The Townships Versus Wild Parsnip

Final Report by the Cannon Valley Noxious Weed Collaboration
2022

Image citation: Dave Hanson, MnDOT.

THE WILD PARSNIP CHALLENGE BEGINS:

- In the summer of 2016, a resident picked wildflowers from a road ditch and received serious skin burns which started an investigation as to the cause of these injuries. This began an all-out study and eradication plan on Wild Parsnip in our township. The original source of the infestation of this non-native plant is unknown, but its growth is rapidly spreading both in road right of ways and private lands.

CHALLENGE ACCEPTED:

- In 2018, Northfield and Bridgewater Townships of Rice County were awarded a Minnesota Department of Agriculture grant to study and mitigate Wild Parsnip. Due to the successful results of the 2018 grant in the two townships, an additional two townships were requested to join in a collaborative to apply for a 2-year, $50,000, grant from the MN Department of Agriculture to be awarded in 2020. Through collaboration, the Rice County Townships of Bridgewater and Northfield along with the Dakota County Townships of Greenvale and Waterford sought to expand mitigation of the Wild Parsnip and other invasive noxious weeds. Together these townships adopted the name Cannon Valley Noxious Weed Collaborative Group.

- Upon receiving the grant, the Cannon Valley Noxious Weed Collaborative Group, worked throughout the 2020 season to educate and encourage all surrounding jurisdictions to reduce the spread of noxious weeds. While significant progress has been made, further coordination will be needed by all surrounding jurisdictions to reduce the explosive spread of old and new invasive species encroaching on our environment. Containment and mitigation of these species is possible with cooperative effort.

WORKING TOGETHER TO ACHIEVE RESULTS:

Positive results can be readily achieved by numerous jurisdictions working together to mitigate the spread of invasive noxious weeds.

What we have learned in these few years of remediation of Wild Parsnip and all Noxious Weeds:

1. Target Spraying is generally more effective than mowing and less destructive to nesting habitat. Broadcast spraying is not preferred due to greater inaccuracy and destruction of desirable plant growth
2. Timing of all treatment methods is critical
3. A clean mower is an ABSOLUTE necessity so as to not ‘carry’ seeds
4. Repeat treatment should be used
5. Removal of trees and brush from the right-of-way by a combination of chemical and mechanical means with treatment of cut stumps is more effective and longer lasting than mowing. This in turn can result in less mowing and less spread of unwanted seed.

WORKING TOGETHER TO ACHIEVE RESULTS (Continued):

6. Mowing only from the road to the bottom of the ditch helps to slow the spread of noxious weeds and reduces the area on the back-slope that requires treatment by other means to prevent spread to nearby crops and private property.
7. Fall mowing allows for easy identification of wild parsnips followed by chemical treatments in early October. However, DO NOT MOW if parsnips have gone to seed.
8. Education of private landowners is critical to the success of mitigating the spread of noxious weeds.
    a. Local governments have a legal obligation and the authority to enforce remediation of noxious weeds on private land to prevent the continued spread only neighboring properties.
    b. Plans should be developed to address how noxious weeds will be mitigated on private properties.
9. The development of joint powers agreements between government entities may enable better mitigation

TREATMENTS TO ACHIEVE RESULTS:

- Past treatment efforts have included broadcast chemical application via commercial sprayer, modified ATV with sprayer, backpack sprayer, and hand pulling. Each of these methods has benefits and drawbacks. Commercial spraying was the first route used by the township as proper equipment was not readily available and chemical use carries risks. While the Township provided direction regarding which roads to spray, timing was limited to the applicator's availability. Commercial spraying can provide the desired result of eliminating all weeds in the ditches; however, they also eliminate native plants and are not as successful in reaching areas next to planted crops.

- The purchase of a modified ATV capable of spraying chemicals allowed a township employee to control when and where the chemical was applied with greater accuracy. This method was beneficial in targeting the wild parsnip, but did involve greater township planning and involvement.

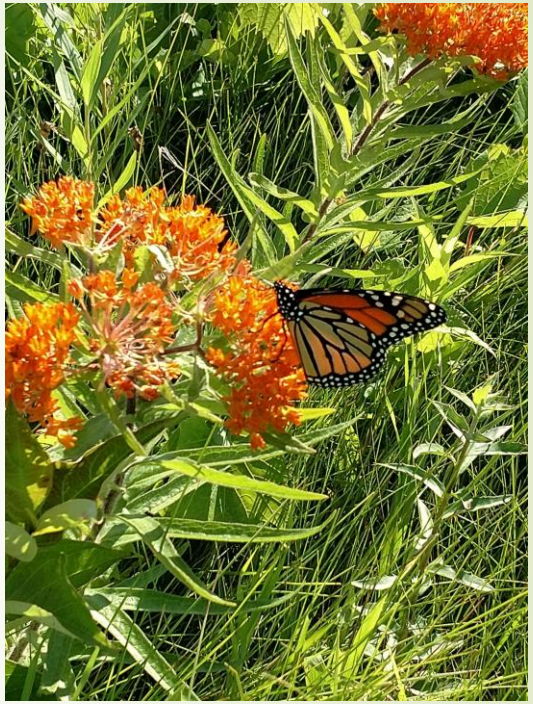
- While use of both commercial broadcast spraying and smaller scale township spraying is effective in control of large infestations of noxious weeds, small scattered areas can be controlled by use of a backpack sprayer or hand pulling. These methods are time consuming, but effective in small areas to prevent the reinfestation of weeds.

VOLUNTEERING TOGETHER:

- An army of volunteers from each township assembled to traverse the hundreds of miles of area roads identifying quantities and location of noxious weeds. These field observers were trained by Nancy Braker of the Carleton College Arboretum and Neil Silfka of the DNR. The observations were recorded in EDD Maps which is a national invasive species web-based inventory system used to track and monitor the presence of species over time. These maps provided the foundation of the project. After various treatments were administered, the results were entered into ISMTrack, a Minnesota/Wisconsin based web program to track not only efforts, but also the progress of remediation of invasive species.

- Information regarding wild parsnip was included in the Township newsletters. Following these publications, residents took note of the dangers of wild parsnip and provided input in locating areas of the noxious weed.

PROTECTING THE ENVIRONMENT:



- Protection of our native environment has been of the utmost importance throughout our endeavor. Signs requesting “Do Not Mow/Spray” were made available to residents with sensitive areas. Residents with these signs agreed to oversee removal of all noxious weeds within the protected areas.

- General use chemicals, such as 2-4-D and Escort, were used in treating noxious weeds. These chemicals were chosen as being the most efficient in eliminating the weeds while having an acceptable impact on the desirable plants and wildlife. While the majority of these chemicals were applied by sprayer from a motor vehicle, some areas were treated by backpack sprayer and hand pulling. Labor intensive techniques such as hand pulling and backpack sprayer were utilized in highly sensitive areas and where minimal noxious weeds were observed.

CONTINUING NEXT STEPS:

- We have made considerable progress in reducing the populations of wild parsnip and thistle. Other noxious weeds such as leafy spurge, wild carrot, and palmer amaranth are being monitored.

- Private landowners need continued education and assistance in controlling noxious weeds on their properties. Railroads are another point of concern as ‘creepage’ from the right-of-way to adjoining land is concerning and should be addressed.

- All jurisdictions and land managers throughout the State of Minnesota have the authority and obligation under the MN State Statute 160.23 to eliminate noxious weeds. As a result, programs should be adopted to control Noxious Weeds as the spread continues with known and new unknown populations.

- Progress has been made over the last two years in surrounding areas, and by working together, progress can continue.

NEXT STEPS CONTINUED:

A combination of vigilance and a solid program of preventive actions can result in the ongoing reduction of invasive plant growth. These actions can include:

- Joint planning between neighboring jurisdictions that results in uniform processes and procedures.
- Mowing according to MDA guidelines found in Mn DOT's Minnesota Noxious Weeds Booklet.
- Obtaining collaborative funding to provide education for both public and private land owners.
- Joint Powers agreements created to further collaboration between adjoining jurisdictions.
- The creation of quality control measures to ensure that the roadside 'seed mixes' utilized in reseeding the road right of way do not contain noxious or invasive plant species.

BARRIERS TO SUCCESS

- Over the last several years Bridgewater and Northfield Townships have been working to control wild parsnip. This effort has been supported by grants from the Minnesota Department of Agriculture. The actual work of spraying infestations has been done by an employee of the Townships. Parsnip grows in township, county, and MNDOT road rights-of-way. It also grows well on private property. To have a successful program to control parsnip therefore, a township must deal with four types of property within its boundary.
- There is the lack of commercial licensed applicators available to combat noxious weeds in the manner we have found to be most effective. As a business model, the short window of time in which to effectively spray for noxious weeds is a serious impediment to encouraging individuals to obtain the needed training for a license.
- It has been difficult to find individuals to undertake the steps to implement the mitigation program recommended in this report. It requires a labor intensive approach to deal with smaller infestations by spot spraying and hand pulling.
- An impediment to spraying is the high cost of the spray equipment. A solution to this could be sharing equipment between government entities.

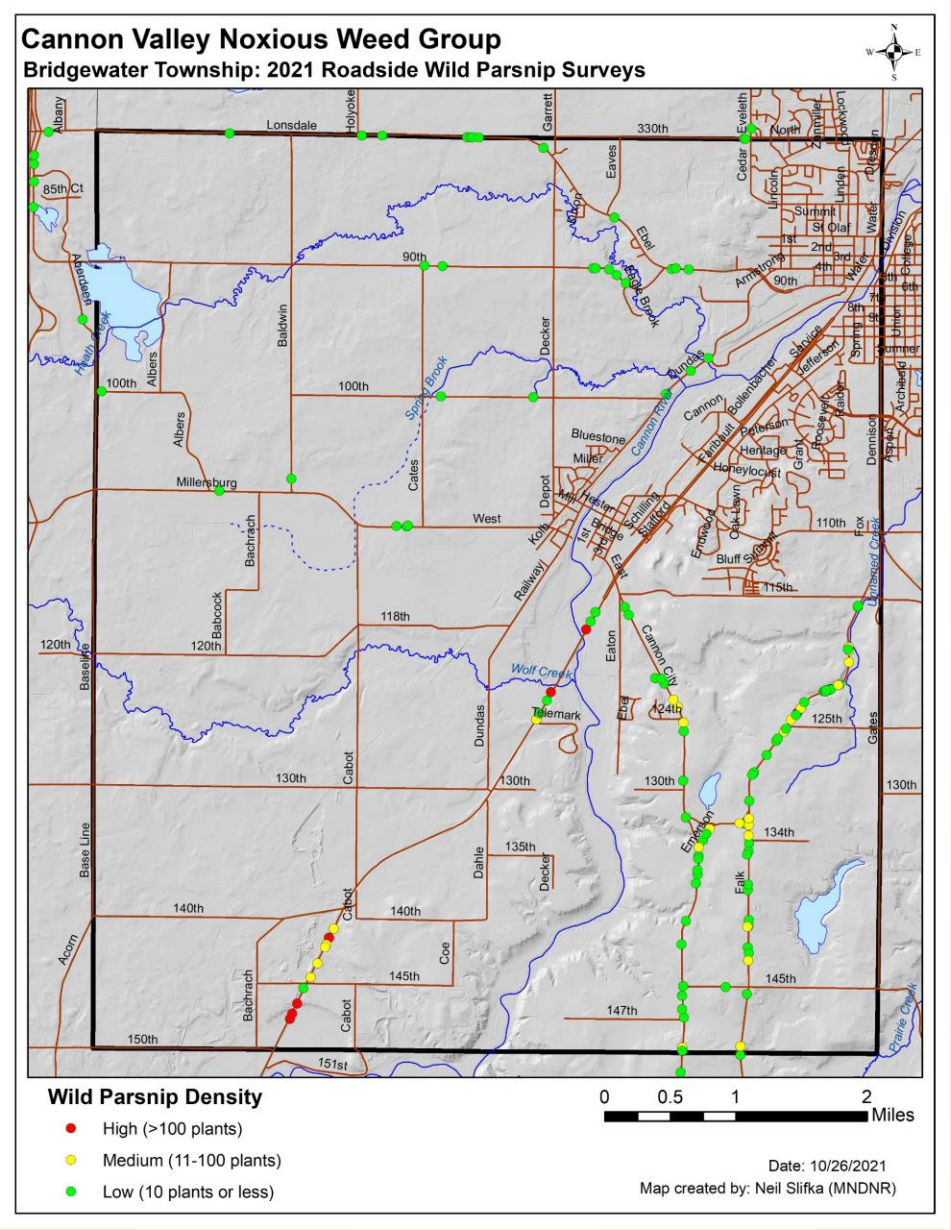
RECOMMENDATIONS FOR SUCCESS

- A recommendation would be for the Department of Agriculture to provide counties with sufficient designated funds to enable them to implement an effective noxious weed control program.
- Another recommendation would be to encourage each jurisdiction to designate a Weed Inspector that has the authority to work with other jurisdictions and private landowners to ensure compliance.
- Request that the Department of Agriculture make grants available for the purchase of equipment to be used in spraying for noxious weeds.
- A list of local licensed applicators is usually available from your county weed inspector.

The Cannon Valley Noxious Weed Collaboration was made possible by the grant from the Minnesota Department of Agriculture. Through this grant the following was accomplished:

- Increased communications between local governments resulting in more effective weed mitigation.
- A significant decrease in the presence of noxious weeds along all roadways.
- Increased public education and a renewed interested in maintaining public areas.
- Increased local government awareness of the impact of noxious weeds and methods of mitigation.

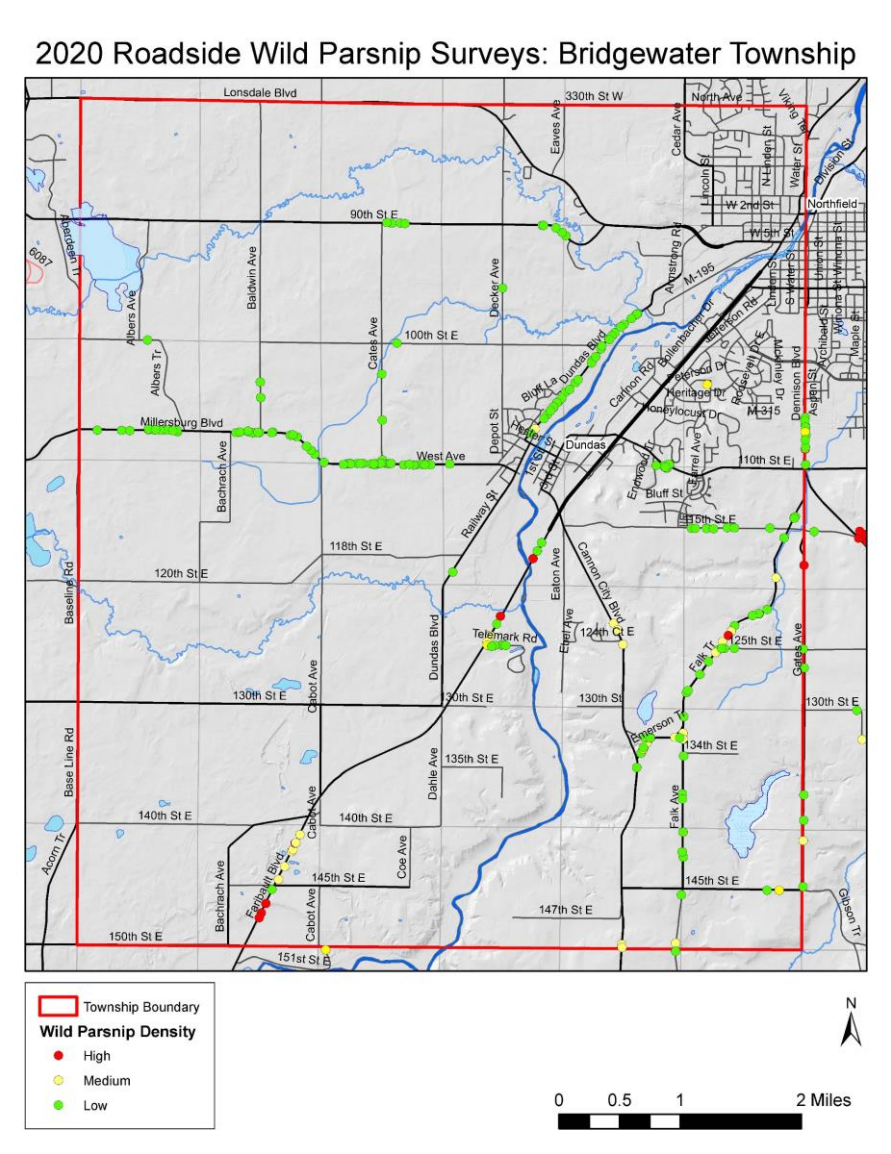
Results of 2021 Bridgewater Wild Parsnip Survey



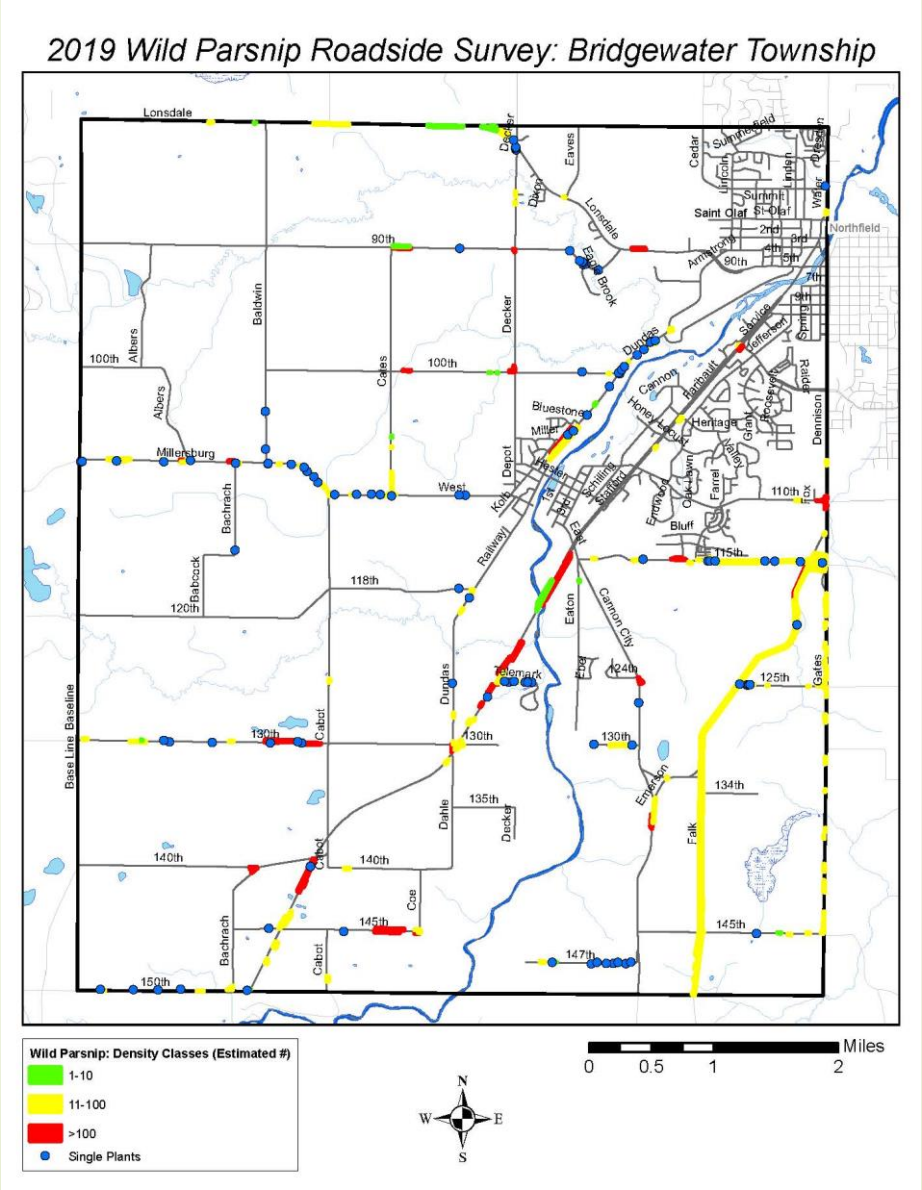
Through a team of volunteers, the presence of noxious weeds was mapped throughout the townships.

Rice County maps were developed by Neil Slifka, DNR Regional Nongame Wildlife Specialist.

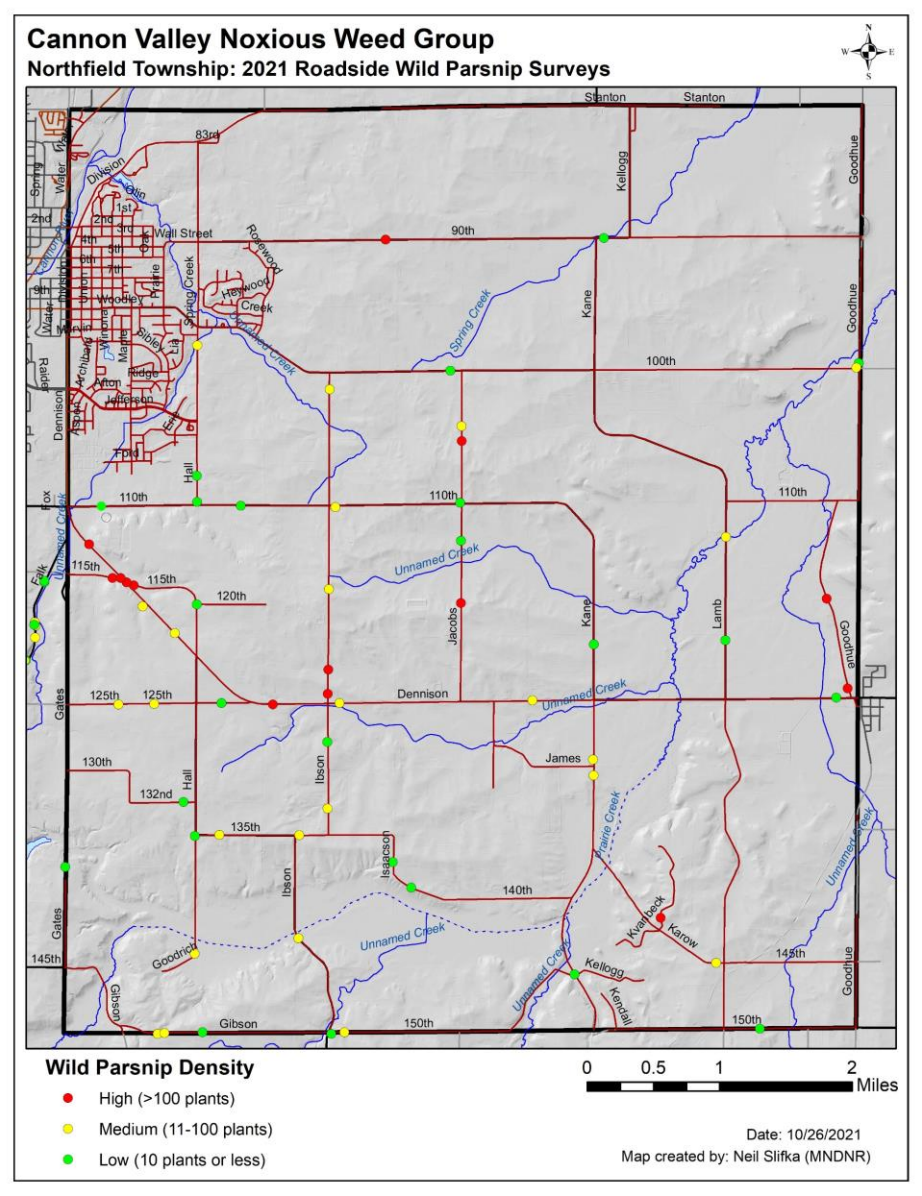
Results of 2020 Bridgewater Wild Parsnip Survey



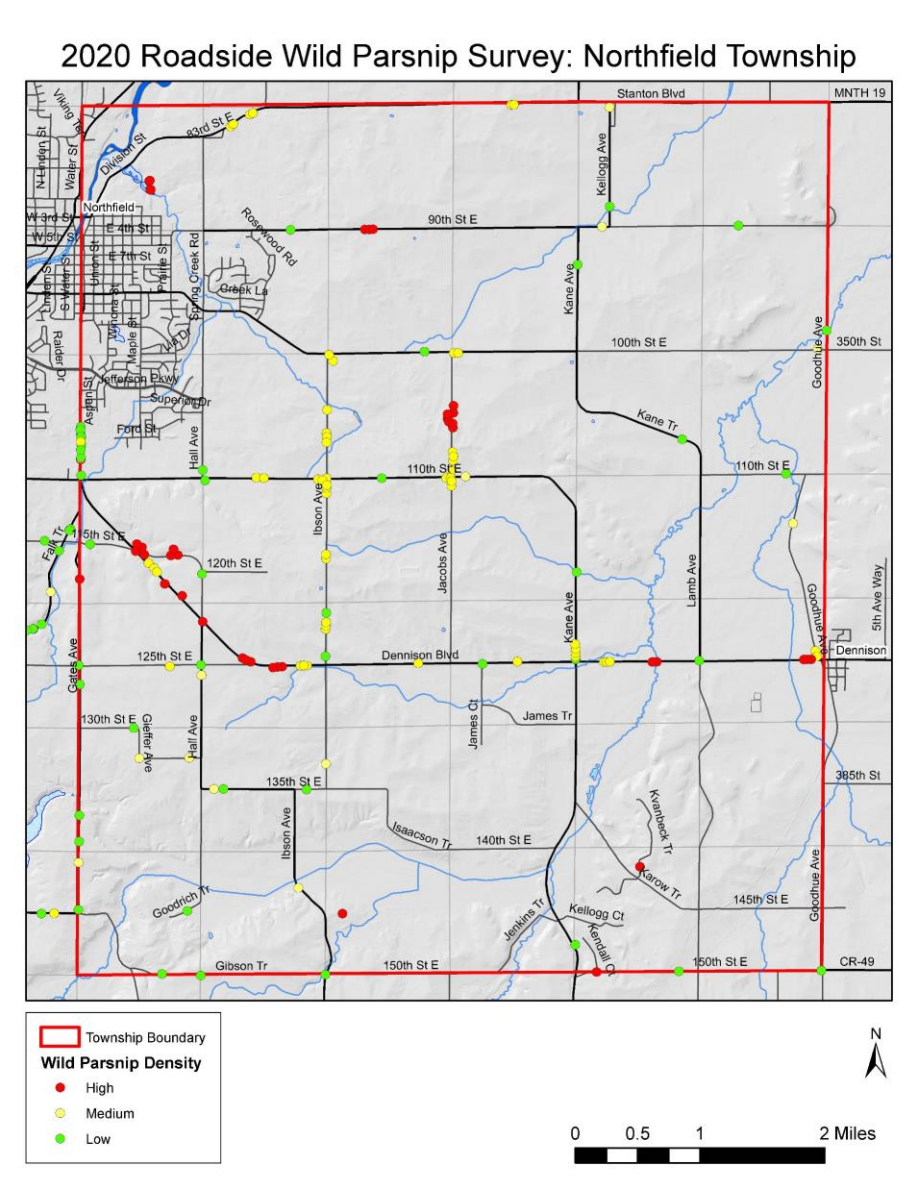
Results of 2019 Bridgewater Wild Parsnip Survey



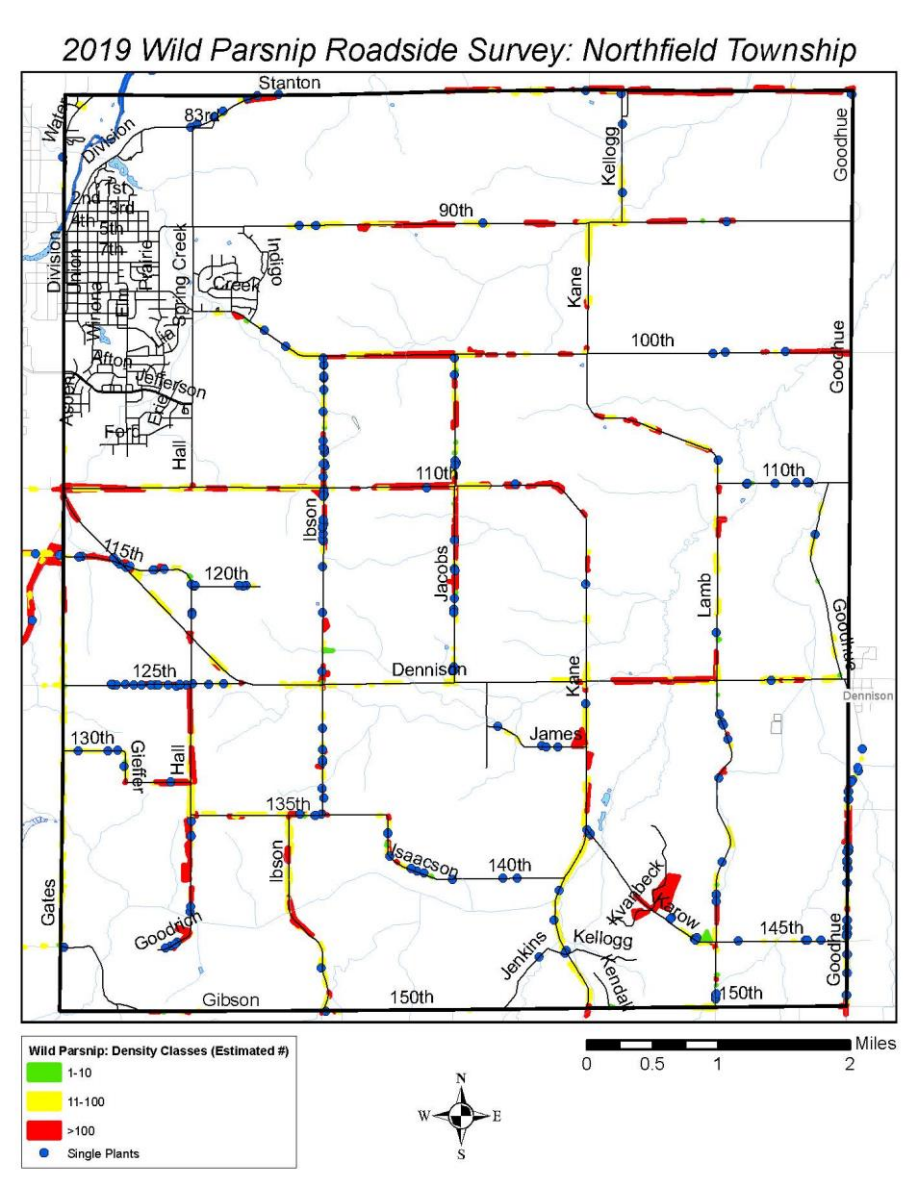
Results of 2021 Northfield Twp Wild Parsnip Survey



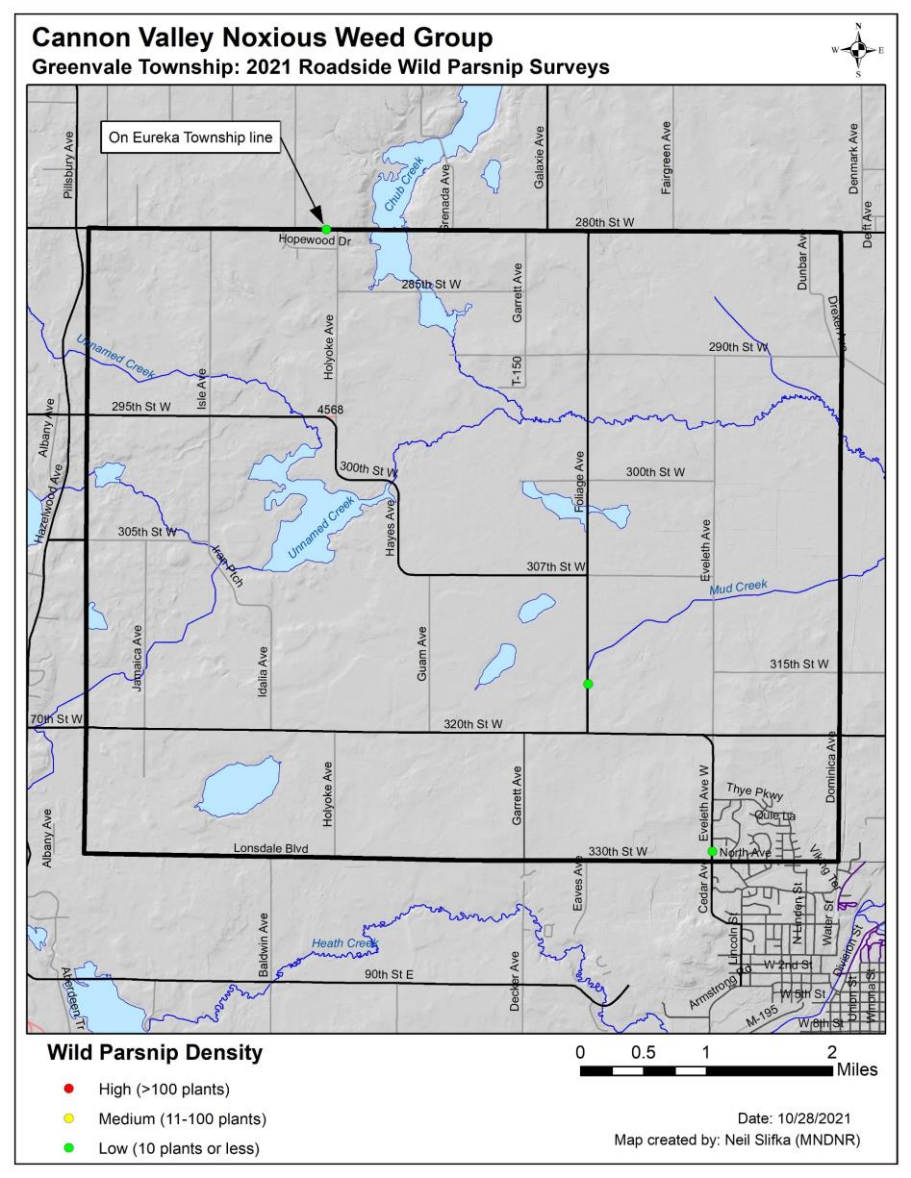
Results of 2020 Northfield Twp Wild Parsnip Survey



Results of 2019 Northfield Twp Wild Parsnip Survey



Results of 2021 Greenvale Twp Wild Parsnip Survey



Wild Parsnip Density

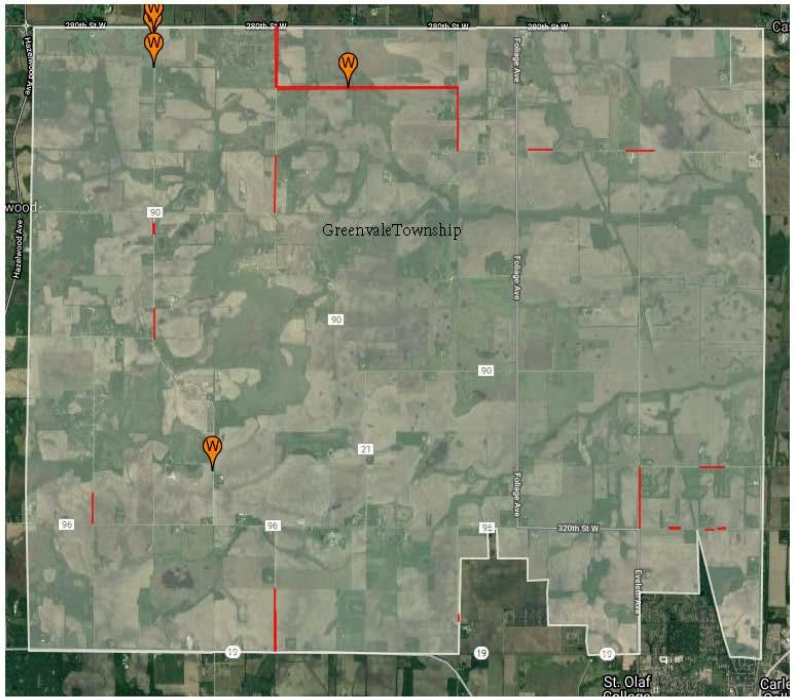
- High (>100 plants)
- Medium (11-100 plants)
- Low (10 plants or less)

0 0.5 1 2 Miles

Date: 10/28/2021
Map created by: Neil Slifka (MNDNR)

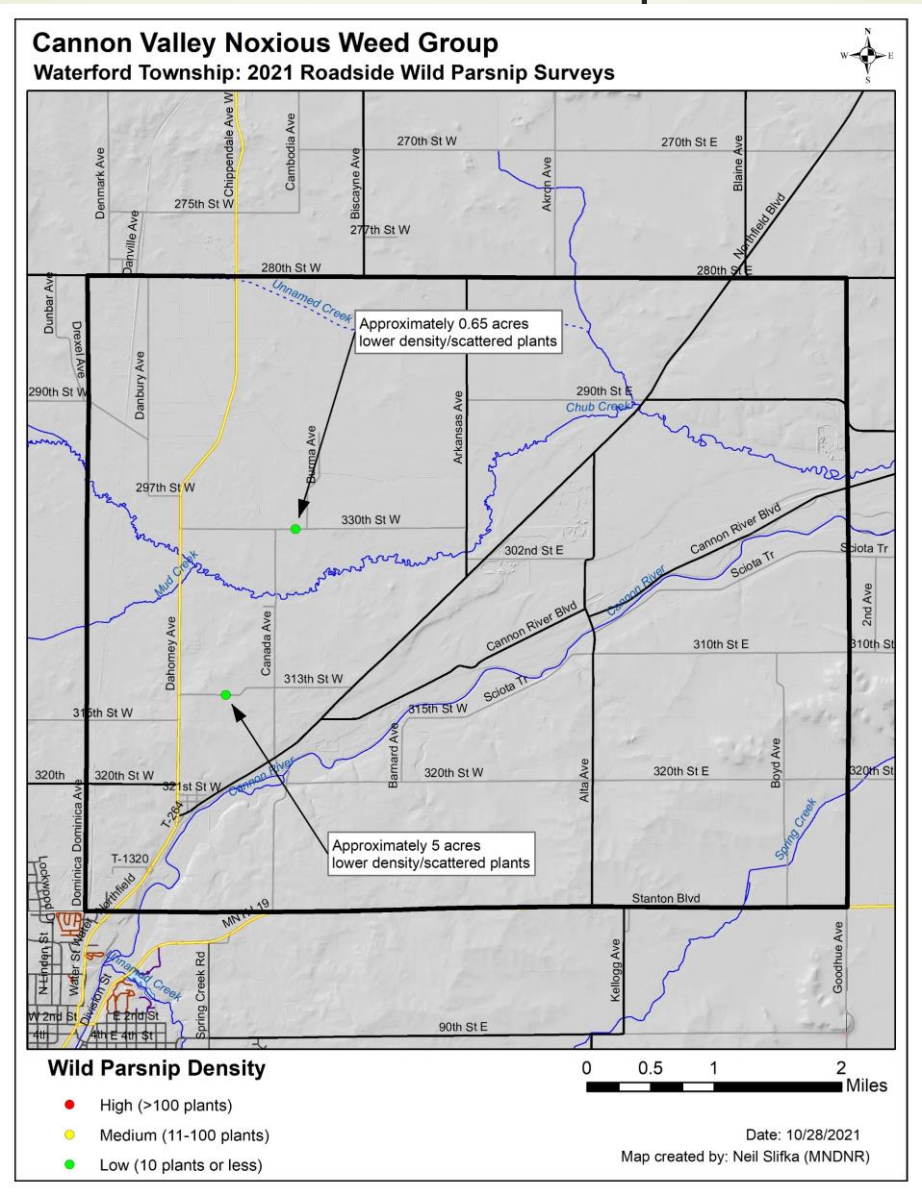
Greenvale map was developed by Neil Slifka, DNR Regional Nongame Wildlife Specialist.

Results of 2020 Greenvale Twp Wild Parsnip Survey



Dakota County maps were developed by Todd Matzke of the Dakota County SWCD office.

Results of 2021 Waterford Twp Wild Parsnip Survey



Waterford map was developed by Neil Slifka, DNR Regional Nongame Wildlife Specialist.

Results of 2020 Waterford Twp Wild Parsnip Survey

DEPARTMENT OF TRANSPORTATION

Office of Environmental Stewardship
395 John Ireland Blvd/
St/ Paul, MN 55155

5/15/2018

Work Safely Around Wild Parsnip

Wild parsnip sap contains toxins and humans can be poisoned through actions such as removing plants by hand pulling, weed whipping or working under a mower deck/ These activities may result in wild parsnip sap contacting bare skin and can cause problems, if in addition, there is continued exposure to sun light/

The resulting reaction ranges from a sunburn like rash to a potentially serious blistering rash which can result in loss of time at work/ Wild parsnip sap contains a chemical which upon exposure to sunlight can cause chemical burns on skin/ Simple precautions can be taken to prevent wild parsnip injuries/ First and foremost people working outdoors are at risk and should be able to identify wild parsnip in all of its life stages/

Identification

Plant. Herbaceous, biennial (monocarpic perennial), first year as a cluster of leaves growing directly from the ground and second year wild parsnip is a branched, 2-5 feet tall, robust plant/ Stems typically lack hairs, are hollow, grooved and are light green/

Leaves: !lternate, pinnately compound with 5-15 leaflets/ Three inch long by two inch wide leaflets are often cleft with coarse teeth on the margin/ Basal leaves tend to be larger with longer stalks and more leaflets than upper stem leaves/ Petiole to stem attachments are covered by a sheath/

Flower: Numerous small yellow flowers arranged in compound umbels (umbrella shaped clusters)/ Each flower is small and has 5 petals/ Petals remain tightly curled/

Leaves of first year rosette and green grooved stem.

Typically, floral bracts at the base of umbels aid identification of carrot family members to species/ However, wild parsnip does not have floral bracts under umbels and umbellets/

Bloom time varies from June through July (typically 1-2 months late spring to mid-summer), then plant parts wither/

Flowers are yellow and petals remain tightly curled.

Working safely around wild parsnip

- Unlike Poison ivy (an allergic reaction), everyone is susceptible to wild parsnip sap reactions/
- You can touch and/or brush past wild parsnip without causing sap flow- thus, no exposure to sap/
- Wild parsnip sap is not an oil like poison ivy sap (urushiol)/ Soap and water or plain water can effectively remove or dilute the sap and prevent skin damage if done in a timely manner/
- Skin that is protected from sun exposure (UV rays) should be effectively protected from skin damage even if sap were to get under clothing/

Proper clothing: Boots, long sleeves, long pants and good gloves/ Cover the gap between glove and sleeve!

Laundering clothing: Unlike poison ivy, mixing contaminated clothing into the family wash is not an issue/

!void wiping sap onto your bare skin: Mosquitos, flies and other biting insects may have you swatting and or itching your bare face/ If there is sap on your hand or glove, it will be effectively transferred to sun-exposed skin on your face and neck/ Hot, sweaty skin means open pores - sap can then penetrate deeper and result in more severe damage/

Removing plants: Effective removal can be accomplished with a shovel or similar cutting tool/ Cut the plants approximately 2 inches below ground/ Leave plants in place to dry/

Mowing or cutting: Effectively knocks height down, but does not kill plants/ Use caution around green, still moist plant material and cut stems that may ooze sap from cut surfaces/ Leave plants in place to dry/

Herbicide: Given time, herbicide applications will kill plants/ However, while plant material is green and not dry the sap still presents a hazard/

Wild parsnip and native cow parsnip

Wild parsnip is not native to Minnesota/ It is related to other members of the carrot family such as native cow parsnip, which can also cause skin reactions/

Wild Parsnip (non-native)

Key Difference.

Flowers are yellow

Leaves are compound with 5-15 leaflets

Stems are green with definite ridges (grooves)/

Cow Parsnip (native)

Key Difference.

Flowers are white

Leaves are 3-parted and can be 18 inches across and long

Stems are hairy, green to purple in color/

For more information

Visit MnDOT's Roadside Vegetation Management website or contact Dave Hanson, MnDOT Office of Environmental Stewardship, 651-366-3632

MnDOT's Minnesota Noxious Weeds Booklet

Prohibited: Control

Wild parsnip : *Pastinaca sativa* L.

Caution - Use protective clothing, goggles or face mask. Contact with the sap of the plant (i.e., phyto) when combined with exposure to sunlight (i.e., photo) can cause severe blistering and swelling (i.e., dermatitis) - phytophotodermatitis. See MnDOT factsheet: Work Safely Around Wild Parsnip.

Identification: *Compare to golden alexanders (Zizia aurea) and heart-leaved golden alexanders (Z. aptera), both native.* *See page 62.*

Plant: Herbaceous, often stated to be biennial but is classed as a monocarpic perennial (plant dies after bearing fruit). Early life form is a basal rosette with mature stems developing a hollow, grooved flowering stalk potentially reaching 5 feet.

Leaves: Basal rosette leaves can be 6 inches in height and are pinnately compound with 5-15 leaflets. Flowering stalk leaves are alternate, 2-5 leaflets that become smaller near the top of the stem. Leaflets are coarsely toothed, sinuses cut to varying depths creating lobes of various sizes. The base of the leaf stalks wrap or clasp the grooved stem.

Flower: 12-35, 5-petaled, small yellow flowers on wide, flat umbels of 15-25 umbellets approximately 2 to 6 inches across.

Bloom time is June to July.

Fruit and Seed: Flattened, yet ridged, oval seeds.

Life History: Typical life span is two years, first year a basal rosette. One of the first plants to green up in spring and one of the last to brown down in autumn providing good opportunities for scouting and treating. Mid to late summer, mature second-year plants will bolt, flower and set dozens of seed per plant. Seeds are moved off infested sites by animal and human activity or wind and water movement. Seed is reported to be viable in soil for up to 4 years.

Habitat: Disturbed sites such as roadsides and abandoned fields or lots. Can occur in wet meadows but dry to mesic soils are more typical. Full to partial sun is a must for this species.

Management: See Minnesota Department of Agriculture web for Lifecycle and Treatment Timing poster.

When possible plan early **mowing** at first inflorescence, then monitor and repeat as plants will likely re-sprout, bolt and flower. If **cutting** or **mowing** after seed set, clean equipment to leave seeds on the infested site. Preferably, propagating plant parts should be disposed of onsite or when necessary contained (e.g., bagged) and removed to an approved facility. For more information on disposal options, please read MDA's guide on removal and disposal.

Prescribed fire can be used to encourage stands of native grasses for competition. However, follow-up treatments (herbicide or cutting) are still required to prevent seed production.

Herbicide controls include foliar applications of 2,4-D or metsulfuron-methyl to the rosette stage during May and June and again in September or October. If glyphosate is to be applied to rosettes, it is recommended to hold off until late fall to prevent damage to desirable plants that should then be dormant.

		April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.-Mar
	Burn	Use fire to improve native plant community.								
Herbicide	Foliar									
	Mow		Mow to prevent flowering							
	Don't mow				Do not mow when seed is present					
Flowering Period										

BE AWARE OF

WILD PARSNIP

(Pastinaca sativa)

Because of its harmful characteristics and concern over its increased spreading over the countryside, Wild Parsnip has been in the news recently.

The plant has become a weed of special concern along roadsides and in abandoned fields. Like many other introduced plants it is very aggressive and spreading rapidly.

The best defense is to be able to identify the plant and be aware of what you need to do when working around or near it. Below you will find photos of various stages of development of Wild Parsnip. Sap will be present in all these stages, but increasing potency from spring to summer and decreasing potency after seed set to end of plant life. The photos are for the cycle of a second year plant.

Early Spring,

Late Spring or fall

Early Summer

Flowers, Summer

Fall.

Seedling/ Late Summer-Fall

The photo above is typical of what you might find along an infested roadside.

This population is too large to hand-cut or pull, a power mower should be used before the seeds set. Plants may re-sprout when cut above the ground, and should be cut again or sprayed, a few weeks later to prevent flowering. Cutting done after seed set will greatly reduce the likelihood that the plants will be able to re-sprout and flower, but will increase the risk of spreading the seeds and creating new problems. Plants cut at this time must all be gathered and destroyed to prevent mature seed from developing and falling to the ground. Another effective way to eliminate reseeding is to hand-collect all seeds after they have set. If control of flowering or seeding plants is carried out over several years, the population will decrease as the seed bank is depleted. If mowing Wild Parsnip, be careful cleaning the equipment as the sap will still be present. It's suggested to clean the mower deck, if mowing while seeds are present and before traveling to the next area or the equipment storage area.

Why the special concern about this plant?

Wild parsnip causes "phyto-photo-dermatitis", which happens when the sap of the plant, from broken stems and leaves, touches the skin and is exposed to ultra-violet light (whether cloudy or sunny).
Within 24 to 48 hours, the affected area will first redden and in most cases be followed by blisters that can be painful for a couple of days. In many cases, the blisters will lead to brownish pigmentation that can last for years. Unlike Poison Ivy, the reaction caused by contact with Wild Parsnip sap is not an allergic reaction. Toxin in the sap is absorbed by the skin and energized by ultraviolet light.
Moisture from perspiration speeds absorption. Burning is inevitable if skin comes in contact with juice from cut or broken stalks, leaves or flowers. The juices are most potent while in flower. **No one is exempt.** Symptoms usually take 24-48 hours to develop, but could take longer. Mild exposure is similar to sunburn. Severe exposure causes skin to blister.

Treatment

Once the toxin is absorbed into the skin and is exposed to sunlight, some reaction is inevitable. Immediately cover exposed skin until it can be washed with soap and water.

To relieve symptoms:

- Cover affected area with a cool, wet cloth.
- If blisters appear, try not to rupture blisters as long as possible.
- To avoid infection, keep area clean and apply antiseptic cream.

Concern:

More people are coming into contact with wild parsnip due to its rapid spread into open habitats and roadsides. Individuals who will be working, hiking, or involved in other activities around it can reduce the risk of exposure by wearing long-sleeved shirts, gloves, and long pants.
During much of July, wild parsnip is one of the dominant yellow-flowered weeds in many roadsides and other right-of-ways, fence rows, prairie restorations, CRP sites and poorly managed pastures.

Botanical basics

Life history: Wild parsnip typically lives for two years. The first year, as a spindly rosette of leaves, it keeps fairly low to the ground while the plant's carrot-like taproot develops. It may live two or more years this way until conditions are right for flowering. The second year, a hollow, grooved flower stalk rises 2-5 feet high, first holding clusters of yellow flowers and later dozens of flat, oval seeds. **Leaves:** Pinnately compound, with a main stem and 5 to 15 leaflets. **Flowers:** Yellow, in flat-topped umbrella-like clusters at the top of the plant. **Season:** Wild parsnip rosettes are among the first plants to become green in spring, and its flowers turn a prominent yellow in midsummer. After flowering and going to seed, plants die and turn brown in fall, but first year rosettes remain green until frost. **Habitat:** Roadsides, abandoned fields, unmowed pastures, edges of woods, prairie restorations.

THE VOLUNTEERS THAT MADE THIS PROGRAM POSSIBLE:

- Cannon Valley Noxious Weed Group
  - John Holden – Bridgewater Township
  - Tony Rowan – Greenvale Township
  - Ron Sommers – Northfield Township
  - Steve and Elizabeth Wheeler – Waterford Township
- Professional Guidance
  - Nancy Braker - Director of Cowling Arboretum, Carleton College
  - Neil Slifka - DNR Regional Nongame Wildlife Specialist
  - Todd Matzke - Dakota County SWCD Office
  - Steve Albers
- Dedicated volunteers that spent countless hours walking roads to identify and eradicate noxious weeds.
- Report compiled by Frances Boehning, Bridgewater Township Clerk