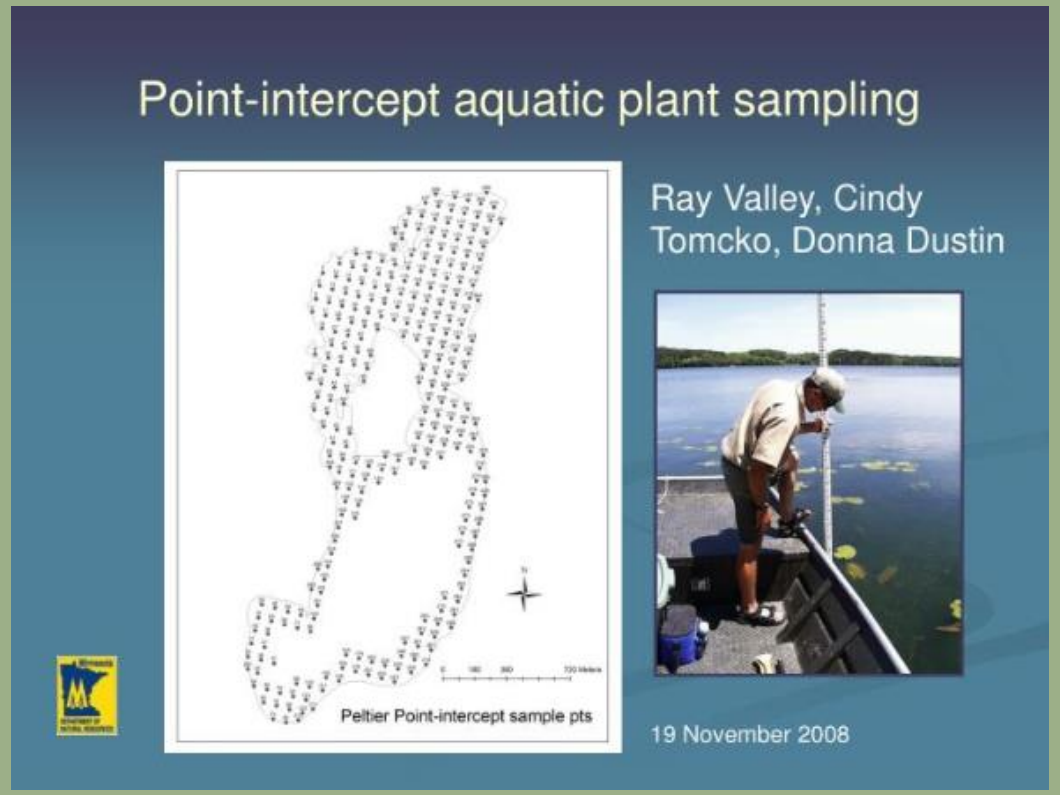
We offer full TrafX counting systems services. We can install the unit, check one month after installation to ensure they are working correctly, and remove them at the end of the summer for the final data gathering. We will create reports including data results on trends for a daily/weekly/monthly basis, average use for each day of the week throughout the summer and the average use for each hour of the day. We will also send you a spreadsheet with the raw data allowing the client to process the data on their own as well. These systems are most commonly used at public water access areas to get an idea of relative use. These can be used to count any large objects with some metal components, as they pass by the unit. ***If a client wants to volunteer their time, the client can install and bring in their unit for us to pull data from and process. Clients are also welcome to purchase a unit on their own and can bring it into the district office for data processing services as we have the hardware and software for reading data.***

Cost Estimates Based on Distance From Our Office	Rental	Total for District Owned and Operated Units	Total Flat Rate for Client Owned and Operated Units and the District Extracts and Generates Data
Site **10** miles away from our office	$50 per month	**$510**	**$150**
Site **20** miles away from our office	$50 per month	**$590**	**$150**
Site **30** miles away from our office	$50 per month	**$670**	**$150**
Site **40** miles away from our office	$50 per month	**$750**	**$150**
Site **50** miles away from our office	$50 per month	**$830**	**$150**

* Prices are based on 5 month agreements (duration is negotiable)

Vegetation Mapping Terrestrial or Aquatic

We would use a Point Intercept Method (same as DNR). This method of sampling will map the submerged plant beds within the shallow areas of a lake. This map would show what species of submerged plants are in your lake and where they are in your lake.

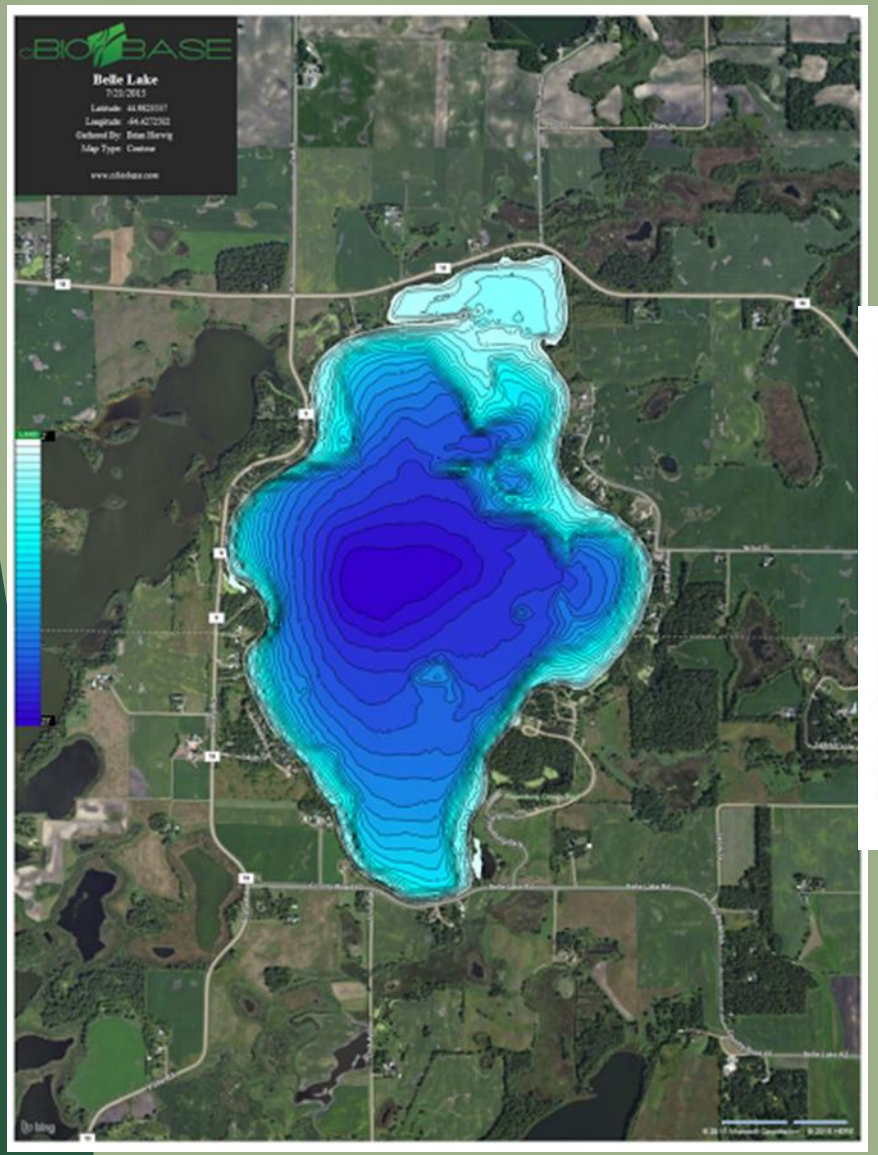


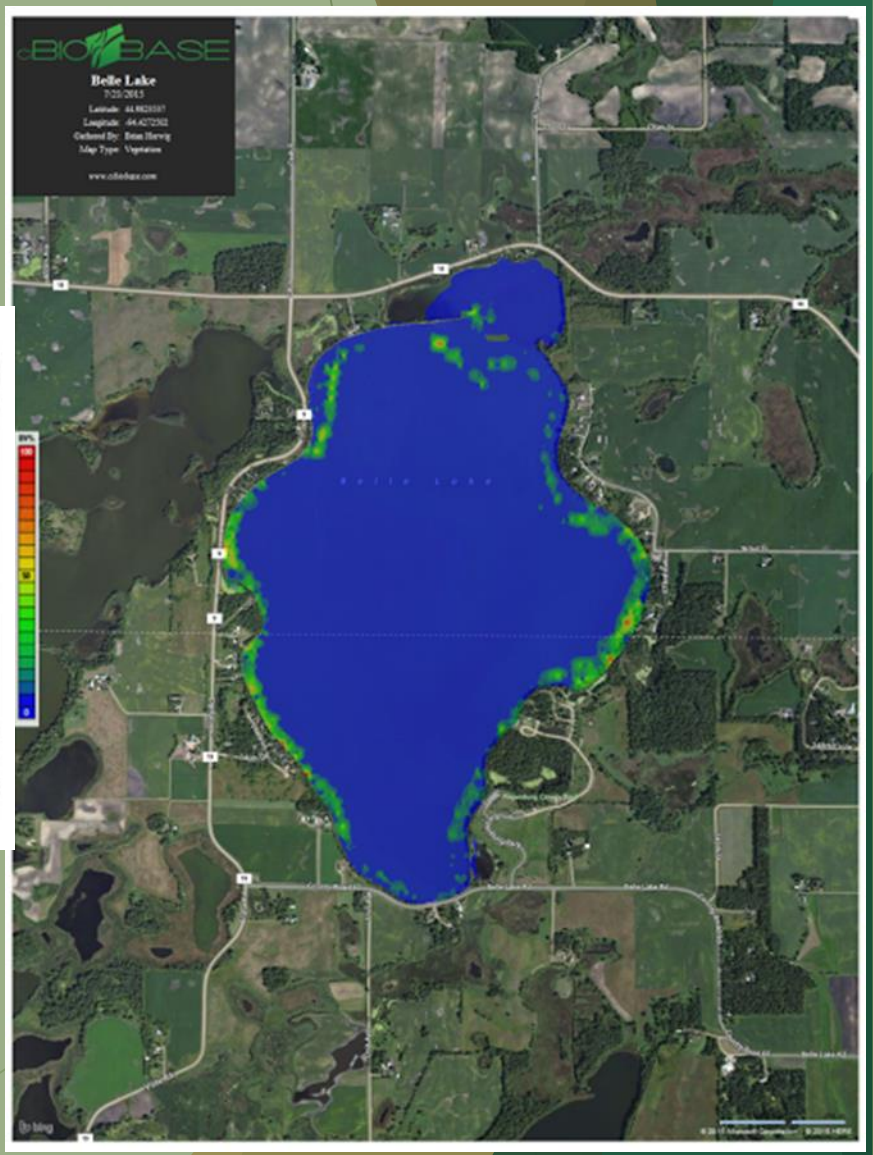
https://www.slideserve.com/hua/point-intercept-aquatic-plant-sampling

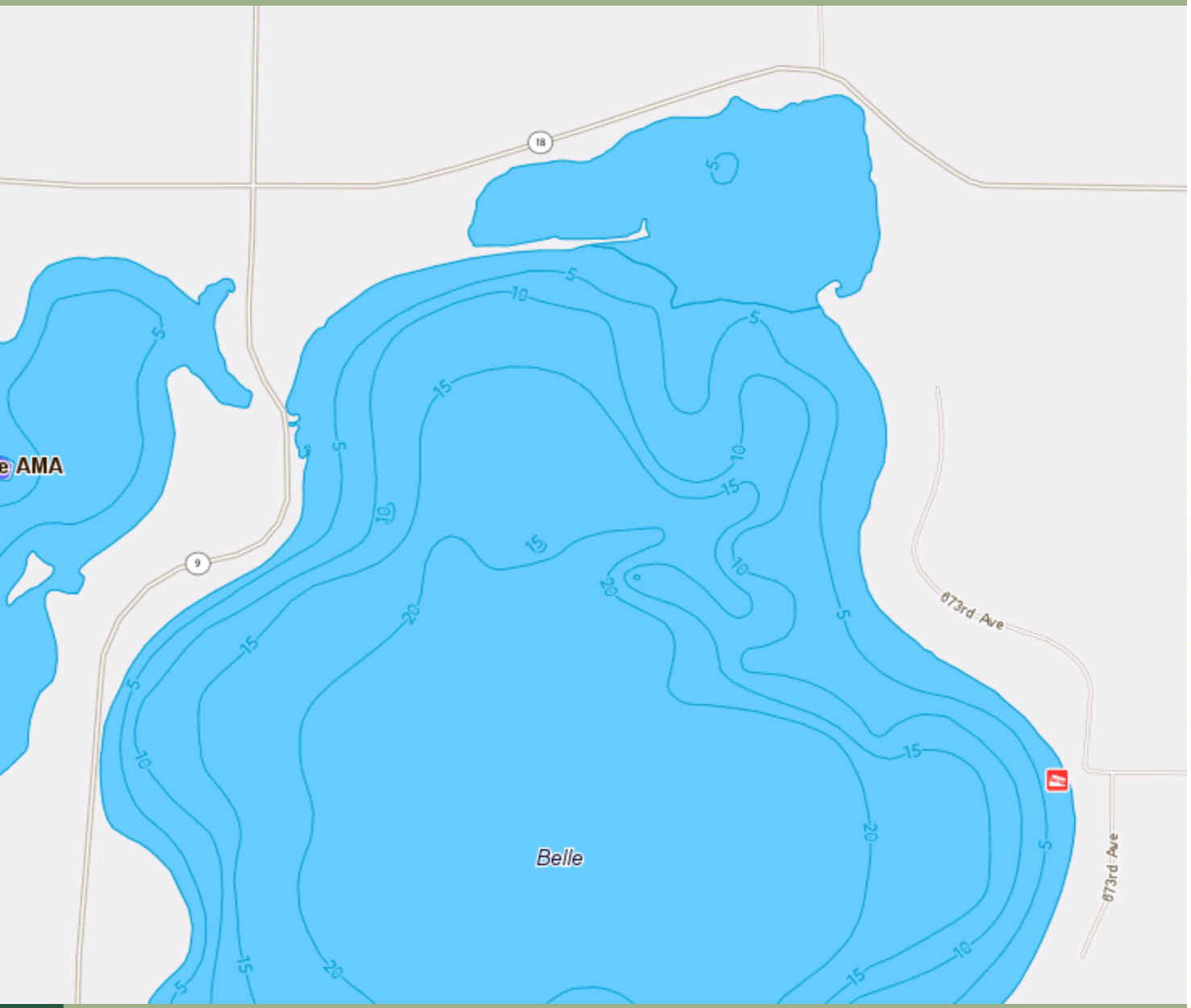
This service cost will greatly depend on the depth and size of the lake, and the distance away from the District office.

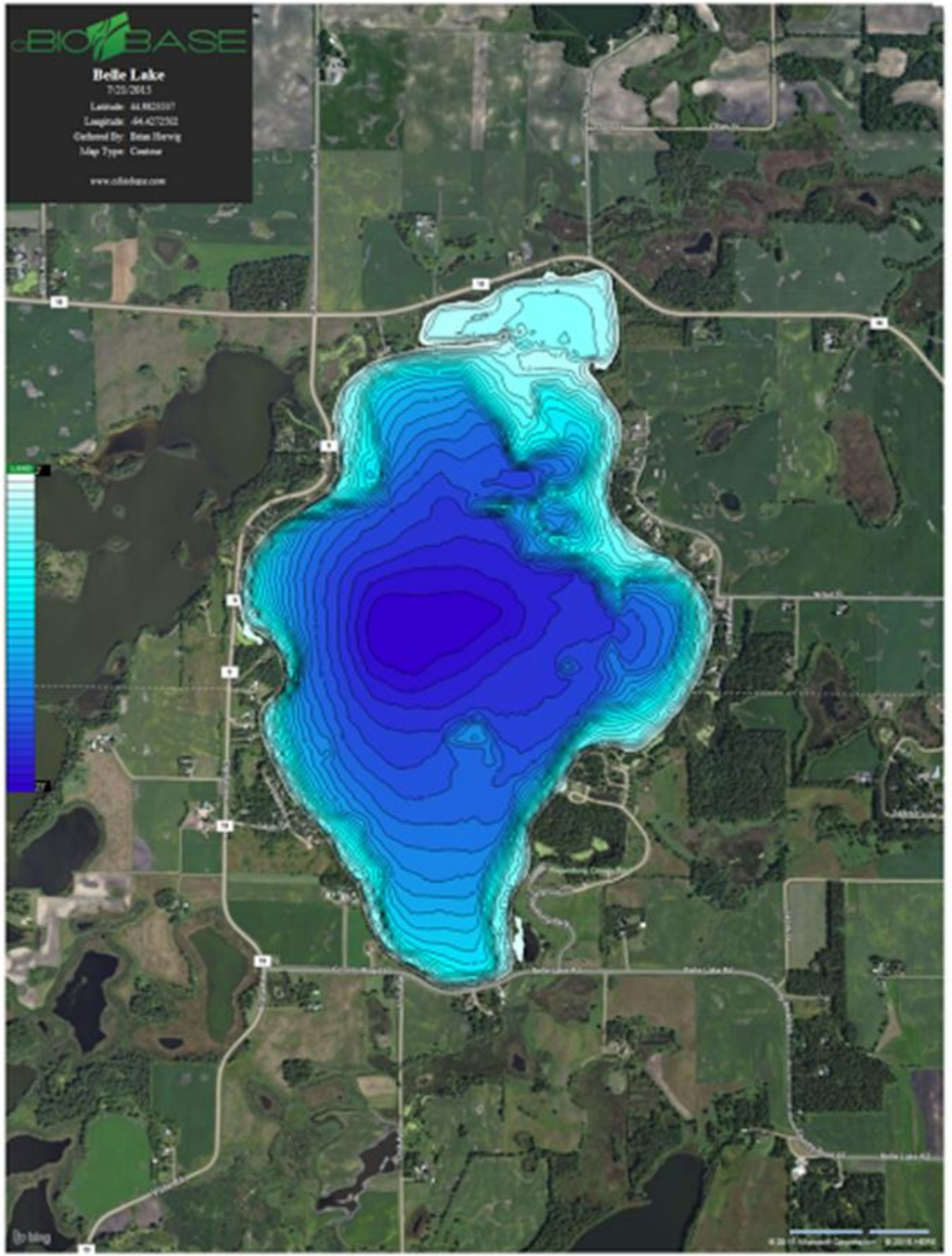
Continued - Bathometry mapping

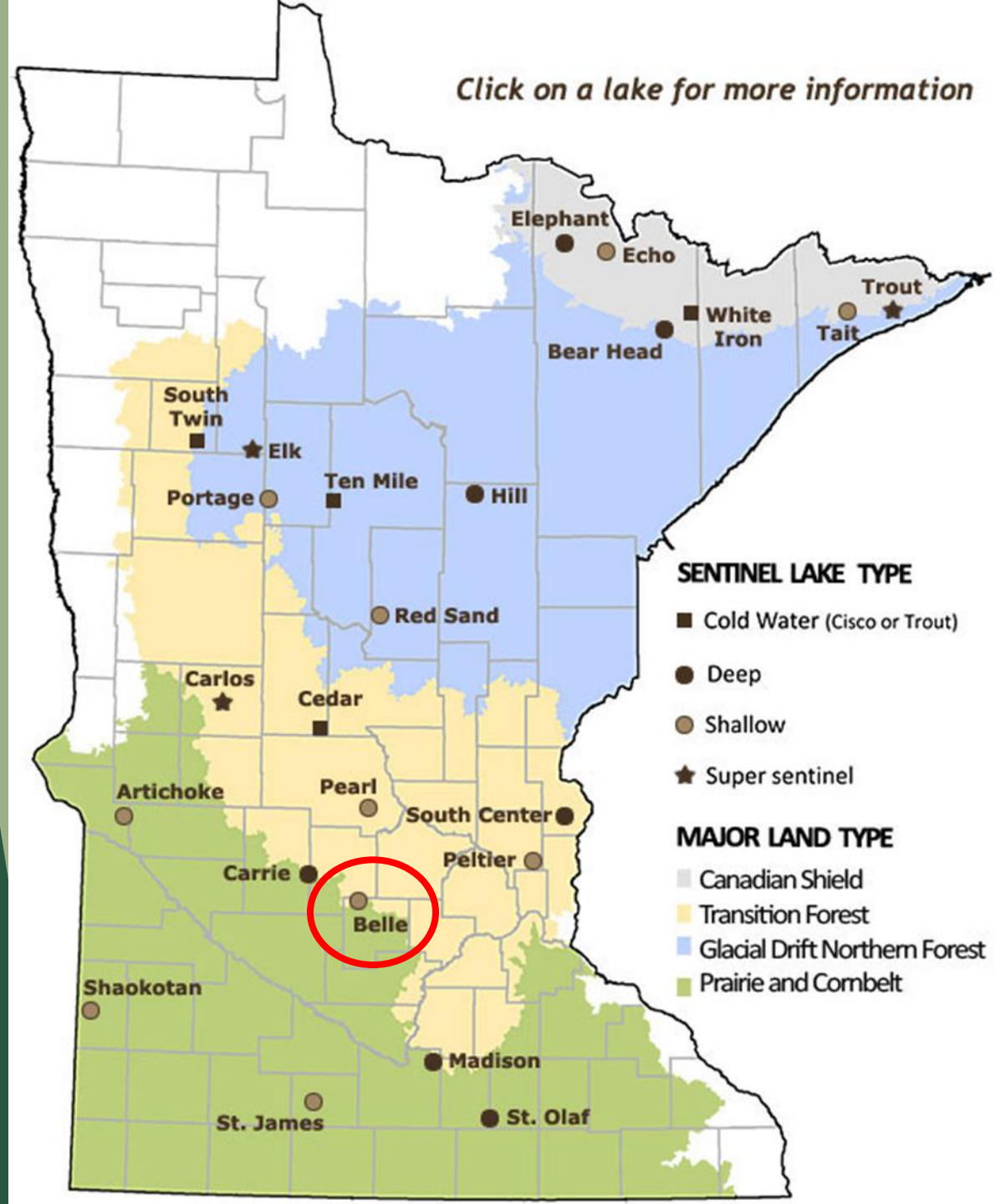
These graphics are from a project I did with DNR in Hutchinson during an internship






18
9
AMA
Belle
873rd Ave
873rd Ave


BIOBASE
Belle Lake


Click on a lake for more information
Elephant
Echo
Trout
White Iron
Tait
Bear Head
South Twin
Elk
Ten Mile
Portage
Hill
Red Sand
Carlos
Cedar
Artichoke
Pearl
South Center
Peltier
Carrie
Belle
Shaokotan
Madison
St. James
St. Olaf
SENTINEL LAKE TYPE
Cold Water (Cisco or Trout)
Deep
Shallow
Super sentinel
MAJOR LAND TYPE
Canadian Shield
Transition Forest
Glacial Drift Northern Forest
Prairie and Cornbelt

Cost Breakdown

Vegetation Mapping, Aquatic or Terrestrial **Breakdown**		
Service		**Rate**
Sampling Creating Reports		*Cost depends on the lake or parcel size please contact the office for a quote
Vehicle Mileage	federal mileage rate	$0.58, per mile
Boat Rental (if Aquatic)		$125, per day

Vegetation Mapping Estimate Examples

We use a Point Intercept Method. This method of sampling will map the submerged plant beds within the shallow areas of a lake. This map would show what species of submerged plants are in your lake and where they are in your lake.

This service cost will greatly depend on the depth and size of the lake, and the distance away from the District office.

For a shallow 1,000 acre lake, that is within 20 miles of the office it would cost around $3,200 for vegetation mapping.

* **These are only estimates. Prices may vary.**

Terrestrial Invasive Species

Hubbard SWCD

HUBBARD COUNTY
Soil & Water
Conservation District

Hubbard County Parks and Rec (not the SWCD) is the Hubbard County Contact for Noxious Weeds

The Agricultural Inspector

- The Hubbard County Agricultural Inspector is also within the Parks and Recreation Department. The Inspector is in charge of enforcing the Minnesota Noxious weed law in Hubbard County, as are all township supervisors. If you have noxious weed complaints please call this office.

- Contact:

  Greg Hensel, Ag Inspector

  Public Works Building

  101 Crocus Hill Street

  Park Rapids, MN 56470

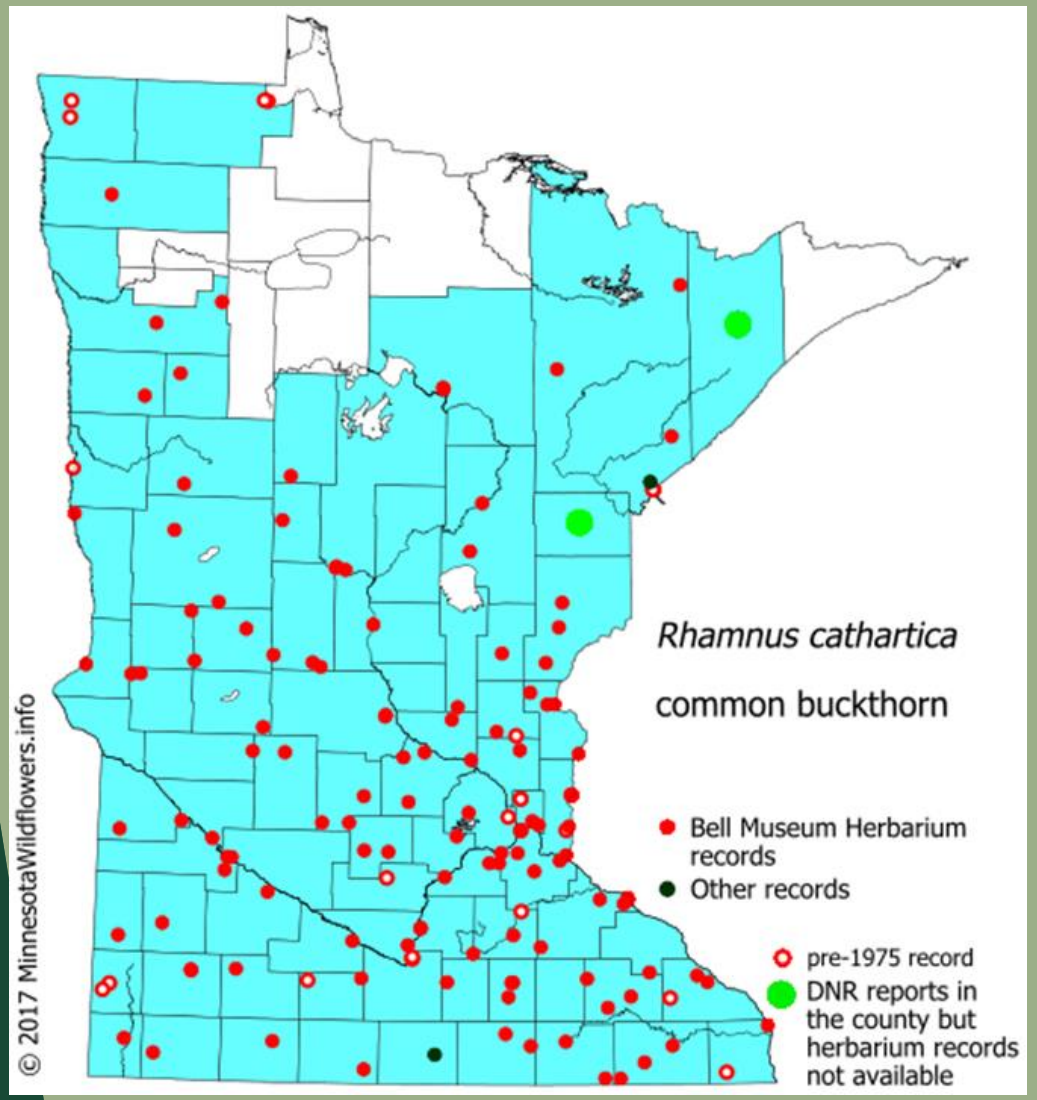
  (218) 237-1456

MN DNR List of Invasive Terrestrial Plants

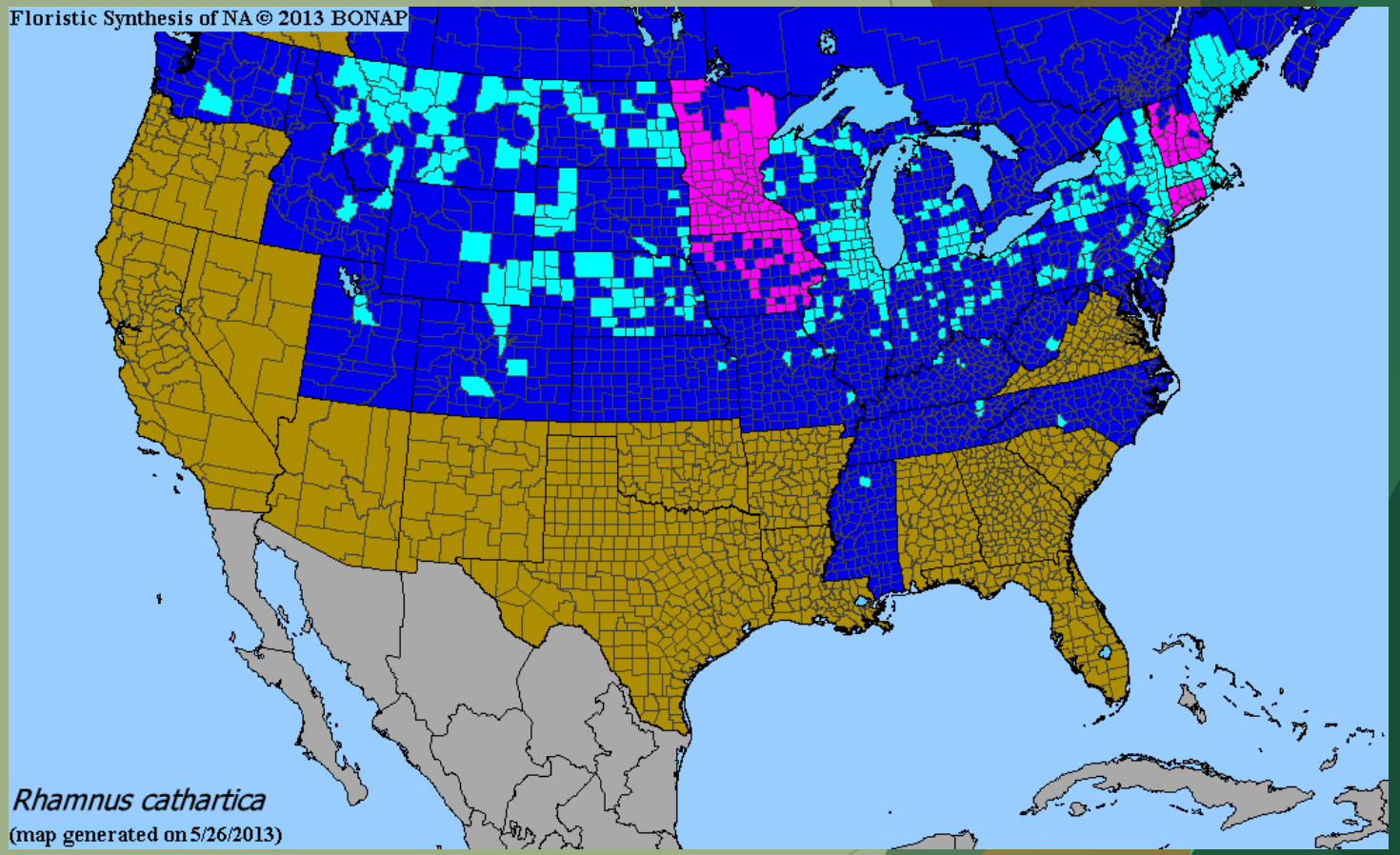
1.) Amur maple
2.) Amur silver grass
3.) Birdsfoot trefoil
4.) Black locust
5.) Black swallow-wort*
6.) British yellowhead*
7.) Buckthorn
8.) Bull thistle
9.) Butter and eggs
10.) Canada thistle
11.) Common tansy
12.) Common teasel*
13.) Cow vetch and hairy vetch
14.) Creeping Charlie
15.) Crown vetch or axseed
16.) Cut-leaved teasel*
17.) Dalmatian toadflax*
18.) Exotic honeysuckles
19.) Garlic mustard
20.) Giant hogweed*
21.) Grecian foxglove*
22.) Hoary alyssum
23.) Japanese barberry
24.) Japanese hedge parsley*
25.) Japanese hops*
26.) Japanese knotweed
27.) Leafy spurge
28.) Meadow knapweed*
29.) Multiflora rose
30.) Musk or nodding thistle
31.) Narrowleaf bittercress*
32.) Norway maple
33.) Orange hawkweed
34.) Oriental bittersweet*
35.) Oxeye daisy
36.) Perennial sow thistle
37.) Poison hemlock
38.) Queen Ann's lace
39.) Reed canary grass
40.) Russian olive
41.) Siberian elm
42.) Siberian peashrub
43.) Smooth brome grass
44.) Spotted knapweed
45.) Tree of heaven*
46.) White and yellow sweet clover
47.) Wild parsnip
48.) Yellow iris
49.) Yellow star thistle*

* Newly Arrived Terrestrial Invasive Species
Early detection and reporting is key!

Common Buckthorn Distribution



https://www.minnesotawildflowers.info/tree/common-buckthorn



https://www.minnesotawildflowers.info/tree/common-buckthorn

County Color Key: Native, not rare | Native, rare | Native, adventive | Extirpated | Extinct | Exotic | Noxious weed | Eradicated | Waif | Questionable presence

State Color Key: Not present | Present, native | Present, exotic

What Does it Look Like?

https://www.michigannatureguy.com/blog/2015/04/19/glossy-buckthorn-in-michigan/

https://www.minnesotawildflowers.info/tree/common-buckthorn

https://www.minnesotawildflowers.info/shrub/glossy-buckthorn

https://www.minnesotawildflowers.info/tree/common-buckthorn

https://www.minnesotawildflowers.info/tree/common-buckthorn

https://www.minnesotawildflowers.info/tree/common-buckthorn

Common Buckthorn

Origin:

Europe

Status in Hubbard County:

Noxious Weed

Habitat:

Partial shade, full shade, full sun; moist to dry soils; in forests, forest edges, fence rows, areas with recent disturbance

Blooms in:

June - July

Plant Height:

Up to about 20 feet high

Hotspots in Hubbard:

Lowland areas near the Fishhook River in town and South of town. Hartland Park has a thriving population.

Eradication Methods

Pulling the complete plant out at any age – easier with smaller/younger plants. Seedlings can be pulled by hand. Easiest done when the soil is moist.

Fire is ineffective long term, fire doesn't spread through buckthorn thickets well, buckthorn sprouts following burns and becomes thicker on each stump

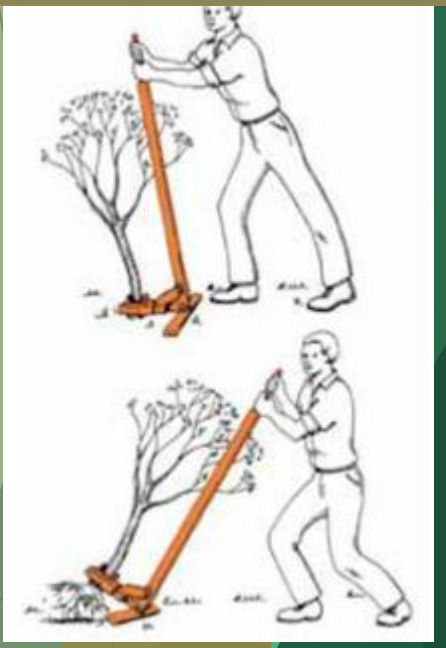
Singular cutting or mowing is ineffective long term, buckthorn will re-sprout after being cut or mowed.

Cutting or mowing buckthorn in spring and fall for multiple years will eventually weaken the root. If you never allow the leaves to emerge. This will take between 5 – 7 years on average

After cutting you can place aluminum cans or black heavy duty plastic over cut stems/stumps and this will prevent regrowth

Girdling can be effective if done properly. Be sure to cut the phloem (Inner Bark) but leave the xylem (sapwood) intact. Roots will send nutrients to the tree but the tree won't be able to send nutrient to the roots. This method is also susceptible to re-sprouting if done incorrectly.

Extraction Devise (Weed Wrench®)
about $100 - $150



https://www.ci.chanhassen.mn.us/549/Buckthorn-Invasive-Plants

https://oaksavannas.org/invasives.html

Continued

- Basal bark application with a chemical is very effective. Applying chemicals directly to the bark of a buckthorn tree, a paint brush can be used for this. Trees will need to be cut down and burned once dead.

- Frilling is effective. Gash a buckthorn tree with a blade or chainsaw apply chemicals to the gash killing the tree quickly. Takes longer to perform compared basal bark application but works quicker and has a higher success rate.

- Foliar can be effective, applying chemicals to the leaves of the buckthorn, this can be effective against seedlings but has a higher risk due to killing nontarget plants. A good time to do this is before leaves come in on native plants.

- All treatment methods should happen for multiple years in a row in target areas to ensure buckthorn does not return. After buckthorn is removed native species may need replanted in those areas.

Chemical Use

Table from the MN DNR

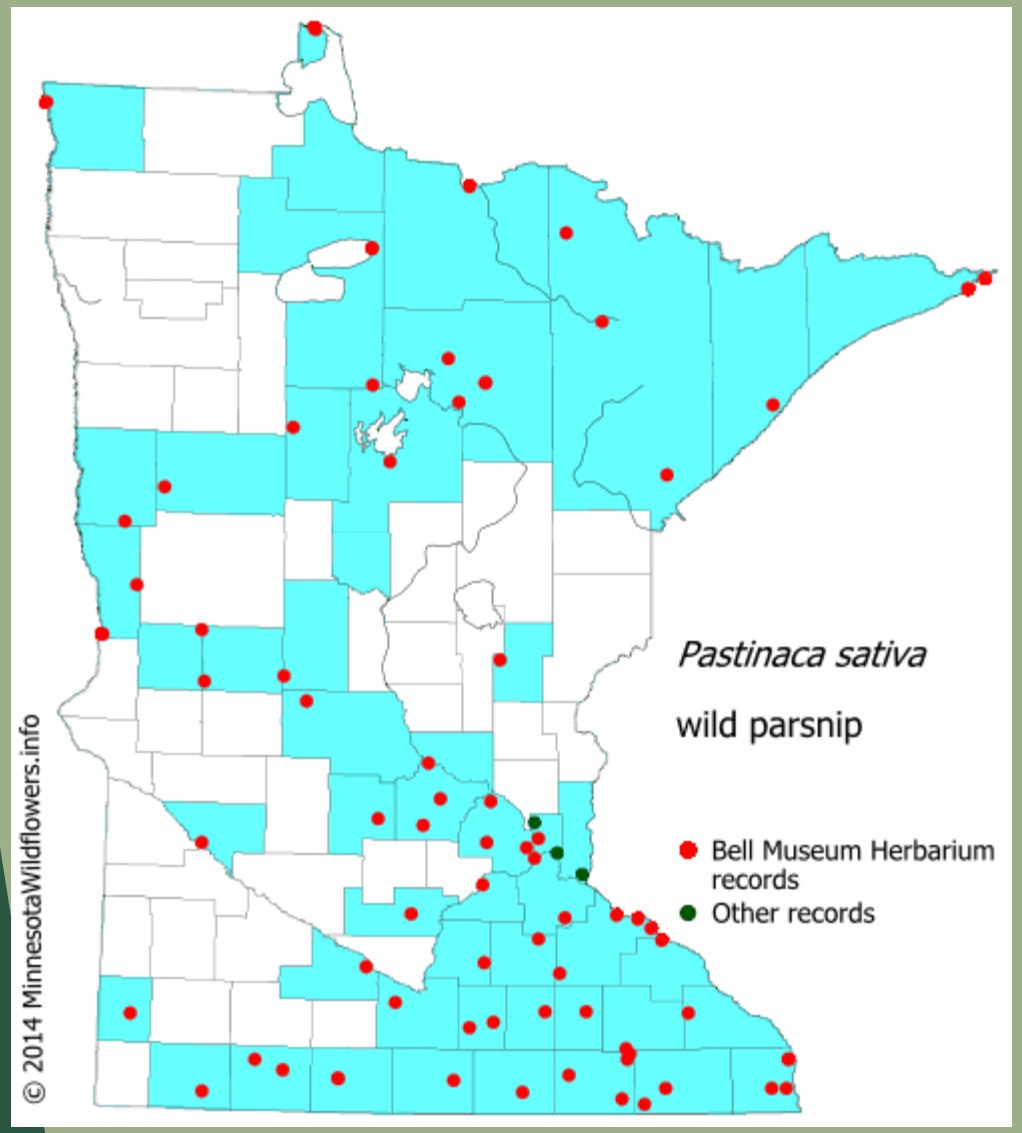
Trade Name	Chemical Name	Concentration	Use
Ortho Brush-B-Gon	Triclopyr	Ready to use – do not dilute	Cut tree down – treat stump
Ferti-Lome Brush Killer and Stump Killer	Triclopyramine	Ready to use – do not dilute	Cut tree down- treat stump
Garlon 3A, Vastlan	Triclopyramine	Mix one part Garlon 3A with 3 parts of water (25% solution). For Vastlan Consult Label	Cut tree down – treat stump
Garlon 4 Ultra, Element 4	Triclopyrester	Mix one part Garlon 4 with 3 parts bark oil/diluent (25% solution)	Cut tree down – treat stump Basal Bark application Gash tree – treat cut
Pathfinder II	Triclopyrester	Ready to use do not dilute	Cut tree down – treat stump
Roundup, Rodeo, Accord, etc.	Glyphosate	Cut stump: Look for at least 25% active ingredient glyphosate for cut-stump treatments. If using Roundup Concentrate you can mix 1 part water with 1 part herbicide to achieve a 50% solution. Foliar spray: Lower concentrations (2% active ingredient) work for foliar spray of seedlings. If using Roundup Concentrate you can mix a 1:50 to 1:20 herbicide:water ratio.	Cut tree down – treat stump Or Foliar Spray

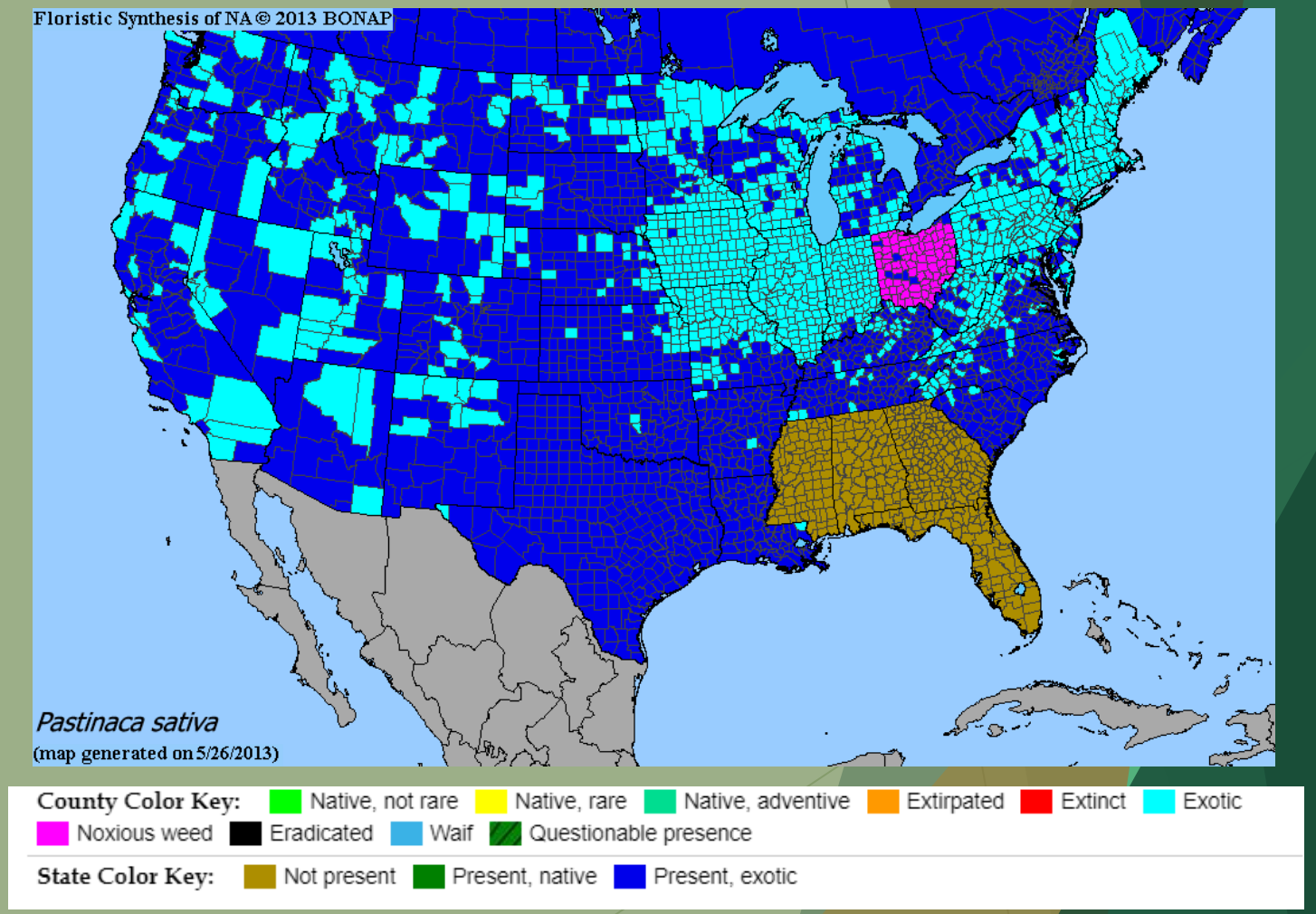
https://www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/control.html

Why Is It Important?

- Buckthorn are an invasive species from Europe
- In thick stands of buckthorn, they shade out the ground and that limits the growth of low lying forest plants
  - Buckthorn leaves can assist in intercepting rain but once it gets to the soil surface without the low lying green vegetation it could cause erosion (according to study with the Science Museum of MN).
- Allelopathic (Some studies show) - Can cause changes to soil chemistry. Exudes emodin (this gives it that orange color just inside the bark).
  - The fruit has the greatest effect, most exudate – can inhibit seed germination of other species
  - Leaf exudate can cause a lesser effect, similar to the fruit
  - Little to no exudate comes from the bark or roots

Wild Parsnip





https://www.minnesotawildflowers.info/flower/wild-parsnip

What Does It Look Like?

https://www.minnesotawildflowers.info/flower/wild-parsnip

Similar to Queen Ann's Lace or Dill

https://www.minnesotawildflowers.info/flower/queen-annes-lace

Leaves

https://www.minnesotawildflowers.info/flower/wild-parsnip

Stem

https://www.minnesotawildflowers.info/flower/wild-parsnip

Mature Seeds

https://www.minnesotawildflowers.info/flower/wild-parsnip

Rosette

Large infestation – Spring Time

Infestation with flowers showing

https://www.minnesotawildflowers.info/flower/wild-parsnip

https://www.minnesotawildflowers.info/flower/wild-parsnip

Information:

- Habitat:
  - Sunny areas, moist soil to upland areas, grows well in ditches and open fields
- Plant height:
  - 4 feet tall – 2 – 5 feet
- Origin:
  - Europe and Asia
- Status in Hubbard County:
  - Noxious weed
- Life Cycle:
  - biennial or short lived perennial
- Flower structure:
  - Compound Umbel
- Blooms :
  - June to July

https://www.minnesotawildflowers.info/flower/wild-parsnip

Warning next slide shows Wild Parsnip Burns and Blisters – Graphic Content - look away if you don't want to see it.

Wild parsnip can cause blisters and burns if a persons skin is exposed to the "sap" in the stem of wild parsnip.

Brushing up against this plant won't cause any harm, it happens when the interior milky latex or "sap" gets on you.

You've been warned

https://www.minnesotawildflowers.info/flower/wild-parsnip

Wild Parsnip burns can cause blisters and discoloration of the skin

If you suspect that you've gotten parsnip sap on you. Get out of direct sunlight wash off with cold water and dawn dish soap

https://dnr.wi.gov/wnrmag/html/stories/1999/jun99/parsnip.htm

Burns from wild parsnip
Photo: Andrew Link, *Lacrosse Tribune* 2013

https://www.dec.ny.gov/docs/lands_forests_pdf/wildparsnipfact.pdf

Seek medical attention
Keep area clean, apply antibiotic cream while heals

How To Eradicate Wild Parsnip:

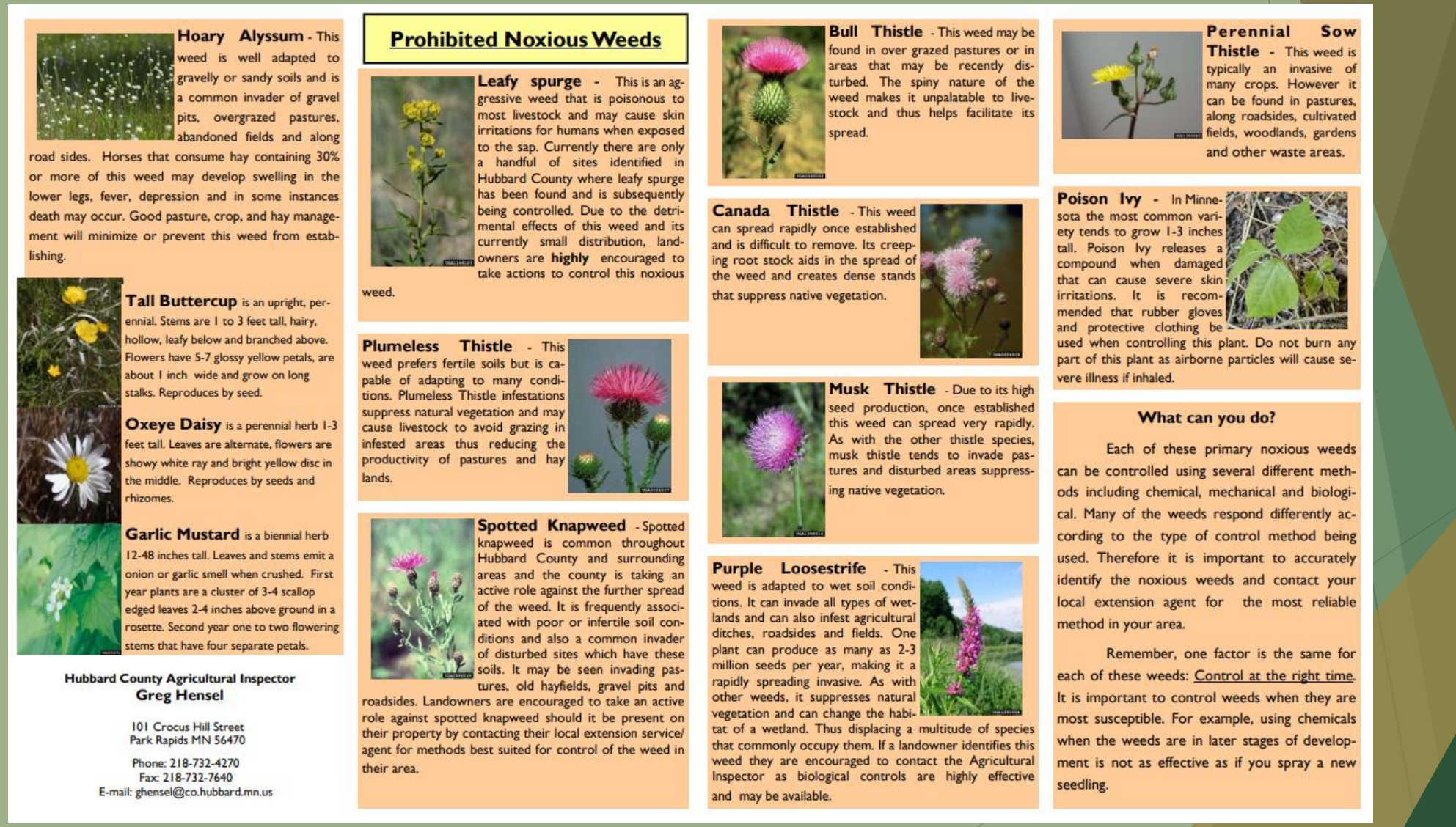
- Mechanical
  - You can pull the plants out by hand - by sure to wear gloves and long sleeves. Try not to breaks the stem.
  - Can cut the plant as low as possible to the ground after flowers emerge but before it seeds. Be sure to wear gloves and long sleeves
  - Can mow the plant after flowering but before it goes to seed. If it cut at the wrong time it will put up a new stem very close to the ground and flower out with in inches of the ground – makes it difficult to see.
- Chemical
  - Spot application with glyphosate or Metsulfuron

Why is it important:

- Wild Parsnip easily grows in disturbed area, ditches, roadsides and can overrun native grassland areas

https://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/wildparsnip.html

Weed Brochure by Hubbard County Parks and Recreation Department – great reference



Hoary Alyssum - This weed is well adapted to gravelly or sandy soils and is a common invader of gravel pits, overgrazed pastures, abandoned fields and along road sides. Horses that consume hay containing 30% or more of this weed may develop swelling in the lower legs, fever, depression and in some instances death may occur. Good pasture, crop, and hay management will minimize or prevent this weed from establishing.

Tall Buttercup is an upright, perennial. Stems are 1 to 3 feet tall, hairy, hollow, leafy below and branched above. Flowers have 5-7 glossy yellow petals, are about 1 inch wide and grow on long stalks. Reproduces by seed.

Oxeye Daisy is a perennial herb 1-3 feet tall. Leaves are alternate, flowers are showy white ray and bright yellow disc in the middle. Reproduces by seeds and rhizomes.

Garlic Mustard is a biennial herb 12-48 inches tall. Leaves and stems emit a onion or garlic smell when crushed. First year plants are a cluster of 3-4 scallop edged leaves 2-4 inches above ground in a rosette. Second year one to two flowering stems that have four separate petals.

Hubbard County Agricultural Inspector
Greg Hensel

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E-mail: ghensel@co.hubbard.mn.us

Prohibited Noxious Weeds

Leafy spurge - This is an aggressive weed that is poisonous to most livestock and may cause skin irritations for humans when exposed to the sap. Currently there are only a handful of sites identified in Hubbard County where leafy spurge has been found and is subsequently being controlled. Due to the detrimental effects of this weed and its currently small distribution, landowners are **highly** encouraged to take actions to control this noxious weed.

Plumeless Thistle - This weed prefers fertile soils but is capable of adapting to many conditions. Plumeless Thistle infestations suppress natural vegetation and may cause livestock to avoid grazing in infested areas thus reducing the productivity of pastures and hay lands.

Spotted Knapweed - Spotted knapweed is common throughout Hubbard County and surrounding areas and the county is taking an active role against the further spread of the weed. It is frequently associated with poor or infertile soil conditions and also a common invader of disturbed sites which have these soils. It may be seen invading pastures, old hayfields, gravel pits and roadsides. Landowners are encouraged to take an active role against spotted knapweed should it be present on their property by contacting their local extension service/ agent for methods best suited for control of the weed in their area.

Bull Thistle - This weed may be found in over grazed pastures or in areas that may be recently disturbed. The spiny nature of the weed makes it unpalatable to livestock and thus helps facilitate its spread.

Canada Thistle - This weed can spread rapidly once established and is difficult to remove. Its creeping root stock aids in the spread of the weed and creates dense stands that suppress native vegetation.

Musk Thistle - Due to its high seed production, once established this weed can spread very rapidly. As with the other thistle species, musk thistle tends to invade pastures and disturbed areas suppressing native vegetation.

Purple Loosestrife - This weed is adapted to wet soil conditions. It can invade all types of wetlands and can also infest agricultural ditches, roadsides and fields. One plant can produce as many as 2-3 million seeds per year, making it a rapidly spreading invasive. As with other weeds, it suppresses natural vegetation and can change the habitat of a wetland. Thus displacing a multitude of species that commonly occupy them. If a landowner identifies this weed they are encouraged to contact the Agricultural Inspector as biological controls are highly effective and may be available.

Perennial Sow Thistle - This weed is typically an invasive of many crops. However it can be found in pastures, along roadsides, cultivated fields, woodlands, gardens and other waste areas.

Poison Ivy - In Minnesota the most common variety tends to grow 1-3 inches tall. Poison Ivy releases a compound when damaged that can cause severe skin irritations. It is recommended that rubber gloves and protective clothing be used when controlling this plant. Do not burn any part of this plant as airborne particles will cause severe illness if inhaled.

What can you do?

Each of these primary noxious weeds can be controlled using several different methods including chemical, mechanical and biological. Many of the weeds respond differently according to the type of control method being used. Therefore it is important to accurately identify the noxious weeds and contact your local extension agent for the most reliable method in your area.

Remember, one factor is the same for each of these weeds: Control at the right time. It is important to control weeds when they are most susceptible. For example, using chemicals when the weeds are in later stages of development is not as effective as if you spray a new seedling.

http://cms6.revize.com/revize/hubbardcounty/document_center/Parks%20and%20Recreation/Weed%20Brochure%202008.pdf

Weed Brochure by Hubbard County Parks and Recreation Department - Page 2

Secondary Noxious weeds

Common Tansy - Be sure to wear gloves if handling this plant to avoid absorbing toxins through the skin. Since the toxic properties of this plant are cumulative, there is danger of illness, convulsions, and even death if exposed to large amounts of the plant's toxins. Generally, most livestock will avoid Tansy but goats or sheep will readily graze on it.

Wormwood - Olive or silvery green leaves are a distinct characteristic of wormwood as well as its smell. When consumed by dairy cattle the strong flavor of this weed will taint the milk making it unusable for human consumption. Wormwood also emits chemicals in the soil that inhibit the growth of other plants.

While control of secondary noxious weeds is not mandatory, controlling these weeds is recommended due to their detrimental effects if they become established.

White Cockle - Because the seed of this plant is difficult to separate from commercial seeds it can pose a serious problem in clover, alfalfa, and grass seed fields. It's recommended that "certified weed-free" seed is used when planting small grains or alfalfa.

Wild Parsnip - Avoid this plant or wear protective clothing when controlling it! The sap of this plant contains a compound that reacts with sunlight causing **photodermatitis** (severe blistering of the skin). Affected skin may remain darkened for years after blisters heal. In Minnesota, wild parsnip is typically found in wet meadow areas and in pastures or along roadsides.

Grecian Foxglove - This weed is sometimes confused with garden variety foxgloves that are typically sold by flower or nursery companies. Grecian foxglove produces a chemical which can affect the heart if absorbed through the skin and be potentially fatal to humans and to cattle or horses if ingested.

Other Sources for Information

University of Minnesota Extension
www.extension.umn.edu

Invasive Species
www.invasive.org

Plants Database
www.plants.usda.gov

National Invasive Species Information Center
www.invasivespeciesinfo.gov

National Invasive Species Council
www.invasivespecies.gov

Weed Integrated Pest Management Program
www.mda.state.mn.us/weedcontrol

Additional Photos

Leafy Spurge

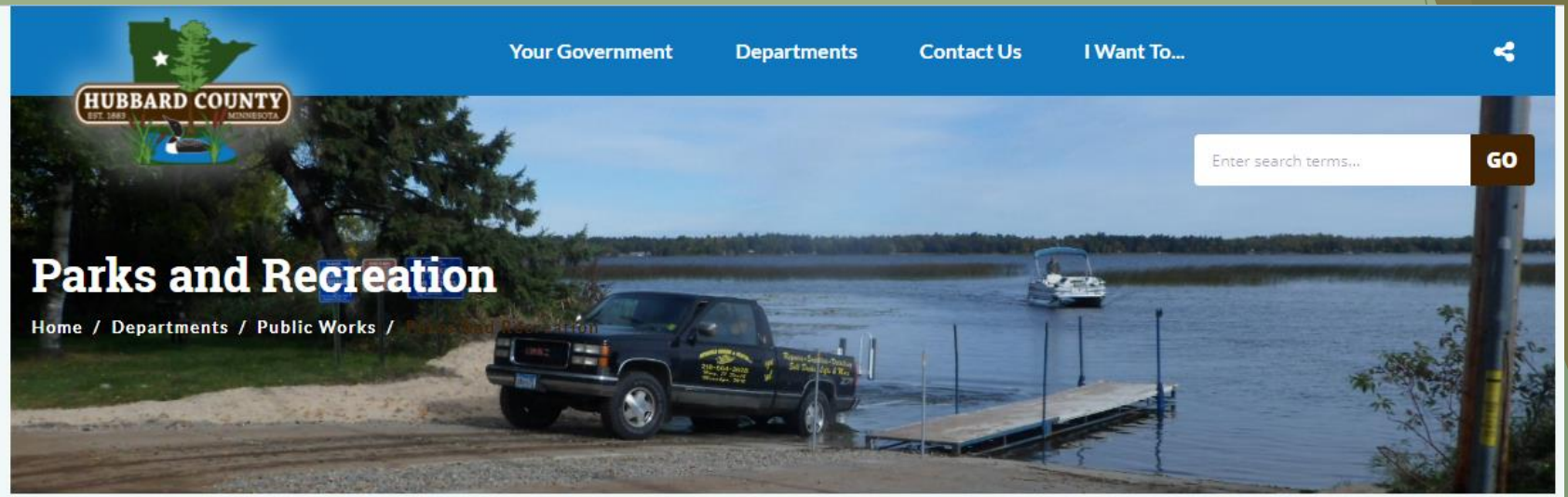
Spotted Knapweed

Purple Loosestrife

Canada Thistle

Plumeless Thistle

http://cms6.revize.com/revize/hubbardcounty/document_center/Parks%20and%20Recreation/Weed%20Brochure%202008.pdf



Links

- Contact Us
- Park Reservation Calendar
- Parks and Recreation Finder
- Noxious Weed Law
- Leafy Spurge Flyer
- Weed Brochure

NEW! Hubbard County Parks and Recreation Finder

We've launched a new app that helps our residents and visitors find parks, trails, public water accesses, public land, and lots of other helpful information about the many recreational opportunities available year-round in the beautiful Heartland Lakes area - The Source of Adventure.

Outdoor recreation is an important part of early childhood development and for a healthy lifestyle as we mature. Hubbard County Parks and Recreation encourages healthy living by offering multiple opportunities to enjoy the great outdoors.

- **Heartland Park** is located in Park Rapids next to the Fish Hook River. The Park has the following amenities: 3 picnic shelters, playground equipment, horseshoe court, tennis/pickleball court, basketball court, softball/baseball field, public access, fishing pier, public swimming beach and restrooms. It also is at the start of the Heartland Trail. The picnic shelters can be reserved for gatherings.
- **Lake George Community Park** is in Lake George on Paine Lake. The park has the following amenities: basketball court, softball/baseball field, playground equipment, bathroom, 3 picnic shelters, public access and swimming beach. The park is maintained by the township. The picnic shelter can be reserved for gatherings.
- **Farris Park** is located in Farden Township. The park has the following amenities: softball/baseball field, basketball court, tennis court, bathrooms, 2 picnic shelters and a paved walking trail. This park is maintained by the township. The picnic shelters can be reserved for gatherings

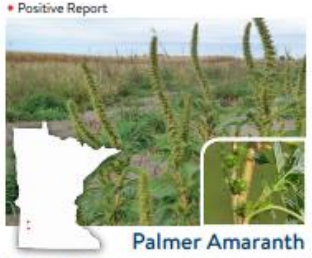
http://www.co.hubbard.mn.us/departments/public_works/parks_recreation/index.php

KEEP A LOOKOUT FOR NEW INVASIVE PLANTS IN MINNESOTA

These species could be spreading in your area.
Early detection and eradicate can prevent an invasion.

Eradicate List

• Positive Report


Palmer Amaranth


Oriental Bittersweet

Brown Knapweed

Yellow Starthistle


Meadow Knapweed

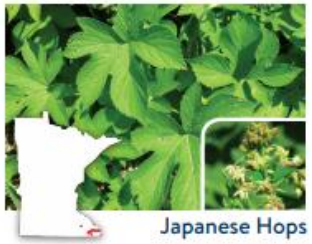

Diffuse Knapweed


Black Swallow-Wort


Grecian Foxglove


Teasels

Giant Hogweed


Japanese Hops


Dalmatian Toadflax

To report an infestation, contact Arrest.The.Pest@state.mn.us or 1-888-545-6684

Updated September 2017

INVASIVE PLANTS IN MINNESOTA

PALMER AMARANTH *(Amaranthus palmeri)*

Annual herb. Grows 6-10 feet tall. **Leaves** are alternate, oval to diamond shaped, sometimes with a white v-shaped mark, and often with a small, sharp spine on the tip. The petiole is longer than the length of the leaf. There are separate male and female plants. Female plants have long main terminal seedhead with stiff, sharp bracts that give **seedheads** a prickly feeling. Adapts quickly, prolific seed producer, competes aggressively, develops herbicide resistance to **threaten** cropland and conservation plantings.

ORIENTAL BITTERSWEET *(Celastrus orbiculatus)*

Woody, perennial vine grows over 60 feet long. **Leaves** alternate, toothed, shape variable; teardrop-shaped to round with a pointed tip. **Flowers** small and greenish-yellow; male and female flowers on separate plants. Blooms in early summer, fruits in fall. **Fruit** greenish to yellow, grows in clusters of 3–7 along stem at leaf axils. Fruit splits open to reveal a bright red inner-fruit. **Threatens** woodlands, forests, savannas and floodplains.

BROWN KNAPWEED *(Centaurea jacea)*

Perennial herb. Plant forms a basal rosette then bolts. **Stems** are 1–4 feet tall. **Leaves** are alternate, lanced shaped and hairy, occasionally with wavy leaf edges or lobed. Small, single **flowers** are clustered together to form composite flower heads; mostly pink/purple, sometimes having white centers; bracts below the flowers are rounded and wide at the tip, often having brown tips that do not have fringe. **Threatens** meadows, hayfields, pastures, riparian areas, and forest openings.

YELLOW STARTHISTLE *(Centaurea solstitialis)*

Annual or biennial herb. Plant forms a basal rosette then bolts. **Stems** are winged, branched and covered with wooly hair. Plant height averages from 1-3 feet. Basal **leaves** are deeply lobed; stem leaves are alternate, narrow, have few to no lobes. **Flower** heads are golden yellow with sharp yellowish spines forming a circle of spines around each flower head. **Seeds** at center of seedhead have fluffy hairs. **Threatens** prairies, fields, woodlands and pastures.

MEADOW KNAPWEED *(Centaurea x moncktonii)*

Perennial herb. Plant forms a basal rosette then bolts. Multiple **stems** grow upright, openly branched near mid-stem, and grow 2-3 feet tall. **Leaves** are simple, alternate, lance-shaped and hairy, occasionally with wavy edges or lobed. Small, single **flowers** are clustered together to form composite flower heads; mostly pink/purple, sometimes having white centers; bracts below the flowers are rounded and wide at the tip and have fringe. **Seeds** are 1/8 inch long and light brown. **Threatens** meadows, hayfields, pastures, riparian areas, and forest openings.

DIFFUSE KNAPWEED *(Centaurea diffusa)*

Biennial or perennial herb. Plant forms a basal rosette then bolts. **Stem** is single and upright with numerous branches, growing up to 3.5 feet tall. **Leaves** are alternate and finely divided; basal leaves are hairy, grayish green, and highly divided. Small, single **flowers** are clustered together to form composite flower heads; mostly white, sometimes pink; bracts have rigid, sharp spines. **Seeds** are light brown to black and 1/8 inch long. **Threatens** prairies, pastures, hayfields and forest openings.

BLACK SWALLOW-WORT *(Cynanchum louiseae)*

Herbaceous, perennial vine twines 3–8 feet high. **Leaves** opposite, toothless, narrowly to broadly oval, pointed tips, dark green and shiny. **Flowers** tiny, dark purple with 5 pointed, downy, triangular petals that are as long as wide. **Seedpods** milkweed-like, slender and tapered. **Threatens** woodlands, forests, grasslands and savannas.

GRECIAN FOXGLOVE *(Digitalis lanata)*

Perennial herb. Forms rosette during first year of growth. Flowering **stems** are mostly unbranched and grow 2–5 feet tall; covered with woolly hairs. **Leaves** are simple, alternate, and oblong-shaped with pointed tip. **Flowers** are tubular, arranged in elongated color; creamy white to pale yellow with brownish-purple venation inside. **Fruit** is a pod covered with hooks that attach easily to fur and clothes. ***Threatens*** prairie and savannah communities, grasslands, river bluffs and forest margins. ***Caution! Poisonous – avoid handling with bare skin.***

TEASELS – common and cutleaf *(Dipsacus fullonum and Dipsacus laciniatus)*

Herbaceous monocarpic perennial herb, flowers once then dies. Form basal rosettes for at least one year until enough resources are acquired to produce flowering stalk. At maturity, flowering **stalks** may grow 2–7 feet. **Leaves** are opposite, large and prickly; wrap around the stalk to form cups that can hold water; cutleaf teasel has deeply-lobed leaves while common teasel leaves are unlobed. **Flower** distinctive for bristly egg shape and is white to lavender/purple. Cutleaf teasel stiff flower bracts are not taller than the flower cluster, while the bracts of common teasel are may be taller than the flower. **Seed** slightly hairy, grayish brown, inside capsule. **Threatens** pastures, sedge meadows, prairies, and seeps.

GIANT HOGWEED *(Heracleum mantegazzianum)*

Herbaceous monocarpic perennial herb, flowers once then dies. Grows a larger rosette each year eventually producing a 7–15 foot flower stalk. **Leaves** 3-part compound, 1–4 feet wide, deeply incised and pointed. **Flowers** white in multiple broad domed umbels. **Flower stalk** hollow with coarse hairs and reddish purple splotching. **Threatens** river corridors and woodland edges. Caution! Plant sap on skin causes severe burns if exposed to sunlight.

JAPANESE HOPS *(Humulus japonicus)*

Herbaceous annual vine, grows up to 35 feet in one season. **Leaves** opposite, toothed, palmately divided with at least 5 lobes. Leaf **stem** as long or longer than leaf length. Leaves and stem with hooked climbing hairs. **Flowers** mid to late summer, male and female flowers on separate plants. Female flowers develop into cone shaped hops fruit with overlapping scales. **Threatens** floodplains, wet forests, stream banks and lakeshores in sun or shade.

DALMATIAN TOADFLAX *(Linaria dalmatica)*

Perennial herb. First year plant develops a rosette of leaves. **Stems** of adult plant are upright, waxy and grow up to 4 feet tall; base may be woody and is often branched. **Leaves** are heart-shaped, waxy, bluish-green and clasp the stem. Multiple **flowers** are arranged in spikes on the stems. They are bright yellow and sometimes have an orange center, have spurs and resemble snapdragon flowers. **Seed** pods are ½ inch long and contain 140–250 small winged seeds. **Threatens** grasslands in pastures, rangelands, and natural areas in the west.

MINNESOTA
DEPARTMENT OF AGRICULTURE
DEPARTMENT OF NATURAL RESOURCES

Play Clean Go
PlayCleanGo.org

MIPN.org

https://www.mda.state.mn.us/sites/default/files/inline-files/invasiveslookout.pdf

Terrestrial invasive species

Main page

What you should do

Program information

Guide to terrestrial invasives

Educational resources

Laws and regulations

Firewood

Contact an Expert

Aquatic Invasive Species

Terrestrial Invasive Species

Terrestrial Invasive Species Early Detection

The best way to control invasive animals and plants is to eliminate populations before they spread and proliferate. We can minimize the impact of newly arrived invasive species through **early detection and rapid response**. We can better control invasive species and prevent their spread to new location by finding and treating populations while they are small, which can reduce environmental and economic impacts. These actions result in lower costs and less resource damage than implementing a long-term control program after the invasive is established.

Criteria for **early detection target species** are non-native, invasive species with limited distribution in Minnesota that are assessed as high risk.

The DNR is working to keep invasive species out of Minnesota. Early reports of new populations allow us to respond rapidly and control invasives before they spread to new areas.

Select from the links below for identification of terrestrial invasive species and where to report them.

Terrestrial Animals*

Terrestrial Plants*

You can help reduce the risk posed by invasive species by reporting them.

Additional Resources:

- Prohibited Noxious Weed Eradicate List - Minnesota Department of Agriculture
  - Keep a Lookout for New Invasive Plants in Minnesota PDF
- Keep a Lookout for New Invasive Plants in the Midwest PDF (2012 version, Midwest Invasive Plant Network - MIPN)
  - 2012 version, high resolution PDF (caution: large file)
  - 2007 version, high resolution PDF (caution: large file)
- Minnesota Noxious Weeds PDF - Mn/DOT

https://www.mda.state.mn.us/sites/default/files/inline-files/invasiveslookout.pdf

Other Resources

I used all of these to help me make this presentation

Hubbard County

http://www.co.hubbard.mn.us/departments/public_works/parks_recreation/index.php

Minnesota Department of Natural Resources - MN DNR

https://www.dnr.state.mn.us/invasives/terrestrialplants/index.html

Minnesota Department of Agricultural - MN MDA

https://www.mda.state.mn.us/plants-insects/noxious-and-invasive-weed-program

Minnesota Wildflowers (great field guide for Minnesota plants)

https://www.minnesotawildflowers.info/tree/common-buckthorn

References

- https://www.smm.org/scwrs/fieldnotes/battling-buckthorn-restore-natural-resilience
- https://quod.lib.umich.edu/m/mbot/0497763.0042.201?rgn=main;view=fulltext
- http://www.myminnesotawoods.umn.edu/2015/09/unseen-changes-common-buckthorns-effects-on-soil-nutrients/
- https://www.ci.chanhassen.mn.us/549/Buckthorn-Invasive-Plants
- http://thamesriver.on.ca/wp-content/uploads/InvasiveSpecies/Buckthorn_factsheet.pdf
- https://www.minnesotawildflowers.info/tree/common-buckthorn
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- https://dnr.wi.gov/wnrmag/html/stories/1999/jun99/parsnip.htm
- https://www.dec.ny.gov/docs/lands_forests_pdf/wildparsnipfact.pdf
- https://www.fondriest.com/environmental-measurements/parameters/water-quality/conductivity-salinity-tds/
- https://www.ysi.com/File%20Library/Documents/Technical%20Notes/T606-The-Basics-of-Chlorophyll-Measurement.pdf
- https://www.slideserve.com/hua/point-intercept-aquatic-plant-sampling
- https://oaksavannas.org/invasives.html
- https://www.co.becker.mn.us/dept/soil_water/PDFs/weeds/Wild_Parsnip.pdf
- https://www.dnr.state.mn.us/invasives/earlydetection.html
- http://www.co.hubbard.mn.us/departments/public_works/parks_recreation/index.php