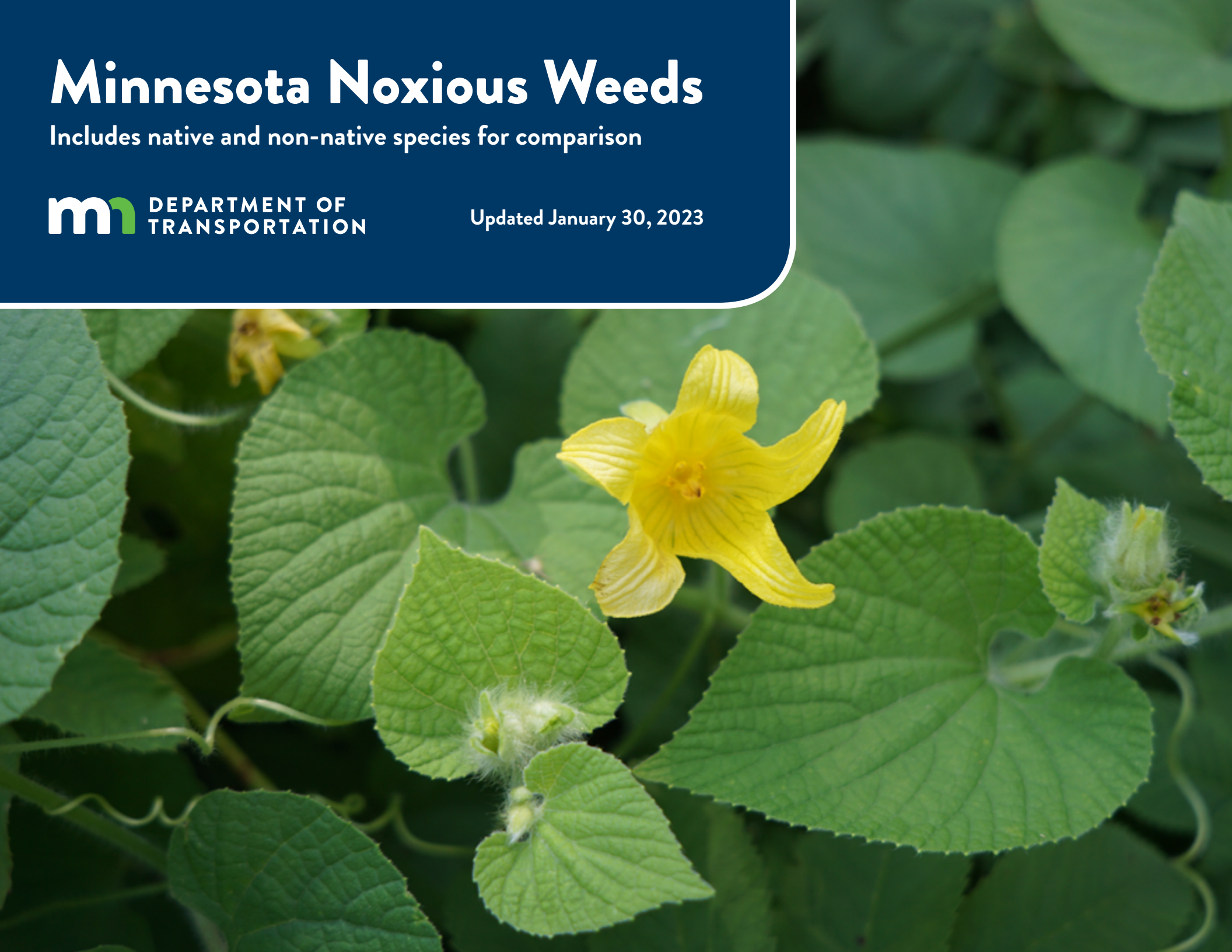
Minnesota Noxious Weeds

Includes native and non-native species for comparison

DEPARTMENT OF TRANSPORTATION

Updated January 30, 2023



Minnesota Noxious Weeds

http://www.dot.state.mn.us/roadsides/vegetation/index.html

This book has two parts.
Part 1: Table of contents pg 4-6 contains terrestrial noxious weeds
Part 2: Table of contents pg 6-8 contains look-alike plants.

For example, compare:

Left: Noxious weed, round leaf bittersweet (*Celastrus orbiculatus*) that has flowers and fruits in leaf axils along its vine.

Right: Native plant, American bittersweet (*Celastrus scandens*) has flowers and fruits only at the terminus of branches.

Table of contents on pages 4-6 contain terrestrial noxious weeds listed under:

Minnesota Noxious Weed Law
Find more information at:
Minnesota Department of Agriculture

Table of contents on pages 6-8 contain a list of terrestrial nonnative and native species often mistaken for the associated noxious weeds. These terrestrial plant descriptions are provided in an effort to prevent mistaken identities.

Scientific names (genus and species) were sourced from: USDA Plants Database

Noxious Weed Disposal
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 these disposal options, please read MDA's guide on noxious weed removal and disposal. Minnesota Pollution Control Agency (MPCA) has a Compost Facility Locator Application for approved disposal sites.

MnDOT invites and encourages participation by all people in their programs, services and activities.

If you need an ASL, a foreign language interpreter, or documents in an alternative format (such as braille, large print or in a different language) at no cost, please email your request to Janet Miller at ADArequest.dot@state.mn.us or call 651-366-4720. Relay service: 711. If you need any other reasonable accommodation to participate (such as seating modification or auxiliary aids), please email your request to Accessibility.DOT@state.mn.us or call 1-833-400-8432. Relay service: 711.

MINNESOTA NOXIOUS WEED LAW

Minnesota Statutes, sections 18.75 to 18.91

Prohibited - Eradicate

Prohibited noxious weeds that are listed to be eradicated are plants that are not currently known to be present in Minnesota or are not widely established. These species must be eradicated, meaning all of the above and below ground parts of the plant must be destroyed, as required by Minnesota Statutes, Section 18.78. Additionally, transportation, propagation, or sale of these is prohibited except as allowed by Minnesota Statutes, Section 18.82. Measures must also be taken to prevent and exclude these species from being introduced into Minnesota.

Prohibited - Control

Prohibited noxious weeds listed to be controlled are plants established throughout Minnesota or regions of the state. Species on this list must be controlled, meaning efforts must be made to prevent the spread, maturation and dispersal of any propagating parts, thereby reducing established populations and preventing reproduction and spread as required by Minnesota Statutes, Section 18.78. Additionally, propagation, sale, or transportation of these plants is prohibited except as allowed by Minnesota Statutes, Section 18.82.

Restricted

Restricted noxious weeds are plants that are widely distributed in Minnesota and are detrimental to human or animal health, the environment, public roads, crops, livestock or other property, but whose only feasible means of control is to prevent their spread by prohibiting the importation, sale, and transportation of their propagating parts in the state except as allowed by Minnesota Statutes, Section 18.82. Plants designated as Restricted Noxious Weeds may be reclassified if effective means of control are developed.

Specially Regulated

Specially regulated plants are plants that may be native species or have demonstrated economic value, but also have the potential to cause harm in non-controlled environments. Plants designated as specially regulated have been determined to pose ecological, economical, or human or animal health concerns. Plant specific management plans and or rules that define the use and management requirements for these plants will be developed by the Minnesota Department of Agriculture for each plant designated as specially regulated. Measures must also be taken to minimize the potential for harm caused by these plants.

TABLE OF CONTENTS

Minnesota Noxious Weeds

Prohibited - Eradicate

Prohibited - Control

TABLE OF CONTENTS

Minnesota Noxious Weeds

Prohibited - Control

Restricted

TABLE OF CONTENTS

Minnesota Noxious Weeds

Restricted

Specially Regulated

Non-native

Provided for comparison

TABLE OF CONTENTS

Minnesota Noxious Weeds

Non-native
Provided for comparison

Minnesota Native
Provided for comparison

TABLE OF CONTENTS

Minnesota Noxious Weeds

Minnesota Native

Provided for comparison

Appendices

BLACK SWALLOW-WORT

Cynanchum louiseae Kartesz & Gandhi

Prohibited - Eradicate

Common Names
Black Dog-strangling Vine

Life Cycle
Herbaceous perennial

Native Range
Europe

Look-a-Likes
Native Milkweeds

Pale Swallow-wort (pg 20)

Habitat
Prefers full sun in upland soils. Disturbances, natural or human caused, provide an opening in which black swallow-wort can gain a foothold. Old fields, grasslands, road or rail corridors, quarries and other disturbed areas provide excellent habitat.

Means of Spread
Fluffy filaments attached to the seed enable it to be dispersed by wind. This is the primary means of long-range dispersal but can also be transported by humans and equipment. New stems can develop through rhizomatous horizontal growth.

Identification
Plant - A perennial, herbaceous vine that twines reaching heights of 3 to 8 feet. Vines are unbranched and have small hairs.

Leaves - Opposite, glossy, and have smooth (toothless) edges terminated by a pointed tip. Leaves are lanced shaped at 3 to 4 inches long, 2 to 3 inches wide, and have clear (not milky) sap.

Flower - Clustered, small (⅛ inch) dark purple flowers with five downy, thickened petals that curve around the edges. Each flower has a yellow center, star shaped, and borne in clusters at leaf axils.

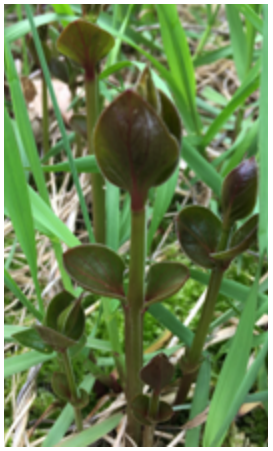
Bloom Time - June to July

Seed and Fruit - Slender, smooth pods, taper to a point at about 1½ to 3 inches. At maturity, pods split open to release flattened, brown, circular seeds attached to filamentous fibers. Seeds contain one to four embryos which helps to ensure germination.

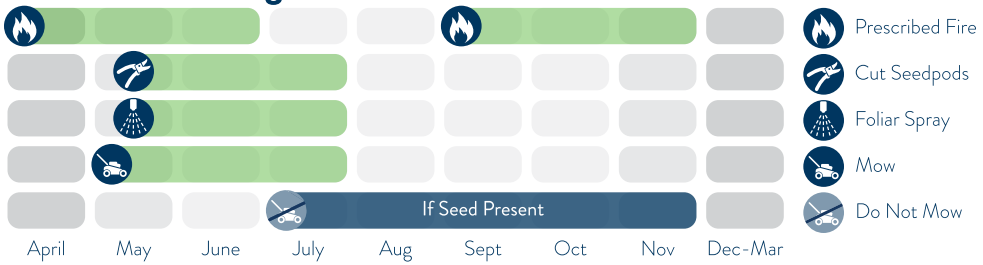
Root - Roots are fleshy with a thickly budded rhizomatous crown. Roots can extend up to 20 inches below the soil surface.

Management
Mechanical - Hand pulling plants is not recommended. Stems will break off leaving the rhizome behind. Repeated mowing or cutting can impact plants but will not eradicate a population. Black swallow-wort, if cut early in the season, can still produce seed that year.

Chemical - Foliar herbicide applications should target plants after flowering stage. Spraying prior to pod formation may limit production of viable seed that season.



Treatment Timing



Biological - A moth, *Hypena opulenta*, has been released on the east coast but is not used in Minnesota at this time. Biological controls are not an eradication tool, and are inappropriate for an eradicate species.

Fire - Prescribed fire can be used with other management efforts to encourage stands of native grasses that will compete with black swallow-wort for resources.

Effective herbicide formulations: glyphosate, imazapyr, triclopyr.

BROWN KNAPWEED

Centaurea jacea L.

Prohibited - Eradicate

Go to [Knapweed Comparison (pg 101)] for key differences.

Common Names

Brown-rayed Knapweed, Brownray Knapweed, and Brown-ray Knapweed

Life Cycle

Herbaceous perennial

Native Range

Europe

Look-a-Likes

Canada Thistle (pg 25)
Diffuse Knapweed (pg 14)
Meadow Knapweed (pg 30)
Spotted Knapweed (pg 37)
Yellow Starthistle (pg 24)

Habitat

Woodland clearings, yards, ditches, in disturbed areas, pastures and other grasslands. It thrives in sunny locations and is also somewhat shade tolerant. It thrives in cool, moist locations.

Means of Spread

Spreads exclusively by seed that can be moved by wind, water, wildlife, equipment and humans.

Identification

Plant - Perennial that has multiple upright, reddish stems that are 1 to 4 feet tall.

Leaves - Alternate, lance shaped and pubescent (hairy), occasionally with wavy margins (leaf edges) or lobed. Basal leaves grow up to 4 inches long.

Flower - Solitary, terminal to branches, purplish disk flowers that are surrounded by 5-petaled florets. Flowers are pink/purple with white centers and are approximately one inch in diameter. Bracts that cover the bulb-like bases of flowers are 2-parted and the bracts below the flowers are rounded and wide at the tip and often have brown tips.

Bloom Time - June to September

Seed and Fruit - Small (less than ⅛ inch), some have short, bristly hairs (pappus) at the top. A typical achene (seed) of the Aster family but pappus is limited and wind will not carry seeds.

Root - Seedlings have taproots and mature plants develop a cluster of roots below the crown.

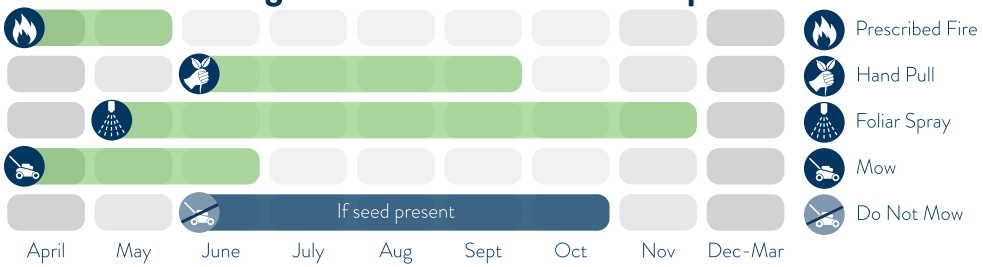
Management

Mechanical - Hand pulling or digging can be an effective step when coupled with chemical treatments. Repeated mowing or cutting can reduce seed production.

Chemical - Foliar herbicide treatments should target rosettes.

Cultural - Grazing animals do not typically target knapweeds.

Treatment Timing — Brown Knapweed



Biological - *Urophora quadrifasciata*, a seedhead feeding fly, is the only bioagent that has established on brown knapweed. Biological controls are not an eradication tool, and are inappropriate for an eradicate species.

Fire - Prescribed fire can be used to encourage stands of native grasses that will compete with knapweeds.

Effective herbicide formulations: aminopyralid, clopyralid, picloram.

COMMON TEASEL

Dipsacus fullonum L.

Prohibited - Eradicate

Common Names
Fuller's Teasel, Wild Teasel

Life Cycle
Herbaceous monocarpic perennial

Native Range
Europe, temperate Asia, and northern Africa

Look-a-Likes
Cutleaf Teasel (pg 12)

Habitat
Disturbed, open sunny site with moist to dry soils. Common on roadsides, stream banks and disturbed areas.

Means of Spread
Prolific seed producer which can spread by wildlife, water, and equipment. Most seed falls within 5 feet of the parent plant, but may be transported longer distances with disturbance. Teasel heads have also been used in decorative flower arrangements.

Identification
Plant - Herbaceous, monocarpic perennial. At maturity, it is 4 to 7 feet tall with erect, ridged, and prickly stems.

Leaves - Opposite with no petiole and form a cup at the stem intersection. Common teasel leaves can be up to 12 inches long by 3 inches wide, lance-shaped and have a wavy edged margin. Each leaf has a prominent white midvein with spines on the underside. Spines can also be visible on the top side of leaf tissue.

Flower - Egg shaped and up to 4 inches tall and 1½ inches wide. Seedhead contain many irregular, 4-parted lavender to pink flowers. Each flower is surrounded by a stiff bract resembling a spine. Flowering occurs in bands and various times. Larger bracts at the flower head base extend past the top of the flower head.

Bloom Time - June to October

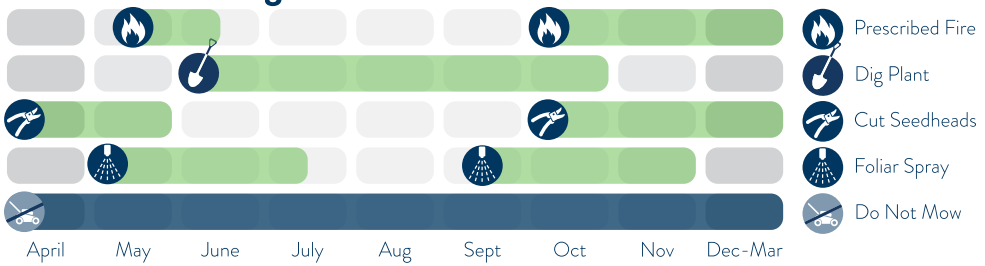
Seed and Fruit - Each flower produces one small, greyish-brown, rectangular seed with deep grooves. Seeds are roughly ⅛ inch long by 1/16 inch wide. Each flower head can produce upwards of 2,000 seeds.

Root - Shallow taproot with fibrous secondary roots.

Management
Mechanical - Severing of taproot at least 2 inches below ground will limit sprouting. Once done flowering, seed heads can be removed from the plant (seed easily falls out of dried seed heads). Mowing of the rosette stage does not kill the plant.

Chemical - Foliar spray rosettes in early spring or late fall.

Treatment Timing — Common Teasel



Fire - Prescribed fire can be used to increase surrounding competition from native vegetation. Spring burns will kill germinating seedlings.

Effective herbicide formulations: 2,4-D amine, aminopyralid, clopyralid, glyphosate, imazapyr, metsulfuron, triclopyr.

CUTLEAF TEASEL

Dipsacus laciniatus L.

Prohibited - Eradicate

Common Names
Cut-leaved Teasel

Life Cycle
Herbaceous monocarpic perennial

Native Range
Europe

Look-a-Likes
Common Teasel (pg 11)

Habitat
Disturbed, open sunny site with moist to dry soils. Common on roadsides, stream banks and disturbed areas.

Means of Spread
Prolific seed producer which can spread by wildlife, water, and equipment. Most seed falls within 5 feet of the parent plant, but may be transported longer distances with disturbance. Teasel heads have also been used in decorative flower arrangements.

Identification
Plant - Herbaceous, monocarpic perennial. At maturity, it is 3 to 8 feet tall with erect, ridged, and prickly stems.

Leaves - Opposite with no petiole and form a cup at the stem intersection. Cutleaf teasel leaves can be up to 2 feet long by 6 inches wide, lance-shaped and have highly lobed margins that can extend close to the midvein. Each leaf has a prominent white midvein with spines on the underside. Early rosette leaves may not show the deep lobing.

Flower - Egg shaped and up to 4 inches tall and 1½ inches wide. Seedhead contain many irregular, 4-parted white flowers. Each flower is surrounded by a stiff bract resembling a spine. Flowering occurs in bands and various times. Larger bracts at the flower head base do not extend past the top of the flower head.

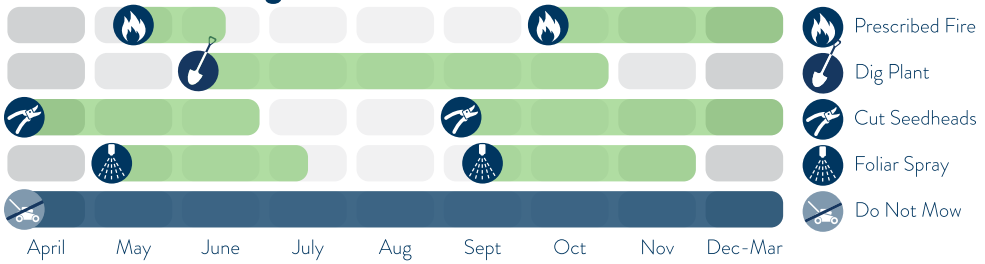
Bloom Time - June to October

Seed and Fruit - Each flower produces one small, greyish-brown, rectangular seed with deep grooves. Seeds are roughly ⅛ inch long by 1/16 inch wide. Each flower head can produce upwards of 2,000 seeds.

Root - Substantial taproot that can extend 24 inches underground with fibrous secondary roots.

Management
Mechanical - Severing of taproot at least 2 inches below ground will limit sprouting. Once done flowering, seed heads can be removed from the plant (seed easily falls out of dried seed heads). Mowing of the rosette stage does not kill the plant.

Treatment Timing — Cutleaf Teasel



Chemical - Foliar spray rosettes in early spring or late fall.

Fire - Prescribed fire can be used to increase surrounding competition from native vegetation. Spring burns will kill germinating seedlings.

Effective herbicide formulations: 2,4-D amine, aminopyralid, clopyralid, glyphosate, imazapyr, metsulfuron, triclopyr.

DALMATIAN TOADFLAX

Linaria dalmatica (L.) Mill.

Prohibited - Eradicate

Common Names
Broadleaf Toadflax, and Wild Snapdragon

Life Cycle
Herbaceous perennial

Native Range
Western Asia and southeast Europe

Look-a-Likes
Balkan Catchfly (pg 61)
Yellow Toadflax (pg 71)

Habitat
Colonizes disturbed sites such as roadsides, rail right-of-way, and other locations including cultivated ground. Prefers a drier site in coarse, well-drained soils.

Means of Spread
Reproduction is primarily by seed that is viable in the seed bank up to 10 years, but the plant also forms colonies via vegetative reproduction from roots.

Toxicity
Dalmatian toadflax contains an iridoid glycoside (a quinoline alkaloid) and is toxic to some livestock, including cattle.

Identification
Plant - A short-lived perennial that grows up to 4 feet tall.

Leaves - Alternate leaves 1 to 3 inch in length clasp stems, are wider and more heart-shaped than similarly flowered yellow toadflax (*Linaria vulgaris*).

Flower - Erect, spike-like racemes of yellow snapdragon-like flowers with orange center markings. Flowers are 1 to 1½ inches long with slender spurs extending downward from the back.

Bloom Time - May to September

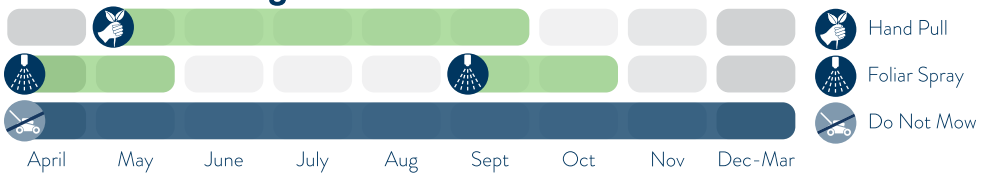
Seed and Fruit - On average 140 to 250 seeds are contained in ½ inch long pods. Seeds are dark in color, flattened, angular and three-edged with a slight, narrow wing on each edge. Mature plants produce up to 500,000 seeds with viability up to 10 years.

Root - Produces both taproots and rhizome (underground lateral stems). Roots can grow 4 to 10 feet deep and can extend 10 feet from the parent plant.

Management
Mechanical - Manual methods including, cutting, hand pulling or tillage if done repeatedly and in conjunction with other treatments may control infestations. Mowing equipment can spread seed and root fragments to uninfested areas.

Chemical - A surfactant is necessary for foliar absorption under the thick waxy leaves.

Treatment Timing — Dalmatian Toadflax



Biological - A variety of beetles, weevils and moths are commonly used in the western United States on large infestations though results of specific bioagents are not documented. Biological controls are not an eradication tool therefore are inappropriate for an eradicate species.

Effective herbicide formulations: chlorsulfuron, dicamba, diflufenzopyr, imazapic, picloram.

DIFFUSE KNAPWEED

Centaurea diffusa Lam.

Prohibited - Eradicate

Go to [Knapweed Comparison (pg 101)] for key differences.

Common Names

White Knapweed, Spreading Knapweed, Tumble Knapweed

Life Cycle

Herbaceous biennial or short-lived perennial

Native Range

Eastern Mediterranean, western Asia

Look-a-Likes

Brown Knapweed (pg 10)
Canada Thistle (pg 25)
Meadow Knapweed (pg 30)
Spotted Knapweed (pg 37)
Yellow Starthistle (pg 24)

Habitat

Disturbed habitats such as roadsides, railroad tracks, gravel pits, vacant lots, and heavily grazed pastures. It can tolerate drought, traffic, disturbance, and thin and gravelly soils.

Means of Spread

Reproduces primarily by seed, and it is a prolific seed-producer. After flowering, the dried plants may break off at the base of the stem and blow about like a tumbleweed, dispersing seed over long distances.

Identification

Plant - Biennial or short lived perennial that is generally shorter than other knapweed species, reaching 1 to 3 feet.

Leaves - Covered with short dense hairs, giving the plant a grey tint. Basal leaves, borne on short stalks, are highly divided into long, narrow lobes. Leaves get smaller as they go up the stem, leaves at the top of the plant are small, sessile, and not lobed.

Flower - ⅛ inch in diameter and ⅓ inch long, usually white, but sometimes pink/ purple, urn-shaped, typically borne in clusters at the ends of branches. Bracts around the flower are light colored and comb-like.

Bloom Time - June to September

Seed and Fruit - Small (less than ⅛ inch), some have short, bristly hairs (pappus) at the top. A typical achene (seed) of the Aster family but pappus is limited and wind will not carry seeds.

Root - Thick taproot.

Management

Mechanical - Hand pulling or digging can be an effective step when coupled with chemical treatments. Repeated mowing or cutting can reduce seed production.

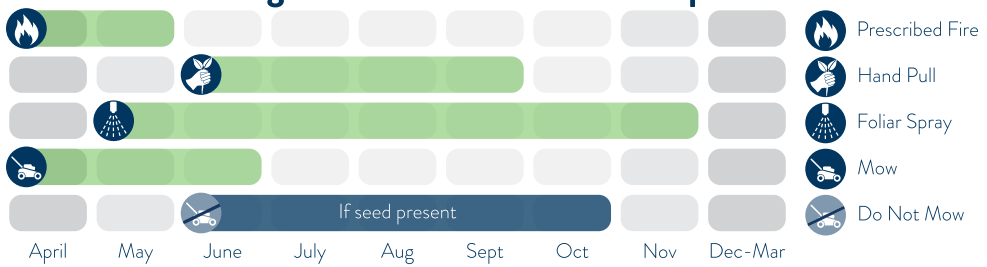
Chemical - Foliar herbicide treatments should target rosettes.

Cultural - Grazing animals do not typically target knapweeds.

Biological - Various knapweed bioagents have been observed feeding on diffuse knapweed. Biological controls are not an eradication tool, and are inappropriate for an eradicate species.

Treatment Timing

Diffuse Knapweed



Fire - Prescribed fire can be used to encourage stands of native grasses that will compete with knapweeds.

Effective herbicide formulations: aminopyralid, clopyralid, picloram.

GIANT HOGWEED

Heracleum mantegazzianum Sommier & Levier

Prohibited - Eradicate

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Giant Cow Parsley

Life Cycle

Herbaceous monocarpic perennial

Native Range

Caucasus region of Asia which includes Armenia, Azerbaijan, Georgia, and part of Russia.

Look-a-Likes

Cow Parsnip (pg 80)
Poison Hemlock (pg 34)

Habitat

Moist soils of woodlands and riparian zones with partial shade as found on woodland edges.

Means of Spread

Spreads by seed that can be moved by wind, water, wildlife, and humans.

Toxicity

Contact with the sap and exposure to sunlight can produce painful, burning blisters (phytophotodermatitis). Sap coming into contact with the eyes can cause temporary or permanent blindness.

Identification

Plant - Herbaceous giant at 10 to 20 feet tall. Stalks have a 2 to 4 inch diameter, and are hollow. Stalks are mottled reddish-purple and are covered with sturdy bristles.

Leaves - Alternate, up to 5 feet across, compound leaves with 3 deeply incised (cut) leaflets which may be further divided. The spotted leaf stalks, underside of leaves and stems are covered with coarse white hairs.

Flower - Flat umbels of small white florets create massive displays up to 2½ feet in diameter.

Bloom Time - June to July

Seed and Fruit - Seed is large, flattened, with visible brown resin canals. A single flower head can produce upwards of 1,500 seeds. Seeds can remain viable in the soil for up to 10 years.

Root - Fibrous white taproot during rosette stage.

Management

Appropriate protective clothing including gloves, goggles and long sleeve shirts should be worn and contact with the stems should be avoided.

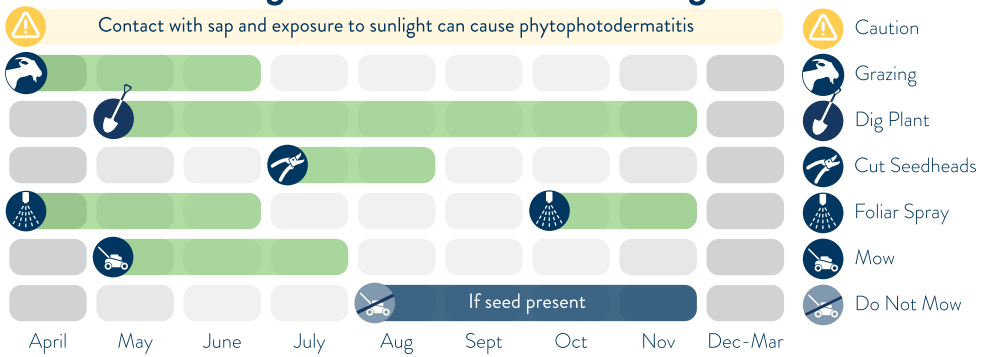
Mechanical - Cutting and removal by hand are effective on small infestations. The focus of this method is to prevent seed production.

Chemical - Foliar herbicide should be applied early season to basal rosettes.

Cultural - Grazing cows, goats, sheep and pigs can help to manage but not eliminate plants.

Fire - Fire will not kill giant hogweed. Use as a tool to improve surrounding native plant community.

Treatment Timing — Giant Hogweed



Effective herbicide formulations: glyphosate, triclopyr.

GRECIAN FOXGLOVE

Digitalis lanata Ehrh.

Prohibited - Eradicate

Common Names
Woolly Foxglove

Life Cycle
Herbaceous perennial

Native Range
Central and southern Europe

Look-a-Likes
Common Mullein (pg 64)
Garden Foxglove

Habitat
Full sun to partial shade along roads, woodland edges and in open fields.

Means of Spread
Small wingless seeds are easily transported by birds, animals, human activity as well as wind and water.

Toxicity
All plant parts contain a cardiac glycoside that is poisonous to humans and livestock.

Identification
Plant - Herbaceous, perennial beginning its first year as a basal rosette with a single flowering stalk from 2 to 5 feet tall in subsequent years.

Leaves - Alternate, smooth, stalk-less upper leaves with toothless edges are narrow (lance-shaped). Basal leaves are more oval with rounded tips and are densely woolly.

Flower - Many tubular flowers attached to a central stalk (raceme) with bloom progression from the bottom to the top of the stalk. Flowers have a brown or purple veined upper hood and a creamy-white, elongated lower lip.

Bloom Time - June to July

Seed and Fruit -Seed capsules are 2-parted and split to release tiny reddish-brown seed with 3 to 4 year viability. The hook (stiff, persistent style of the flower) on the seed pods are easily caught on clothing or fur and transported to new locations.

Root - Shallow taproot with fibrous secondary roots.

Management
Appropriate protective clothing including gloves, long sleeve shirts should be worn. Avoid direct skin contact with plant. Caution should be taken when burning areas with Grecian foxglove.

Mechanical - Repeated mowing or cutting to prevent flowering can drain plants of energy and help control an infestation. Flowering can occur on mowed, short stems.

Chemical - Herbicide applications in May and again in July are beneficial to knock down plants before flowering can occur. A fall application is also recommended to kill basal rosettes.

Treatment Timing

Effective herbicide formulations: 2,4-D ester (fall application only), metsulfuron, picloram (fall application only).

JAPANESE HONEYSUCKLE

Lonicera japonica Thunb.

Prohibited - Eradicate

Common Names
Golden and Silver Honeysuckle

Life Cycle
Woody perennial

Native Range
Eastern Asia

Look-a-Likes
Asian Bush Honeysuckles (pg 40)
Native Honeysuckles (pg 88)

Habitat
Prefers part-shade but will do well in full sunlight such as abandoned fields or power line corridors and areas of low maintenance. Plants invade woodlands and floodplain woods often thriving along edge habitats. Fertile soils with moist to mesic conditions produce best growth. Growth is limited by deep shade and drought.

Means of Spread
Spreads by seeds. Birds can consume fruit and disperse seeds. Rhizomes below ground and stems contacting ground can root at nodes (runners) increasing spread of infestations.

Identification
Plant - Twining vine reaching 30 to 45 feet in length. Climbs nearby trees, shrubs, or structures for vertical support. Sprawling, forming a low, dense ground cover. Stems are pubescent when young but become woody and glabrous (not fuzzy) over time, stems up to 2 inches in diameter.

Leaves - Opposite, simple, up to 2 inches across and 3 inches long. Leaves on younger stems may be lobed or have toothed edges while leaves on older stems have smooth edges with an ovate form.

Flower - Fragrant, white to yellow, 1 to 1½ inch tubular flowers develop in pairs from leaf axils. Lower lip droops downward while upper lip, divided into 4 parts, extends upward. Five white stamens and a white pistil extend forward of each flower. Paired leafy bracts, approximately 2 inches in length, are located at flower bases.

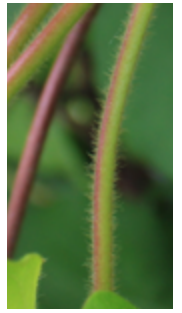
Bloom Time - June to July

Seed and Fruit - Paired black berries approximately ⅛ to ¼ inch across replace each flower pair. Each berry holds 2 to 3 flattened, oval seeds.

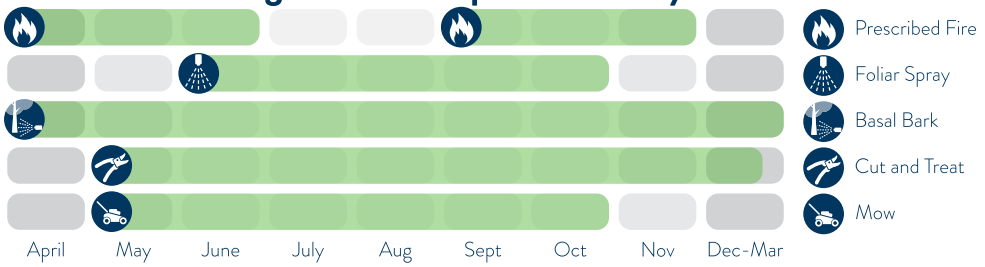
Root - Rhizomes below ground and stems contacting ground can root at nodes.

Management
Mechanical - Cutting provides good control of small infestations. Mowing for control of seedlings or ground mats should occur twice or more per year to be effective.

Chemical - Cut stems as close to the ground as possible prior to treatment.



Treatment Timing — Japanese Honeysuckle



Fire -Prescribed fire, where applicable, to reduce dense ground mats. Rhizomes will likely resprout following fire so follow-up is necessary.

Effective herbicide formulations: glyphosate, imazapyr, metsulfuron, picloram + 2,4-D, triclopyr, triclopyr + 2,4-D.

JAPANESE HOPS

Humulus japonicus Siebold & Zucc.

Prohibited - Eradicate

Common Names
Japanese Hop

Life Cycle
Herbaceous annual

Native Range
Eastern Asia

Look-a-Likes
Common Hops (pg 78)
Cucumbers (pg 81)
Riverbank Grape (pg 92)
Woodbines (pg 99)

Habitat
Japanese hops prefer full or partially sunny areas in riparian areas, grasslands, hayfields, and roadsides. It will invade disturbed habitats but can also colonize undisturbed sites like forest edges and fields.

Means of Spread
Reproduce by seed that can be dispersed by wind, water, wildlife, vehicles, and equipment.

Caution
Stem hairs are known to irritate the skin.

Identification
Plant - Herbaceous, annual vine trailing on the ground or climbing vegetation and infrastructure. Vines are covered with downward pointing prickles and can grow up to 35 feet in a single year.

Leaves - Opposite, 2 to 5 inches long and almost as wide, with 5 to 9 palmate lobes. Japanese hops leaves are rough and edges are toothed. Two downward facing bracts (stipules) are at leaf stalk bases and the leaf stalks (petioles) are as long or longer than the leaves.

Flower - Dioecious (separate male and female plants). Flowers are small and greenish to reddish, not showy. Male flowers are branched clusters (panicles) while the female flowers are drooping structures that are rather plump and composed of overlapping reddish bracts or scales (hops).

Bloom Time - July to August

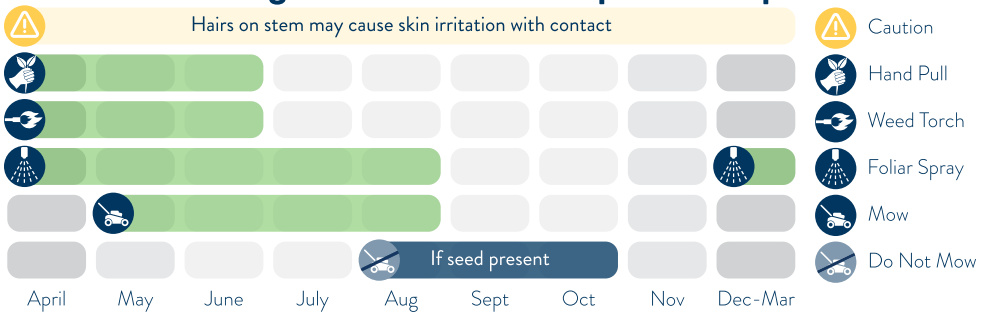
Seed and Fruit - Each cluster of female flowers produce rounded seeds that mature in September.

Root - Shallow but sturdy taproot with secondary fibrous roots that spread laterally.

Management
Mechanical - Manual methods including cutting and pulling, while labor intensive, can be successful on small, young infestations. Mowing is an effective method to control maturity and seed production.

Chemical - Pre-emergent should be applied prior to the growing season beginning in late March or early April. Once germination has occurred a switch to foliar applications should be made in an effort to keep plants from maturing and producing seed.

Treatment Timing



Fire - A hand-held propane torch can be effective for treating seedlings. Use caution when burning where vines climb into trees, as hop vines can act as ladder fuel and carry fire into the crown of trees.

Effective herbicide formulations: Pendimethalin (pre-emergent), 2,4-D, aminopyralid, dicamba, glyphosate, metsulfuron, sulfometuron, triclopyr.

JOHNSONGRASS

Sorghum halepense (L.) Pers.

Prohibited - Eradicate

Common Names
Johnson Grass, Allepo Grass, Arabian Millet

Life Cycle
Perennial grass

Native Range
Mediterranean & north Africa

Look-a-Likes
Indian Grass
Switch Grass

Habitat
Invades disturbed areas along roads, pastures, field edges, wetlands, and forest edges. Tolerant of drought, but prefers moist soils.

Means of Spread
Prolific seed producer which can also spread vegetatively. A single stem can produce up to 175 seeds, which are easily spread by wind, water, wildlife, and disturbance. Small rhizome fragments can start new plants.

Toxicity
During drought, extreme heat, or frost conditions, cyanogenic glycosides can concentrate in the leaves and stems leading to livestock poisoning from grazing.

Identification
Plant - Warm season perennial grass. Plants are bright green and can grow up to 8 feet tall. Rhizome forms thick, budded, tangled mass below ground with above ground stems growing in clumped formations.

Leaves - Alternate and lanced. Can grow to a width of 1 inch, and 6 to 20 inches long. Hairless with smooth margins. Large white midvein is visible along the center of the leaf. Sheaths can appear darker green or maroon close to the base. Ligule is prominent and membranous.

Flower - Open panicle, 8 to 24 inches in height, with a purple tint. Spikelets are paired with up to 350 spikelets per panicle that form a pyramid shape.

Bloom Time - June to October

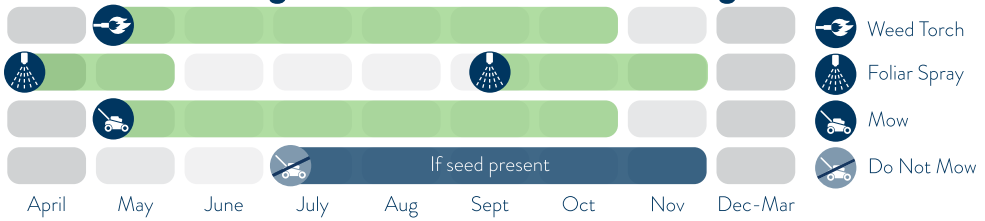
Seed and Fruit - Glumes are reddish brown, oval, and 1⁄16 to 1⁄8 inch at maturity. Seeds are glossy with fine lines, and sometimes surrounded by a small twisted awn.

Root - Thick, budded rhizome that forms a dense mass and can grow 100 feet away from main stem.

Management
Mechanical - Small clusters of plants can be hand pulled. Any remaining roots in the soil may resprout. Cutting or mowing will not kill plants or eradicate infestations, but can be effective at slowing the spread. Best when combined with herbicide application.

Chemical - Johnsongrass in crop settings have developed herbicide resistance, so rotation of mode of action is important. Herbicide application should be targeted during active growth and is most effective in late summer or fall.

Treatment Timing — Johnsongrass



Cultural - Grazing will not kill plants but will reduce seasonal growth.

Fire - Fire may invigorate regrowth.

Effective herbicide formulations: clethodim, glyphosate, imazamox, imazapic, imazethapyr, nicosulfuron + metsulfuron, sethoxydim, sulfosulfuron.

PALE SWALLOW-WORT

Cynanchum rossicum (Kleopow) Borhidi

Prohibited - Eradicate

Common Names
European Swallow-wort

Life Cycle
Herbaceous perennial

Native Range
Eastern Europe

Look-a-Likes
Black Swallow-wort (pg 9)
Native Milkweeds

Habitat
Prefers full sun in upland soils. Disturbances, natural or human caused, provide an opening in which pale swallow-wort can gain a foothold. Old fields, grasslands, road or rail corridors, quarries and other disturbed areas provide excellent habitat.

Means of Spread
Fluffy filaments attached to the seed enable it to be dispersed by wind. This is the primary means of long-range dispersal but can also be transported by humans and equipment.

Identification
Plant - A perennial, herbaceous vine that twines reaching heights of 3 to 8 feet. Vines are unbranched and have small hairs.

Leaves - Opposite, glossy, and have smooth (toothless) edges terminated by a pointed tip. Leaves are lanced shaped at 3 to 5 inches long, 2 to 3 inches wide and have clear (not milky) sap.

Flower - Clustered, small (⅛ inch) light pink to maroon flowers with five thin petals that curve around the edges. Each flower has a yellow center, star shaped, and borne in clusters at leaf axils.

Bloom Time - May to June

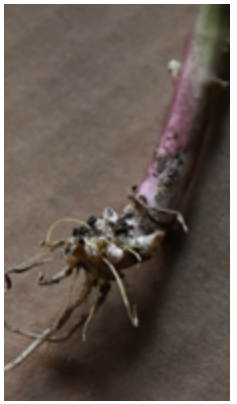
Seed and Fruit - Slender, smooth pods, taper to a point at about 1½ to 3 inches. At maturity, pods split open to release flattened, brown, circular seeds attached to filamentous fibers. Seeds contain one to four embryos which helps to ensure germination.

Root - Roots are fleshy with thick buds just below the soil surface. Horizontal stems are rarely present.

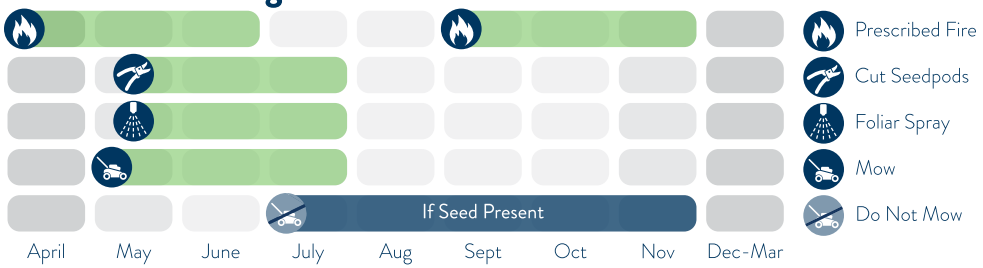
Management
Mechanical - Hand pulling plants is not recommended. Stems will break off leaving the rhizome behind. Repeated mowing or cutting can impact plants but will not eradicate a population. Pale swallow-wort, if cut early in the season, can still produce seed that year.

Chemical - Foliar herbicide applications should target plants after flowering stage. Spraying prior to pod formation may limit production of viable seed that season.

Above: Pale swallow-wort flower (left) next to black swallow-wort flower (right).



Treatment Timing



Biological - A moth, *Hypena opulenta*, has been released on the east coast. Biological controls are not an eradication tool, and are inappropriate for an eradicate species.

Fire- Prescribed fire can be used with other management efforts to encourage stands of native grasses that will compete with black swallow-wort for resources.

Effective herbicide formulations: glyphosate, imazapyr, triclopyr.

PALMER AMARANTH

Amaranthus palmeri S. Watson

Prohibited - Eradicate

Common Names
Careless Weed, Dioecious Amaranth, Palmer Pigweed

Life Cycle
Herbaceous annual

Native Range
Southwest United States, northwest Mexico

Look-a-Likes
Kansas State Pigweed Identification Guide

Pigweeds

Habitat
Desert climate, species performs well during heat of summer in disturbed areas and agriculture fields. Shade intolerant.

Means of Spread
Female plants are prolific seed producers. Seed can be spread in water movement, by wildlife and via agricultural practices such as plowing, harvesting and spreading manure.

Identification
Plant - Herbaceous, annual plant, a potential growth rate of 2 to 3 inches per day. Plants can reach 6 to 8 feet tall. Stems are stout, smooth, and up to 2 inches thick. Top-view of plants as foliage develops resembles a poinsettia.

Leaves - Alternate, green color, some plants with white or red V-shaped markings (chevrons) on leaves. Elliptical to diamond-shaped leaf blades terminated by a small spine. Petioles up to 2 to 3 times longer than leaves.

Flower - Dioecious with male and female flowers on separate plants. Flowers are not showy. Bracts on female plants are spiny and painful to touch.

Bloom Time - June to September. Flowers can occur 8 weeks post-emergence to end of season.

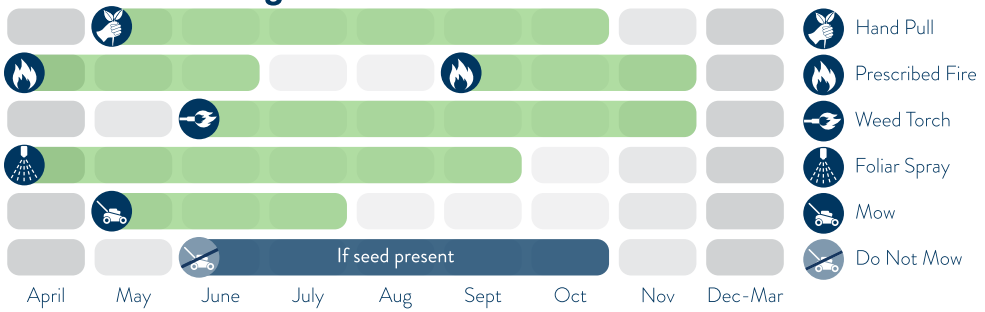
Seed and Fruit - Seeds are dark colored and extremely small. Research shows pigweeds including palmer amaranth can produce upwards of 250,000 or more seeds per female plant.

Root - Deep taproot as well as a network of finer, fibrous roots.

Management
Mechanical - Repeated mowing or cutting are not effective. Continue monitoring and consider alternative methods such as cultivation, manual methods like hand-pulling or herbicide applications.

Chemical - Biotypes have shown resistance to herbicides. Herbicide applications both pre-emergent and post-emergent are possible, but should be closely monitored.

Treatment Timing



Fire - Prescribed fire has the potential to kill seedlings, sterilize seed on the soil surface, and drain energy from maturing plants.

Effective herbicide formulations: 2,4-D, aminocyclopyrachlor, aminopyralid, clopyralid, dicamba, glyphosate, glufosinate, imazapyr, imazapic, metsulfuron, sulfometuron.

Herbicide can be used depending on crop tolerance traits or desired vegetation outcomes for non-cropland sites. Genetic testing may be available for certain herbicide resistant traits.

RED HAILSTONE

Thladiantha dubia Bunge

Prohibited - Eradicate

Common Names
Golden Creeper

Life Cycle
Herbaceous perennial

Native Range
Russia, northern China, and Korea

Look-a-Likes
Cucumbers (pg 81)
Wild Yam

Habitat
Degraded landscapes, along railroad corridors, in cornfields and in eroded floodplain forests.

Means of Spread
In its native range, red hailstone can spread by seed or underground tubers. Tubers easily break off from rhizome and can float in water, spreading downstream. Only male vines have been found in Minnesota as of 2023, and spread is limited to tuber movement.

Identification
Plant - Herbaceous, perennial vine that is covered in downy hooked hairs with tendrils that grasp other plants and objects for support. Vines can grow up to 18 feet but above ground parts (vines) will die back to the ground each winter (after hard frost, in late autumn).

Leaves - Fine, simple, heart-shaped, irregularly toothed and arranged alternately with petioles up to 2 ½ inches long. Leaves can be 2 to 6 inches long by 1 ½ to 4 inches wide. Base of the leaf is deeply cordated.

Flower - Bell-shaped yellow or golden flowers, roughly an inch wide, with five petals fused at the base producing a tube.

Bloom Time - July to September

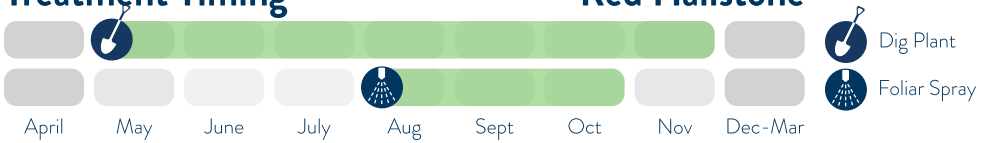
Seed and Fruit - Oblong berry that can grow around 2 inches long and covered in hairs. Skin is green and matures to a deep red color. Flesh inside is bright orange. Seeds are small, 1/16 inch by ¼ inch, ovate, and dark brown to black.

Root - Potato-like tuberous underground stems. Tubers can float and have a starchy white flesh.

Management
Mechanical - Removing tubers in small infestations can control populations, but can easily break off so shouldn't be used for larger infestations. Mechanical removal for larger sites can increase chances of erosion, and multiple years of follow up is necessary.

Chemical - Foliar herbicide should be applied while plants are leafed out. Research on effective herbicide formulations and timing is limited at this time.

Treatment Timing



Effective herbicide formulations: glyphosate, imazapyr, metsulfuron, triclopyr.

TREE OF HEAVEN

Ailanthus altissima (Mill.) Swingle

Prohibited - Eradicate

Common Names
Stinking Sumac, Ailanthus

Life Cycle
Woody perennial

Native Range
China, Taiwan, and Vietnam

Look-a-Likes
Amur Corktree (pg 56)
Black Walnut (pg 74)
Sumacs (pg 96)

Habitat
Prefers full sun and dry soil. It will readily colonize disturbed urban and rural areas. Tolerant of soils with high levels of pollution.

Means of Spread
Prolific seed producer and a single female tree may produce up to 325,000 seeds per year. It also spreads aggressively through vegetative means, in response to above-ground cutting or root breaking. Root fragments found in infested soil may start new populations if brought to a new area.

Toxicity
Exposure to sap may cause myocarditis, an inflammation of the heart lining.

Identification
Plant - Tree, woody perennial plant that can attain heights of 70 feet. Very thick twigs with dime-sized leaf scars aid winter identification. Cutting twigs reveals a soft white pith.

Leaves - Alternate, 1 to 4 feet long, odd-pinnate compound with 11 to 25 (up to 40) leaflets. Leaflets are 3 to 5 inches long by up to 2 inches wide, smooth edged with 1 to 5 distinct glands (bumps) near leaflet bases.

Flower - Clusters of small yellowish-green flowers are showy due to the sheer number. Species is predominantly dioecious (male and female flowers on separate trees).

Bloom Time - June

Seed and Fruit - Clusters of 1 to 1½ inch long twisted samaras develop mid-summer. A pinkish hue develops, then maturing to light tan. Samaras are documented to wind disperse up to 300 feet.

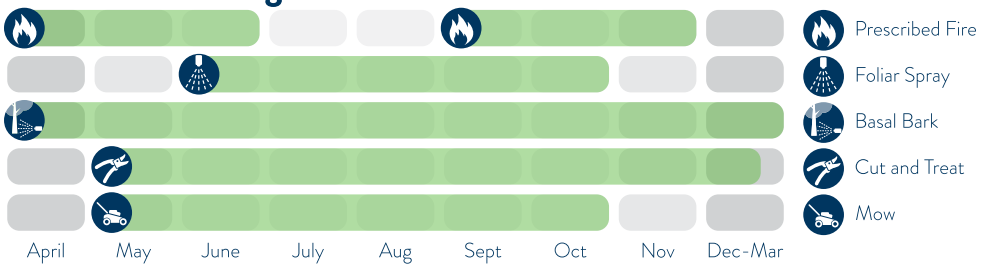
Root - Fast growing, sprawling root system that can send suckering roots up to 90 feet away.

Management
Appropriate protective clothing including gloves and long sleeves should be worn. Wash hands and clothing after exposure.

Mechanical - Cultural methods like cutting or mowing are beneficial but should be followed up with good monitoring. Goal with these methods is to prevent flower and seed.

Chemical - Stumps should be cut as low as possible to minimize surface area from which potential resprouts occur. Hack and squirt can be used for larger trees. Avoid treating in spring during times of heavy sap flow.

Treatment Timing — Tree of Heaven



Fire - Prescribed fire, where applicable, can top kill seedlings and or saplings with the goal to strengthen the native plant community.

Effective herbicide formulations: 2,4-D, dicamba, glyphosate, imazapyr, picloram, triclopyr.

YELLOW STARTHISTLE

Centaurea solstitialis L.

Prohibited - Eradicate

Go to Knapweed Comparison (pg 101) for key differences.

Common Names

St. Barnaby's Thistle, Yellow Cockspur, Golden Starthistle

Life Cycle

Herbaceous winter annual

Native Range

Mediterranean

Look-a-Likes

Brown Knapweed (pg 10)
Diffuse Knapweed (pg 14)
Meadow Knapweed (pg 30)
Spotted Knapweed (pg 37)

Habitat

Periods of summer drought favor infestations on disturbed sites such as roadsides. Invader of prairies, fields, woodlands and pastures.

Means of Spread

Reproduces exclusively by seed and can remain dormant in soil for 10 years. Spread by wind, water, vehicles, humans, wildlife, and by moving soil, hay, or grain containing seed.

Toxicity

Yellow starthistle is toxic to horses and causes chewing disease. Spines may also cause discomfort for other livestock.

Identification

Plant - Herbaceous annual with heights of 6 to 36 inches. Plants start as a biennial or winter annual with a basal rosette the first season. Mature plants are bushy with a greyish or bluish cast to otherwise green color.

Leaves - Basal leaves are lobed, dandelion-like at about 8 inches. Basal leaves may not persist as plants bolt to flower. Stem leaves are alternate, narrow to oblong and an extended leaf attachment provides a winged appearance to stems.

Flower - Approximately 1 inch long yellow flowers with substantial ¾ inch spines emanating from bracts beneath flowers. Flowers are terminal and solitary on stems.

Bloom Time - June to August

Seed and Fruit - Each terminal flower produces between 35 to 80 plumeless or plumed seeds. Seeds in the center of the seedhead have white pappi while seeds near the seedhead edge do not.

Root - Fibrous taproot that quickly can grow up to 4 feet deep.

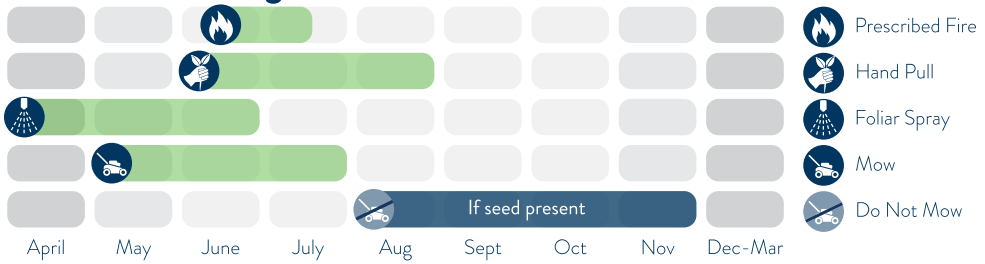
Management

Mechanical - Limit movement of seed on grazing animals, mowing equipment and vehicles. Tilling, hand pulling, and mowing to prevent flowering is most effective between May and June. Monitor infestations and time mowing at early flowering stages, soon after spine development.

Chemical -Foliar applications early in the growing season appear to be most effective.

Treatment Timing

Yellow Starthistle



Biological - Various bioagents have been approved and are used in the western United States for large infestations. Biological controls are not an eradication tool, and are inappropriate for an eradicate species.

Fire - Prescribed fire is effective in reducing populations. Regimented burn plans kill seedlings and plants, sterilize seeds in the top 2 inches of soil, and improve surrounding native plant communities.

Effective herbicide formulations: aminopyralid, clopyralid, picloram.

CANADA THISTLE

Cirsium arvense (L.) Scop.

Prohibited - Control

Common Names
Creeping Thistle, California Thistle, Corn Thistle

Life Cycle
Herbaceous perennial

Native Range
Europe

Look-a-Likes
Alfalfa (pg 60)
Knapweeds (pg 101)
Musk Thistle (pg 68)
Native Thistles
Plumeless Thistle (pg 33)
Swamp Thistle (pg 97)

Habitat
A successful inhabitant of disturbed areas such as roadsides and old fields but will also move into open wood-lands and prairies. This species is also found where water levels fluctuate such as in wet meadows, along stream banks and ditches.

Means of Spread
Spreads primarily by rhizomes and seeds. 80% of seed falls within 3 feet of the parent plant. Clonal stands are common and spread significant from roots that can grow horizontally 10 to 12 feet per year.

Identification
Plant - Herbaceous, perennial with grooved, non-spiny, hairy and typically upright stems to a height of 2 to 6 feet tall.

Leaves - Alternate, simple, pinnately lobed leaves that are generally lance-shaped. The leaves are irregularly lobed, with toothed, spiny edges. The leaves are stalkless (sessile) and at maturity are downy or hairy on the underside.

Flower - Male and female (dioecious) ¾ inch flowers occur singly on the end of branches. The disk or composite inflorescence is comprised of many purple to pinkish (may also be white) small florets. Bracts below the inflorescence do not have spines on the tips.

Bloom Time - June to October

Seed and Fruit - Tufted, oblong, light brown seeds can be dispersed by wind.

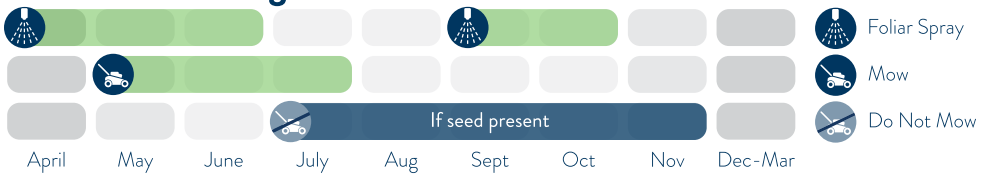
Root - Develops a widespread root and rhizome system quickly taking over an area.

Management
Mechanical - Cutting or mowing should target plants that are approximately 3 inches tall and the process must be repeated throughout the season to maintain the plants at 3 inches or less in height. Continuing this approach for several years can drain the plants of reserves.

Chemical - Foliar applications should be made as the plants bolt, prior to flower set, or in late summer/early autumn to rosettes.

Fire - Repeated prescribed fire can be used to encourage stands of native grasses that will outcompete thistle. However, monitoring is needed to check for thistle that germinates in bare soil soon after burns are completed.

Treatment Timing



Effective herbicide formulations: aminopyralid, clopyralid, metsulfuron.

COMMON BARBERRY

Berberis vulgaris L.

Prohibited - Control

Common Names
European Barberry, Barberry

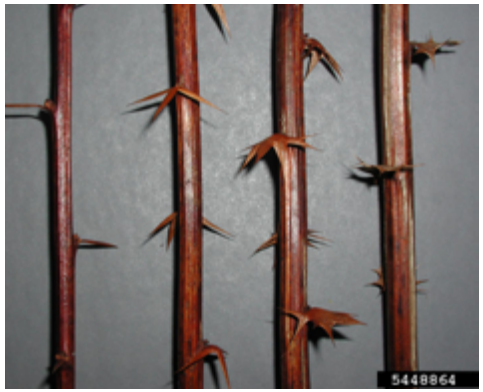
Life Cycle
Woody perennial

Native Range
Asia, and widely naturalized in Europe

Look-a-Likes
Japanese Barberry (pg 47)
Korean Barberry

Habitat
Typically found in open or lightly shaded woods. Also found in pastures, fencerows and roadsides in full sun.

Means of Spread
Prolific seed producer, producing thousands of seeds per bush which are long-lived in the soil and have a high germination rate. Birds are attracted to the fleshy berries and disperse seeds to new areas. It also spreads vegetatively from rhizomes sending up new shoots and can sprout from small rhizome fragments.



Identification
Plant - Deciduous shrub reaching 8 to 10 feet in height and up to 6 feet in width. Slender branches are straight between nodes, strongly grooved. Common barberry may have single or multi-branched spines, usually 3-branched possibly 5. Bark on second year stems is grey.

Leaves - Alternate, but clustered not appearing alternate. Simple leaves are ovate, narrow near the base, toothed on the edges, described as finely serrate. As few as 8, often 16 to 30 spiny teeth along leaf edge. Young shoots typically have spiny leaves.

Flower - Drooping, 1 to 2 inch long clusters (racemes) of 10 to 20 yellow, ½ inch long flowers. Flowers are somewhat showy, fragrance is not described as pleasant.

Bloom Time - May to June

Seed and Fruit - Oblong berry, up to ½ inch long, bright red and fleshy. Berries persist into and through winter. Each fruit contains 1 to 3 seeds. The US Forest Service indicates seed viability of 7 to 9 years in soil.

Root - Sprawling rhizomes that sends up new shoots and can sprout from small fragments.

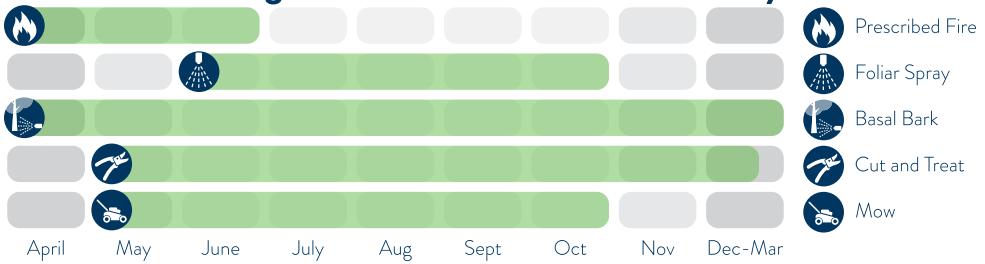
Management
Mechanical - Cutting or mowing can be effective once mature shrubs are removed. Follow-up with frequent mowing to control regeneration or utilize other treatments as needed.

Chemical - Foliar applications should be made when plants are fully leafed out and for best effect while plants are fruiting.

Fire - Repeated prescribed fire can damage above ground parts and drain energy from shrubs. Resprouting will likely occur.

Treatment Timing

Common Barberry



Effective herbicide formulations: dicamba + 2,4-D, glyphosate, metsulfuron, triclopyr.

COMMON TANSY

Tanacetum vulgare L.

Prohibited - Control

Common Names
Tansy, Bitter Buttons, Golden Buttons

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Goldenrods (pg 85)

Habitat
Found most often in open, disturbed areas typical of stream and river banks, trail edges, roadsides, gravel pits and old farmsteads or pastures. Can be found in riparian areas, but most often in dry, well drained soils in full sun.

Means of Spread
Spreads primarily by rhizomes and seeds. Seeds are lightweight and easily moved by wind, water, wildlife, equipment, etc.

Toxicity
Alkaloids in common tansy are toxic to humans and livestock if consumed in high quantities.

Identification
Plant - Herbaceous, perennial reaching 2 to 5 feet in height. Stems appear woody, are slightly hairy to smooth and at the base are purplish-red.

Leaves - Alternate, pinnately divided, toothed on edges and 2 to 12 inches long, typically smaller near the top of plants. Leaves are strongly aromatic (bitter) when crushed.

Flower - Single stems support multibranched, flat clusters of bright yellow button-like flowers. Each ¼ to ½ inch wide button is comprised of many small florets and the flower heads, like the leaves, are strongly aromatic.

Bloom Time - July to October

Seed and Fruit - Small, yellowish-brown, dry, 5-toothed crowned seeds.

Root - Extensive, sturdy and fibrous rhizome system. Broken sections easily resprout.

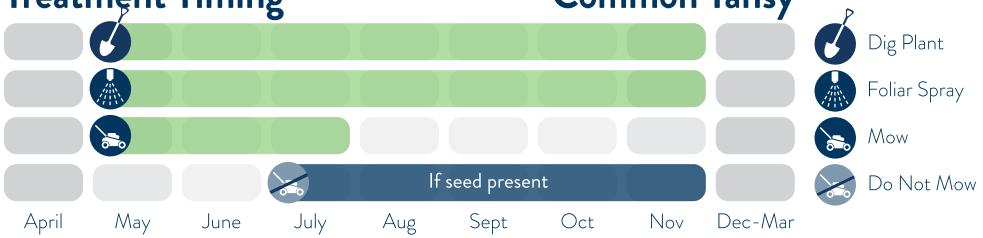
Management
Appropriate protective clothing including gloves and long sleeves should be worn.

Mechanical - Tilling can spread common tansy by spreading small root segments. Pulling also may leave root segments in the ground which may resprout. Mowing to prevent seed production should be timed just prior to flowering.

Chemical - Apply as foliar applications in spring.

Cultural - Goats and sheep will graze on common tansy, but is toxic to all livestock in high quantities.

Treatment Timing — Common Tansy



Fire - Can eliminate competition and create favorable conditions for common tansy by opening the canopy and preparing bare soil. Plants are top killed and follow up with other management methods is necessary.

Effective herbicide formulations: 2,4-D, glyphosate, imazapyr, metsulfuron.

KNOTWEEDS

Polygonum spp.

Prohibited - Control

Go to Knotweed Comparison (pg 102) for key differences.

Bohemian Knotweed
Polygonum × bohemicum **(J. Chrtek & Chrtkova) Zika & Jacobson**
Giant Knotweed
Polygonum sachalinense **F. Schmidt ex Maxim**
Japanese Knotweed
Polygonum cuspidatum **Siebold & Zucc.**

Common Names

Knotweed, Mexican Bamboo, Japanese Bamboo

Life Cycle

Herbaceous perennial

Native Range

Bohemian knotweed is a hybrid of giant knotweed and Japanese knotweed that has been documented in Japan. Giant knotweed is native to Japan and Japanese knotweed is native to China, Japan, Korea, and Taiwan.

Look-a-Likes

Bamboo
False buckwheat

Habitat

Prefers moist soils in full sun to partial shade. Plants readily inhabit moist roadside ditches, wetlands, and areas along rivers and streams. However, plants will thrive on dry soils.

Means of Spread

Can spread both vegetatively and by seed. Rhizomes allow knotweed to spread quickly and aggressively and new colonies can form from very small stem or rhizome fragments. Not the primary means of spread.

Identification

Plant - They are large perennial plants with non-woody stems. Stems are smooth, green with reddish-brown blotches and hollow between swollen nodes where leaves attach. Depending on species, can grown anywhere from 5 to 20 feet tall. Plants die back every winter, and brown stems persist.

Leaves - Alternate, and simple. Tips of leaves are blunt. Leaves are variable based on species, and fall off the stalks after first frost.

Flower - Branched flower structures at leaf attachments holding many small, creamy white to greenish flowers.

Bloom Time - August to September

Seed and Fruit - Small, black, 3-sided, contained in a papery husk.

Root - Extensive underground rhizome system that can grow 60+ feet away from the original colony. Rhizomes can grow through structures and pavement.

Management

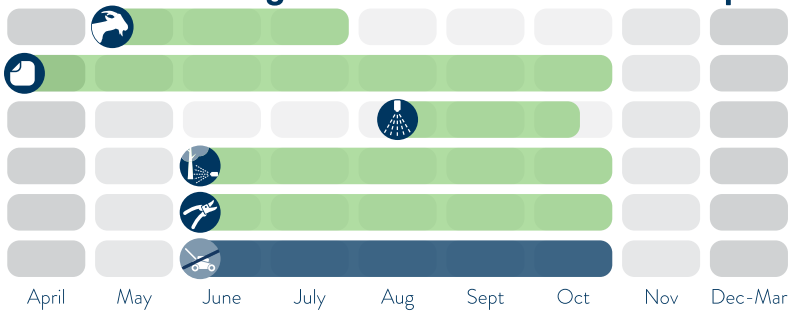
Mechanical - Knotweed is invigorated by mechanical disturbance, and any management is recommended to be coupled with a chemical treatment. Smothering infestations with a thick tarp for several seasons can reduce subsequent growth.

Chemical - Foliar spraying is most effective after plants have gone to flower, and before the first frost in fall. Stalks are cold sensitive and will die back after frost events.

Cultural - Goats will graze on young knotweed stalks.

Fire - Fire promotes invigorated regrowth of stems. Can be used to remove old stems.

Treatment Timing



Knotweed Complex

Effective herbicide formulations: 2,4-D, aminopyralid, glyphosate, imazapyr, triclopyr, triclopyr + 2,4-D.

LEAFY SPURGE

Euphorbia esula L.

Prohibited - Control

Common Names
Spurge, Wolf's Milk

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Cypress spurge
Yellow rocket (pg 70)

Habitat
Dry sites in full sun, but tolerance of a range of conditions allows them to invade moist, rich soils as well.

Means of Spread
Produces seed that explodes from the seedpods and can travel up to 20 feet. The seed is durable and can remain viable up to 10 years. Reproduction can be vegetative from buds on roots, rhizomes and root cuttings.

Toxicity
Milky sap is toxic to cattle and horses. Contact with human skin can cause rashes.

Identification
Plant - Herbaceous, perennial to 3 feet tall. Broken stems of many *Euphorbia* spp. produce a milky sap (latex).

Leaves - Alternate, linear to lance-like, bluish-green and 1 to 4 inches in length.

Flower - There are no petals or sepals on the small yellowish-green flowers. Upper stem leaves or bracts develop just below flowers and are yellow-green in color providing the appearance of yellowish petaled flowers. The bracts develop before the true flowers.

Bloom Time - May to August

Seed and Fruit - Three-celled capsules that expel seeds up to 20 feet. Each cell contains a seed.

Root - Deep roots to 21 feet with extensive horizontal roots allow plants to store vast reserves.

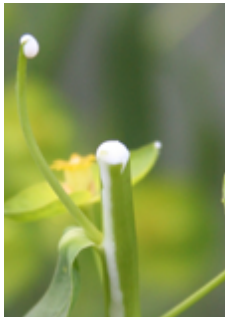
Management
Appropriate protective clothing including gloves and long sleeves should be worn.

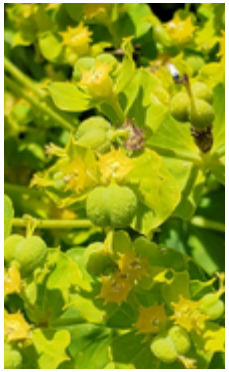
Mechanical - Cutting or mowing if timed before flower development can reduce or limit seed production.

Chemical - Repeated herbicide applications during the early spring and autumn can effectively reduce spurge.

Cultural - Grazing goats and sheep can effectively limit the spread of infestations.

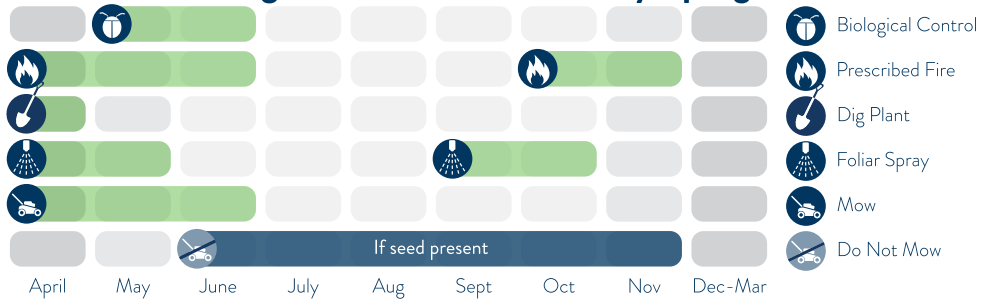
Biological - Biological control agents are available for controlling leafy spurge. Flea beetles (*Aphthona lacertosa*) are widely used in Minnesota. Flea beetles are collected late May to early June and released. Stem and root boring beetles (*Oberea erythrocephala*) provide some control.





Below: *Aphthona lacertosa.*

Treatment Timing



Fire - Early spring prescribed fire is compatible with biological control.

Effective herbicide formulations: 2,4-D, aminocyclopyrachlor, dicamba, glyphosate, imazapic, picloram.

MEADOW KNAPWEED

Centaurea x moncktonii C.E. Britton

Prohibited - Control

Go to Knapweed Comparison (pg 101) for key differences.

Common Names

Hybrid Knapweed

Life Cycle

Herbaceous perennial

Native Range

Europe

Look-a-Likes

Brown Knapweed (pg 10)
Canada Thistle (pg 25)
Diffuse Knapweed (pg 14)
Spotted Knapweed (pg 37)
Yellow Starthistle (pg 24)

Habitat

Woodland clearings, yards, ditches, in disturbed areas, pastures and other grasslands. It thrives in cool, moist locations with full or partial sun.

Means of Spread

Spreads by seed that can be moved by wind, water, wildlife, equipment and humans. Meadow knapweed can also be propagated by root crown fragments.

Identification

Plant - Perennial plant that has multiple upright, 20 to 40 inch tall reddish stems with vertical ridges. Hybrid species between brown and black knapweed.

Leaves - Lance-shaped and pubescent, occasionally with wavy margins or lobed. Basal leaves grow 4 to 9 inches long.

Flower - Solitary, terminal to branches, purplish disk flowers that are surrounded by 5-petaled florets. Flowers are pink to purple with white centers, borne at the ends of branches and are approximately ¾ inch diameter. Bracts that cover bases of flowers are fringed as long or longer than the width of the bract, not rigid.

Bloom Time - June to September

Seed and Fruit - Small (less than ⅛ inch), some have short, bristly hairs (pappus) at the top. A typical achene (seed) of the Aster family but pappus is limited and wind will not carry seeds.

Root - Seedlings have taproots and mature plants develop a cluster of roots below the crown.

Management

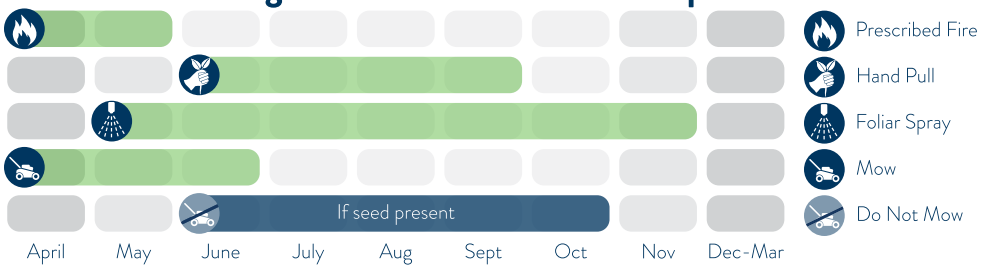
Mechanical - Hand pulling or digging can be an effective step when coupled with chemical treatments. Repeated mowing or cutting can reduce seed production.

Chemical - Foliar herbicide treatments should target rosettes.

Cultural - Grazing animals do not typically target knapweeds.

Biological - Seedhead weevils *Larinus minutus* and *L. obtusus* (used for spotted knapweed) feed on meadow knapweed.

Treatment Timing — Meadow Knapweed



Fire - Prescribed fire can be used to encourage stands of native grasses that will compete with knapweeds.

Effective herbicide formulations: aminopyralid, clopyralid, picloram.

NARROWLEAF BITTERCRESS

Cardamine impatiens L.

Prohibited - Control

Common Names

Narrow-leaved Bittercress, Bushy Rock-cress

Life Cycle

Herbaceous annual or biennial

Native Range

Eurasia

Look-a-Likes

Garlic Mustard (pg 45)
Yellow Rocket (pg 70)

Habitat

Moist woodlands, forested areas and on margins of thickets. River bottom sites, stream banks and other moist areas are very good habitat and provide avenues for dispersal. Can tolerate a variety of conditions and has been reported in areas such as roadsides, vacant lots, yards and gardens.

Means of Spread

Can self-pollinate and produces prolific quantities of seed in siliques that can shoot the seed a short distance from the plant when the dried seedpods burst open. Seeds can germinate in water and rivers and streams are considered a method of long-range dispersal.

Identification

Plant - Herbaceous, annual or biennial. First-year plants that don't flower form a rosette, with the basal leaves dying in winter. Bolting plants send up a smooth flower stem to approximately two feet in height.

Leaves - Basal rosette leaves are pinnately compound with 3 to 11 round lobed leaflets. Alternate leaves on flowering stems, while still pinnately compound, likely will not have rounded lobes but 6 to 20 lance or arrowhead shaped leaflets. Edges of flowering stem leaves may be smooth or sharply toothed. Where leaves attach to stems, there are narrow pointed ears or auricles that grasp and may extend beyond stems.

Flower - Small (⅛ inch), white 4-parted flowers. White petals may not be present.

Bloom Time - May to August

Seed and Fruit - Similar to other mustard family members, seed pods are long (½ to ¾ inch) and slender. Seed ripens from May to September.

Root - Taproot with shallow secondary roots.

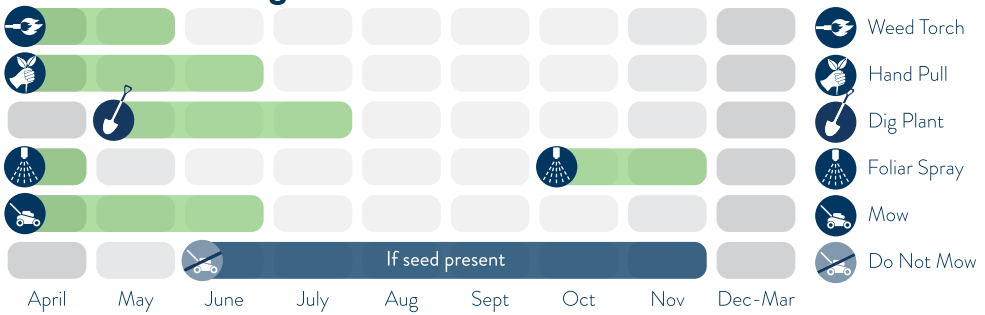
Management

Mechanical - Hand pull and dig plants before flowering. As with other mustard species, mowing before flowering will reduce seed production. If infestations are large or dense, consider the need for ground cover to prevent erosion and to provide competing vegetation.

Chemical - Foliar spray green plants before buds form.

Fire - Prescribed fire in spring to top-kill basal rosettes and seedlings.

Treatment Timing — Narrowleaf Bittercress



Effective herbicide formulations: 2,4-D, glyphosate, imazapic, metsulfuron-methyl, triclopyr.

NON-NATIVE PHRAGMITES

Phragmites australis (Cav.) Trin. Ex Steud. subsp. *australis*

Prohibited - Control

Check out MAISRC's Identify Invasive Phragmites guide for identification and key differences.

Common Names

European Common Reed, Invasive Giant Reed, Invasive Phragmites

Life Cycle

Perennial grass

Native Range

Eurasia

Look-a-Likes

Amur Silvergrass (pg 39)
Native Phragmites (pg 89)

Habitat

Shorelines of lakes and rivers as well as pond edges and freshwater marshes. Disturbed areas (roadsides, storm water ponds, and rail corridors) can support non-native Phragmites very well.

Means of Spread

Spreads to new areas by both seeds and vegetative means (stolons, green stem fragments, rhizomes). Seed dispersal occurs through wind, water, animal and human activities. **Cutting or mowing are a primary means of spread along roadways when mowing occurs during the growing season (stem fragments), or in winter (ripe seed).**

Identification

Plant - A perennial grass reaching heights of 15 feet. Dense stands develop from rhizomatous root systems with live stems and dead stems intermingled. Hollow stems are green in summer and yellow in winter.

Leaves - Dark green, grass-like elongated foliage that is at most 1½ inches wide. Leaf sheaths are typically retained on culms (stems) into winter even if leaves drop from dead culms.

Flower - Dense bushy panicles of purplish or golden flowers range from 8 to 20 inches tall.

Bloom Time - late-August to September

Seed and Fruit - Large, dense seed heads become grey-brown. Hairy seeds give heads a fuzzy, fluffed appearance. Seeds persist on stems throughout the winter.

Root - Extensive underground rhizome system that can grow 10 feet in a single growing season. Rhizomes can grow through structures and pavement.

Management

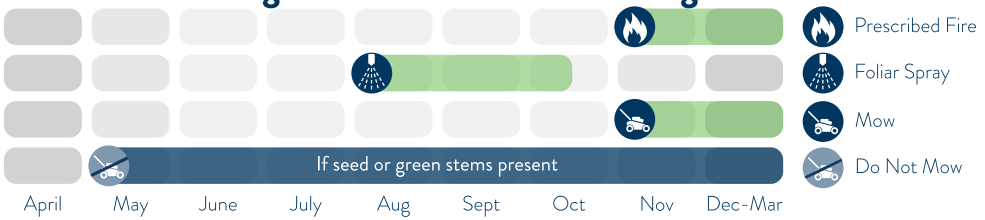
Chemical management is recommend as the primary control method.

Mechanical - Cutting or mowing will not kill plants or eradicate infestations, but can be used to facilitate herbicide application. **Do not mow if seeds or green stems are present.**

Chemical - Late summer/early autumn herbicide applications to foliage or to cut stems are best and repeat treatments in subsequent seasons are likely necessary.

Fire - Controlled burns can be used to remove biomass and facilitate herbicide application.

Treatment Timing — Non-native Phragmites



Effective herbicide formulations: glyphosate, imazapyr (preferred), or combination of both.

PLUMELESS THISTLE

Carduus acanthoides L.

Prohibited - Control

Common Names

Spiny Plumeless Thistle

Life Cycle

Herbaceous biennial

Native Range

Eurasia

Look-a-Likes

Canada Thistle (pg 25)
Musk Thistle (pg 68)
Native Thistles
Swamp Thistle (pg 97)

Habitat

Found on dry to moist soils in pastures, woodlands, waste areas, along roadsides, ditches and stream banks.

Means of Spread

Prolific seed producer building a large seed bank in a short period of time. Movement is greatly increased by animal and/or human activities such as mowing or haying.

Identification

Plant - Herbaceous, biennial reaching heights of 1 to 4 feet. Stems are branched and covered with numerous spiny leaves.

Leaves - Edges of rosette leaves are wavy with yellowish spines. Stem leaves are alternate, attached directly to stems and typically have hairs on bottoms along mid-veins.

Flower - Numerous stem branches support terminal, single, composite flowers that are ½ to 1½ inches wide. Linear or narrow bracts with short spines are found immediately below pink to purple flowers.

Bloom Time - July to October

Seed and Fruit - Small seeds approximately 1/16 inch long described as straw colored and tufted with fibers on the terminal end. The fibers aid in wind dispersal.

Root - Deep, fibrous taproot.

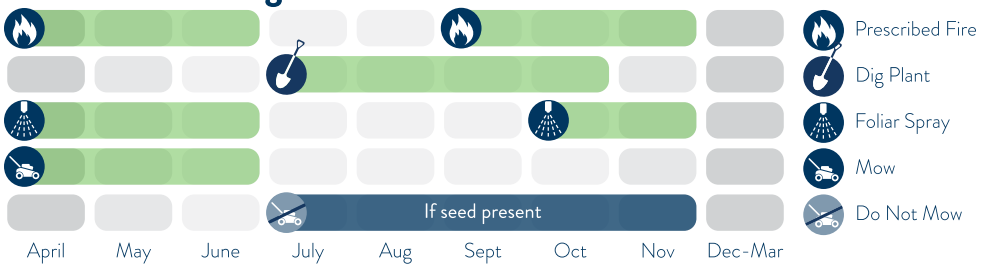
Management

Mechanical - Control measures should focus on eliminating seed production and exhaustion of seed banks. Cutting taproots 1 to 2 inches below ground is effective but time consuming for large numbers of plants. Mowing should be timed at flower bud stage to prevent seed production and should be repeated 2 to 3 times per season to be effective. Avoid spreading seed with hay or straw and with mowing and vehicle movement through infestations.

Chemical - Foliar applications timed at the early bolting, budding or flowering stage.

Cultural - Goats and sheep will graze while plants are in the budding stage, reducing seed production.

Treatment Timing — Plumeless Thistle



Fire - Prescribed fire can be used to encourage stands of native grasses that will outcompete thistle.

Effective herbicide formulations: 2,4-D ester, aminopyralid, clopyralid, dicamba, metsulfuron, triclopyr.

POISON HEMLOCK

Conium maculatum L.

Prohibited - Control

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Hemlock, Wild Hemlock

Life Cycle

Herbaceous biennial

Native Range

Europe

Look-a-Likes

Giant Hogweed (pg 15)
Water Hemlock (pg 98)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Partial shade is tolerated but preference is full sun with moist fertile soils. Often found near water or in riparian zones. Can tolerate drier conditions.

Means of Spread

Partial shade is tolerated but preference is full sun with moist fertile soils. Often found near water or riparian zones. Can tolerate drier conditions.

Toxicity

All plant parts are highly toxic and can be deadly to humans and livestock if ingested.

Identification

Plant - First year is a basal rosette and second year is a branched, 3 to 7 feet tall, robust plant. Stems are smooth, hollow, ridged, and are light green, with purple spots (mottled).

Leaves - Alternate and triangular. Doubly or triply pinnately compound (up to 12 inches by 18 inches). Leaflets are fern-like, deeply divided and typically twice as long as they are wide (1 inch by 2 inch). Basal leaves are larger and have longer petioles than upper stem leaves. Petiole attaches to stem and covered by sheath.

Flower - Flat or slightly dome-shaped open compound umbels of 3 to 16 umbellets with 12 to 25 five-petaled, white florets. There are small ovate-lanceolate bracts with elongated tips under main umbels. Bracts are also present under umbellets.

Bloom Time - June to August

Seed and Fruit - Paired, hairless seeds are ⅛ in. tall schizocarps that split at maturity becoming two carpels. Each carpel is a seed, flattened on 1 side and lined vertically by broken ridges (wavy ribs).

Root - White taproot.

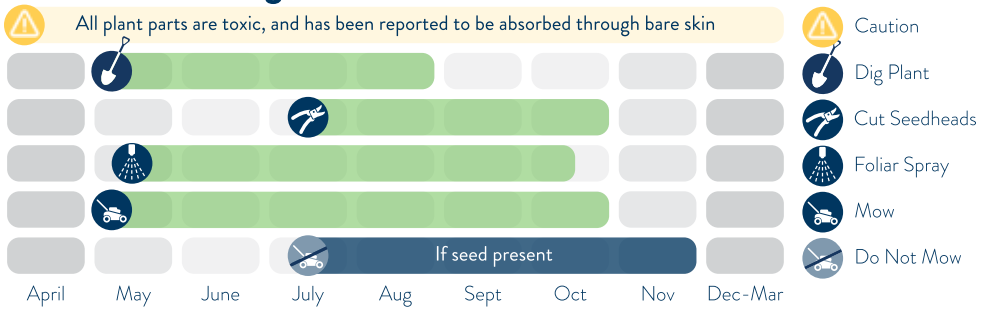
Management

Appropriate protective clothing including gloves, goggles and long sleeve shirts should be worn. Caution should be taken when burning areas with poison hemlock.

Mechanical - Frequently cutting or mowing is effective to prevent seed production. Hand pulling and digging roots (cut at least 2 inches below ground) can work for smaller populations. Root fragments remaining in soil may resprout.

Treatment Timing

Poison Hemlock



Chemical - Foliar herbicide applications to plants at rosette stage or during active growth (before flowering).

Effective herbicide formulations: 2,4-D or 2,4-D including dicamba or triclopyr, glyphosate, aminopyralid, chlorsulfuron, clopyralid, dicamba, imazapic, imazapyr, metsulfuron, 2,4-D + picloram.

PURPLE LOOSESTRIFE

Lythrum salicaria L.

Prohibited - Control

Common Names
Spiked Loosestrife, Purple Lythrum

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Dame's Rocket (pg 65)
Fireweed (pg 83)

Habitat
Upland sites but is best known as an invader of wetlands or aquatic habitats such as ditches, wet meadows, ponds, marshes, river and stream banks as well as lake shores.

Means of Spread
Reproduces both by seed and vegetative means which allows it to quickly invade new landscapes. Each flower spike can produce thousands of seeds that are easily dispersed by wind, water, animals, and humans.

Identification
Plant - Herbaceous, wetland perennial, 4 to 7 feet tall with a 4 to 6 sided wood-like stem.

Leaves - Opposite, sometimes whorled, lance-shaped, and downy with a slightly wavy yet smooth edge. Leaf pairs are positioned at right angles to the leaf pairs above and below.

Flower - Each plant can have from one to many spikes of pinkish-purple flowers. Center of the flower is yellowish and surrounded by 5 to 7 petals that have a wrinkled appearance.

Bloom Time - July to September

Seed and Fruit - Tiny seeds are released from 2-parted capsules.

Root - Thick and woody roots. On mature plants, roots are extensive and can send out 30 to 50 shoots, creating a dense web. Pieces of the roots and stem fragments can also produce new plants.

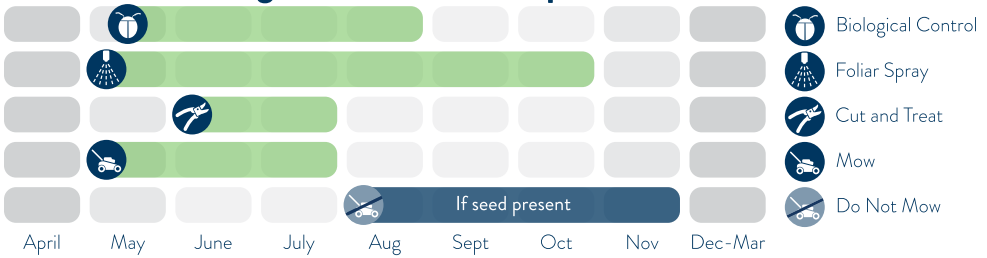
Management
Mechanical - Mowing is seldom an option due to wet environments. Cutting of flower spikes can be an effective control of seed production. Hand pulling or digging of plants can also be effective but care should be taken to remove entire root systems if possible. Resprouting can occur from roots and root segments left in the ground or on the site.

Chemical - Purple loosestrife is a semi-aquatic to aquatic species, it is important to use only herbicides that are labeled and approved for use in or around water.

Biological - Biological control agents in the form of two leaf feeding beetles of the same genus (*Galerucella calmariensis* and *G. pusilla*) have been very effective in Minnesota.

Above left: *Galerucella pusilla.*

Treatment Timing



Effective herbicide formulations: 2,4-D, aminocyclopyrachlor, glyphosate, imazamox, imazapyr, metsulfuron + aminopyralid, triclopyr.

ROUND LEAF BITTERSWEET

Celastrus orbiculatus Thunb.

Prohibited - Control

Common Names

Previous editions have referred to *Celastrus orbiculatus* as Oriental bittersweet.
Asian Bittersweet, Chinese Bittersweet

Life Cycle

Woody perennial

Native Range

China, Korea, and Japan

Look-a-Likes

American Bittersweet (pg 72)
Burning Bush (pg 75)
Winged Burning Bush (pg 54)

Habitat

Readily invades disturbed, open, sunny sites, yet round leaf bittersweet is moderately tolerant of shade allowing it to grow in open woodlands.

Means of Spread

Vegetative reproduction occurs from below-ground rhizomes, above-ground stolons and suckering of roots. Birds will eat the fruits (arils) during the winter and disperse the seeds. Seeds germinate late spring.

Identification

Plant - Woody, twining, perennial vines up to 60 feet long, reaches treetops and covers fences.

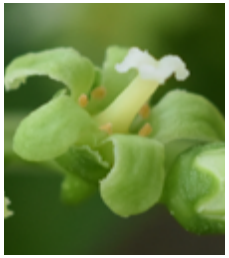
Leaves - Alternate, fine rounded teeth on the leaf edge, dark green and shiny turning yellow in autumn. Typically, elliptical with a blunt leaf tip and nearly as wide as long at 2 to 5 inches. Leaves unfurl conduplicatedly.

Flower - Dioecious species, male and female flowers on separate plants. Female flowers are small, inconspicuous, greenish clumped (3 to 7) in leaf axils along stems. Male flowers are also axial but may be terminal. Compare white pollen on male flowers to yellowish pollen on American bittersweet flowers.

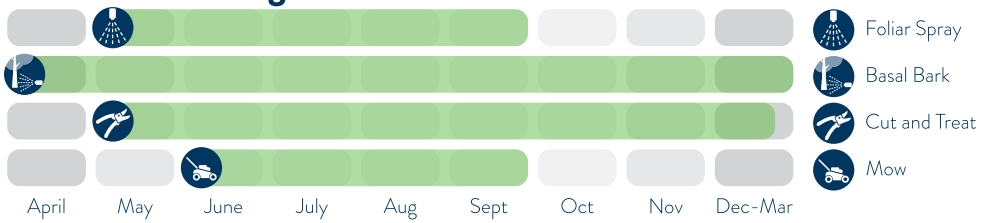
Bloom Time - May to June

Seed and Fruit - Along the vine in leaf axils are potentially 3 to 7 yellowish, 3-parted capsules enclosing reddish-colored, 3-parted, berry-like arils. Each part contains 1 or 2 seeds; therefore, potential total of 3 to 6 seeds per fruit. Dioecious, separate fruiting (female) and non-fruiting (male) plants. American bittersweet's 3-parted fruit is more red, the 3-parted capsules more orange and fruits are terminal on the vine branches (on the ends).

Root - Woody fibrous root with lateral stems (rhizome). Disturbance to root or root crown, encourages regrowth and sprouting.



Treatment Timing — Round Leaf Bittersweet



Management

Mechanical - Cutting of stems can be used to kill above ground portions of plants especially if the infestation is covering large areas or is climbing high into forest canopy.

Chemical - Foliar applications should be used on easy to reach foliage, resprouting, or along fence lines.

Fire - Prescribed fire can be used to reduce existing vegetation. Research has shown that basal sprouting is stimulated and stand density increases dramatically so fire should be followed by herbicide application.

Effective herbicide formulations: glyphosate, imazapyr, triclopyr.

SPOTTED KNAPWEED

Centaurea stoebe L. subsp. *micranthos* (Gugler) Hayek

Prohibited - Control

Go to Knapweed Comparison (pg 101) for key differences.

Common Names

Bushy Knapweed

Life Cycle

Herbaceous biennial or short lived perennial

Native Range

Eurasia

Look-a-Likes

Brown Knapweed (pg 10)
Canada Thistle (pg 25)
Diffuse Knapweed (pg 14)
Meadow Knapweed (pg 30)
Yellow Starthistle (pg 24)

Habitat

Prefers disturbed sites with gravely or sandy dry soils. Roadsides, abandoned lots, old fields and gravel pits are habitat that support infestations.

Means of Spread

Seeds are the primary means of reproduction and a mature plant produces thousands of seeds that may remain viable. Allelopathic properties (chemicals exuded by the plant) can suppress the germination of seeds of other plants nearby.

Identification

Plant - Herbaceous, short-lived perennial living 1 to 4 years. Initial stage is a rosette before the plant produces 1 to 6 stems ranging from 1 to 4 feet tall.

Leaves - Simple, alternate, greyish-green basal rosette leaves up to 6 inches long have deep sinuses. Alternate leaves on mature stems vary from smaller, 1 to 3 inch, versions of the basal leaves to very small linear leaves near the top.

Flower - Pink to purple color (rarely white) and multi-parted texture. Below the petals, flowers are held together by bracts that are stiff and tipped with darkened hairs.

Bloom Time - July to September

Seed and Fruit - ⅛ inch long, brownish, tufted seeds.

Root - Stout taproot with secondary roots.

Management

Appropriate protective clothing including gloves and long sleeves should be worn.

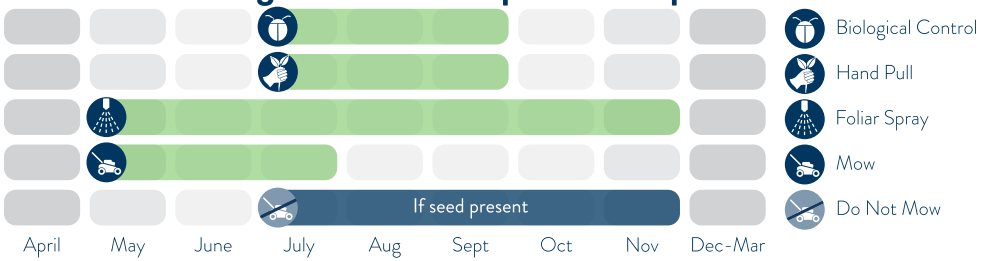
Mechanical - Cutting or mowing will not kill populations. Hand pulling small populations can be effective but will leave bare disturbed soil.

Chemical - Foliar spraying in early spring and late fall, targeting rosettes, can be effective.

Biological - Approved biological control agents used in Minnesota are seedhead weevils (*Larinus minutus* and *L. obtusus*) and a root-boring weevil (*Cyphocleonus achates*). Weevils are collected July through September and released. A combination of seedhead and root boring weevils work together, infestations can be reduced over years.

Above: *Larinus minutus.*
Below: *Cyphocleonus achates.*

Treatment Timing — Spotted Knapweed



Fire - Fire will not kill spotted knapweed, but improve surrounding plant communities. Spring burns are compatible with biological control efforts.

Effective herbicide formulations: aminocyclopyrachlor, aminopyralid, clopyralid, glyphosate, imazapyr, picloram.

WILD PARSNIP

Pastinaca sativa L.

Prohibited - Control

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Parsnip

Life Cycle

Herbaceous monocarpic perennial

Native Range

Eurasia

Look-a-Likes

Golden Alexanders (pg 84)

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.

Means of Spread

Spreads primarily by seeds. 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.

Toxicity

Contact with the sap and exposure to sunlight can produce painful, burning blisters (phytophotodermatitis).

Identification

Plant - Herbaceous, often stated to be biennial but is classed as a monocarpic perennial. First year as 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 to 15 leaflets. Flowering stalk leaves are alternate, 2 to 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 to 35, 5-petaled, small yellow flowers on wide, flat umbels of 15 to 25 umbellets approximately 2 to 6 inches across.

Bloom Time - June to July

Seed and Fruit - Seeds are small, broad, oval, slightly ribbed, and are produced in the umbels several weeks after flowering.

Root - Long thick taproot that is similar in appearance and smell to cultivated parsnips.

Management

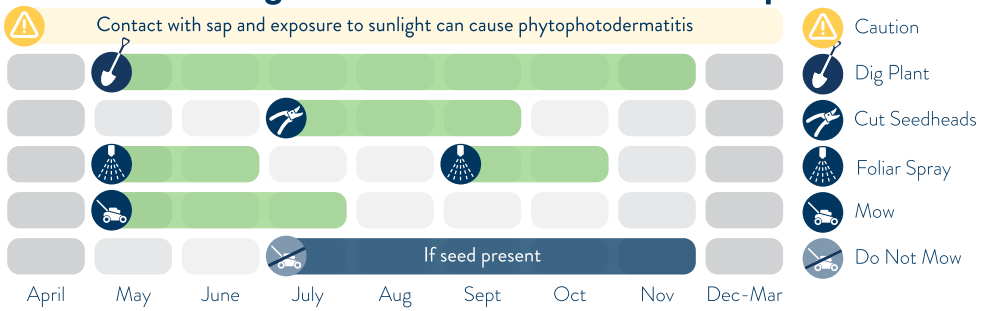
See MnDOT Factsheet:
Work Safely Around Wild Parsnip

Appropriate protective clothing including gloves, goggles and long sleeve shirts should be worn and contact with the stems should be avoided.

Mechanical - When possible plan early mowing at first inflorescence, then monitor and repeat as plants will likely resprout, bolt and flower. Mowing during the secondary inflorescence may prevent seed production that season. If cutting or mowing after seed set, clean equipment to leave seeds on the infested site.

Treatment Timing

Wild Parsnip



Chemical - Foliar applications in the spring and fall targeting rosettes can greatly reduce seed production.

Fire - Prescribed burns can kill germinating seedlings and strengthen native plant communities.

Effective herbicide formulations: 2,4-D, dicamba + 2,4-D, aminocyclopyrachlor + chlorsulfuron, chlorsulfuron, glyphosate, metsulfuron.

AMUR SILVERGRASS

Miscanthus sacchariflorus (Maxim.) Franch.

Restricted

Check out the U of M CFANS webpage for identification and key differences of Miscanthus grasses.

Common Names

Silvergrass, Silver Banner Grass

Life Cycle

Perennial grass

Native Range

Eastern Asia

Look-a-Likes

Native Phragmites (pg 89)
Non-native Phragmites (pg 32)

Habitat

Prefers wet sites, disturbed areas, field edges, roadsides, and streams. Can grow in a variety of soil type.

Means of Spread

Spreads aggressively from large underground rhizome systems. Evidence of spread by seed has been observed recently with infestations occurring along mowing corridors or waterways.

Identification

Plant - Warm season perennial grass that grows 6 to 8 feet tall. Stands of Amur silvergrass do not grow in a clumping form.

Leaves - Amur silvergrass leaves are arching, with a distinct white line down the center. They are less than 1 inch wide. There is a hairy fringe where the leaf meets the stem.

Flower - The flowers are silky and plume-like in the fall. Amur silvergrass flowers resemble corn tassels but are more dense and arch to one side of the stalk. Racemes are up to 12 inches long with up to 40 branches on each. Spikelets are paired, and flowers are white with no awns.

Bloom Time - August to early September

Seed and Fruit - Seeds are long, light brown, and surrounded by feathery hairs. Plants are not self-compatible.

Root - Sprawling budded rhizome.

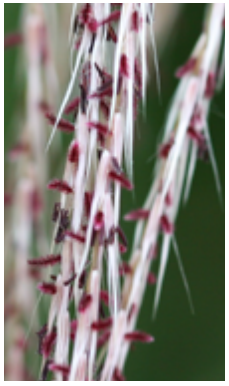
Management

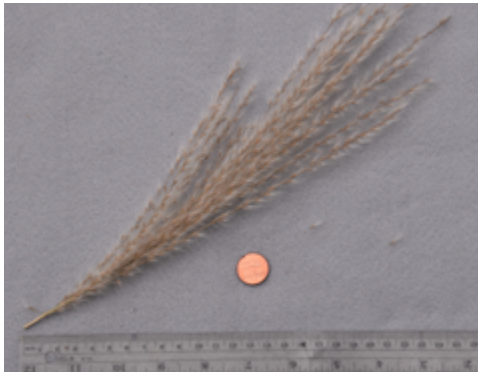
Mechanical - Small populations can be hand pulled or dug out. Monthly repeated mowing close to the ground will reduce stands after a few seasons. Once mature, plumes can be clipped and removed to prevent seed spread.

Chemical - Foliar herbicide applications during active growth. Cutting stands first and allowing some regrowth before an herbicide application is most effective.

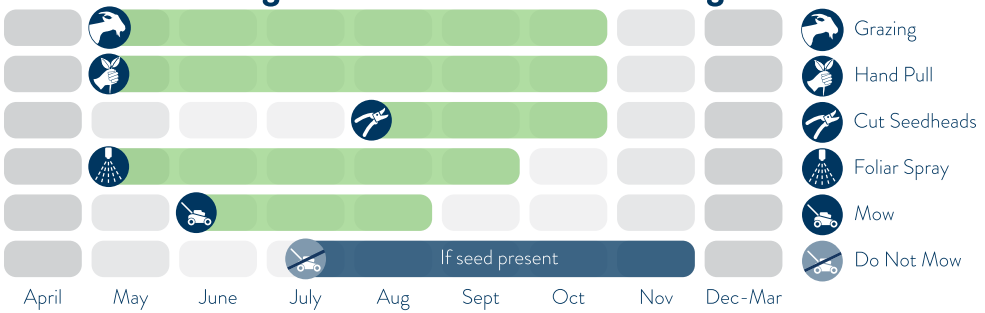
Cultural - Repeated heavy grazing from livestock can be used to control spread.

Fire - Spring and fall burning can promote stem regeneration and vigorous growth.





Treatment Timing



Effective herbicide formulations: glyphosate.

ASIAN BUSH HONEYSUCKLE

Lonicera spp.

Restricted

Check out MnDOT's Asian Bush Honeysuckles Guide for identification and key differences.

Amur Honeysuckle
Lonicera maackii [Rupr.] Herder

Bell's Honeysuckle
Lonicera × bella Zabel [*morrowii × tatarica*]

Morrow's Honeysuckle
Lonicera morrowii

Tatarian Honeysuckle
Lonicera tatarica L.

Common Names

Non-native Bush Honeysuckles, Honeysuckle

Life Cycle

Woody perennial

Native Range

Eurasia

Look-a-Likes

Japanese Honeysuckle (pg 17)
Native Honeysuckles (pg 88)

Habitat

Shade-intolerant plants often found along the forest edges. Also found in disturbed, open upland sites such as roadsides, and abandoned pastures or fields.

Means of Spread

Reproduces asexually by root suckering. Prolific seed producer dispersed by birds.

Identification

Plant - Perennial woody shrubs, multi-stemmed and ranging in heights of 6 to 15 feet tall (Bell's to 20 feet, Amur to 30 feet). All nonnative bush honeysuckles have hollow stems with a brownish pith.

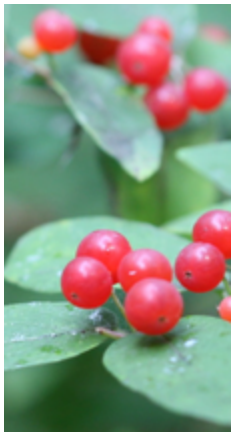
Leaves - Opposite, egg-shaped to lanceolate (Amur has lance-shaped with drawn out tips). Other species have rounded to acute leaf tips with tapered, straight or heart-shaped leaf bases. Surfaces range from smooth and hairless on Tatarian to pubescent (hairy) on Amur and Morrow's. Leaf lengths are 1 to 2½ inches.

Flower - Fragrant pairs of tubular flowers approximately ¾ to 1 inch across. Color ranges from cream to white (Amur and Morrow's) or pink (Bell's) fading to yellow. Tatarian produces white, pink or red to crimson not fading to yellow.

Bloom Time - May to June

Seed and Fruit - Most species bright red, Tatarian red to orange. The ¼ inch berries are in clusters of 2 to 4, mature in late summer and are readily eaten by birds that then disperse the oval, flattened seeds. Amur honeysuckle fruit can be dark red to purplish, persists into winter and is held on stalks (peduncles) shorter than the leaf stalks (petioles).

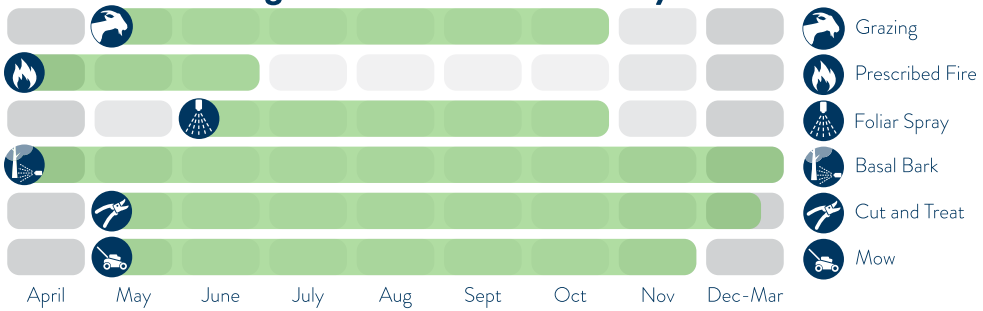
Root - Fibrous, shallow, and readily produce suckers.



Management

Mechanical - Mowing alone will not kill plants. When pulling and digging suspend roots above ground to ensure they dry out. Plants should be disposed of on site or contained.

Treatment Timing — Asian Bush Honeysuckles



Chemical - Foliar spray once plants have fully leafed out.

Cultural - Goats will readily graze on honeysuckles

Fire - Prescribed fire can be useful to kill seedlings, and drain energy from mature plants .

Effective herbicide formulations: 2,4-D, 2,4-D + picloram, 2,4-D + triclopyr, aminopyralid, dicamba, glyphosate, imazapyr, metsulfuron, triclopyr.

BLACK LOCUST

Robinia pseudoacacia L.

Restricted

Common Names
False Acacia

Life Cycle
Woody perennial

Native Range
Eastern United States - Appalachian Mountains and Ozark Plateau

Look-a-Likes
Hawthorn

Honey Locust (pg 86)

Habitat
Performs well in full sun on well drained soils where there is little competition. Does well in disturbed areas such as roadsides, abandoned fields and woodland sites that are degraded. Has been used in the past for mine soil (spoils) reclamation due to its tough nature and nitrogen fixing capability.

Means of Spread
Spreads mainly through intentional human plantings and disturbance. The seeds are long-lived, remaining viable in the soil for up to 10 years.

Toxicity
Black locust (leaves, stem, bark, and seeds) contain robin, a toxic compound when ingested.

Identification
Plant - Woody perennial, large trees attaining heights ranging from 40 to 60 feet tall (potentially 80 feet). Bark is dark grey-brown with deep furrows between flat-topped ridges. Vigorous sprouts and young shoots are green and have paired spines up to 1 inch long at the base of leaves.

Leaves - Alternate, pinnately compound with 11 to 19 leaflets creating leaves 3 to 8 inches long. Oblong leaflets about ¾ to 2¼ inches long by ¼ to 1¼ inches wide. Leaf surfaces are dull dark green to blue-green and paler beneath.

Flower - Before leaves reach full expansion, showy racemes of ¾ inch long white to creamy white, pea-like flowers appear. Fragrant flowers attract early season pollinators.

Bloom Time - June

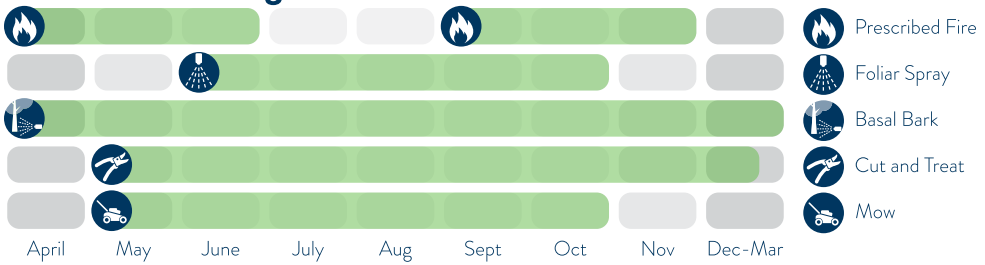
Seed and Fruit - Flat pods about 2 to 4 inches long by ½ inch wide turning brown at maturity. Pods contain 4 to 8 seeds.

Root - Sprouts vigorously from roots and stumps. Many stands of trees are clonal stands connected with a fibrous root system.

Management
Appropriate protective clothing including gloves and long sleeves should be worn. Wash hands and clothing after exposure.

Mechanical - Methods such as cutting or mowing are seldom worth the time or effort since the plants are strong sprouters from root and stump. All of these mechanical methods can have limited effects, but eradication or even good control is unlikely. Mowing and prescribed fire can invigorate suckering.

Treatment Timing — Black Locust



Chemical - Applied to the stems or cut stumps spread into the root system and provide better control. In large, dense infestations with little else growing, foliar applications of herbicide can be effective.

Effective herbicide formulations: aminopyralid or clopyralid formulations including bark oil, dicamba, glyphosate, imazapyr, triclopyr. Combinations: picloram + 2,4-D, triclopyr + 2,4-D, aminopyralid + triclopyr.

COMMON BUCKTHORN

Restricted

Rhamnus cathartica L.

Common Names
European Buckthorn, Buckthorn

Life Cycle
Woody perennial

Native Range
Europe

Look-a-Likes
Cherries and Plum (pg 77)
Glossy Buckthorn (pg 46)

Habitat
A strong competitor on upland sites in a variety of soil types and moisture regimes. Common buckthorn thrives in the understory, on the forest edge or in full sun often to complete exclusion of other species.

Means of Spread
Ripened berries drop directly beneath the plants where a dense understory of seedlings is eventually produced. The fruits are also highly attractive to birds and small mammals.

Identification
Plant - Tall shrub at 20 to 26 feet with potential to become a small tree reaching 36 feet. Often one to a few stems with diameters up to 5 to 6 inches and occasionally larger. Light colored lenticels on shiny grey to brown bark. Many twigs are terminated by a small thorn-like spine between dark colored, scale covered buds. Cut stems have orange heartwood and yellow sapwood.

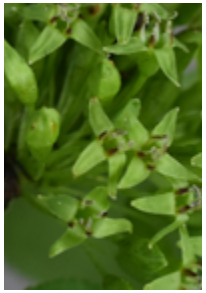
Leaves - Sub-opposite, at times appearing opposite and on fast growing sprouts alternate. Shiny green, 1 to 2½ inches, oval with tiny teeth on leaf edges. Veins curving to the tip of the leaf (arcuate venation) provide a strong identification characteristic and green leaves persisting into autumn.

Flower - Dioecious, male and female flowers on separate plants, small, 4-parted and green.

Bloom Time - May to June

Seed and Fruit - Fruit on female plants only. At maturity a purplish-black, small (¼ inch), berry-like fruit held close to the stem in clusters. Strong identification characteristic are these blackish fruits held close to twigs late into winter. Typically, 3 to 4 seeds per fruit.

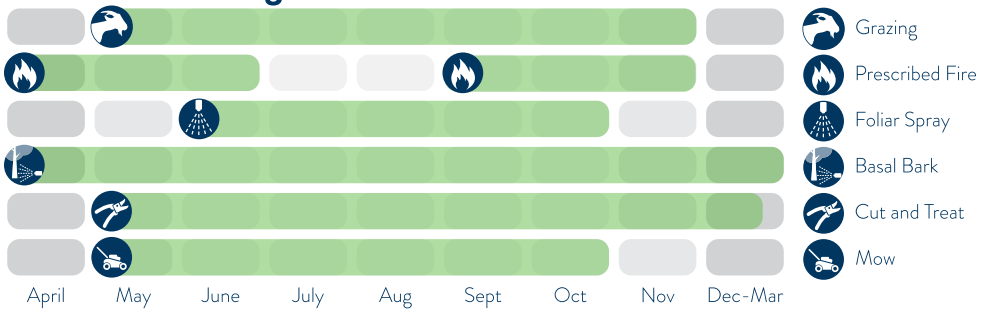
Root - Extensive, shallow, and fibrous root system.



Management
Mechanical - Hand pulling or the mechanical advantage provided by a weed-wrench can help control small infestations. Cutting of stems must be accompanied by herbicide treatments or resprouting will occur.

Chemical - Foliar spray once plants have fully leafed out.

Treatment Timing — Common Buckthorn



Cultural - Goats will readily graze on common buckthorn.

Fire - Prescribed fire will kill germinating seedlings and strengthen surrounding plant community.

Effective herbicide formulations: 2,4-D, glyphosate, imazapyr, metsulfuron, picloram, triclopyr.

CROWN VETCH

Securigera varia (L.) Lassen

Restricted

Common Names
Crownvetch, Purple Crown Vetch

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Alfalfa (pg 60)
American Vetch (pg 73)
Canadian Milkvetch (pg 76)
Hairy Vetch (pg 67)

Habitat
Old fields, pastures and roadsides. Crown vetch has been planted extensively for forage products and along roadsides and steep embankments for erosion control.

Means of Spread
Spreads through seeds and vegetatively through rhizomes. It can be introduced to new areas by moving soil infested with rhizome fragments.

Identification
Plant - Erect, perennial plant at 1 to 2 feet tall that forms dense tangled masses of reclining 2 to 6 feet long stems.

Leaves - Alternate, compound leaves, odd-pinnate with 11 to 25 oval, smooth-edged leaflets often with a minutely pointed tip. Leaves are stalkless.

Flower - Up to 6 inch long, erect flower stalks support dense umbels or crown-like clusters of 10 to 25, 5-parted, ⅓ to ½ inch long pinkish flowers.

Bloom Time - May to September

Seed and Fruit - Erect, narrow, multi-segmented, pointy-tipped, angular pods containing up to 12 seeds are clustered at ends of upright stalks.

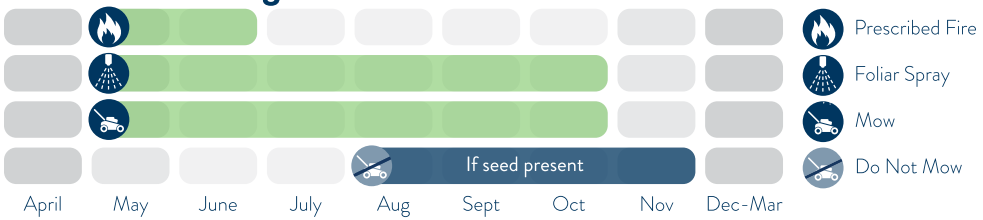
Root - Aggressive rhizomes, growing horizontally up to 10 feet and vegetatively producing new plants.

Management
Mechanical - Cutting or mowing will reduce vigor but not eliminate an infestation. Plan to mow several times a season and monitor to time operations with a goal to prevent seed set. Mow cautiously as large infestations often conceal erosion.

Chemical - Foliar application during active growing periods.

Fire - Prescribed fire can be used with other management tactics to encourage stands of native grasses that will compete for resources. However, monitoring is necessary as crown vetch will resprout after burns.

Treatment Timing



Effective herbicide formulations: 2,4-D, aminopyralid, clopyralid, dicamba, glyphosate, metsulfuron, picloram, sulfometuron, triclopyr.

EUROPEAN ALDER

Alnus glutinosa (L.) Gaertn.

Restricted

Common Names

European Black Alder, Common Alder, Alder

Life Cycle

Woody perennial

Native Range

Europe, northern Africa, and western Asia

Look-a-Likes

Green Alder

Speckled Alder (pg 94)

Habitat

Prefers moist habitats such as those found in riparian zones where European alder will dominate the system. While the species prefers moist soils, a range of soil types and periods of drought can be tolerated.

Means of Spread

Wind dispersed seed is released from the cone-like structures in late autumn and winter. Since plants are often in riparian zones, seed can be further distributed by water.

Identification

Plant - Medium sized tree around 50 feet tall with a narrow, up-right crown. Bark is initially smooth and greenish with prominent whitish lenticels. With age bark becomes greyish-brown and broken into small patches. Alders are nitrogen fixing species allowing them to alter the environment in their favor.

Leaves - Alternate, simple, oval to almost circular at 2 to 3 inches wide with a rounded to slightly notched tip. The edge or margin is doubly serrate and the color is dark green above. The veins are markedly parallel, 7 or fewer per side, with some hairs in vein axils on the underside.

Flower - Trees are monoecious with male and female catkins on each tree. Male catkins are reddish-brown, slender, about 1 to 1½ inches long and present summer through winter. In spring male catkins extend to release pollen. Female catkins are egg shaped, ¾ inch long, green in summer maturing to a brown cone-like structure that persists into winter.

Bloom Time - March to May

Seed and Fruit - Female catkins mature to a brown, woody, cone-like structure that opens in winter to release small winged nutlets (samaras). The cone-like structures persist all winter and into the next season in some cases.

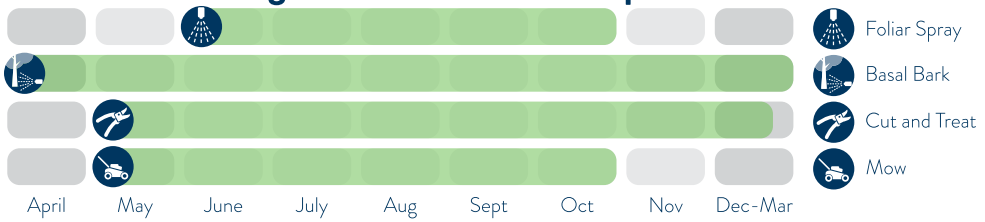
Root - Shallow, fibrous root system that can fix nitrogen into the soil.

Management

Mechanical - Hand pull when soils are moist, or repeated cutting of stems can be effective. The site must be monitored for potential resprouts and for seed germination in disturbed soils.

Treatment Timing

European Alder



Chemical - For cut stem treatments make cuts as close to the ground as possible to prevent resprouting.

Fire - In forested settings, seedlings/saplings can be damaged or killed, but so can desirable woody species.

Effective herbicide formulations: glyphosate, triclopyr.

GARLIC MUSTARD

Alliaria petiolata (M. Bieb.) Cavara & Grande

Restricted

Common Names
Jack by the Hedge, Hedge Garlic, Penny Hedge, Poor Man's Mustard

Life Cycle
Herbaceous biennial

Native Range
Europe

Look-a-Likes
Dame's Rocket (pg 65)
Narrowleaf Bittercress (pg 31)
Yellow Rocket (pg 70)

Habitat
An invader of shady, moist forests or woodland settings but also invades oak savannas and disturbed areas in full sun. Garlic mustard may inhibit the growth of beneficial fungi associated with native plants thus causing a decline in herbaceous cover.

Means of Spread
Spreads by seed that matures June into July and can be dispersed about 6 inches when pods burst at maturity. Seed remains viable in soil for up to 5 years.

Identification
Plant - Herbaceous, biennial with first year plants being basal rosettes. Second year flowering plants can attain heights of 4 feet and can produce more than one flowering stem.

Leaves - Basal rosettes with coarsely toothed, kidney-shaped foliage remains green through winter. Foliage on flowering stems is alternate, triangular, coarsely toothed and stalked. Foliage has the odor of garlic when crushed.

Flower - Clustered, four-parted, white flowers are approximately ⅓ inch across.

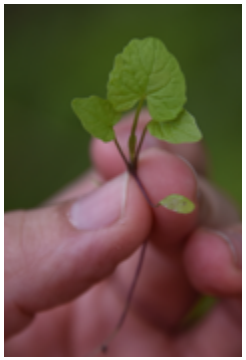
Bloom Time - April to June

Seed and Fruit - The 1 to 2½ inch long slender seed pods (siliques) are very recognizable and contain numerous black, shiny seeds.

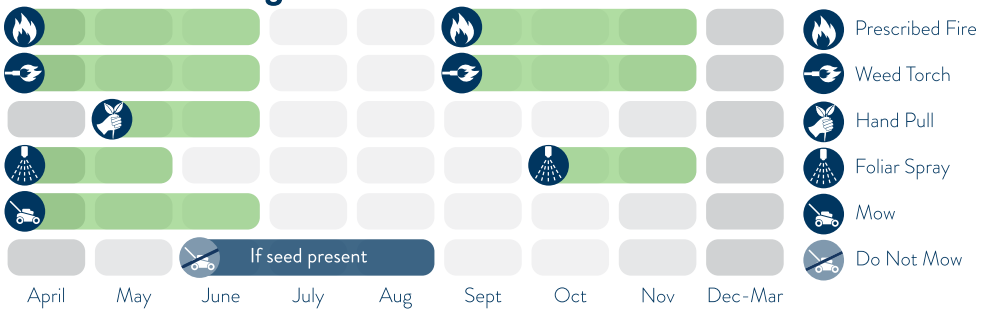
Root - Slender taproot with fibrous secondary roots.

Management
Mechanical - Manual methods include pulling plants in early spring prior to flowering and cutting plants back to the ground as they bolt for flowering, prior to flower opening. Monitor the site as cutting may need to be repeated. If mature flowers or seed pods are present, plants should be disposed of on site or contained (e.g., bagged) and removed to an approved facility. Seeds can still mature if pulled plants are left on the ground.

Chemical - Herbicide applications to foliage in spring and fall can reduce flowering populations.



Treatment Timing



Biological - Biological control agents are under investigation, and approved for release in Canada at this time. The United States is still assessing the species. One insect being studied is *Ceutorhynchus scrobicollis*, a crown and stem-mining weevil.

Fire - Direct heating bolted plants will sterilize seed, or prevent seed from maturing. Prescribed fire will kill germinating seedlings and top kill rosettes.

Effective herbicide formulations: 2,4-D, glyphosate, imazapic, metsulfuron, triclopyr.

GLOSSY BUCKTHORN

Frangula alnus Mill.

Restricted

Common Names

Alder Buckthorn, Buckthorn, Breaking Buckthorn, Columnar Buckthorn, Fernleaf Buckthorn, Tallhedge Buckthorn

Life Cycle

Woody perennial

Native Range

Eurasia

Look-a-Likes

Cherries and Plum (pg 77)
Common Buckthorn (pg 42)

Habitat

An invader of wetlands, including sedge meadows, sensitive acidic bogs and calcareous fens. Tolerant of shade, yet will perform well in full sun on upland sites.

Means of Spread

Ripened berries drop directly beneath the plants, resulting in a dense understory of seedlings. The fruits are also highly attractive to birds and small mammals.

Identification

Plant - Shrub or small tree at 20 feet in height, often multi-stemmed with prominent light colored lenticels on dull greyish to dark brown bark. Heartwood may be orange to pinkish and sapwood may be yellowish, both can facilitate identification. No thorns or spines. There are no bud scales protecting overwintering buds - referred to as naked buds.

Leaves - Alternate, glossy, 2 to 3 inch length with prominent parallel veins terminating near a smooth edge. Undersides are slightly hairy and dull. Leaves will likely persist longer in autumn than native deciduous shrubs, but they will turn yellow and drop.

Flower - Monoecious, male and female parts present in flowers. All shrubs can fruit. Not showy, small, five-petaled, yellowish and borne in clusters in the leaf axils.

Bloom Time - May to July

Seed and Fruit - Clustered in leaf axils along the stem, initially reddish maturing to purplish-black in late summer into autumn. Each fruit contains 2 or 3 seeds, dispersed by birds.

Root - Extensive fibrous root system.

Management

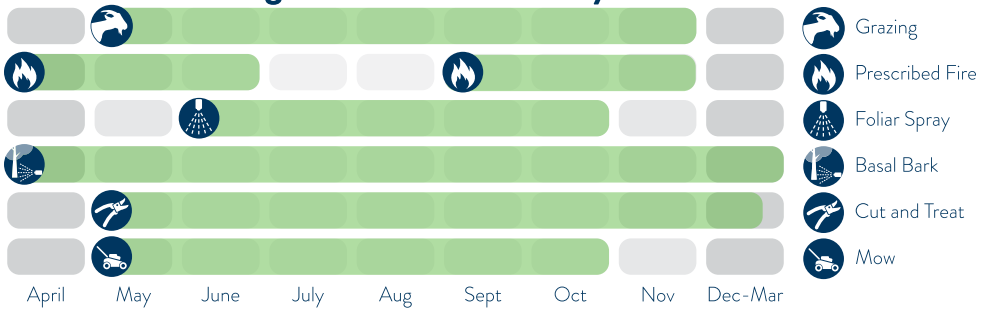
Mechanical - Hand pulling or the mechanical advantage provided by a weed-wrench can help control small infestations. Mowing is typically not an option in sensitive wetland areas.

Chemical - Foliar applications should target plants once they are fully leafed out.

Cultural - Goats will readily graze on glossy buckthorn.

Treatment Timing

Glossy Buckthorn



Fire - Prescribed fire will kill germinating seedlings and strengthen surrounding plant community.

Effective herbicide formulations: 2,4-D, glyphosate, imazapyr, metsulfuron, picloram, triclopyr.

JAPANESE BARBERRY

Berberis thunbergii DC.

Restricted

Go to Japanese Barberry Restricted Cultivars (pg 100) to see which cultivars are restricted for sale in Minnesota.

Common Names

Thunberg's Barberry, Red Barberry

Life Cycle

Woody perennial

Native Range

East Asia and Japan

Look-a-Likes

Common Barberry (pg 26)

Korean Barberry

Habitat

Prefers well drained soils in full sun to partial or deep shade. Forest edges, open forests and other woodlands yet also found in old fields, areas of disturbance and can survive in wetland soils.

Means of Spread

Japanese barberry seeds are spread by birds; plants also spread vegetatively by low branches that will root when they come in contact with soil. It is also spread through intentional ornamental and landscaping plantings.

Identification

Plant - Perennial woody shrubs, multi-stemmed, typically 3 to 6 feet tall. Stems are grooved or angular and ranging in color from grey to reddish-brown with yellow sapwood. Single, ½ inch long spines occur at nodes where leaves attach. Lateral spine branches if present may be very small.

Leaves - Alternate, typically clustered so not appearing alternate. Leaves are simple, narrow near the twig and described as obovate (wider towards the end). The leaf edge or margin is smooth and occasionally there is a minute spine tip or point at the ends of leaves.

Flower - Small (¼ to ⅓ inch) yellowish flowers suspended under the foliage. Therefore not considered showy. Japanese barberry flowers are typically individual but flowers may be in clusters of 2 to 4.

Bloom Time - May to early June

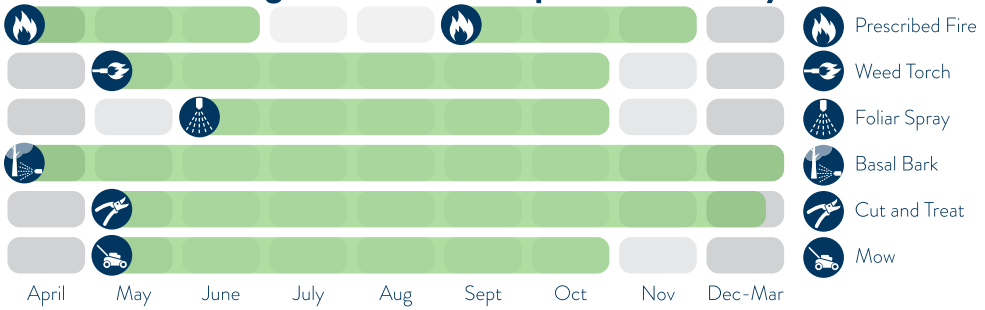
Seed and Fruit - Bright red, dry flesh, a true berry that persists into and through winter. The ⅓ inch long ellipsoidal berries, like the flowers, will be solitary or in clusters of 2 to 4.

Root - Sprawling rhizomes that sends up new shoots and can sprout from small fragments.

Management

Mechanical - Mowing can prevent or delay seed production but typically is not considered an eradication method. For small numbers of plants manual methods including cutting, digging, and hand pulling if done repeatedly. When pulling and digging suspend roots above ground to ensure they dry out. Cutting of stems must be accompanied by herbicide treatments or resprouting will occur.

Treatment Timing — Japanese Barberry



Chemical - Foliar spray plants once entirely leafed out.

Fire - Prescribed fire or weed torching can kill seedlings, smaller plants, and drain energy from mature plants.

Effective herbicide formulations: dicamba + 2,4-D, glyphosate, imazapyr, metsulfuron, triclopyr.

LESSER CELANDINE

Ficaria verna Huds.

Restricted

Common Names
Fig Buttercup, Pilewort

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Marsh Marigold (pg 87)

Habitat
Thrives in forest floodplains, wetlands, riparian areas, upland areas and disturbed areas such as lawns.

Means of Spread
Spreads both vegetatively and by seed, though most spread is through vegetative means. Grows tubers and bulbulets which break from the plant easily. Both vegetative forms and seeds can be spread with seasonal flooding.

Toxicity
Fresh leaves contain saponins, tannins, ascorbate, protoanemonin, and anemonin. Poisonous if ingested raw by human or grazing animals.

Identification
Plant - Herbaceous, perennial, low-growing plant that blooms early in the spring and carpets the understory before entering dormancy and dying back to the ground.

Leaves - Dark green with distinct veining, heart shaped, cordate, and have a slightly pointed tip. Can grow up to 1½ inches in diameter and have a glossy appearance.

Flower - 5 to 12 petals that are highly glossy and bright yellow. Three green sepals are found on the underside of the flower. One flower develops on each stalk and flowering occurs soon after snow melts.

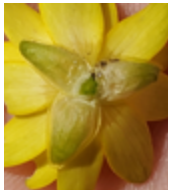
Bloom Time - March to early May

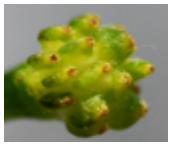
Seed and Fruit - Bulbulets form at leaf intersections with the stem. Fruit is clustered, small and tubular. Fruit falls off the plant before maturity and requires further maturation time.

Root - Aggressive underground tubers.

Management
Mechanical - Stems easily break from tubers making mechanical control difficult.

Chemical - Above ground vegetation dies after flowering, so herbicide must be applied while a rosette or flowering.





Treatment Timing — Lesser Celandine

Effective herbicide formulations: glyphosate, metsulfron.

MULTIFLORA ROSE

Rosa multiflora Thunb.

Restricted

Common Names

Japanese Rose, Seven-sisters Rose, Rambler Rose, Multiflowered Rose

Life Cycle

Woody perennial

Native Range

East Asia

Look-a-Likes

Native Roses

Habitat

Disturbed areas such as woodlands, prairies, roadsides, along streams and has become a problem in pastures where the thorns discourage grazing.

Means of Spread

Seed dispersal and the rooting of arching stems. Rose hips will fall near the parent plant. Birds and small mammals will also consume them and spread seeds to new areas. Plant stems can also arch back to the ground and root, causing existing populations to spread outward in this manner, creating dense impenetrable thickets.

Identification

Plant - Shrub with 6 to 13 feet long, wide arching canes reaching 6 to 15 feet tall. Canes armed with stiff, downward curved prickles (thorns) form an impenetrable thicket.

Leaves - Alternate, pinnately compound, 5 to 11 sharply-toothed leaflets. The oval leaflets are nearly smooth on the topside and are covered with short hairs below. Has fringed stipules where leaves attach to stems.

Flower - Numerous, showy flowers. Five-parted, fragrant, white to slightly pink, ½ to 1½ inches across.

Bloom Time - May to July

Seed and Fruit - Numerous rose hips, ¼ inch diameter, bright red to orange-red, hairless or smooth. Hips are on a wide branched structure and persist into winter.

Root - Sprawling rhizomes that send up new shoots and can sprout from small fragments.

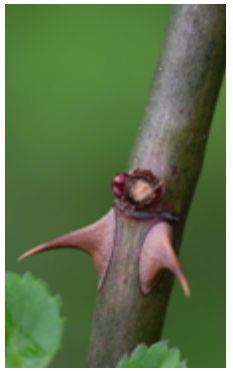
Management

Mechanical - Cutting or mowing frequently during the growing season (3 to 6 times) for 2 to 4 years can achieve good control of infestations.

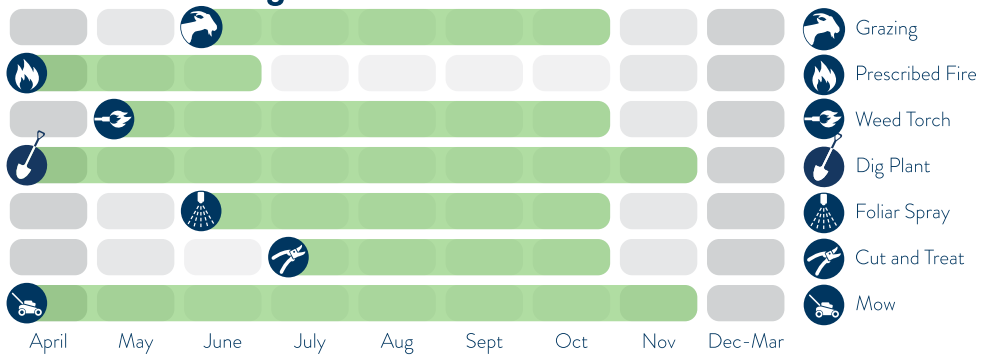
Chemical - Foliar spray plants once entirely leafed out. As with most species, late season applications of herbicides are effective as plants are moving photosynthates to storage in root systems.

Cultural - Goats will readily graze on multiflora rose despite the spines.

Fire - Prescribed fire or weed torching can kill seedlings, smaller plants, and drain energy from mature plants.



Treatment Timing — Multiflora Rose



Effective herbicide formulations: dicamba + 2,4-D, glyphosate, imazapyr, metsulfuron, triclopyr.

PORCELAIN BERRY

Ampelopsis brevipedunculata (Maxim) Trautv.

Restricted

Common Names
Amur Peppervine

Life Cycle
Woody perennial

Native Range
Asia

Look-a-Likes
Riverbank Grape (pg 92)
Woodbines (pg 99)

Habitat
Typically in riparian (floodplain) areas that are not permanently wet. Full sun to partial shade on forest edges, stream banks, thickets and other such places.

Means of Spread
Spreads by seed; birds and other animals are attracted by the fruit and will spread it long distances. The seeds germinate after natural or human disturbance. It can also spread vegetatively by resprouting from roots, especially in response to cutting above-ground vines.

Identification
Plant - Perennial, woody vines that climb trees or structures with assistance of tendrils. Like riverbank grape, tendrils occur opposite leaves. Bark of porcelain berry is grey and retains smoothness with age and the pith is white.

Leaves - Alternate, simple leaves with a cordate (heart-shaped) base and 3 to 5 palmate coarsely toothed lobes separated by deep sinuses. Some leaves may resemble wild grape leaves.

Flower - Inconspicuous, panicles of greenish flowers occur opposite leaves.

Bloom Time - June to August

Seed and Fruit - Shiny, brightly colored berries in hues of blue to purple mature in September and October. Each berry contains 2 to 4 seeds.

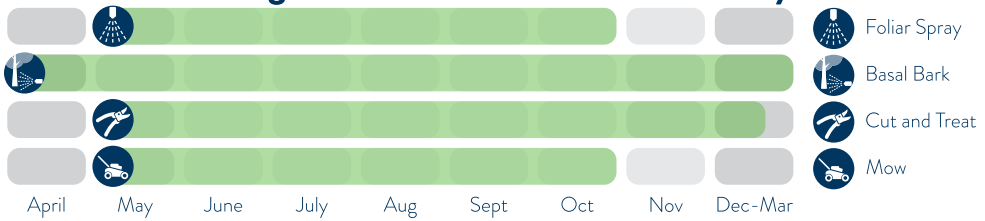
Root - Woody, fibrous and sprawling. New sprouts can emerge from cut roots.

Management
Mechanical - After cutting, plants will resprout so there should be a plan to monitor and follow up cutting treatments with additional cutting or herbicide. Follow-up to monitor for new seedlings will also be required. Young plants easily pull from wet soils.

Chemical - Foliar spray during active leaf growth.

Cultural - Goats will graze on infestations of porcelain berry.

Treatment Timing — Porcelain Berry



Effective herbicide formulations: glyphosate, triclopyr.

SALTCEDAR

Tamarix ramosissima Ledeb.

Restricted

Common Names
Tamarisk, Salt Cedar

Life Cycle
Woody perennial

Native Range
Eurasia and Northern Africa

Look-a-Likes
Eastern Red Cedar (pg 82)
Northern White Cedar (pg 90)

Habitat
Can grow in arid climates, but thrives along riparian edges, wetlands and areas prone to flooding. Tolerant of areas with high alkalinity or salinity.

Means of Spread
Mature trees/shrubs spread vegetatively through rhizome growth. Produces large amounts of seed, which have a short seed life and do not persist in the soil.

Identification
Plant - Medium to large deciduous shrub up to 25 feet high. Bark is smooth and red to dark brown when young, and matures to a ridged texture. Thin, arching stem emerge from a central root crown.

Leaves - Alternate leaves that resemble cedar's scaled leaves and are each smaller than ⅛ inch giving the shrub a feathery appearance. Each leaf clasps the stems and ends in a point. Leaves mature to golden-brown before falling off each year.

Flower - 5 petaled flowers that are less than ⅛ inch long, and clustered along terminal branches up to 1½ inch long. Color ranges from pink to white.

Bloom Time - April to September

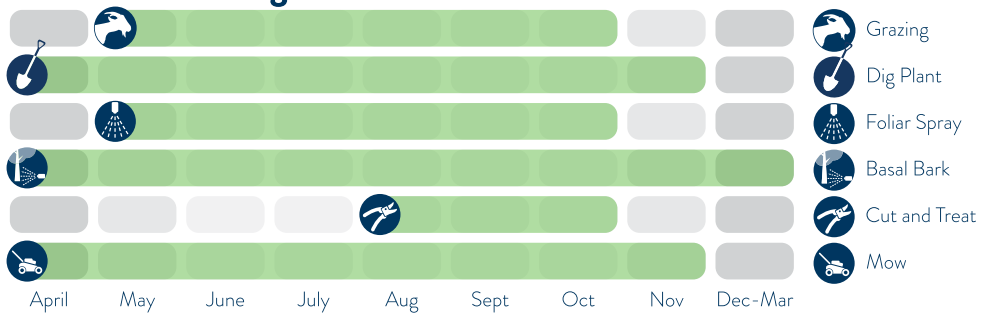
Seed and Fruit - Flowers mature and each is capable of producing 8 to 20 tiny seeds. Each seed has a tiny hair attached to aid with dispersal. Single plants can produce hundreds of thousands of seeds.

Root - Rhizome and large woody taproot that can reach depths around 30 feet.

Management
Mechanical - Mechanical removal alone will not effectively control saltcedar. Site must be monitored for potential resprouts and for seed germination in disturbed soils.

Chemical - Foliar treatments are most effective in fall when plants are moving carbohydrates into the roots for winter. Any cut stump treatments must be followed up with herbicide and monitored for a few years.

Treatment Timing — Saltcedar



Biological - Tamarisk beetles (*Diorhabda carinulata*) have been released in the southwest United States and defoliate saltcedars. Bioagents are not used in Minnesota currently.

Effective herbicide formulations: glyphosate, imazapic, triclopyr.

SIBERIAN PEASHRUB

Caragana arborescens Lam.

Restricted

Common Names
Caragana

Life Cycle
Woody perennial

Native Range
Siberia, China, Kazakhstan, Mongolia

Look-a-Likes
Forsythia

Honey Locust (pg 86)

Habitat
Prefers full sun (tolerates some shade) and is tolerant of poor growing conditions such as poor dry soils, cold temperatures, windy sites and tolerates salt.

Means of Spread
Seed is released late July into August. Seed is forcibly ejected as pods audibly pop to expel seeds. Plants are self compatible.

Identification
Plant - Oval, often a multi-stemmed shrub 15 to 20 feet in height and 12 to 18 feet in width. Occasionally a single stemmed tree. Stems are greenish, shiny, becoming grey and can have paired spines at nodes. Spur shoots develop on some older branches. Like many members of the Fabaceae family this plant fixes nitrogen.

Leaves - Alternate, compound with an even number of pinnate leaflets (8 to 12). Each leaflet is approximately ½ to 1 inch long, elliptic-oblong in shape. Fuzzy at emergence, later much less so and bright green.

Flower - Pea-like flowers are bright yellow and about ½ to 1 inch long. Flowers are arranged in clusters or as singles.

Bloom Time - May to early June

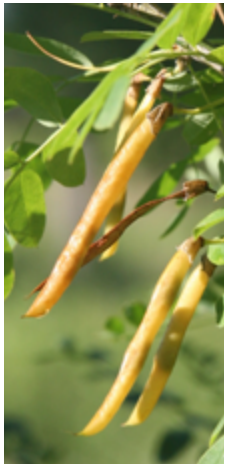
Seed and Fruit - Slender, cylindrical, sharply pointed pods (peapod like) 1½ to 2 inches long. Yellow-green changing to brown, splitting (audibly) and curling to release 3 to 5 seeds. Split, empty pods persist on the shrub.

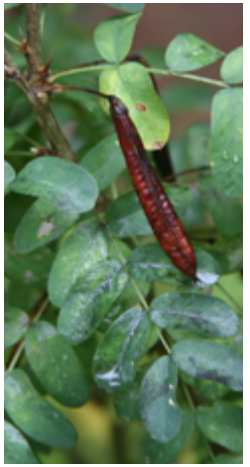
Root - Extensive, fibrous root system which has been used for erosion control.

Management
Mechanical - Hand pull when soils are moist, or repeated cutting of stems can be effective. Site must be monitored for potential resprouts and for seed germination in disturbed soils. Follow-up with an applicable herbicide.

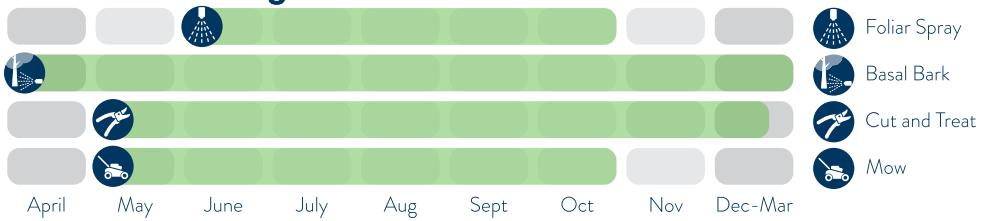
Chemical - Foliar spray when fully leaved out. Make cuts as close to the ground as possible to reduce chance of resprouting.

Cultural - Goats, sheep and cattle will graze on Siberian peashrub.





Treatment Timing



Effective herbicide formulations: glyphosate, triclopyr.

WILD CARROT

Daucus carota L.

Restricted

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Queen Anne's Lace, Bird's Nest

Life Cycle

Herbaceous biennial

Native Range

Eurasia

Look-a-Likes

Burnet Saxifrage (pg 62)
Caraway (pg 63)
Erect Hedgeparsley (pg 66)
Poison Hemlock (pg 34)
Water Hemlock (pg 98)
Wild Chervil (pg 69)

Habitat

Dry to moist, disturbed soils in full sunlight. Tolerant of a variety of soils and partial shade.

Means of Spread

Reproduces entirely by seed. The seed is wind and animal dispersed. The dried umbels will break off and tumble long distances, spreading seed. The hooked spines on the seed can attach to clothing or animal fur and help to disperse it. One plant can produce up to 40,000 seeds.

Identification

Plant - Herbaceous, biennial, first year as a basal rosette. Basal leaves are clustered, up to 5 inches long and arch away from a central location. Second year flowering plants attain heights of 3 to 4 feet on hollow stems that are hairy to sparsely hairy and striped with light colored lines.

Leaves - Alternate, finely divided leaves are widely spaced on upper stems and up to 4 inches across by 2 inches wide. Stem and basal leaves are fern-like, narrowly lobed described as bipinnate-pinnatifid. Underside of leaves may be slightly hairy along veins. Leaves are attached to stems with sheaths.

Flower - many small (⅛ inch), 5-petaled, white flowers (florets) make up a flat-topped compound umbel 2 to 5 inches across. Compound umbels are dense with 20 to 90 umbellets of which each has 15 to 60 flowers. Outer flower petals are large in comparison to others. Some have singular red flower in the center. Has very prominent, often branched bracts under main umbels and smaller sometimes linear (unbranched) bracts under umbellets making up the larger floral display.

Bloom Time - June to September

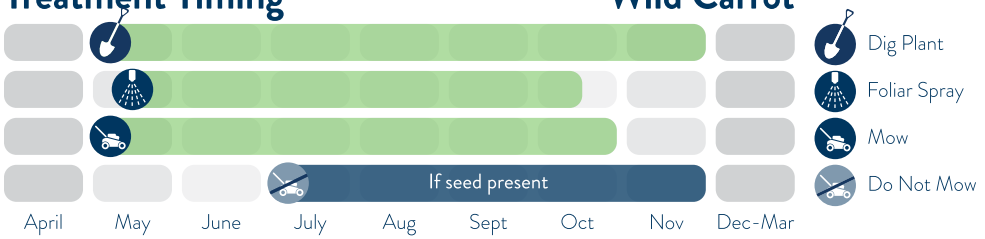
Seed and Fruit - Each floret produces 2 seeds. Seeds are flat and bristly to catch passing fur or clothing. Entire seed clusters may break off plants in winter to roll across the snow distributing seed.

Root - Long, white taproot.

Management

Mechanical - Hand pulling is effective but root fragments remaining may resprout.

Treatment Timing — Wild Carrot



Chemical - Target plants at rosette stage for foliar herbicide applications.

Fire - Should be used to improve native plant community. Will likely not outcompete healthy vegetation and will decline on its own.

Effective herbicide formulations: 2,4-D, aminopyralid, chlorsulfuron, dicamba, glyphosate, imazapic, imazapyr, metsulfuron, picloram, triclopyr. ***2,4-D resistant populations have been found in Michigan.***

WINGED BURNING BUSH

Euonymus alatus (Thunb.) Siebold

Restricted

Common Names
Burning Bush, Winged Eunonymus, Winged Wahoo, Corky Spindletree

Life Cycle
Woody perennial

Native Range
Asia including far eastern Russia, central China, Korea and Japan.

Look-a-Likes
American Bittersweet (pg 72)
Burning Bush (pg 75)
Round Leaf Bittersweet (pg 36)

Habitat
Full sun to part shade prefers moist, well drained soil. A shrub that is very adaptable to poor soil conditions and tolerates; compaction, wide pH range, heat, drought and pollution. Described as very urban tolerant. Will tolerate full shade as a spindlier plant with less brilliant fall color.

Means of Spread
Reproduces by seed which is spread by wildlife.

Identification
Plant - Form is typically a rounded, multi-stemmed shrub up to 10 feet tall. Young stems are very green and develop significant ¼ inch tall, thin, corky, brown wings. After the first season bark matures to greyish-brown and wings may persist.

Leaves - Opposite, simple, elliptical to obovate (wider above the middle). Length is about 1½ to 3 inches and the edge of the leaf is finely serrated (little teeth). Brilliant scarlet to red fall color.

Flower - Clusters of three pale yellow-green, ½ inch flowers with rounded petals.

Bloom Time - mid-May to June

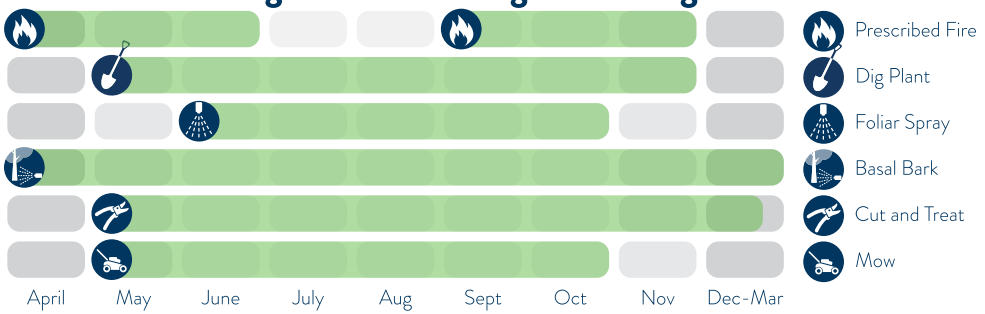
Seed and Fruit - Husk is a dark red, ¼ to ⅓ inch capsule that splits to reveal a red-orange aril (a berry-like fruit).

Root - Deep and fibrous root system.

Management
Mechanical - Hand pulling when soils are moist, or repeated cutting of stems can be effective. The site must be monitored for potential resprouts and for seed germination in disturbed soils. These resprouts and seedlings require additional treatments or subsequent follow-up with an applicable herbicide.

Chemical - Smaller shrubs can be controlled with foliar applications, while larger shrubs can be controlled with cut stump or basal bark.

Treatment Timing — Winged Burning Bush



Fire - In forested settings, if conditions are right to carry a fire, seedlings/saplings can be damaged or killed.

Effective herbicide formulations: glyphosate, triclopyr.

AMUR & TATARIAN MAPLE

Acer spp.

Specially Regulated

Amur Maple
Acer ginnala Maxim.
Tatarian Maple
Acer tataricum L.

Common Names

Acer ginnala Maxim. - Ginnala Maple
Acer tataricum L. - Tatar Maple

Life Cycle

Woody perennial

Native Range

Eurasia

Look-a-Likes

Norway Maple (pg 58)
Red Maple (pg 91)
Silver Maple (pg 93)
Sugar Maple (pg 95)

Habitat

Full sun or partial shade in well drained moist soils. Will tolerate dry conditions, salt and pH range of 6.1 to 7.5. A frequent invader of savannas, prairies and forests where native shrubs, trees and forbs can be displaced.

Means of Spread

Each tree can produce 5,000 or more fruits per year. The seeds are winged samaras, mostly landing within 100 yards of the parent tree, but a small portion can be carried long distances by wind and water.

Identification

Plant - Woody perennial, large shrub or small tree up to 20 feet in height. Mature bark is faint grey developing thin vertical stripes.

Leaves - Opposite, 1 to 3 inch long simple leaves are three lobed with center lobe extending past shorter side lobes and edges (margins) are doubly toothed. Bright green early in the season and producing brilliant fall colors in hues of red, yellow and gold-orange. Tatarian maple tends to have duller foliage, and less prominent lobing compared to Amur maple.

Flower - Fragrant, but not showy, loose clusters of pale yellow to creamy white flowers appear in early spring.

Bloom Time - May to June

Seed and Fruit - Approximately ¾ to 1 inch long, paired, winged seed structures called samaras. The samara pair hang at close to a right angle almost parallel to one another. Initially, seed is very red in color, maturing to a light brown.

Root - Shallow, fibrous roots.

Management

Mechanical - Hand pulling or cutting can eliminate small infestations of seedlings and saplings while digging or cutting larger material can be effective. Monitor and follow up with additional treatments as necessary.

Chemical - Small plants or resprouting stumps can be treated with foliar herbicide applications. Cut stump and basal bark work on larger shrubs.

Fire - Prescribed fire will set back plants and may top kill seedlings but plants will likely resprout.

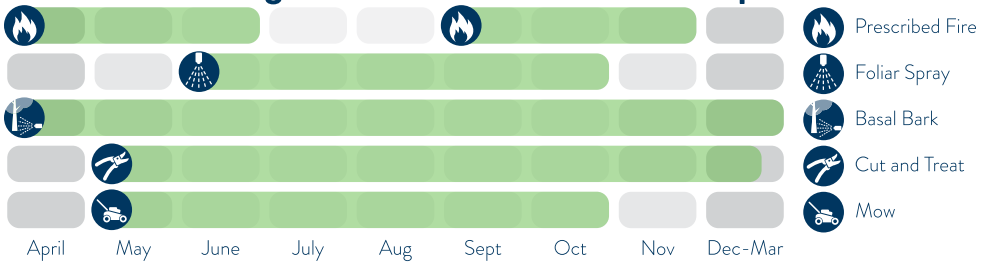
Special Regulation

Any person, corporation, business or other retail entity distributing Amur or Tatarian maple or its cultivars for sale within the state, must have information directly affixed to the plant or container packaging that it is being sold with, stating the following: **"Amur and Tatarian maple should only be planted in areas where the seedlings will be controlled or eradicated by mowing or other means. Amur and Tatarian maple should not be planted closer than 100 yards from natural areas."**

Left: Amur maple

Right: Tatarian maple

Treatment Timing — Amur & Tatarian Maple



Effective herbicide formulations: glyphosate, triclopyr.

AMUR CORK TREE

Phellodendron amurense Rupr.

Specially Regulated

Common Names

Phellodendron, Chinese Cork Tree, Japanese Cork Tree

Life Cycle

Woody perennial

Native Range

East Asia

Look-a-Likes

Black Walnut (pg 74)
Sumacs (pg 96)
Tree of Heaven (pg 23)

Habitat

Most Amur cork tree in Minnesota has been planted as a boulevard tree due to its disease resistance and ability to tolerate a variety of habitats. Grows in full to partial sun and a variety of soil types.

Means of Spread

Spreads mostly by seeds. Fruits persist on trees during the winter and are spread by birds. Root suckering has been reported but is not the primary means of spread.

Identification

Plant - Medium sized, deciduous tree that reaches heights of 35 to 50 feet. Bark is spongy and highly textured giving it a cork appearance on mature trees. Inner bark is bright yellow. Horseshoe shaped leaf scar surrounding the bud.

Leaves - Opposite. Leaves are compound, with 5 to 11 leaflets, and can grow 10 to 15 inches long. Leaflets have smooth margins and grow around 2 to 4 inches long.

Flower - Trees are mostly dioecious (female and males are usually separate plants). Flowers are small (⅛ inch), clustered, and inconspicuous with five greenish petals.

Bloom Time - May to June

Seed and Fruit - Develops clusters of pea-sized fruit that are green when immature turning dark brown to black in fall. Each fruit contains one seed. A single female tree can produce thousands of fruit. When crushed, the fruit emit an aroma similar to turpentine.

Root - Shallow, spreading, fibrous roots.

Management

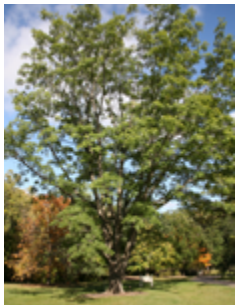
Mechanical - Mowing will invigorate stem growth and should be followed up with herbicide or repeated mowing. Smaller plants can be hand pulled or dug out. Any remaining root fragments can resprout.

Chemical - Cut stump applications should avoid periods of heavy sap flow. For larger trees, hack and squirt methods are effective for translocating herbicides.

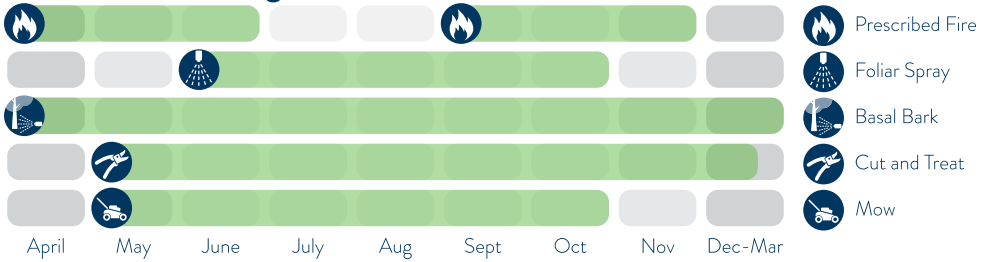
Fire - Spring and fall prescribed burning can control seedlings and saplings.

Special Regulation

Only sales of named male cultivars permitted. Sales of all other *Phellodendron amurense* are prohibited. All existing planted and escaped fruit producing trees must be controlled, by tree removal or other means, such that no seed is disseminated.



Treatment Timing — Amur Cork Tree



Effective herbicide formulations: glyphosate, triclopyr.

CALLERY PEAR

Pyrus calleryana Decne.

Specially Regulated

Common Names
Bradford Pear, Cleveland Select, Aristocrat

Life Cycle
Woody perennial

Native Range
China and Vietnam

Look-a-Likes
Cherries and Plum (pg 77)

Habitat
Thrives in full to partial sun in a variety of soil types and moisture levels. Readily invades disturbed areas and forest edges.

Means of Spread
Originally cultivated as a self-incompatible genotype, introduction of other cultivars have led to successful cross-pollination resulting in viable seed production. Seeds are numerous and spread by birds.

Identification
Plant - Medium sized tree that can grow 60 feet tall with a diameter of 2 feet. Young bark is smooth and grey to light brown. Bark texture becomes fissured as maturing. Thorns can be found on naturalized populations an can be up to 3 inches long.

Leaves - Simple, alternate leaves that are ovate, and 2 to 3 inches long. Surfaces are shiny, and margins are slightly toothed with a noticeable wave.

Flower - Showy, white, 5 petaled flowers that are 1 inch in diameter and incredibly fragrant while in bloom. Some describe the smell similar to rotting fish. Flowers bloom before leaves mature.

Bloom Time - April to May

Seed and Fruit - Fruits are green during the summer, maturing to brown. ½ inch in diameter and contains 2 to 6 seeds. Fruit will soften after frost events where birds will then spread seeds.

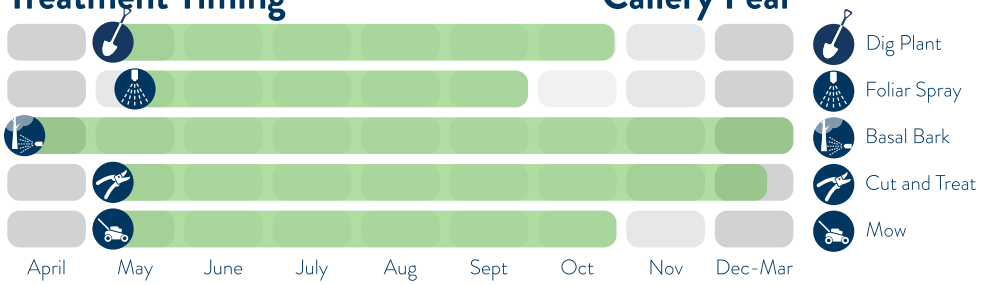
Root - Vigorous, woody roots. Historically used as root stock for grafting other pear species.

Management
Mechanical - Mowing will invigorate stem growth and should be followed up with herbicide or repeated mowing. Smaller plants can be hand pulled or dug out. Any remaining root fragments can resprout.

Chemical - Foliar applications should be made after trees have fully leafed out. Cut stump applications should avoid periods of heavy sap flow. For larger trees, hack and squirt methods are effective for translocating herbicides.

Special Regulation
Callery pear will begin a three-year phase-out period in Minnesota starting January 1, 2023. At the end of the phase-out period (December 31, 2025), the listed species will become a Restricted Noxious Weed in Minnesota and will be illegal to sell and propagate.

Treatment Timing — Callery Pear



Fire - Prescribed burning may kill seedlings but will not kill larger trees. Mature trees will vigorously resprout after fire events.

Effective herbicide formulations: Aminopyralid + metsulfuron, aminopyralid + triclopyr, glyphosate, picloram, triclopyr.

NORWAY MAPLE

Acer platanoides L.

Specially Regulated

Common Names

'Crimson King', 'Columnare', 'Erectum', 'Olmsted', 'Drummondii', 'Emerald Queen', 'Globosum', 'Schewedleri', and 'Summershade', and any other cultivar capable of producing viable seed.

Life Cycle

Woody perennial

Native Range

Central and eastern Europe and western Asia

Look-a-Likes

Amur & Tatarian Maple (pg 55)
Red Maple (pg 91)
Silver Maple (pg 93)
Sugar Maple (pg 95)

Habitat

Seedlings and saplings are very tolerant of shade and will alter the forest floor species composition excluding spring ephemerals and other tree/ shrub species.

Means of Spread

Reproduce by seed which can be spread by wind and water.

Identification

Plant - Medium sized trees that can attain heights of 50 to 80 feet. Bark becomes greyish black with shallow furrows at maturity. Stout olive-brown twigs with lenticels have purplish, terminal, rounded buds that are significantly larger than other species at ¼ to ⅜ inch.

Leaves - Opposite, simple, 4 to 7 inches wide with palmate veins leading out to 5 or 7 sharply toothed lobes. Color by variety ranges from dark green to purple.

Flower - Yellowish to greenish-yellow flowers appear just before leaf emergence. Due to large numbers of ⅓ inch flowers the display is showy.

Seed and Fruit - Paired, winged samaras are widely separated. The wings are almost straight across from one another. Each samara is approximately 1½ to 2 inches in length. Seed matures in late summer and some may persist on the tree into winter.

Root - Shallow fibrous roots that are notorious for growing along the surface.

Management

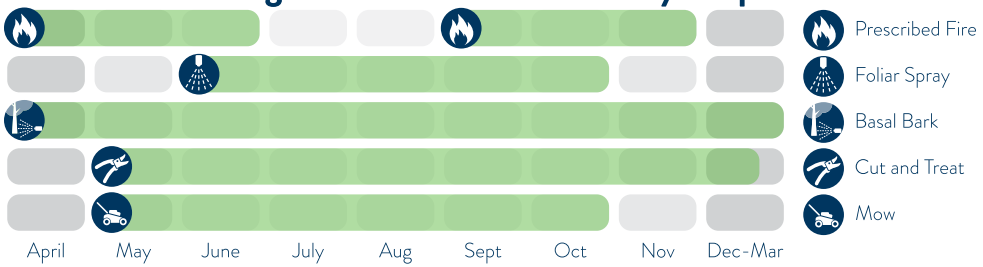
Mechanical - hand pulling or repeated cutting of stems can be effective for smaller plants. The site must be monitored for potential resprouts and for seed germination in disturbed soils. These resprouts and seedlings require additional treatments or subsequent follow-up with an applicable herbicide.

Chemical - Smaller trees can be controlled with foliar herbicide applications. Cut stump, basal bark, and girdling (with herbicide) are options for larger trees.

Special Regulation

Any person, corporation, business or other retail entity distributing Norway maple or its cultivars for sale within the state, must have information directly affixed to the plant or container packaging that it is being sold with, stating the following: **"Norway maple should only be planted in areas where the seedlings will be controlled or eradicated by mowing or other means. Norway maple seed is wind dispersed so trees should not be planted closer than 100 yards from natural areas."**

Treatment Timing — Norway Maple



Fire - In forested settings, if conditions are right to carry a fire, seedlings/saplings can be damaged or killed.

Effective herbicide formulations: glyphosate, triclopyr.

POISON IVY

Toxicodendron spp.

Specially Regulated

Western poison ivy
Toxicodendron rydbergii (Small) Green
Eastern poison ivy
T. radicans (L.) Kuntze subsp. *negundo* (Greene) Gillis

Life Cycle

Woody perennial

Native Range

North America

Although irritating to humans, poison ivy is a native plant that benefits wildlife by providing a food source to birds, and mammals.

Look-a-Likes

Box Elder

Raspberry

Woodbines (pg 99)

Habitat

Thrives in disturbed areas such as roadsides, trail sides, fence rows, parks and can also be found in prairie and forested settings.

Means of Spread

Spreads primarily by shoots arising from an extensive shallow, horizontal root system and aboveground vining. New populations are started by transportation of seeds primarily by wind, water, or animals.

Toxicity

Contact with oily sap (urushiol) from broken plant parts can cause blistering, even in winter. May persist in compost. Oil can stay on and transfer from pets, tools, toys and other objects for long periods. Do not burn, can adhere to smoke particles from burning poison ivy and be taken into airways and lungs.

Identification

Plant - A 1 to 2 foot native shrub (western poison ivy), or climbing vine (eastern poison ivy) with grey to tan bark and little if any branching. Eastern poison ivy has small aerial roots that attach to structures.

Leaves - Alternate, compound leaves, 3 shiny or dull surfaced leaflets. Leaflet edges are variable from smooth to very coarsely toothed. Lower leaf surfaces are pale and often hairy.

Flower - Small, greenish flowers on erect spikes (panicles). Flower spikes are borne in leaf axils on new or current years growth with male and female flowers on separate plants (dioecious).

Bloom Time - June to July

Seed and Fruit - Creamy white to tannish berry-like drupes, approximately ¼ inch diameter. Drupes mature in late summer and persist through the winter.

Root - Fibrous rhizome with root crown.

Management

See MnDOT Factsheet:
Work Safely Around Poison Ivy

Appropriate protective clothing including gloves, and long sleeve shirts should be worn and contact with the stems should be avoided. Wash all equipment/clothing after exposure.

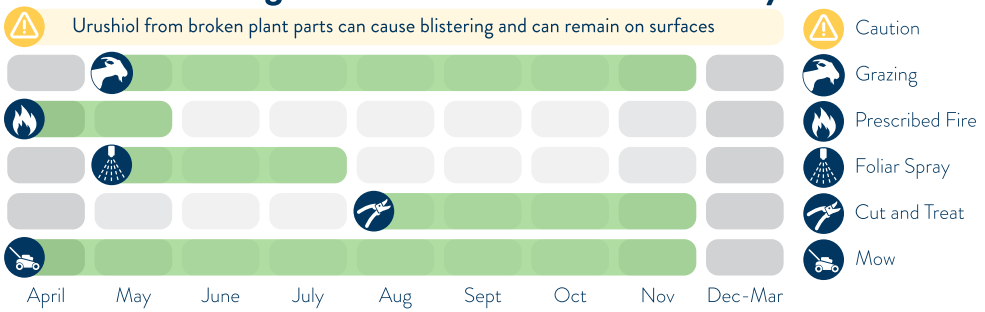
Mechanical - Cutting or mowing can inhibit flowering but must be continued in order to deplete energy reserves and to deplete seed banks.

Chemical - Herbicide applied to foliage or to cut stems are effective. Repeat applications will be required to exhaust seed banks.

Special Regulation

Must be eradicated or controlled for public safety along rights-of-ways, trails, public accesses, business properties open to the public or on parts of lands where public access for business or commerce is granted. Must also be eradicated or controlled along property borders when requested by adjoining landowners.

Treatment Timing — Poison Ivy



Cultural - Goats and sheep that have been acclimated to feed on poison ivy may be used to reduce large populations.

Fire - Prescribed fire generates potentially harmful smoke. While prescribed fire can provide control, this tool should not be the first choice.

Effective herbicide formulations: 2,4-D, aminocyclopyrachlor, glyphosate, imazapyr, triclopyr.

ALFALFA

Medicago sativa L.

Non-native

Common Names

Lucerne

Life Cycle

Herbaceous perennial

Native Range

Southwest Asia

Look-a-Likes

American Vetch (pg 73)
Canada Thistle (pg 25)
Canadian Milkvetch (pg 76)
Crown Vetch (pg 43)
Hairy Vetch (pg 67)
Knapweeds (pg 101)

Habitat

Introduced to North America for livestock forage and is an agriculture crop. Adapted to many climates and common in roadside ditches, and similar disturbed areas.

Identification

Plant - Fabaceae family, 4-sided stem supports a 1 to 3 foot tall plant.

Leaves - Alternate, 3-parted, compound leaves with individual leaflets measuring ⅜ to 1⅜ inches long, stipulate (leaf-like appendages where leaves attach to stems).

Flower - 5-parted, purplish to blue (occasionally cream colored) and approximately ¼ to ½ inch long.

Bloom Time - June to September

Seed and Fruit - Coiled pods, mature to a brown color.

Root - Deep, fast growing root that can reach depths of 50 feet. New stems emerge from woody root crown.

Key Differences

Leaves - Alfalfa has compound leaves. Thistles and knapweeds have simple leaves with lobes, not compound.

Flower - Alfalfa has a clustered, somewhat conical flower head. Thistles and knapweeds are disk flowers with ray flowers on the edges.

Top left: Alfalfa flowers
Top right: Crown vetch flowers
Bottom left: Canada thistle flower
Bottom right: Spotted knapweed flower

BALKAN CATCHFLY

Silene csereii Baumgarten

Non-native

Common Names
Biennial Catchfly, Glaucous Campion

Life Cycle
Woody perennial

Native Range
Europe

Look-a-Likes
Dalmatian Toadflax (pg 13)

Habitat
Full sun, dry, disturbed sites such as roadsides, abandoned lots, fields and gravel pits.

Identification
Plant - Similar to and often confused with bladder campion (*Silene vulgaris*). Classed as a biennial/perennial that stands as tall as 40 inches. Stems are smooth, pale greyish-green.

Leaves - Opposite, simple leaves have entire margins (no teeth on leaf edges), smooth, waxy and greyish-green.

Flower - Flowers are five-parted, white with petals that are often rolled. The flower typically has purple tinged stamens extending forward and behind the petals is a smooth bladder-like calyx or cup that will hold the seeds. The calyx is light green, tapers at the ends and has parallel veins.

Bloom Time - May to October

Seed and Fruit - Held in the calyx or bladder behind the petals. At maturity the bladder turns light tannish-brown and the five tips curl backward.

Root - Stout taproot.

Key Differences
Leaves - Balkan catchfly has opposite leaves. Leaves of Dalmatian toadflax are alternate on the stem.

Flower - Flowers are significantly different. Dalmatian toadflax has yellow snapdragon like flowers, while Balkan catchfly has creamy-white, 5-parted flowers.

Above left: Balkan catchfly flowers
Above right: Dalmatian toadflax flowers

Above left: Balkan catchfly leaf
Above right: Dalmatian toadflax leaf

BURNET SAXIFRAGE

Pimpinella saxifraga L.

Non-native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Solidstem Burnet Saxifrage, Lesser Burnet, Pimpinella, Scarlet Pimpernel

Life Cycle

Herbaceous perennial

Native Range

Temperate Eurasia

Look-a-Likes

Caraway (pg 63)
Common Yarrow (pg 79)
Erect Hedgeparsley (pg 66)
Poison Hemlock (pg 34)
Water Hemlock (pg 98)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Partial shade to full sun. Takes advantage of disturbance to become established well on roadsides.

Identification

Plant - Herbaceous perennial that can grow 2 to 3 feet tall, stems rough but slender with short hairs, ribs.

Leaves - Pinnately compound leaves. Basal leaves in particular have oval, toothed leaflets. As leaves ascend the stem they become smaller and deeply lobed (pinnatifid).

Flower - Five-petaled, white and flat or shaped clusters (compound umbels). Umbels, comprised of 7 to 20 umbellets, each with 10 to 20 white flowers. Bracts may be present but not always.

Bloom Time - July to September

Seed and Fruit - Schizocarps splitting at maturity to two carpels (individual seeds). Small seed at ⅛ inch or less, faintly ribbed, dark brown color when mature.

Root - Fibrous taproot, with a strong scent.

Key Differences

Leaves - Wild carrot has obvious, showy, branched bracts beneath umbels. Caraway may have up to 4, Burnet saxifrage may have 1 bract while erect hedgeparsley may have 2 or more narrow bracts at bases of compound umbels and up to 8 tiny bracts under umbellets.

Bloom Time - Burnet saxifrage, caraway and erect hedgeparsley bloom June to September. Wild chervil blooms April to June.

Seed and Fruit - Wild carrot seeds are about ⅛ inch with ridges covered by stiff bristles (not hooked). At maturity wild carrot folds its seed structure into what is often described as a bird's nest. Erect hedgeparsley seeds are covered in stiff hooked hairs.

Top left: Burnet saxifrage flowers
Top right: Caraway flowers
Center left: Erect hedgeparsley flowers
Center right: Poison hemlock flowers
Bottom left: Wild carrot flowers
Bottom right: Wild chervil flowers

Comparison of carrot family leaves - Page 63
Comparison of carrot family seeds - Page 66
Comparison of carrot family stems - Page 69

CARAWAY

Carum carvi L.

Non-native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Meridian Fennel, Persian Cumin

Life Cycle

Herbaceous biennial

Native Range

Eurasia and North Africa

Look-a-Likes

Burnet Saxifrage (pg 62)
Common Yarrow (pg 79)
Erect Hedgeparsley (pg 66)
Water Hemlock (pg 98)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Prefers full sun, disturbed soils and tolerate drier roadside conditions.

Identification

Plant - Herbaceous biennial that can grow 1 to 4 feet tall. Stems are smooth, hairless, and shiny.

Leaves - Sparse alternate stem foliage is pinnately compound. Upper stem leaflets are deeply incised and smaller. Sheaths present at attachments to the hairless stem.

Flower - Umbels, flat-topped with 3 to 10 umbellets. Each umbellet holds up to 20 white (pinkish) florets. Petals are mostly equal in size and they are notched.

Bloom Time - June to August

Seed and Fruit - Seeds are oval, ribbed with no hooks or hairs. About to ¼ inch long. Fragrant when crushed, foliage and seeds used as an herb.

Root - Fibrous taproot.

Key Differences

Leaves - Wild carrot has obvious, showy, branched bracts beneath umbels. Caraway may have up to 4, burnet saxifrage may have 1 bract while erect hedgeparsley may have 2 or more narrow bracts at bases of compound umbels and up to 8 tiny bracts under umbellets.

Bloom Time - Burnet saxifrage, caraway and erect hedgeparsley bloom June to September. Wild chervil blooms April to June.

Seed and Fruit - Wild carrot seeds are about ⅛ inch with ridges covered by stiff bristles (not hooked). At maturity wild carrot folds its seed structure into what is often described as a bird's nest. Erect hedgeparsley seeds are covered in stiff hooked hairs.

Top left: Burnet saxifrage leaf
Top right: Caraway leaf
Center left: Erect hedgeparsley leaf
Center right: Poison hemlock leaf
Bottom left: Wild carrot leaf
Bottom right: Wild chervil leaf

Comparison of carrot family flowers - Page 62
Comparison of carrot family seeds - Page 66
Comparison of carrot family stems - Page 69

COMMON MULLEIN

Verbascum thapsus L.

Non-native

Common Names
Great Mullein, Woolly Mullein, Flannel Plant

Life Cycle
Herbaceous monocarpic perennial

Native Range
Eurasia and north Africa

Look-a-Likes
Grecian Foxglove (pg 16)
Moth Mullein

Habitat
Shade intolerant. Easily establishes in disturbed areas, along roadsides

Identification
Plant - Herbaceous monocarpic perennial that spends its first year as a rosette before bolting and producing seed. Can grow anywhere from 5 to 10 feet tall. Plants develop a large center spike covered in flowers, and sometimes grow smaller auxiliary spikes around the base of the main spike.

Leaves - Alternate and decrease in size further up the stem. Covered in soft hairs giving each leaf the texture of flannel. Basal leaves can be 15 inches long. As the plant matures, leaves fall off the stem leaving a brown stalk that persists.

Flower - Yellow with 5 petals. Grow densely clustered along a spike, with only a few flowers blooming at a time. Each flower is ¾ inch wide and have 5 orange stamen and a green style in the center.

Bloom Time - June to September

Seed and Fruit - Flowers mature into two-capsuled, circular pods that cover the entire spike. Each pod contains many small, black seeds, and single plants can produce up to 180,000 seeds.

Root - Deep taproot, with fibrous lateral roots.

Key Differences
Leaves - Common mullein leaves are rounded and visibly hairy. Grecian foxglove leaves are lanced and dark green. Moth mullein leaves are hairless and lanced with lobing.

Flower - Grecian foxglove has white, bell-shaped flowers with brown veining. Moth mullein flowers can either be white or yellow and have stamen that look like moth antennas. Spikes are much narrower on both Grecian foxglove and moth mullein.

Seed and Fruit - Grecian foxglove capsules are two parted and spiked. Capsules split at maturity releasing seed.

Top left: Common mullein flower
Top right: Moth mullein flower (may also be yellow)
Bottom left: Grecian foxglove flower

Top left: Common mullein seed pods
Top right: Moth mullein seed pods
Bottom left: Grecian foxglove seed pods

DAME'S ROCKET

Hesperis matronalis L.

Non-native

Common Names

Dame's Violet, Mother-of-the-evening, Sweet Rocket

Life Cycle

Herbaceous biennial or short lived perennial

Native Range

Central and southern Europe

Look-a-Likes

Fireweed (pg 83)
Garlic Mustard (pg 45)
Narrowleaf Bittercress (pg 31)
Phlox
Purple Loosestrife (pg 35)
Yellow Rocket (pg 70)

Habitat

Prefers partial to full shade. Commonly found in disturbed areas, rights-of-ways, forest edges, and meadows. Prefers medium to high moisture environments.

Identification

Plant - Herbaceous, biennial with first year plants being basal rosettes. Second year flowering plants can attain heights of 2 to 4 feet and can produce more than one flowering stem.

Leaves - Alternate, lanced shaped leaves that are larger near the base. Margins are finely toothed and attach to the stem with no or minimal petiole. Leaves and stems are covered in small hairs.

Flower - Loose, clustered, and rounded. Each inflorescence has 4 petals. Flowers can vary in color from purple, pink, or white and are approximately ½ inch across. Flowers are sweetly fragrant.

Bloom Time - May to August

Seed and Fruit - Slender seed pods (siliques) grow from each flower, and can reach 5 inches long. As plants mature, the pods split and release small black seeds.

Root - Slender taproot with fibrous secondary roots.

Key Differences

Leaves - Garlic mustard has rounded, kidney shaped leaves with a strong garlic smell when crushed. Yellow rocket has similar kidney shaped leaves. Fireweed leaves have smooth margins.

Flower - Native phlox species have 5 petals. Purple loosestrife flowers grow up a square spike. Yellow rocket has yellow flowers. Garlic mustard and narrowleaf bittercress have white flowers.

Seed and Fruit - Garlic mustard, narrowleaf bittercress, and yellow rocket siliques are much smaller (1 to 2 inches long).

Dame's rocket flower color diversity. White (top left), purple (top right) and pink (bottom left).

Top left: Dame's rocket flower
Top right: Phlox flower
Center left: Garlic mustard flower
Center right: Fireweed flower
Bottom left: Yellow rocket flower
Bottom right: Purple loosestrife flower

Comparison of leaves - Page 83

ERECT HEDGEPARSLEY

Torilis japonica [Houtt.] DC.

Non-native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Previous editions have referred to *Torilis japonica* as Japanese Hedge Parsley.
Upright Hedge Parsley

Life Cycle

Herbaceous annual or biennial

Native Range

Eurasia and north Africa

Look-a-Likes

Burnet Saxifrage (pg 62)
Caraway (pg 63)
Poison Hemlock (pg 34)
Water Hemlock (pg 98)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Prefers partial shade to full sun. Takes advantage of disturbance to become established and overtake on roadsides. Erect hedgeparsley thrives along woodland edges.

Identification

Plant - Herbaceous annual to biennial plant that can grow 2 to 6 feet tall. Life Cycle is dependent on environment, and some plants form a basal rosette the first year before bolting the second year. Stems are covered with stiff tiny hairs that give it a rough appearance. Delicate, linear bracts are observed under each umbel.

Leaves - Foliage is sparse, alternate, and pinnately compound. Leaves clasp around the stem. Upper stem leaflets are covered with minute hairs, are deeply incised, and smaller. Basal leaves are compound, incised, covered with minute appressed hairs. Can be fern-like, deeply incised and smaller.

Flower - Flat-topped umbels with 5 to 12 umbellets, each with 10 to 20 white to pinkish flowers. Cleft (nearly split) petals are not equally sized.

Bloom Time - June to August

Seed and Fruit - Green and turns brown when mature with small hooked hairs. Fruits are small (⅛ inch) and each fruit contains two seeds.

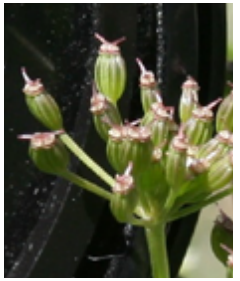
Root - Long, fibrous taproot.

Key Differences

Leaves - Wild carrot has obvious, showy, branched bracts beneath umbels. Caraway may have up to 4, burnet saxifrage may have 1 bract while erect hedgeparsley may have 2 or more narrow bracts at bases of compound umbels and up to 8 tiny bracts under umbellets.

Bloom Time - Burnet saxifrage, caraway and erect hedgeparsley bloom June to September. Wild chervil blooms April to June.

Seed and Fruit - Wild carrot seeds are about ⅛ inch with ridges covered by stiff bristles (not hooked). At maturity wild carrot folds its seed structure into what is often described as a bird's nest. Erect hedgeparsley seeds are covered in stiff hooked hairs.



Top left: Burnet saxifrage seeds
Top right: Caraway seeds
Center left: Erect hedgeparsley seeds
Center right: Poison hemlock seeds
Bottom left: Wild carrot seeds
Bottom right: Wild chervil seeds

Comparison of carrot family flowers - Page 62
Comparison of carrot family leaves - Page 63
Comparison of carrot family stems - Page 69

HAIRY VETCH

Vicia villosa Roth.

Non-native

Common Names

Winter Vetch, Fodder Vetch

Life Cycle

Herbaceous annual, biennial, or short lived perennial

Native Range

Eurasia

Look-a-Likes

Alfalfa (pg 60)
American Vetch (pg 73)
Canadian Milkvetch (pg 76)
Cow Vetch
Crown Vetch (pg 43)

Habitat

Prefers dry old fields, pastures and roadsides. Readily invades disturbed areas but struggles to invade well established vegetation.

Identification

Plant - Fabaceae family, hairy vetch is a nonnative, short-lived perennial (biennial) with a spreading, viney form and has tendrils that assist climbing nearby plants up to 3 feet.

Leaves - Alternate, compound leaves, pinnately divided. Hairy vetch has 5 to 10 pairs of leaflets and tendrils are often found terminal on the compound leaves.

Flower - Hairy vetch has 10 to 40, 5-parted, pink to purple flowers about ¾ inch in length in a one-sided cluster.

Bloom Time - May to September

Seed and Fruit - Pea-like pods, ½ to ¾ inch long, that hang. Seed pods are green while maturing and once mature are grey/black to brown and hairy.

Root - Deep, fibrous taproot.

Key Differences

Leaves - Crown vetch has no stipules, no leaf stalk and no tendrils.

Flower - Crown vetch has a dense cluster (crown-like) not one-sided or spike-like.

Seed and Fruit - Crown vetch's pods stand erect, they are angled, and multi-segmented.

Top left: Hairy vetch flowers
Top right: American vetch flowers
Bottom left: Canadian milkvetch flowers
Bottom right: Crown vetch flowers

Comparison of vetch leaves - Page 73
Comparison of vetch seed pods - Page 76

MUSK THISTLE

Carduus nutans L.

Non-native

Common Names
Nodding Thistle

Life Cycle
Herbaceous biennial

Native Range
Europe

Look-a-Likes
Canada Thistle (pg 25)
Plumeless Thistle (pg 33)
Swamp Thistle (pg 97)

Habitat
Dry to moist soils in woodlands, waste areas, roadsides, ditches and stream banks.

Identification
Plant - Herbaceous, biennial thistle, basal rosette in its first season. Second season, mature flowering stalks 1 to 7 feet tall.

Leaves - Rosettes can be twenty inches or more in diameter with rosette foliage deeply lobed, a light colored midrib and leaf edges that are light colored and spiny. Foliage on flowering stalks is alternate with spiny wings from leaf bases onto the stem and both surfaces are without hairs.

Flower -Large at 1½ to 3 inches wide and deep pink to purple. Composite flowers are solitary on branch ends, often nodding with large dark-colored spiny bracts beneath.

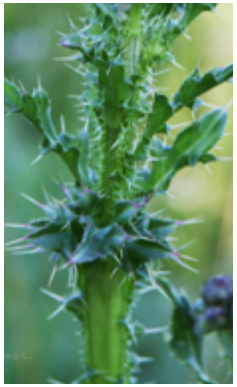
Bloom Time - June to August

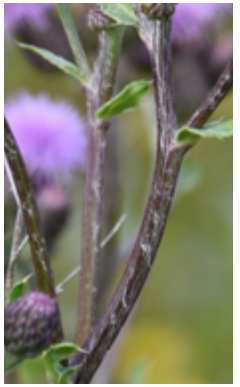
Seed and Fruit - Seeds are tufted with feathery plumes that are easily wind dispersed and most are deposited within 160 feet of plants. Do not mow after seed has developed as this strongly aids dispersal.

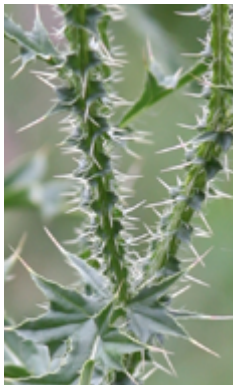
Root - Thick taproots but no rhizomes.

Key Differences
Leaves - Plumeless thistle leaves are hairy.

Flower - Plumeless thistle's flowers are ½ to 1½ inches wide with short spiny bracts and winged, spiny stems.







Top left: Musk thistle stem
Top right: Canada thistle stem
Bottom left: Plumeless thistle stem
Bottom right: Swamp thistle stem

Comparison of thistle flowers - Page 97

WILD CHERVIL

Anthriscus sylvestris (L.) Hoffm.

Non-native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Cow Parsley, Wild Beaked Parsley

Life Cycle

Herbaceous monocarpic perennial

Native Range

Eurasia and north Africa

Look-a-Likes

Burnet Saxifrage (pg 62)
Caraway (pg 63)
Erect Hedgeparsley (pg 66)
Poison Hemlock (pg 34)
Water Hemlock (pg 98)
Wild Carrot (pg 53)

Habitat

Part shade to full sun, moist soils, disturbed sites such as roadsides, abandoned lots, fields and gravel pits.

Identification

Plant - Herbaceous, often stated to be biennial but is a monocarpic perennial (plant dies after bearing fruit), that stands as tall as 5 feet (2 to 5 feet). Stems are hollow, ribbed, and mostly green with fine hairs, especially along the ribs.

Leaves - Alternate, doubly pinnately compound leaves are smooth and shiny on upper surfaces with short hairs below. Vein patterns are more pronounced than on poison hemlock.

Flower - Structure of the inflorescence is a compound umbel. Each umbel is comprised of 4 to 15 umbellets each with 3 to 10 white, 5-parted, florets.

Bloom Time - April to June

Seed and Fruit - Like other carrot family members, compound umbels of 2-parted seeds. In this species the styles persist resulting in a "beaked" seed (a pointed tip). Seed matures to ⅜ inch long and develops a dark brown color.

Root - Deep, fibrous taproot with rhizomes.

Key Differences

Plant - Poison hemlock stems are smooth and spotted purple, not hairy or ridged.

Leaves - Poison hemlock leaves have no hairs and venation is not as pronounced. Erect hedgeparsley has some hairs along the stem.

Bloom Time - Burnet saxifrage, caraway and erect hedgeparsley bloom June to September. Wild chervil blooms April to June.

Top left: Burnet saxifrage stem
Top right: Caraway stem
Center left: Erect hedgeparsley stem
Center right: Poison hemlock stem
Bottom left: Wild carrot stem
Bottom right: Wild chervil stem

Comparison of carrot family flowers - Page 62
Comparison of carrot family leaves - Page 63
Comparison of carrot family seeds - Page 66

YELLOW ROCKET

Barbarea vulgaris W. T. Aiton

Non-native

Common Names

Wintercress, Herb Barbara, Rocketcress

Life Cycle

Herbaceous biennial

Native Range

Eurasia

Look-a-Likes

Garlic Mustard (pg 45)
Leafy Spurge (pg 29)
Narrowleaf Bittercress (pg 31)

Habitat

Considered a weed of lawns, gardens and agricultural fields. Often along roadsides and other disturbed sites. An infestation of yellow rocket indicates a disturbed site on which ground cover of native forbs and grasses is thin.

Identification

Plant - Biennial plant (also described as perennial) that forms a basal rosette its first year. Subsequent growing seasons, flower stalks are erect at 8 to 36 inches tall, typically multi-branched and terminated by clusters of bright yellow flowers.

Leaves - Basal leaves and some stem leaves are pinnately lobed to deeply toothed and up to 6 inches in length. Often the terminal end of leaves is a larger rounded lobe in addition to 1 to 4 lesser side lobes. Leaves near the top of the plant are alternate, typically smaller, oval and often stalkless.

Flower - Crowded, rounded clusters of bright yellow stalked flowers. Flower clusters are terminal to branch ends. Individual flowers range from ⅓ to ½ inch wide and have 4 bright yellow petals. As flower clusters elongate, flowers are produced above with seed pods produced below flowers. Each flower is surrounded by a stiff bract resembling a spine. Flowering occurs in bands and various times. Larger bracts at the flower head base do not extend past the top of the flower head.

Bloom Time - April to June

Seed and Fruit - Slender pods develop along stems as flower clusters stretch upwards. The roundish pods are approximately 1 inch long, upward curved and contain small brown seeds at maturity.

Root - Stout taproot.

Key Differences

Leaves - Leafy spurge leaves are simple (not lobed) and narrowly linear at 1 to 4 inches in length.

Flower - Leafy spurge has greenish white flowers with no petals. The greenish-yellow bracts beneath the true flowers provide the appearance of a petaled flower. Confusion occurs due to overlap in bloom periods. Garlic mustard and narrowleaf bittercress have white flowers.

Top left: Yellow rocket flower
Top right: Garlic mustard flower
Bottom left: Leafy spurge flower
Bottom right: Narrowleaf bittercress flowers

YELLOW TOADFLAX

Linaria vulgaris Mill.

Non-native

Common Names
Butter and Eggs, Yellow Snapdragon, Common Toadflax

Life Cycle
Herbaceous perennial

Native Range
Eurasia

Look-a-Likes
Dalmatian Toadflax (pg 13)

Habitat
Grows on gravelly to sandy soil along roadsides, railroad yards, waste places, dry fields, pastures, and croplands.

Toxicity
Yellow toadflax contains an iridoid glycoside (a quinoline alkaloid) and is reported to be toxic to cattle.

Identification
Plant - Herbaceous perennial that can grow 1 to 3 feet high, and are often found clustered along disturbed areas. Stems and leaves are hairless.

Leaves - Alternate, lanced shaped leaves that can appear whorled. Leaves are blue-green and can grow ¾ to 2½ inches long.

Flower - Erect, spike-like racemes of light yellow snapdragon-like flowers with orange center markings. Flowers are tightly clustered and 1 to 1½ inches long with slender spurs extending downward from the back.

Bloom Time - June to August

Seed and Fruit - Fruits are spherical and ¼ inch wide. Each pod contains many small seeds (less than 1/16 inch wide) which are flat, with a circular ring around the outside.

Root - Woody taproot that can grow up to 3 feet with lateral roots.

Key Differences
Leaves - Yellow toadflax has narrow lanced leaves while Dalmatian toadflax leaves are heart shaped and clasp around the stem.

Flower - Dalmatian toadflax has a darker yellow flower, where yellow toadflax has white to light yellow flowers. Both will have orange center markings.

Yellow and Dalmatian toadflax are closely related and have the ability to hybridize, showing intermittent characteristics between the two species.

Above left: Yellow toadflax flowers
Above right: Dalmatian toadflax flowers

Above left: Yellow toadflax narrow leaves
Above right: Dalmatian toadflax leaves

Below: Yellow toadflax (left) and Dalmatian toadflax (right)

AMERICAN BITTERSWEET

Celastrus scandens L.

Minnesota Native

Common Names

Bittersweet, Climbing Bittersweet

Life Cycle

Woody perennial

Look-a-Likes

Burning Bush (pg 75)
Round Leaf Bittersweet (pg 36)
Winged Burning bush (pg 54)

Habitat

Typically found in rich soil, full to partial sun often along roadsides and woodland edges.

Identification

Plant - Woody vine, twining, no tendrils or aerial roots to assist in climbing. Bark is smooth, brown to dark grey, and has visible lenticels. Vines can reach a diameter of 2½ inches and wrap loosely around structures.

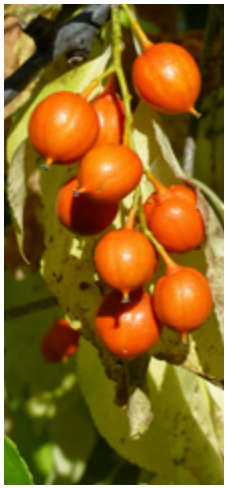
Leaves - Alternate, elliptic to oblong or obovate, typically twice as long as wide. At bud break, leaf edges unfurl involutely (inward curling).

Flower - Terminal panicles of numerous 5-parted flowers. Dioecious plants (male and female) producing small, inconspicuous whitish flowers. Male flowers have yellow pollen.

Bloom Time - May to June

Seed and Fruit - Like the flowers, terminal panicles. Orange colored husks covering bright red 3-parted arils (fleshy, berry-like fruits) containing 1 to 2 seeds each. Fruits persist into late winter.

Root - Woody taproot with suckering lateral roots.



Key Differences

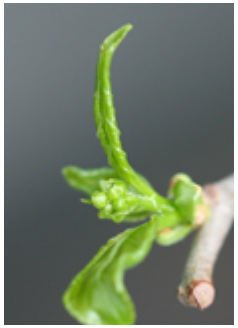
Plant - Bark on round leaf bittersweet is highly textured and grey. Vines have been recorded in southeast Minnesota with a diameter larger than 8 inches. Vines wrap tightly around structures.

Leaves - Round leaf bittersweet can have an egg shaped, rounded leaf. Leaf edges unfurl conduplicately (folded in half lengthwise with the upper side inward).

Flower - Round leaf bittersweet has greenish flowers with white pollen (male vines) and a thin ovlule (female vines).

Seed and Fruit - Round leaf bittersweet fruit do not cluster at the terminal end of stems. Fruit are covered in yellow husks.

Left: American bittersweet leaf bud unfurling involutely (inward curling)
Right: Round leaf bittersweet leaf bud unfurling conduplicately (folded in half)



Top: American bittersweet male (left) and female (right) flowers
Center: Round leaf bittersweet male (left) and female (right) flowers
Bottom left: Burning bush flowers
Bottom right: Winged burning bush flowers

Comparison of bittersweet & burning bush fruit - Page 75

AMERICAN VETCH

Vicia americana Muhl. Ex Willd.

Minnesota Native

Common Names
Purple Vetch

Life Cycle
Herbaceous perennial

Look-a-Likes
Alfalfa (pg 60)
Canadian Milkvetch (pg 76)
Cow Vetch
Crown Vetch (pg 43)
Hairy Vetch (pg 67)

Habitat
Old fields, pastures and roadsides.

Identification
Plant - Fabaceae family, American vetch is a native perennial with a spreading, viney form and typically has tendrils that assist in climbing nearby plants up to 3 feet.

Leaves - Alternate, compound leaves, pinnately divided. American vetch has 4 to 8 pairs of leaflets and tendrils terminal on the compound leaves. American vetch has toothed stipules at the base of its compound leaves.

Flower - American vetch has 2 to 9 flowers in a one-sided cluster. Flowers are 5-parted, pink to purple and about ¾ inch in length.

Bloom Time - May to September

Seed and Fruit - Pea-like pods that hang. American vetch's pods are about 1 inch long.

Similar to hairy vetches pea-like pod.

Root - Fibrous taproot.

Key Differences
Leaves - Crown vetch has no stipules, no leaf stalks and no tendrils.

Flower - Crown vetch has a dense crown-like flower cluster.

Seed and Fruit - Crown vetch's pods stand erect, they are angled, and multi-segmented.

Top left: American vetch leaf
Top right: Hairy vetch leaf
Bottom left: Canadian milkvetch leaf
Bottom right: Crown vetch leaf

Comparison of vetch flowers - Page 67
Comparison of vetch seed pods - Page 76

BLACK WALNUT

Juglans nigra L.

Minnesota Native

Common Names

Eastern Black Walnut, American Black Walnut

Life Cycle

Woody perennial

Look-a-Likes

Amur Cork Tree (pg 56)
Sumacs (pg 96)
Tree of Heaven (pg 23)

Habitat

Commonly found scattered throughout hardwood forests in areas with good drainage. The roots release juglone preventing other species from growing in close proximity.

Toxicity

Produces juglone which can be toxic to surrounding plant species. Moldy walnuts and bark can be toxic to dogs if consumed.

Identification

Plant - Large tree that can grow 100 feet tall with a diameter of 3 feet. Bark is thick, furrowed, and grey to dark grey. Leaf scars are V shaped with the top notched, some say they resemble a monkey face. Twig piths are light brown and segmented.

Leaves - Alternate, pinnately compound leaves with 12 to 18 leaflets. Margins are finely serrated. The terminal leaflet is usually absent or underdeveloped. Terminal leaves can appear radial.

Flower - Male and female flowers grow on the same tree, but different branches. Male flowers are green catkins, up to 4 inches long. Female flowers are small, and 1 to 4 can be found on spikes near terminal ends of branches.

Bloom Time - May to early June

Seed and Fruit - Spherical fruit with green outer husk that can grow up to 3 inches long. The inner shell is hard and encapsulates a bitter, brown, corrugated kernel.

Root - Woody taproot with lateral roots.

Key Differences

Plant - Sumacs are tall shrubs or small trees while Amur cork tree, black walnut and tree of heaven are all large trees.

Leaves - Black walnut has immature or missing terminal leaflet. Amur cork tree has opposite leaves. Sumac leaves are sessile. Tree of heaven leaves are smooth with glands at the base.

Leaf Scar - Back walnut has a leaf scar resembling a monkey face. Amur cork tree leaf scars are horse shoe shaped surrounding the bud. Tree of heaven has large heart shaped leaf scars. Sumac leaf scars are horse shoe to circular and surrounding the bud.

Flower - Tree of heaven has showy flowers. Tree of heaven and Amur cork tree and sumacs have make and female flowers mostly growing on separate plants. Sumac flower clusters are pyramidal.

Seed and Fruit - Amur cork tree produces black berries, sumac produces red berries, and tree of heaven has reddish-yellow samaras.

Top left: Black walnut leaf scar
Top right: Amur cork tree leaf scar
Bottom left: Tree of heaven leaf scar

Comparison of Amur cork tree, black walnut, sumac, & tree of heaven fruit - Page 96

Below: Black walnut nut (left) and butternut, *Juglans cinerea*, nut (right)

BURNING BUSH

Euonymus atropurpureus Jacq.

Minnesota Native

Common Names
Eastern Wahoo, Euonymus

Life Cycle
Woody perennial

Look-a-Likes
American Bittersweet (pg 72)
Round Leaf Bittersweet (pg 36)
Winged Burning Bush (pg 54)

Habitat
Prefers forested river corridors, floodplains, and margins of sloughs. Tolerates partial to full shade, flooding, and sedimentation.

Identification
Plant - Tall understory shrub with a single upright stem that can grow 13 feet tall with a diameter of 1½ inches. Four faint corky ridges are visible and run the length of the stem. Ridges become less pronounced as stem matures. Bark is smooth and grey to light brown.

Leaves - Simple and opposite leaves that mature to deep red in fall. Elliptical with a drawn out tip and fine serrations around the margins.

Flower - Four smooth, ovate petals with reddish purple color, ¼ inch in diameter. Flowers have both male and female parts.

Bloom Time - Early June to mid-July

Seed and Fruit - Red colored, four lobed, leathery husk. Husk splits when mature exposing 1 to 4 red fruit, each with one seed.

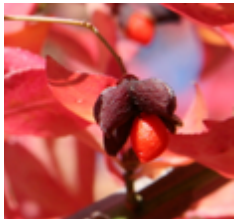
Root - Extensive, slow growing rhizome which sends up single stems that are interconnected.

Key Differences
Plant - American and round leaf bittersweet are vines. Corky ridges remain along stems on winged burning bush.

Leaves - Bittersweet leaves are alternate.

Flower - Burning bush has red flowers. American bittersweet have white flowers. Round leaf bittersweet and winged burning bush have pale green flowers.

Seed and Fruit - Burning bush fruit have 4 lobes with up to 4 fruit, while other species capsules split to reveal a single fruit or paired fruit (winged burning bush). Bittersweet fruit are 3 parted and spherical.



Top left: Burning bush fruit
Top right: Winged burning bush fruit
Bottom left: American bittersweet fruit
Bottom right: Round leaf bittersweet fruit

Comparison of bittersweet & burning bush flowers - Page 72

CANADIAN MILKVETCH

Astragalus canadensis L.

Minnesota Native

Common Names

Canada Milkvetch, Milkvetch

Life Cycle

Herbaceous perennial

Look-a-Likes

American Vetch (pg 73)

Cow Vetch

Crown Vetch (pg 43)

Hairy Vetch (pg 67)

Habitat

Used for livestock forage and as an agriculture crop. Common in roadside ditches, and similar disturbed areas.

Identification

Plant - Herbaceous, monocarpic perennial. At maturity, it is 3 to 8 feet tall with erect, ridged, and prickly stems.

Leaves - Alternate, odd-pinnate, compound leaves with 21 to 31 oblong leaflets, about 1½ inches long. Leaves measure 5 to 9 inches long and there are no tendrils.

Flower - 5-parted, cream colored and approximately ¾ inch long. Milkvetch has a tall, spike-like, clustered, conical flower head with as many as 75 flowers.

Bloom Time - June to September

Seed and Fruit - Thickened, fuzzy, 2-parted pods with a pointed tip, mature to a brown color.

Root - Fibrous taproot.

Key Differences

Leaves - Crown vetch has 11 to 25 oval leaflets while Canadian milkvetch has 21 to 31 oblong leaflets.

Flower - Canadian milkvetch flowers are white where American, cow, crown, and hairy vetches have purple to pink flowers.

Top left: Canadian milkvetch seed pods
Top right: American vetch seed pods
Bottom left: Hairy vetch seed pods
Bottom right: Crown vetch seed pods

Comparison of vetch flowers - Page 67
Comparison of vetch leaves - Page 73

CHERRIES AND PLUM

Prunus spp.

Minnesota Native

Black Cherry
Prunus serotina Ehrh.
Choke Cherry
Prunus virginiana L.
Pin Cherry
Prunus pensylvanica L. f.
American Plum
Prunus americana Marshall

Common Names

Prunus serotina Ehrh. - Wild Cherry, Rum Cherry

Prunus virginiana L. - Bitter-berry, Virginia Bird Cherry

Prunus pensylvanica L. f. - Fire Cherry, Bird Cherry, Red Cherry

Prunus americana Marshall - Wild Plum

Life Cycle

Woody perennial

Look-a-Likes

Callery Pear (pg 57)
Common Buckthorn (pg 42)
Glossy Buckthorn (pg 46)

Habitat

Typically found in rich soil, full to partial sun often along roadsides and woodland edges.

Identification

Plant - Plums, choke cherry and fire or pin cherry are small sized trees. Black cherry may be a small tree, but reaches medium to large tree status. All have smooth, grey to brown bark that is often shiny and lenticeled. Couple that bark and American plum's thorn-like twigs and it is no surprise that these species are frequently confused with buckthorn.

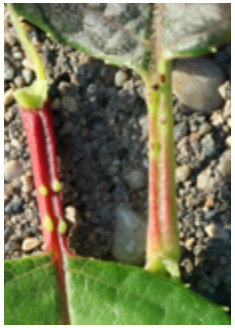
Leaves - Alternate, elliptic to oblong or ovate, typically finely toothed with acuminate or drawn out leaf tips.

Flower - Numerous five-parted, white, fragrant flowers are fairly showy or obvious. Cherries have panicles of white fragrant flowers while the plum's white flowers are clustered along the stem. In Minnesota, American plum (wild plum) is one of the earliest trees to bloom, typically small groups of trees clumped along forest edges.

Bloom Time - May to June

Seed and Fruit - Choke and black cherry panicles (loose, hanging clusters) of black fruit are readily taken by birds. Pin cherry fruits mature to a bright red. Plums have a ¾ to 1 inch, reddish to purplish fruit that contains a large seed.

Root - Sprawling woody roots.



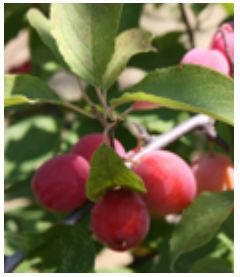
Key Differences

Leaves - Prunus species have glands on the leaf petioles. Common buckthorn has arcuate (curved) venation.

Flower - Five-parted, white, fragrant flowers are fairly showy or obvious.

Seed and Fruit - Birds eat fruits of cherries and plums after ripening. Buckthorn fruits remain on shrubs into late winter.

Top left: Black cherry flowers
Top right: Choke cherry flowers
Bottom: American plum flowers



Top left: Black cherry fruit
Top right: Choke cherry fruit
Bottom left: Pin cherry fruit
Bottom right: American plum fruit

Top left: Common buckthorn fruit
Top right: Glossy buckthorn fruit
Bottom left: Callery pear fruit

COMMON HOPS

Humulus lupulus L.

Minnesota Native

Common Names

Hops, American Hops, Beer Hops

Life Cycle

Herbaceous perennial

Look-a-Likes

Cucumbers (pg 81)
Japanese Hops (pg 18)
Woodbines (pg 99)

Habitat

Moist soils, disturbed sites in woodlots and along fence rows.

Identification

Plant - Herbaceous, perennial vine, rhizomatous (spreads by rhizomes), and can grow to around 20 feet. Leaf petioles and annual stems with stout hooked hairs.

Leaves - Opposite, for the most part 3 lobed (up to 5 lobes), higher on the vine leaves may be unlobed. Typically, a cordate (heart shaped) base to the leaf and leaves nearly as broad as long. Petioles attaching the leaf to the vine are shorter than the length of the leaf. At the stem intersection, there is a large, papery, upward facing bract. Leaf undersides are covered in yellow glands.

Flower - Inconspicuous, wind pollinated and dioecious (male and female) plants.

Bloom Time - July to August

Seed and Fruit - Fruiting structure is cone like, comprised of papery bladders covering individual seeds. Fragrant when crushed. Fruit persists into late winter.

Root - Woody rhizome with root crown.

Key Differences

Plant - Japanese hops is an annual, and does not contain the resins found in common hops that are used for brewing.

Leaves - Japanese hops has leaves with 5 to 9 lobes. Petioles are longer than the length of the leaf. Bracts at the petiole base are smaller, face downward, and are split down the middle.

Seed and Fruit - Female cones on Japanese hops are much smaller and do not typically persist over the winter.

Root - Japanese hops has a taproot.

Above left: Common hops leaf
Above right: Japanese hops leaf

Above left: Common hops bracts
Above right: Japanese hops bracts

Above left: Common hops petiole
Above right: Japanese hops petiole

Below: Yellow glands on underside of common hops leaf

COMMON YARROW

Achillea millefolium L.

Minnesota Native

Common Names

Yarrow, Milfoil, Plumajillo

Life Cycle

Herbaceous perennial

Look-a-Likes

Burnet Saxifrage (pg 62)
Caraway (pg 63)
Erect Hedgeparsley (pg 66)
Poison Hemlock (pg 34)
Water Hemlock (pg 98)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Mesic to dry soils, full to partial sun often in prairies, along roadsides and woodland edges.

Identification

Plant - Perennial, herbaceous plant reaching heights of 1 to 3 feet. Stems are pale green, hollow and typically covered with fine hairs. Plants are often unbranched except near the top.

Leaves - Alternate, narrow and finely divided, single or double pinnate, very fern-like. Stem leaves are sessile (no leaf stalk) and near top of plants, typically smaller. Leaflets are longest at the middle of the rachis and shorter near the tip and base.

Flower - Terminal branched flower structures (compound corymb) of numerous 5-parted flower heads. Each flower head consists of 5 ray florets and 5 disk florets. Florets are typically whitish to pale cream. White flowers on a flat-topped structure brings about confusion with the carrot family.

Bloom Time - June to September

Seed and Fruit - Like the flowers, branched, terminal clusters. Florets are replaced by seeds (achenes) lacking hairs.

Root - Fibrous root with rhizomes

Key Differences

Plant - Member of the aster family, not carrot family.

Flower - Terminal branched panicles or compound corymb versus carrot families compound umbels.

Bottom left: Common yarrow basal leaf
Bottom right: Common yarrow upper leaf

Above left: Common yarrow flowers
Above right: Water hemlock flowers

Above left: Common yarrow leaf
Above right: Wild carrot leaf

COW PARSNIP

Heracleum maximum W. Bartram

Minnesota Native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

American Cow Parsnip, American Hogweed, Indian Celery

Life Cycle

Herbaceous perennial

Look-a-Likes

Giant Hogweed (pg 15)

Great Angelica

Poison Hemlock (pg 34)

Habitat

Often found in rich, moist soils along streams or river bottoms in full to partial sun.

Toxicity

Although to a lesser extent that giant hogweed and wild parsnip, contact with the sap and exposure to sunlight can produce painful, burning blisters (phytophotodermatitis).

Identification

Plant - Perennial, single-stemmed large plants at 3 to 10 feet tall. Fuzzy stems are hollow and described as foul smelling.

Leaves - Alternate, compound, 3-parted with toothed, palmate leaflets. Leaves can grow up to 2 feet wide. The petiole or leaf stalk has an enlarged base that clasps the stem.

Flower - 8 to 30 small, white, 5-parted flowers with notched petals, in a 4 to 8 inch flat umbel, 8 to 30 umbellets. Cow parsnip outer flower petals are often larger, irregular, and notched.

Bloom Time - June to July

Seed and Fruit - Many flattened fruits that when dry split into 2 seeds.

Root - Short, fibrous taproot.

Key Differences

Plant - Giant hogweed has purplish stems with coarse hairs and can grow up to 20 feet tall.

Leaves - Giant hogweed has strongly dissected leaves up to 5 feet wide.

Flower - Umbels on giant hogweed are curved, where cow parsnip umbels are flat. Umbels on great angelica are spherical.

Top left: Cow parsnip umbel
Top right: Giant hogweed umbel
Bottom left: Great angelica umbel

Top left: Cow parsnip leaf
Top right: Giant hogweed leaf
Bottom left: Great angelica leaf

CUCUMBERS

Echinocystis lobata Michx. and *Sicyos angulatus* L.

Minnesota Native

Bur Cucmber
Sicyos angulatus L.
Wild Cucumber
Echinocystis lobata Michx.

Common Names

One-seed Bur Cucumber, Star-cucumber, Prickly Cucumber

Life Cycle

Herbaceous annual

Look-a-Likes

Common Hops (pg 78)
Japanese Hops (pg 18)
Red Hailstone (pg 22)
Woodbines (pg 99)

Habitat

Can be found growing side-by-side. Plants can be found in partial shade to full sun along the edge of the woods or in thickets or open areas with moist soils.

Identification

Plant - Annual herbaceous vines with tendrils, often found covering shrubs and small trees to approximately 20 feet.

Leaves - Simple, alternate, 3 to 5 triangular lobed wild cucumber leaves have small teeth along the leaf edge. Bur cucumber differs with its 3 to 5 shallowly lobed leaves having hairy undersides as well as sticky hairs on its stems.

Flower - Wild cucumber has creamy white flowers with 6 strap-like petals. Panicles have mostly male flowers, and single female flowers appear periodically throughout the flower spike. Bur cucumber has 5-petaled greenish-white male flowers clustered and separate from the female flowers clustered elsewhere on the plant.

Bloom Time - July to September

Seed and Fruit - Solitary, prickly bladders distinguish wild cucumber versus bur's grouped, up to 10, prickly pods.

Root - Shallow taproot.

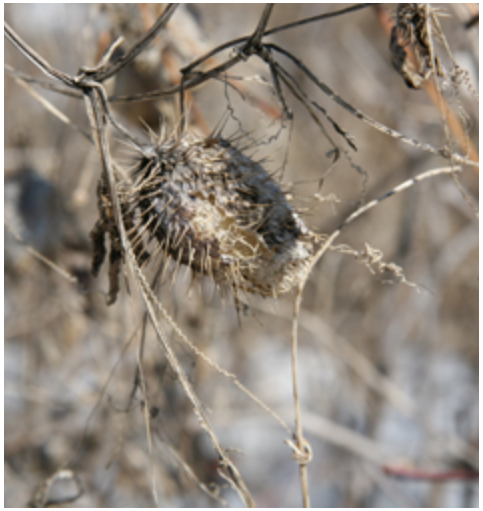
Below: Bur cucumber leaf and flower

Key Differences

Plant - Cucumber vines have tendrils.

Leaves - Simple leaves with shallow lobing.

Seed and Fruit - Both cucumber species have prickly seed structures. Wild cucumber has prickly, bladder-like seed pods that remain in winter.



Below: Wild cucumber leaf and flower

Above: Bur cucumber fruits
Below: Wild cucumber fruit

EASTERN RED CEDAR

Juniperus virginiana L.

Minnesota Native

Common Names

Red Cedar, Cedar, Red Juniper

Life Cycle

Woody perennial

Look-a-Likes

Northern White Cedar (pg 90)
Saltcedar (pg 51)

Habitat

Originally inhabited rocky outcrops, cliffs, and bluff prairies. Agriculture and fire prevention measures have expanded suitable habitats where it now thrives along field edges, pastures, and disturbed areas.

Identification

Plant - Small to medium evergreen tree that can reach heights of 50 feet. Bark is thin, brownish-red, and peels in thin strips. Heartwood is deep red.

Leaves - Opposite and persist on the branch for 4 to 6 years. Red cedars have juvenile and adult leaves. Adult leaves are dark green, scale-like, compressed, and overlapping. They are up to ¼ inch long and ⅛ inch wide. Juvenile leaves are more needle like, ⅛ inch wide, divergent, and found on younger growth.

Flower - Dioecious and cone-like (strobili). Fruit producing cones are typically ¼ inch wide, with yellow to blue-green scales. Pollen cones are ⅛ inch wide with yellow to light brown scales. Pollen is released early spring.

Bloom Time - mid-April to May

Seed and Fruit - Berries develop after flowering and mature to a blue fruit with waxy surface, ¼ diameter. Each fruit contains 1 to 3 egg-shaped seeds, and persist throughout winter.

Root - Shallow, fibrous root system.

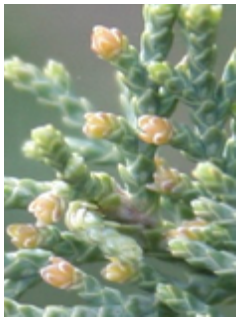
Key Differences

Leaves - Saltcedar leaves drop off the branches every year where eastern red and northern white cedar leaves persist for several seasons.

Flower - Saltcedar has white to pink tiny flowers, while both eastern red and northern white cedar have strobili.

Bloom Time - Saltcedar can continue to bloom throughout the growing season.

Seed and Fruit - Saltcedar produces tiny tufted seeds, and northern white cedars produce cones.



Left: Female strobili (above) and form (below)
Right: Male strobili (above) and form (below)

Top left: Eastern red cedar leaves
Top right: Northern white cedar leaves
Bottom left: Saltcedar leaves

Comparison of cedar and saltcedar seed - Page 90

FIREWEED

Chamerion angustifolium (L.) Holub subsp. *angustifolium*

Minnesota Native

Common Names
Great Willowherb

Life Cycle
Herbaceous perennial

Look-a-Likes
Dame's Rocket (pg 65)
Purple Loosestrife (pg 35)

Habitat
Often present following burns on moist soils at forest edges or in clearings.

Identification
Plant - Perennial, erect, rounded, single stems reaching 2 to 6 feet tall.

Leaves - Alternate, crowded leaves that are lance-like and stalkless.

Flower - Four-parted, colors range from pink to purple. The flowers are showy at ¾ to 1½ inches wide and arranged along a tall terminal spike.

Bloom Time - June to August

Seed and Fruit - Long, slender capsules or pods that split to release small seeds with long tufted hairs.

Root - Fibrous rhizome.

Key Differences
Plant - Purple loosestrife has a 4 to 6 sided stem.

Leaves - Purple loosestrife leaves are opposite. Dame's rocket leaves are toothed and lances shaped where fireweed has long linear leaves.

Flower - Fireweed has 4-parted flowers (purple loosestrife has 5-parted flowers). Dame's rocket flower colors are variable from white to deep purple.

Top left: Fireweed leaves
Top right: Dame's rocket leaves
Center left: Phlox leaves
Center right: Garlic mustard leaf
Bottom left: Purple loosestrife leaves
Bottom right: Yellow rocket leaves

Comparison of flowers - Page 65

GOLDEN ALEXANDERS

Zizia spp.

Minnesota Native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Golden Alexander
Zizia aurea (L.) W.D.J. Koch
Heart-leaved Golden Alexander
Zizia aptera (A.) Fernald

Common Names

Golden Zizia, Meadow Zizia

Life Cycle

Herbaceous perennial

Look-a-Likes

Wild Parsnip (pg 38)

Habitat

Moderately moist to wet - sandy, loamy soils, full sun to shade.

Identification

Plant - Herbaceous, perennial reaching 1 to 2 feet tall.

Leaves - Alternate 2 to 3 inch stem leaves, mostly three-parted with finely toothed edges. Basal leaves of heart-leaved golden alexanders are simple and oval (heart-shaped) while those of golden alexanders are compound like upper stem leaves.

Flower - Compound umbels of numerous 5-parted, yellow flowers.

Bloom Time - May to July

Seed and Fruit - Not as flat as wild parsnip seeds. Ridged, slightly oval and when mature becomes tan, appears dry and splits into two parts.

Root - Fibrous taproot.

Key Differences

Plant - Golden alexanders have smooth, shiny stems compared to the grooved stem of wild parsnip.

Leaves - Basal leaves of wild parsnip are pinnately compound with 5 to 15 leaflets.

Flower - Incurved yellow petals cover the flower center. Wild parsnips yellowish petals remain tightly curled against the sides of flowers.

Seed and Fruit - Wild parsnip seeds are typically larger and flatter.

Above left: Golden alexander flowers
Above right: Wild parsnip flower

Above left: Golden alexander leaf
Above right: Wild parsnip leaf

Below: Heart-leaved golden alexander leaf

GOLDENRODS

Solidago spp.

Minnesota Native

Common Species

Canada Goldenrod
Solidago canadensis
Showy Goldenrod
Solidago speciosa
Stiff Goldenrod
Solidago rigida
Tall Goldenrod
Solidago altissima

Life Cycle

Herbaceous perennial

Look-a-Likes

Common Tansy (pg 27)

Habitat

Goldenrod species thrive in a variety of sites. They can be found in dry to wet prairies, dry to moist forests and on a variety of roadsides. Partial to full sun.

Identification

Plant - Perennial plants, often clumped, typically erect, single stems. Species typically ranges in height from 1 to 4 feet while species may reach heights of 7 feet.

Leaves - Alternate, simple, depending on species leaves are lance shaped, may or may not be toothed and may or may not be hairy.

Flower - Yellow ray flowers typically arranged in branched clusters. Depending on species the inflorescence may be pyramidal, flat-topped or one-sided.

Bloom Time - July to September

Seed and Fruit - Dry, light seeds often tufted with light-colored to brownish hairs easily carried by wind.

Root - Deep and fibrous rhizome.

Key Differences

Leaves - Tansy foliage is pinnately divided, toothed and aromatic when crushed.

Flower - Goldenrod flowers have ray petals surrounding central, disk-like florets. Common tansy has clusters of flowers in each "button".

Seed and Fruit - Tansy seed is not tufted and persists into winter in the flower heads.

Above: Grey goldenrod - *Solidago nemoralis*
Left: Canada goldenrod - *Solidago canadensis*
Below: Stiff goldenrod - *Solidago rigida*

Above left: Goldenrod flowers
Above right: Common tansy flowers

Above left: Goldenrod leaves
Above right: Common tansy leaf

HONEY LOCUST

Gleditsia triacanthos L.

Minnesota Native

Common Names

Thorny Locust, Sweet Locust

Life Cycle

Woody perennial

Look-a-Likes

Black Locust (pg 41)
Siberian Peashrub (pg 52)

Habitat

Honey locust is native to the central United States, commonly planted in yards and boulevards. Non-cultivated plants can typically be found near river bottoms with mixed forest cover. Shade intolerant. Honey locust is considered invasive in other countries.

Identification

Plant - Medium sized, fast growing tree that can grow 75 feet tall with a 1½ foot diameter. Compound thorns are visible on wild-type trees, and bark develops into a dark grey scaled texture. Young stems are shiny, hairless, and green.

Leaves - Alternate, pinnately compound, and 4 to 12 inches long. Leaves on long terminal stems are twice-pinnate, while those on lateral shoots are once-pinnate. Leaflets are elliptical to lancolate, up to 1½ inches long and ½ inch wide. Leaflets are serrated and sometimes display hair on the mid-vein.

Flower - Flowers are either male or female, and both are rarely found on the same tree. Flowers are white, fragrant, pea-like, and clustered on a raceme up to 3 inches long.

Bloom Time - May to late June

Seed and Fruit - Flat and oblong pea-like pods that can grow 12 to 14 inches long and 1 to 3 inches wide. Pods mature to a reddish or dark brown color in late August and hang on branches into the winter.

Root - Deep taproot with extensive lateral root system.

Key Differences

Plant - Bark on mature black locust is deeply furrowed. Siberian peashrub is a shrub and not a tree.

Leaves - Black locust leaves are simply compound, while honey locust can have single and twice-pinnate compound leaves.

Flower - Flowers on Siberian peashrub are yellow. Black locust has showy, large, white flowers.

Seed and Fruit - Seed pods on black locust are 2 to 4 inches long.

Top left: Honey locust flowers
Top right: Black locust flowers
Bottom left: Siberian peashrub flowers

Below: Black locust seed pods (left) and honey locust seed pods (right)

MARSH MARIGOLD

Caltha palustris L.

Minnesota Native

Common Names

Yellow Marsh Marigold, Kingcup, Cowslip

Life Cycle

Herbaceous perennial

Look-a-Likes

Lesser Celandine (pg 48)

Habitat

Grows in partial shade to full sun. Prefers margins of wet areas such as marshes and swamps, or floodplains. Can tolerate growing in shallow water.

Toxicity

Contains protoanemonin and consumption of raw leaves can be fatal to humans and livestock.

Identification

Plant - Species in the buttercup family that blooms in early spring. Grows in clusters with thick, hollow, branching stems that can reach 8 to 24 inches tall.

Leaves - Kidney shaped with heart-like bases. Leaves typically stay low to the ground, up to 4 inches long with 2 to 6 inch petioles. Margins are finely toothed. Leaves rarely extend up the stalk.

Flower - Plants have several flowering stems. Flowers are 1 to 1½ inches wide with 5 to 9 rounded petal-like sepals that are bright yellow. The sepals surround a ring of stamen in the center of the flower.

Bloom Time - April to May

Seed and Fruit - Seeds mature in curved capsules that split open at maturity. Each capsule is about ⅜ inch long and contain multiple oval seeds.

Root - Fibrous, sprawling roots.

Key Differences

Plant - Lesser celandine has a creeping growth pattern, and only grows 11 inches tall.

Leaves - Lesser celandine leaves are much smaller, coarsely toothed, and come to a point. Bulbils form at the leaf axials.

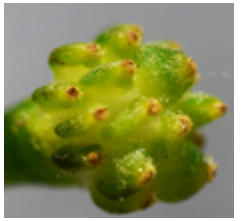
Flower - Lesser celandine flower have 8 to 12 petals that are highly glossy, and have three sepals on the back of the flower.

Seed and Fruit - Lesser celandine seed heads are small, clustered and tubular.

Root - Lesser celandine has a tuberous root structure.

Above left: Marsh marigold flower
Above right: Lesser celandine flower

Above left: Marsh marigold clustered form
Above right: Lesser celandine creeping form



Above left: Marsh marigold seed head
Above right: Lesser celandine seed head

NATIVE HONEYSUCKLES

Diervilla lonicera and *Lonicera spp.*

Minnesota Native

Common Species

Northern Bush Honeysuckle (shrub)
Diervilla lonicera Mill.
Fly Honeysuckle (shrub)
Lonicera canadensis Marsh.
Swamp Fly Honeysuckle (shrub)
Lonicera oblongifolia [Goldie] Hook.
Mountain Fly Honeysuckle (shrub)
Lonicera villosa [Michx.] J. A. Schultes
Hairy Honeysuckle (vine)
Lonicera hirsuta Eat.
Wild Honeysuckle (vine)
Lonicera dioica L.

Life Cycle

Woody perennial

Look-a-Likes

Asian Bush Honeysuckles (pg 40)
Japanese Honeysuckle (pg 17)

Habitat

Woodland habitats with some species tolerant of deeper shade while others require partial sun. Swamp fly and mountain fly honeysuckles are typically found in moist soils such as forested swamps or bogs.

Identification

Plant - Shrubs range in heights up to 3 feet for northern bush honeysuckle on up to 6 feet for fly honeysuckles. Twining vines may be sprawling, standing weakly or climbing to heights of 9 to 15 feet (hairy and wild) on up to 24 feet for the uncommon grape honeysuckle.

Leaves - Opposite. Bush honeysuckle has lance-shaped leaves with a long tip, serrated and ciliated margins with hairs possibly present on surfaces or mid-veins. Fly honeysuckles have elliptical to oblong shapes with blunt or acute tips. Vining honeysuckles tend to have rounded or ovate leaves except terminal leaf pairs tend to be fused.

Flower - Tubular. Northern bush honeysuckles have a yellow flower while wild honeysuckles are red. Others, like fly honeysuckle, vary from pale yellow to white.

Bloom Time - May to July. Northern bush honeysuckle as late as September.

Seed and Fruit - Typically berry-like, typically red except for bush honeysuckles beaked, capsule with sepals attached.

Root - Suckering roots, branches can root if they come in contact with the ground.

Left: Northern bush honeysuckle shrub form
Below: Northern bush honeysuckle flower (left) and beaked fruit (right)

Key Differences

Plant - Native bush honeysuckles have solid piths, typically white. Vine forms have hollow stems, white piths.

Leaves - Northern bush honeysuckle has serrated, lance shaped foliage. Vining honeysuckles tend to have rounded foliage with the terminal pair of fused leaves.

Above: Fly honeysuckle flower
Below: Fly honeysuckle fruit and leaves

Top: Hairy honeysuckle vining form
Center: Wild honeysuckle red flowers
Bottom: Wild honeysuckle fused foliage

NATIVE PHRAGMITES

Phragmites australis subsp. *americanus* Saltonstall

Minnesota Native

Check out MAISRC's Identify Invasive Phragmites guide for identification and key differences.

Common Names

American Common Reed

Life Cycle

Perennial grass

Look-a-Likes

Amur Silvergrass (pg 39)
Non-native Phragmites (pg 32)

Habitat

Shorelines of lakes and rivers as well as pond edges and freshwater marshes. Disturbed areas and roadsides can support native Phragmites very well.

Identification

Plant - Perennial grass. Stand density can be similar to introduced common reed but, stands often have other native plants interspersed.

Leaves - Summer leaves are yellowish green. Leaves and leaf sheaths will drop from plants in winter leaving bare, glossy, reddish stems. Ligule length typically 1/32 to 1/16 inch wide.

Flower - Green to purplish-green plumes inflorescence with a sparsely, branched density and flag to one side.

Bloom Time - July to September

Seed and Fruit - Inflorescences are fuzzy when seeds are ripe.

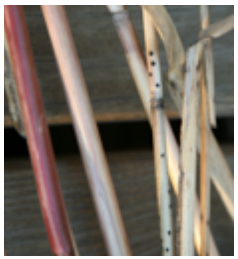
Root - Extensive system of rhizomes.

Key Differences

Plant - Stems on native Phragmites are smooth and mature to a red color during the summer, while non-native Phragmites stems are rough and remain green.

Leaves - Native Phragmites mostly shed both leaves and leaf sheaths by mid-winter. The ligule is a strong characteristic for distinguishing invasive from native Phragmites. The ligule on non-native Phragmites appears as a discrete narrow line compared to a short flap of tissue on native Phragmites. Both species will have a short fringe of hairs on the ligule.

Flower - Plumes on non-native Phragmites are much denser and persist on the plant throughout the winter.



Below: Native Phragmites (left) next to non-native Phragmites (right) in August

Above left: Native Phragmites plumes
Above right: Non-native Phragmites plumes

Above left: Native Phragmites stems
Above right: Non-native Phragmites stem

Above left: Native Phragmites leaf sheath
Above right: Non-native Phragmites leaf sheath

Above left: Native Phragmites ligule
Above right: Non-native Phragmites ligule

NORTHERN WHITE CEDAR

Thuja occidentalis L.

Minnesota Native

Common Names

Swamp Cedar, Eastern White Cedar, American Arborvitae

Life Cycle

Woody perennial

Look-a-Likes

Eastern Red Cedar (pg 82)
Saltcedar (pg 51)

Habitat

Dominates swamps and peat swamps. Prefers moist, slightly acidic, upland forests. Also grows along rocky lake shores and cliffs but growth is stunted.

Identification

Plant - Medium sized evergreen tree or shrub that can grow up to 80 feet tall with a 3 foot diameter. Grows in a triangular form. Grey to reddish brown bark that separates in long, narrow strips.

Leaves - Opposite, scale like leaves that grow in a flat, fan shape. Each leaf is green to yellowish green and ⅛ inch to ¼ inch long. Leaves persist on branches for several years.

Flower - Flowers are dioecious and cone-like (strobili) and can appear on different branchlets of the same tree. Fruit producing cones are typically 1/16 inch wide, with multiple yellow to brown scales with black tips. Pollen cones are 1/16 inch wide with dark brown scales. Strobili are found at the terminal end of the branchlet.

Bloom Time - April to May

Seed and Fruit - Cones ripen each fall. Oblong and greenish brown, and up to ½ inch long. Cones mature to dark brown and scales separate to release on average 8 seeds. Seed are elliptical, brown, flattened with wings, and ¼ inch long.

Root - Woody, wide spreading root system.

Key Differences

Leaves - Saltcedar leaves drop off the branches every year where eastern red and northern white cedar leaves persist for several seasons. Saltcedar leaves do not grow in a flat form.

Flower - Saltcedar has white to pink tiny flowers, while both eastern red and northern white cedar have strobili.

Bloom Time - Saltcedar can continue to bloom throughout the growing season.

Seed and Fruit - Saltcedar produces tiny tufted seeds, and eastern red cedars produce berries encapsulating seeds.

Top left: Eastern red cedar fruits
Top right: Northern white cedar cones
Bottom left: Saltcedar tufted seeds

Comparison of cedar and saltcedar leaves - Page 82

RED MAPLE

Acer rubrum L.

Minnesota Native

Common Names

Swamp Maple, Scarlet Maple

Life Cycle

Woody perennial

Look-a-Likes

Amur and Tatarian Maple (pg 55)
Norway Maple (pg 58)
Silver Maple (pg 93)
Sugar Maple (pg 95)

Habitat

Common inhabitant in hardwood and conifer forests. Fire suppression efforts have expanded its range. Tolerant of seasonal flooding and drought, but will not tolerate sedimentation.

Identification

Plant - Large tree that can grow 95 ft tall with a 2 foot diameter. Young bark is light grey to brown and matures to scaled ridges. Branches are reddish brown and hairy.

Leaves - Opposite and simple leaves that are deciduous. Petioles are 2½ to 5 inches long, and hairy along the margins near the base. No stipules. The leaf base is cordate to truncate. Leaves are deeply, palmately three to five lobed, and finely toothed. Leaves turn bright red in the fall.

Flower - Flowers are clustered on lateral buds in bunches of 2 to 6. Male and female flowers are on different trees. Female flowers are bright red while males are yellow to pink. Form in early spring before leaves appear. Flowers lack petals and are insect pollinated.

Bloom Time - March to early May

Seed and Fruit - Paired samaras with papery husks with wings that mature mid-May to early June.

Root - Extensive woody rhizome network.

Key Differences

Plant - Norway maple has milky sap, while sugar maple has clear sap. Amur and Tatarian maples typically have multiple stems.

Leaves - Norway and silver maples typically have 5 lobes. Silver maple leaves are deeply lobed. Sugar maples margins have fewer teeth than red maples and sinuses are U-shaped. Amur and Tatarian maple have an elongated middle lobe.

Seed and Fruit - Samaras mature in the spring, where Amur, Tatarian, Norway, and sugar maple samaras mature in autumn.

Top left: Red maple leaf
Top right: Silver maple leaf
Center left: Sugar maple leaf
Center right: Norway maple leaf
Bottom left: Amur maple leaf
Bottom right: Tatarian maple leaf

Comparison of maple flowers - Page 93
Comparison of maple samaras - Page 95

RIVERBANK GRAPE

Vitis riparia Michx.

Minnesota Native

Common Names

Wild Grape, Frost Grape

Life Cycle

Woody perennial

Look-a-Likes

Common Hops (pg 78)
Cucumbers (pg 81)
Japanese Hops (pg 18)
Poison Ivy (pg 59)
Porcelain Berry (pg 50)
Woodbines (pg 99)

Habitat

Prefer full sun but will tolerate partial shade. Preference is moist soils and as the name implies, riverbank grapes are often found in river bottoms climbing into trees where there is good sunlight at forest edges and in openings.

Identification

Plant - Perennial, woody, vines climbing into trees and structures or spreading over low growing vegetation. Height can be variable and up to 80 feet. Tendrils opposite some leaves assist climbing and support. Stems of grape vines can attain diameters of 7 to 8 inches with bark maturing to dark brown and shredding from stems in narrow strips.

Leaves - Alternate, simple, cordate (heart-shaped) leaves are sharply toothed and palmately lobed, often three distinct lobes. Leaves may be up to 6 inches long and 4 across. Upper leaf surface is typically dark green and smooth while underside may be whitish. There may or may not be hairs along the major veins.

Flower - Often dioecious, male and female flowers on separate plants, occasionally flowers are perfect (all reproductive parts). Hanging panicles of greenish-yellow, 5-parted flowers are not showy. Most are held opposite a leaf.

Bloom Time - May to June

Seed and Fruit - Green berries (grapes), covered by a whitish film (glaucous), that mature to a purple color. Berries contain 1 to 4 seeds.

Root - Large taproot with numerous woody lateral roots.

Key Differences

Plant - Virginia creeper climbs with aerial roots and adhesive disks. Porcelain berry's bark does not shed in vertical strips. Round leaf bittersweet has textured grey bark.

Leaves - Porcelain berry's leaves are often deeply divided by sinuses. Virginia creeper and woodbine have compound leaves.

Seed and Fruit - Porcelain berry has shiny, berries in hues of blue/purple, and are sometimes spotted.

Above: Riverbank grape bark (left) and round leaf bittersweet bark (right).

Top left: Riverbank grape fruit
Top right: Porcelain berry fruit
Center left: Common hops fruit
Center right: Wild cucumber fruit
Bottom left: Poison ivy fruit
Bottom right: Woodbine fruit

Comparison of leaves - Page 99

SILVER MAPLE

Acer saccharinum L.

Minnesota Native

Common Names

Creek Maple, Silverleaf Maple

Life Cycle

Woody perennial

Look-a-Likes

Amur and Tatarian Maple (pg 55)
Norway Maple (pg 58)
Red Maple (pg 91)
Sugar Maple (pg 95)

Habitat

Well adapted to flood plains and frequent sedimentation. Prefers low, moist habitats, and can be found mixed within hardwood forests.

Identification

Plant - Herbaceous, monocarpic perennial.
Plant - Large tree that can grow up to 100 feet tall and 5 feet in diameter. Bark is smooth when young and turns shaggy when mature. Branches are reddish brown and hairy.

Leaves - Opposite and simple leaves that are deciduous. Petioles are 1 to 4 inches long, and hairy along the margins near the base. No stipules. Leaves are deeply, palmately five lobed, and finely toothed. Color may vary in fall from yellow to reddish brown.

Flower - Flowers are clustered on lateral buds in bunches of 3 to 6. Form in early spring before leaves appear. Flowers lack petals and are wind pollinated.

Bloom Time - March to early May

Seed and Fruit - Paired samaras with papery husks with wing that mature in May to early June. Samaras fall individually.

Root - Shallow and extensive root system. Roots commonly are exposed on the surface.

Key Differences

Plant - Norway maple has milky sap, while sugar maple has clear sap. Amur and Tatarian maples typically have multiple stems.

Leaves - Norway maples leaves are not as deeply lobed. Amur and Tatarian maple have an elongated middle lobe. Silver maple leaves are deeply lobed.

Seed and Fruit - Samaras mature in the spring, where Amur, Tatarian, Norway, and sugar maple samaras mature in autumn.

Top left: Red maple flowers
Top right: Silver maple flowers
Center left: Sugar maple flowers
Center right: Norway maple flowers
Bottom left: Amur maple flowers
Bottom right: Tatarian maple flowers

Comparison of maple leaves - Page 91
Comparison of maple samaras - Page 95

SPECKLED ALDER

Alnus incana (L.) Moench subsp. *rugosa* (DuRoi) Clausen

Minnesota Native

Common Names
Grey Alder

Life Cycle
Woody perennial

Look-a-Likes
European Alder (pg 44)
Green Alder

Habitat
Typically found in wetlands. Often found along streams, lake shores and wetland margins. Prefers moderate acidity, full sun yet tolerates part shade.

Identification
Plant - Woody, perennial, multi-stemmed shrub or small trees often leaning into one another forming a tangle to walk through. Heights of 26 feet can be attained with typically small diameters of 6 inches or less. Green alder (*A. viridis*), another Minnesota native shrub reaches 14 feet, and is found in drier upland habitats.

Leaves - Alternate, simple with toothed shallow lobes. About 2 to 4 inches long and 1¼ to 2½ inches wide.

Flower - Male catkins are typically 1½ to 3½ inches when dormant and extend in spring to release pollen. Female catkins are less than ¼ inch long and typical bloom is March to early May.

Bloom Time - March to early May

Seed and Fruit - Female cones mature late summer and release tiny flattened samaras during the winter months. Dispersal is via wind and water.

Root - Shallow, woody rhizome.

Key Differences
Plant - European alder is a medium tree with a single trunk, while native alders are typically multi-stemmed shrubs.

Leaves - European alder leaves have a notched tip.

Top left: Speckled alder leaf
Top right: European alder leaf
Bottom left: Green alder leaf

Green alder - *Alnus viridis* (Vill.) DC. subsp. *crispa* (Ait.) Turrill.

Top: Green alder leaf with fine serrations
Bottom left: Green alder upright female flowers and drooping male catkins
Bottom right: Green alder maturing female cones

SUGAR MAPLE

Acer saccharum Marshall

Minnesota Native

Common Names

Rock Maple, Sugar Tree, Sweet Maple

Life Cycle

Woody perennial

Look-a-Likes

Amur and Tatarian Maple (pg 55)
Norway Maple (pg 58)
Red Maple (pg 91)
Silver Maple (pg 93)

Habitat

Well drained, moist, loamy soil. Intolerant of flooding and will not survive in flood plains. Seedlings are very tolerant of deep shade. Saplings also tolerate shade, persisting in the understory for a long period before a gap opens to allow maturity. Common in late successional mesic forests.

Identification

Plant - Woody perennial, large trees to 100 feet tall with trunk diameters to 3 feet. Bark is smooth grey to brown when young becoming darker and furrowed later.

Leaves - Opposite, simple, typically 5 lobed. Three of the lobes similar in size while the base lobes are much reduced in size. Sinuses are rounded cutouts between the lobes, U-shaped. Leaves turn orange in the fall.

Flower - Flowers appear with leaf emergence. Clusters of 8 to 15 yellow-green drooping flowers. Wind and insect pollinated.

Bloom Time - April to early June

Seed and Fruit - Double samaras mature in the autumn, U-shaped and each samara is approximately 1 inch long. Seeds fall in the autumn prior to the leaves and germinate the following spring.

Root - Extensive woody rhizome network.

Key Differences

Plant - Norway maple has milky sap, while sugar maple has clear, sweet sap. Amur and Tatarian maples typically have multiple stems.

Leaves - Norway and silver maples typically have 5 lobes. Silver maple leaves are deeply lobed. Red maples margins more teeth than sugar maples and sinuses are V-shaped. Amur and Tatarian maple have an elongated middle lobe.

Seed and Fruit - Samaras mature in autumn, where red and silver maple samaras mature in the spring. Norway maple samaras are horizontally aligned.

Top left: Red maple samaras
Top right: Silver maple samaras
Center left: Sugar maple samaras
Center right: Norway maple samaras
Bottom left: Amur maple samaras
Bottom right: Tatarian maple samaras

Comparison of maple flowers - Page 93
Comparison of maple leaves - Page 91

SUMAC

Rhus spp.

Minnesota Native

Smooth Sumac
Rhus glabra L.
Staghorn Sumac
Rhus typhina L.

Common Names

Rhus glabra L. - White Sumac, Upland Sumac
Rhus typhina L. - Stag-horn Sumac

Life Cycle

Woody perennial

Look-a-Likes

Amur Cork Tree (pg 56)
Black Walnut (pg 74)
Tree of Heaven (pg 23)

Habitat

Both sumac species prefer full sun. Both are found along forest edges and in forest openings. However, they may also be found near lakes or rivers or even on the drier extremes of rocky outcrops, prairie and savanna habitats. Sumacs are a common sight along dry roadsides.

Identification

Plant - Smooth sumac is a shrub that grows up to 18 feet tall, and staghorn sumac is considered a shrub or small tree reaching heights up to 36 feet. Both develop clonal, multi-stemmed colonies. The names are indicative of the hairiness of the plants. Smooth sumac has smooth bark, fruits and foliage while staghorn has very fuzzy twigs, fruit and leaf parts.

Leaves - Alternate, odd pinnate compound. Smooth sumac has 9 to 23 hairless, sessile (no stalk) leaflets while staghorn sumac has 13 to 27 hairy, sessile leaflets. Both species have serrated (toothed) leaflet edges. Leaflets are dark green on top and pale green on the bottom.

Flower - Dioecious species, male and female flowers on separate plants. Pyramidal multi-branched, stalks of greenish, 5 parted flowers. Many ¼ inch greenish flowers are showy and are held on terminal, pyramidal structures that can be 15 inches tall by 9 inches wide.

Bloom Time - June to July

Seed and Fruit - The pyramidal structure of female flowers will be replaced by red fruits called drupes, each contains a single seed. Fruits are rounded, slightly flattened, and will hold on through winter and potentially into the following summer.

Root - Extensive, woody rhizome.

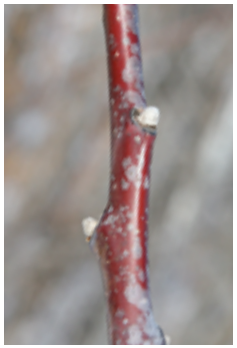
Key Differences

Plant - Tree of heaven has smooth twigs similar to smooth sumac, but twigs and small branches of tree of heaven are very stout with very large leaf scars. Amur cork tree and black walnut have distinctively different leaf scars.

Leaves - Tree of heaven has 11 to 25 or more smooth leaflets that have smooth edges and glands near leaf bases. Leaf color is a consistent green top and bottom. Amur cork tree leaves are opposite.

Seed and Fruit - Tree of heaven, clusters of slightly twisted, single-seeded samaras. Amur cork trees produce a black berry, and black walnut produce large nuts.

Top left: Sumac fruit
Top right: Amur cork tree fruit
Bottom left: Black walnut nut
Bottom right: Tree of heaven samaras



SWAMP THISTLE

Cirsium muticum Michx.

Minnesota Native

Common Names

Marsh Thistle

Life Cycle

Herbaceous biennial

Look-a-Likes

Canada Thistle (pg 25)
Musk Thistle (pg 68)
Plumeless Thistle (pg 33)

Habitat

Swamps, bogs and areas like wet meadows, moist woods and thickets.

Identification

Plant - Biennial, mature plants from 2 to 7 feet tall with multiple-branches terminated by many heads. Stems are not spiny but woolly, especially lower portions of the plant.

Leaves - Alternate, deeply divided leaves have lance-like or oblong segments that are described as softly spiny.

Flower - Purple to pink typically not white. Composite flowers are 1½ inches wide held together by whitish, woolly, non-spiny bracts that have a visible light-colored dorsal (central) ridge.

Bloom Time - July to October

Seed and Fruit - Tufted seed matures and is wind-dispersed late summer into autumn.

Root - Fleshy taproot.

Key Differences

Plant - Stems are hairy or woolly, not spiny.

Leaves - Deeply divided foliage that is softly spiny.

Flower - Swamp thistle has woolly, non-spiny bracts with a light colored dorsal ridge.

Top left: Swamp thistle flower
Top right: Canada thistle flower
Bottom left: Plumeless thistle flower
Bottom right: Musk thistle flower

Comparison of thistle stems - Page 68

Below: Flodman's thistle, *Cirsium flodmanii*, is another native thistle in Minnesota.

WATER HEMLOCK

Cicuta maculata L.

Minnesota Native

Check out MnDOT's Carrot Comparison Guide for identification and key differences.

Common Names

Spotted Water Hemlock, Spotted Parsley, Spotted Cowbane

Life Cycle

Herbaceous biennial or short-live perennial

Look-a-Likes

Burnet Saxifrage (pg 62)
Caraway (pg 63)
Erect Hedgeparsley (pg 66)
Poison Hemlock (pg 34)
Wild Carrot (pg 53)
Wild Chervil (pg 69)

Habitat

Partial shade is tolerated but preference is full sun with wet to moist fertile soils with organic material. Often found in wet meadows and pastures and other similar sites like moist to wet roadside ditches. Prefers more moisture than poison hemlock and typically, does not compete or occur with poison hemlock.

Toxicity

All plant parts are highly toxic and can be deadly to humans and livestock if ingested.

Identification

Plant - Herbaceous, biennial (short-lived perennial), first year as a basal rosette. Second year water hemlock is a lightly branched, 3 to 6 feet tall, plant. Stems are smooth (no hairs), hollow (lower portion), appear ridged due to veins and are light green or pinkish or reddish purple.

Leaves - Alternate, generally triangular in form. Compound leaves are pinnate or doubly pinnate with 3 to 7 leaflets. Leaflets are not fern-like. Leaflets are 1 to 4 inches long by ½ - 1¼ inches wide. Leaflets are toothed and veins appear to terminate in the notch between teeth - not at the tip. Petiole to stem attachments are partially covered by a sheath.

Flower - Petals are notched at the tip and narrowed at the base. Flowers are five-petaled, white and held as flat or slightly dome-shaped, loose, open compound umbels. Each umbel is comprised of 10 to 20 domed umbellets each holding 12 to 15 flowers. Main branches (rays) of umbels are not subtended by bracts. Secondary branches of umbellets have lanceolate bracts with scarious (thin, dry, membranous) margins.

Bloom Time - June to August

Seed and Fruit - Seeds are schizocarps splitting at maturity to two carpels (individual seeds). Seeds are ⅛ inch long and angular. There are no hairs.

Root - Clustered white taproots.

Key Differences

Plant - Wild carrot stems are hollow and sparingly hairy to hairy. Poison hemlock stems are spotted.

Leaves - Leaflets are not fern-like.

Flower - Wild carrot has obvious, showy, branched bracts beneath flower umbels and umbellets.

Seed and Fruit - Wild carrot seeds are also about ⅛ inch with ridges covered by stiff bristles. At maturity wild carrot folds its seed structure into what is often described as a bird's nest.

Above left: Water hemlock umbels
Above right: Poison hemlock umbels

Above left: Water hemlock leaf
Above right: Poison hemlock leaf

Above left: Water hemlock seeds
Above right: Poison hemlock seeds

WOODBINES

Parthenocissus spp.

Minnesota Native

Virginia Creeper
Parthenocissus quinquefolia (L.) Planch.
Woodbine
Parthenocissus vitacea (Knerr) Hitchc.

Common Names

Parthenocissus quinquefolia (L.) Planch. - Victoria Creeper, Five-leaved Ivy

Parthenocissus vitacea (Knerr) Hitchc. - Thicket Creeper, False Virginia Creeper, Grape Woodbine

Life Cycle

Woody perennial

Look-a-Likes

Common Hops (pg 78)
Cucumbers (pg 81)
Japanese Hops (pg 18)
Poison Ivy (pg 59)
Porcelain Berry (pg 50)
Riverbank Grape (pg 92)

Habitat

Virginia creeper is often found in forest interiors where it climbs high into the canopy. Woodbine on the other hand will sprawl over the ground, on fences, rock piles unless it encounters a structure or tree suitable for climbing. Full sun to partial shade of the forest, moist soils, along fence rows or found growing on disturbed sites where animals and birds have dropped the seeds.

Identification

Plant - Woody, perennial vines, with tendrils that assist climbing into trees and onto structures (Virginia creeper and woodbine) or sprawling on the forest floor (woodbine). Virginia creeper may develop aerial roots while woodbine does not. Tendrils of Virginia creeper develop adhesive disks while tendrils of woodbine usually attach by wrapping around an object, seldom developing adhesive disks.

Leaves - Alternate, palmately compound with 4 to 5 leaflets (typically 5). Leaflet bases are tapered and the leaf edges are toothed (possibly doubly toothed).

Flower - Both species have greenish flowers held on compound cymes (branched, flat-topped structures with terminal flowers opening first). Virginia creeper's structure has a central axis while woodbine's does not.

Bloom Time - June to July

Seed and Fruit - Fruits are berries, bluish at maturity and held on red structures.

Root - Woody root crown, stems can root when they come in contact with the ground.

Left: Virginia creeper aerial roots
Below: Virginia creeper adhesive disks

Key Differences

Plant - Cucumbers and Japanese hops are herbaceous vines.

Leaves - Japanese hops, porcelain berry, and riverbank grape leaves are simple not palmately compound.

Seed and Fruit - Japanese hops does not produce berries. Poison ivy fruits are white.

Top left: Woodbine leaf
Top right: Poison ivy leaf
Center left: Common hops leaf
Center right: Wild cucumber leaf
Bottom left: Porcelain berry leaf
Bottom right: Riverbank grape leaf

Comparison of fruit - Page 92

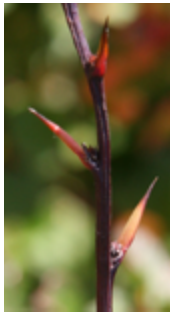
BARBERRY CULTIVAR RESTRICTIONS

Restricted Cultivars

Japanese barberry, *Berberis thungbergii*, (pg 47) cultivars prohibited from sale. These plants average greater than 600 seeds per plant.

'Anderson' (Lustre Green™)
'Angel Wings', 'Antares'
'Bailgreen' (Jade Carousel®)
'Bailone' (Ruby Carousel®)
'Bailsel' (Golden Carousel® *B. koreana* x *B. thunbergii* hybrid)
'Bailtwo' (Burgundy Carousel®) *B. thunbergii* var. atropurpurea
'Crimson Velvet'
'Erecta'
'Gold Ring'
'Inermis'
'JN Redleaf' (Ruby Jewel™)
'JN Variegated' (Stardust™)
'Kelleris'
'Kobold'
'Marshall Upright'
'Monomb' (Cherry Bomb™)
'Painter's Palette'
'Pow Wow'
'Red Rocket'
'Rose Glow'
'Silver Mile'
'Sparkle'
'Tara' (Emerald Carousel® *B. koreana* x *B. thunbergii* hybrid)
Wild Type (parent species – green barberry)

'Tara' (Emerald Carousel®; *B. koreana* × *B. thunbergii* hybrid)

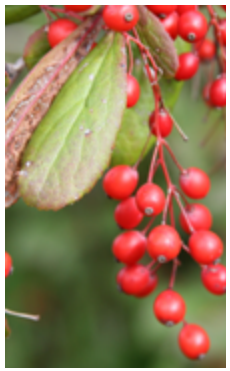


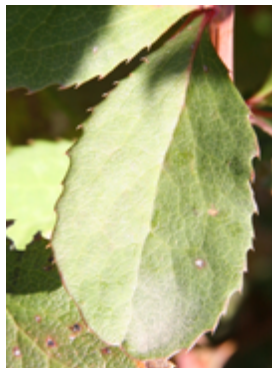
Above left: Grooved, reddish-brown stem, single spines at nodes. **Above center:** Foliage and racemes of fruits. **Above right:** Form

Above left: *B. thunbergii* 'Bailone' Ruby Carousel®

Above right: *B. thunbergii* 'Bailtwo' Burgundy Carousel®

Korean barberry (*B. koreana*) for comparison





Bottom Left: Toothy foliage and more than 10 rounded fruits per raceme.

Bottom Center: Close-up of Korean barberry leaf edge.

Bottom Right: Korean barberry serrulate margin leaf.

Below: Unknown *Berberis* species / cultivar holding fruit at leaf out in April.

KNAPWEED COMPARISON

Centaurea spp.

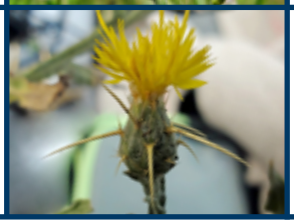
	Life Cycle	Habitat	Leaves		Flowers		Bracts	Root
Brown Knapweed *Centaurea jacea* L. Page 10	Perennial	Sunny areas with moist soils.	Lanced and undivided. Leaves grow smaller near the top.		Mostly pink/ purple, some having white centers. Flowers borne at the ends of branches.		Papery, rounded, and wide at tip appearing raggedly torn.	Woody taproot
Diffuse Knapweed *Centaurea diffusa* (Lam.) Page 14	Biennial or short-lived perennial	Sunny areas with well drained soils.	Lower leaves highly divided leading to narrow upper leaves.		Usually white, but sometimes pink or purple, urn-shaped, and either solitary or borne in clusters.		Comb like spines.	Taproot
Meadow Knapweed *Centaurea x moncktonii* C.E. Britton Page 30	Perennial	Sunny areas with moist soils.	Lanced & stalkless, lobing may be present on lower leaves.		Pink/purple but occasionally white flowers on ends of branches.		Rounded at tip with fine fringe.	Woody to fleshy taproot
Spotted Knapweed *Centaurea stoebe* L. *ssp. micranthos* (Gugler) Hayek Page 37	Biennial	Sunny areas with well drained soils.	Lower leaves divided leading to narrow upper leaves.		Small, oval, pink to purple, produced at the end of branched stems.		Brown to black triangular spot on tip.	Stout taproot
Yellow Starthistle *Centaurea solstitialis* L. Page 24	Winter annual	Sunny, open areas with a variety of moisture levels.	Narrow with winged stem. Lower leaves deeply lobed. Covered in woolly hair.		Yellow and approximately ⅝ inch in diameter.		Stiff spine tip that can be ¾ inch long.	Taproot

Table adapted from sources:
http://your.kingcounty.gov/dnrp/library/water-and-land/weeds/Brochures/knapweed.pdf
http://bugwoodcloud.org/mura/mipn/assets/File/KnapweedBrochure072814WEB.pdf

KNOTWEED COMPARISON

Polygonum spp.

Knotweeds (pg 28)

	Plant	Leaves	Leaf Hair	Flowers
Japanese Knotweed *Polygonum cuspidatum* Siebold & Zucc.	Height 5-8 feet (10 feet), potentially multiple branches. Typically, only female flowers. 	2 to 7 inches long with a truncate base. Tips of leaves are acuminate. 	Undersides of leaves along veins may have brown, fuzzy ridges.	Typically, plants with female flowers only. If male flowers present, likely sterile. Branched flower structures are longer than nearby leaves.  
Bohemian Knotweed *Polygonum × bohemicum* (J. Chrtek & Chrtkova) Zika & Jacobson	Can display intermittent characteristics of both species. Heights from 6 to 16 feet. Typically few, but potentially several branches. 	2 to 12 inches long and width about ⅔ of length. Leaf bases may be straight across or rounded. Leaf tip may be blunt, gradually tapered or pointed. 	Few to no hairs on the leaf edges (margin) and veins under leaves may have stiff, broad-based, small hairs.	Fertile female flowers. Male flowers, also fertile, consist of anthers attached to long stamens extending beyond a flower's petals. Structure is branched with variable length.  
Giant Knotweed *Polygonum sachalinense* F. Schmidt ex Maxim.	Larger plant attaining heights of 9 to 20 feet. Typically few or no branches that appear to be drooping. 	Up to 12 inches across and 6 to 14 inches long with rounded lobes at the base (heart-shaped). Leaves feel notably thin. 	Undersides of leaves may have scattered, segmented hairs early in the season.	Perfect flowers (male + female) and fertile. Branched, flower structures of giant knotweed are compact, shorter than nearby leaves.  

Table adapted from sources:
https://bugwoodcloud.org/mura/mipn/assets/File/Knotweed%20Brochure%205_14_18%20WEB.pdf
https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-identification/invasive-knotweeds.aspx

CITATIONS

Minnesota Noxious Weeds

Aulakh, Jatinder S. 2020. *Lesser Celandine (Ficaria verna Huds.) Identification and Management.* The Connecticut Agricultural Experiment Station. Online. https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Fact_Sheets/Valley_Laboratory/Lesser-celandine_Factsheet.pdf.

Black Merel R., Emmet J. Judziewicz. 2009. *Wildflowers of Wisconsin and the Great Lakes Region: A Comprehensive Field Guide.* Univ of Wisconsin Press. 275 pages.

CABI. 2022. *Invasive Species Compendium.* Online. https://www.cabi.org/isc/.

Dalmatian toadflax
Johnsongrass
Round Leaf Bittersweet

Colorado Weed Management Association. 2022. *Weed List – CWMA.* Online. https://cwma.org/weed-information/weed-list/.

Dalmatian toadflax
Diffuse Knapweed

Dirr, Michael. 2009. *Manual of woody landscape plants: their identification, ornamental characteristics, culture, propagation and uses.* Champaign, Ill: Stipes Pub.

Duke, James A. 1983. *Humulus lupulus L. Handbook of Energy Crops.* Online. https://hort.purdue.edu/newcrop/duke_energy/Humulus_lupulus.html.

Ecological Landscape Alliance. 2014. *Tree of Heaven: An Exotic Invasive Plant Fact Sheet.* Online. https://www.ecolandscaping.org/05/landscape-challenges/invasive-plants/tree-of-heaven-an-exotic-invasive-plant-fact-sheet/.

EFloras. 2008. Online. http://www.efloras.org.

Brown Knapweed
Diffuse Knapweed
Meadow Knapweed
Spotted Knapweed

Go Botany. 2022. *Go Botany: Native Plant Trust.* Online. https://gobotany.nativeplanttrust.org/.

Common Barberry
Poison hemlock

Great Lakes Phragmites Collabrative. 2015. *Native vs Non-Native Phragmites.* Online. http://greatlakesphragmites.net/basics/native-vs-invasive/.

Hilty, J. 2019, September 11. *Weedy Wildflowers of Illinois.* Illinois Wildflowers. Online. https://www.illinoiswildflowers.info/weeds/weed_index.htm.

Canadian Milkvetch
Common Teasel
Common Yarrow
Crown Vetch
Japanese Honeysuckle
Japanese Hops
Poison Hemlock
Water Hemlock

Iowa State University Extension and Outreach. 2016. *Palmer Amaranth Identifcation.* Online. https://store.extension.iastate.edu/product/Palmer-amaranth-identification.

Jackson, David R., and Wurzbacher, Sarah. 2020. *Callery Pear.* PennState Extension. Online. https://extension.psu.edu/callery-pear.

Johnston, Brian. 2006. *A Close-up View of the Wildflower "Brown Knapweed".* Mic-UK. Online. http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/artmar06/bj-knapweed.html.

Kansas State University. 2019. *Pigweed Identification: A Pictorial Guide to the Common Pigweeds of the Great Plains*. Online. https://bookstore.ksre.ksu.edu/pubs/s80.pdf.

King County. 2021. *Noxious Weeds in King County, Washington.* Online. https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds.aspx.

Knapweed spp.
Knotweed spp.

MAISRC. 2022. *Minnesota Aquatic Invasive Species Research Center.* Online. https://maisrc.umn.edu/.

Phragmites spp.
Purple Loosestrife

McCullough, Patrick and Shilling, Donn. 2022. *Johnsongrass Control in Pastures, Roadsides, and Noncropland Areas.* University of Georgia Extension. Online. https://secure.caes.uga.edu/extension/publications/files/pdf/B%201513_2.PDF.

Meyer, Mary H. 2022. *Miscanthus: Ornamental and Invasive Grass.* University of Minnesota – College of Food, Agricultral and Natural Resource Sciences. Online. https://miscanthus.cfans.umn.edu/.

Michigan State University. 2022. *Plant and Pest Diagnostics.* Online. https://www.canr.msu.edu/pestid/index.

Garlic Mustard
Johnsongrass
Knotweed spp.
Wild Carrot

CITATIONS

Minnesota Noxious Weeds

Midwest Invasive Plant Network. Online. http://www.mipn.org/.

Minnesota Department of Agriculture. *Noxious and Invasive Weed Program.* Online. https://www.mda.state.mn.us/plants-insects/noxious-invasive-weed-program.

Minnesota Department of Natural Resources. *Invasive Species in Minnesota.* Minnesota Department of Natural Resources. Online. https://www.dnr.state.mn.us/invasives/index.html.

Minnesota Department of Transportation. 2011. *Herbicide Options for Vegetation Control on Mn/DOT Rights-of-Way*. Internal Document.

Minnesota Wildflowers. 2022. Online. https://www.minnesotawildflowers.info/.

- American Vetch
- Balkan Catchfly
- Bur Cucumber
- Burnet Saxifrage
- Canada Thistle
- Canadian Milkvetch
- Caraway
- Common Mullein
- Common Tansy
- Common Yarrow
- Cow Parsnip
- Dame's Rocket
- Erect Hedgeparsley
- Fireweed
- Garlic Mustard
- Golden Alexander
- Goldenrod spp.
- Grecian Foxglove
- Heart-Leaved Golden Alexander
- Leafy Spurge
- Marsh Marigold
- Narrowleaf Bittercress
- Northern White Cedar
- Plumeless Thistle
- Purple Loosestrife
- Swamp Thistle
- Wild Carrot
- Wild Chervil
- Wild Cucumber
- Wild Parsnip
- Yellow Rocket

Missouri Department of Conservation. 2022. *Invasive Field Guide.* Online. https://mdc.mo.gov/field-guide/statuses?status=995.

- Cutleaf Teasel
- Musk Thistle
- Poison Ivy

Montana Field Guide. n.d. *Salt Cedar - Tamarix ramosissima.* Montana Natural Heritage Program. Online. https://fieldguide.mt.gov/speciesDetail.aspx?elcode=PDTAM01080.

Mortenson, Carol. 2003. *Noxious Weeds of Minnesota.* Leech Lake Division of Resources Management.

NDSU. 2018. *Know Your Knapweeds.* Online. https://www.ndsu.edu/agriculture/ag-hub/publications/know-your-knapweeds.

NRCS. 2010. *Brush Management – Invasive Plant Control: Black Locust – Robinia pseudoacacia.* Online. https://efotg.sc.egov.usda.gov/api/CPSFile/21640/314_VT_OTH_Brush_Management-Black_Locust_2010.

PCA Alien Plant Working Group. 2010. *Least Wanted: Alien Plant Invaders of Natural Areas.* Factsheets. Online. https://www.invasive.org/weedcd/html/wgw.htm.

Milford Porcelain-berry Taskforce. 2011. *Porcelain-Berry Fact Sheet*. FWS.gov.

Sarver, Matthew. et al. 2008. *Mistaken Identity? Invasive plants and their native look-alikes.* Online. http://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf.

Smith, Welby R. 2008. *Trees and shrubs of Minnesota: the complete guide to species identification.* Minneapolis, MN: University of Minnesota Press.

United States Forest Service. 2022. *Fire Effects Information System.* Online. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Services Library (Producer). Online. https://www.feis-crs.org/feis/.

- Black Locust
- Black Swallow-wort
- Canada Thistle
- Common Barberry
- Common Buckthorn
- Common Tansy
- Cow Parnsip
- Crown Vetch
- Cypress Spurge
- Dalmatian Toadflax
- Diffuse Knapweed
- Garlic Mustard
- Giant Hogweed
- Glossy Buckthorn
- Grey Alder
- Honeysuckle spp.
- Japanese Barberry
- Japanese Honeysuckle
- Johnsongrass
- Knotweed spp.
- Leafy Spurge
- Multiflora Rose
- Musk Thistle
- Northern Bush Honeysuckle
- Pale Swallow-wort
- Phragmites – native and non-native
- Porcelain Berry
- Purple Loosestrife
- Round Leaf Bittersweet
- Russian Knapweed
- Saltcedar
- Spotted Knapweed
- Teasel – common and cutleaf
- Tree of Heaven
- Yellow Starthistle
- Yellow Toadflax

CITATIONS

Minnesota Noxious Weeds

University of Georgia Center for Invasive Species and Ecosystem Health. 2022. *Integrated Pest Management.* Online. https://wiki.bugwood.org/.

Common Buckthorn
Common Tansy
Dalmatian Toadflax
Glossy Buckthorn
Multiflora Rose
Spotted Knapweed
Wild Parsnip

University of Georgia Center for Invasive Species and Ecosystem Health, and the National Park Service. 2022. *Invasive Plant Atlas.* Online. https://www.invasiveplantatlas.org/.

Amur Maple
Brown Knapweed
Callery Pear
Common Teasel
Cutleaf Teasel
Dalmatian Toadflax
Erect Hedgeparsley
Giant Hogweed
Japanese Honeysuckle
Norway Maple
Siberian Peashrub

University of Georgia Center for Invasive Species and Ecosystem Health, USDA Animal and Plant Health Inspection Service, USDA Forest Service, USDA Identification Technology Program, and USDA National Institute of Food and Agriculture. 2022. *Invasive.org.* Online. https://www.invasive.org/.

Black Swallow-wort
European Alder
Japanese Barberry
Japanese Honeysuckle
Narrowleaf Bittercress
Non-native Phragmites
Norway Maple
Round Leaf Bittersweet
Siberian Peashrub
Tree of Heaven
Winged Burning Bush
Yellow Starthistle

University of Missouri. 2020. *Johnsongrass.* Online. https://weedid.missouri.edu/weedinfo.cfm?weed_id=275.

Urban Ecology Center. 2014. *Invasive Plant To Watch: Lesser Celandine (Ranunculus ficaria).* Online. https://urbanecologycenter.org/blog/invasive-plant-to-watch-lesser-celandine-ranunculus-ficaria.html.

USDA Plants Database. 2022. *United States Department of Agriculture, Natural Resources Conservation Service.* Online. https://plants.usda.gov/java/.

Virginia Tech Dendrology. 2022. *Virginia Tech Dendrology Factsheets.* College of Natural Resources and Environment. Online. https://dendro.cnre.vt.edu/dendrology/factsheets.cfm.

American Bittersweet
Black Locust
Norway Maple
Siberian Peashrub
Winged Burning Bush

White, Mitchel R. 2008. *Field Guide to Noxious and Invasive Weeds, Known to Occur or Are Potentially Occurring on the Apache-Sitgreaves National Forests.* U.S. Department of Agriculture. Online. https://img1.wsimg.com/blobby/go/c10a53e0-1feb-472f-bf1b-63bf20a9913a/downloads/USDA-%20Field%20guide%20to%20Noxious%20and%20Invasive%20Weed.pdf?ver=1660597545238.

Wilson, Linda M. 2007. *Key to Identification of Invasive Knotweeds in British Colombia.* Ministry of Forests and Range Forest Practives Branch. Online. https://www.princerupert.ca/sites/default/files/publicworks/invasive/Knotweed_key_BC_2007.pdf.

Wisconsin DNR. 2022. *Invasive Species.* Wisconsin Department of Natural Resources. Online. https://dnr.wisconsin.gov/topic/Invasives.

Amur Maple
Canada Thistle
Common Buckthorn
Common Tansy
Cutleaf Teasel
Dame's Rocket
Giant Hogweed
Glossy Buckthorn
Japanese Barberry
Japanese Hops
Knotweed spp.
Multiflora Rose
Non-native Phragmites
Plumeless Thistle
Purple Loosestrife
Round Leaf Bittersweet
Spotted Knapweed
Wild Parsnip

Wisconsin DNR. 2010. *A field Guide to Terrestrial Invasive Plants in Wisconsin.* Ed. Thomas Boos, Kelly Kearns, Courtney LeClair, Brandon Panke, Bryn Scrivner, and Bernadette Williams. Online. https://dnr.wi.gov/topic/invasives/documents/wi%20inv%20plant%20field%20guide%20web%20version.pdf.

Wisconsin State Herbarium. 2015. *Online Virtual Flora of Wisconsin.* Online. https://wisflora.herbarium.wisc.edu/index.php.

Alfalfa
Hairy Vetch
Balkan Catchfly
Prunus spp.
Yellow Rocket

CITATIONS - PHOTOS

Minnesota Noxious Weeds

Black Swallow-wort (pg 9)
Twining vines – Minnesota Department of Agriculture (MDA)
Sprouting plants – Emilie Justen, MDA
All other images – Dave Hanson, Minnesota Department of Transportation (MnDOT)

Brown Knapweed (pg 10)
Infestation, and root – Monika Chandler, MDA
Bracts, and leaf – Dave Hanson, MnDOT
Flower – Christina Basch, MnDOT

Common Teasel (pg 11)
Full plant next to road – Monika Chandler, MDA
All other images– Christina Basch, MnDOT

Cutleaf Teasel (pg 12)
Spines on underside of leaf – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Dalmatian Toadflax (pg 13)
Stem close up, flower and seed pod – Christina Basch, MnDOT
All other images - Dave Hanson, MnDOT

Diffuse Knapweed (pg 14)
All images – Monika Chandler, MDA

Giant Hogweed (pg 15)
5398967 – Stem - Robert Vidéki, Doronicum Kft., Bugwood.org
5452748 – Umbel - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
5452695 – Roots - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
People walking through giant hogweed – Frazier Valley Regional District
UGA1460060 – Leaf - Donna R. Ellis, University of Connecticut, Bugwood.org
UGA2121077 – Person holding leaf - Thomas B. Denholm, New Jersey Department of Agriculture, Bugwood.org

Grecian Foxglove (pg 16)
Rosette – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Japanese Honeysuckle (pg 17)
Infestation – Monika Chandler, MDA
Leaves and buds, flowers, stem – Anthony Cortilet, MDA
5408377 - Fruit - Karan A. Rawlins, University of Georgia, Bugwood.org
5453472 - Basal leaf - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Japanese Hops (pg 18)
Female cone, and male flowers – Dave Hanson, MnDOT
Leaves, rosette, infestation, and vine – Christina Basch, MnDOT

Johnsongrass (pg 19)
1556498 - Roots - Ohio State Weed Lab, The Ohio State University, Bugwood.org
5358456 – Seedling - Howard F. Schwartz, Colorado State University, Bugwood.org
5391774 – Inflorescence - Barry Rice, sarracenia.com, Bugwood.org
5403108 - Leaf - Rebekah D. Wallace, University of Georgia, Bugwood.org
5427569 – Infestation - Chris Evans, University of Illinois, Bugwood.org
5437533 – Seed - Bruce Ackley, The Ohio State University, Bugwood.org

Pale Swallow-wort (pg 20)
5537165 - Infestation - David Nisbet, Invasive Species Centre, Bugwood.org
Flower comparison, leaf, and seed pods – Dave Hanson, MnDOT
Close up of flower, and root – Christina Basch, MnDOT

Palmer Amaranth (pg 21)
All images – Shane Blair, MDA

Red Hailstone (pg 22)
Infestation – Monika Chandler, MDA
Flower, and leaf – Christina Basch, MnDOT
Fruit - Rob Hille, CC BY-SA 4.0, via Wikimedia Commons
https://commons.wikimedia.org/wiki/File:Thladiantha_dubia_R.H_(10).jpg
Tuber - Rob Hille, CC BY-SA 4.0, via Wikimedia Commons
https://commons.wikimedia.org/wiki/File:Thladiantha_dubia_R.H_(26).jpg

Tree of Heaven (pg 23)
Seedling, back leaf gland, and bark – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Yellow Starthistle (pg 24)
Flower close up – Christina Basch, MnDOT
Plant in bloom, rosette, basal leaf – Monika Chandler
UGA1459661 - Wavy leaf - Steve Dewey, Utah State University, Bugwood.org
UGA1350005 - Seeds - Cindy Roche, Bugwood.org

Canada Thistle (pg 25)
Seed and mature seed head – Monika Chandler, MDA
Leaf and stem – Christina Basch, MnDOT
Flower close up and flowering field – Dave Hanson, MnDOT

Common Barberry (pg 26)
All images - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Common Tansy (pg 27)
Root and leaf – Christina Basch, MnDOT
Full plant, flowers, and seedhead – Dave Hanson, MnDOT

Knotweeds (pg 28)
Flowering stem, hollow stem, and infestation – Dave Hanson, MnDOT
Sprouting plant, green stem with spots, and stems in winter – Christina Basch, MnDOT

Leafy Spurge (pg 29)
Infestation, seed, and *Aphthona* biocontrol – Monika Chandler, MDA
Immature seed capsules – Christina Basch, MnDOT
Flower, latex, and leaf – Dave Hanson, MnDOT

Meadow Knapweed (pg 30)
Leaf - Monika Chandler, MDA
All other images – Tom Jacobson, MnDOT

Narrowleaf Bittercress (pg 31)
5449291, 5449238 - Flowers, and stem - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
All other images – Monika Chandler, MDA

CITATIONS - PHOTOS

Minnesota Noxious Weeds

Non-native Phragmites (pg 32)
Ligule – Christina Basch, MnDOT
Stem with leaf, cluster of stems with plumes - Julia Bohnen, University of Minnesota
All other images – Dave Hanson, MnDOT

Plumeless Thistle (pg 33)
Seedhead – Monika Chandler, MDA
All other images – Dave Hanson, MnDOT

Poison Hemlock (pg 34)
Full plant – Monika Chandler, MDA
Stem, and flower – Christina Basch, MnDOT
Leaf, seed, and bracts – Dave Hanson, MnDOT

Purple Loosestrife (pg 35)
Infestation, *Galerucella pusilla*, flower, and leaf – Dave Hanson, MnDOT
Full plant, stem, and root – Christina Basch, MnDOT

Round Leaf Bittersweet (pg 36)
Infestation – Monika Chandler, MDA
All other images – Christina Basch, MnDOT

Spotted Knapweed (pg 37)
Larinus biocontrol, and *Cyphocleonus* biocontrol – Monika Chandler, MDA
Flower and upper leaf – Christina Basch, MnDOT
Rosette, basal foliage, and infestation – Dave Hanson, MnDOT

Wild Parsnip (pg 38)
Leaf, umbellet, and infestation – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Amur Silvergrass (pg 39)
5478812 - Stem - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
Seedhead next to ruler – Monika Chandler, MDA
All other images – Dave Hanson, MnDOT

Asian Bush Honeysuckles (pg 40)
Infestation – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Black Locust (pg 41)
All images – Dave Hanson, MnDOT

Common Buckthorn (pg 42)
Young bark and berries – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Crown Vetch (pg 43)
All images – Dave Hanson, MnDOT

European Alder (pg 44)
All images – Dave Hanson, MnDOT

Garlic Mustard (pg 45)
Rosette, seedling, and silique – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Glossy Buckthorn (pg 46)
Multi-stemmed base – Monika Chandler, MDA
All other images – Dave Hanson, MnDOT

Japanese Barberry (pg 47)
Infestation and fruit – Monika Chandler, MDA
Flower and bark – Christina Basch, MnDOT
'Rose Glow' leaves – Dave Hanson, MnDOT

Lesser Celandine (pg 48)
Sepals – Christina Basch, MnDOT
All other images – Maggie Barnick, MDA

Multiflora Rose (pg 49)
Flowers and fruit – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Porcelain Berry (pg 50)
Foliage – Paul Kortebein
All other images – Dave Hanson, MnDOT

Saltcedar (pg 51)
Full plant and flowers – Dave Hanson, MnDOT
5405637 - Leaf and stem - Bonnie Million, Bureau of Land Management, Bugwood.org
5477202 - Seed - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Siberian Peashrub (pg 52)
All images – Dave Hanson, MnDOT

Wild Carrot (pg 53)
Top of flower – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Winged Burning Bush (pg 54)
Bark and hand holding branch – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Amur & Tatarian Maple (pg 55)
All images – Dave Hanson, MnDOT

Amur Cork Tree (pg 56)
Tree, leaf and sapwood – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Callery Pear (pg 57)
All images – Dave Hanson, MnDOT

Norway Maple (pg 58)
All images – Dave Hanson, MnDOT

CITATIONS - PHOTOS

Minnesota Noxious Weeds

Poison Ivy (pg 59)
Eastern poison ivy leaves and aerial roots – Christina Basch, MnDOT
Fruit, flowers, and western poison ivy plant – Dave Hanson, MnDOT

Alfalfa (pg 60)
1316035 – Flower close up- Keith Weller, USDA Agricultural Research Service, Bugwood.org
All other images – Dave Hanson, MnDOT

Balkan Catchfly (pg 61)
Dalmatian toadflax flower – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Burnet Saxifrage (pg 62)
Poison hemlock, wild chervil flowers – Christina Basch, MnDOT
All other images – Dave Hanson

Caraway (pg 63)
Wild chervil leaf – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Common Mullein (pg 64)
Full plant, seedhead, leaf, rosette, winter form– Dave Hanson, MnDOT
Grecian foxglove, moth mullein, common mullein flower close up – Christina Basch, MnDOT

Dame's Rocket (pg 65)
White, pink and purple flower close up, and infestation – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Erect Hedgeparsley (pg 66)
Wild chervil seed – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Hairy Vetch (pg 67)
All images – Dave Hanson, MnDOT

Musk Thistle (pg 68)
Canada thistle stem, front flower, and infestation – Christina Basch, MnDOT
Full plant, side flower, stem (must, Plumeless, and swamp thistle) – Dave Hanson, MnDOT

Wild Chervil (pg 69)
Wild chervil beaked seed/flower, close up of wild chervil stem – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Yellow Rocket (pg 70)
5449291 - Narrowleaf bittercress flower - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
All other images – Dave Hanson, MnDOT

Yellow Toadflax (pg 71)
Yellow toadflax full plant and panicle, leaf, comparison side by side, and seed head – Monika Chandler, MDA
Dalmatian toadflax flower – Christina Basch, MnDOT
Dalmatian toadflax leaf, yellow toadflax close up flower, various flowering stages – Dave Hanson, MnDOT

American Bittersweet (pg 72)
American bittersweet bark, unsplit orange capsules – Monika Chandler, MDA
Round leaf bittersweet male and female flowers, round leaf bittersweet leaf unfurling – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

American Vetch (pg 73)
All images – Dave Hanson, MnDOT

Black Walnut (pg 74)
Amur cork tree leaf scar – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Burning Bush (pg 75)
Round leaf bittersweet fruit – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Canadian Milkvetch (pg 76)
American vetch seed pods - Walter Siegmund, CC BY-SA 3.0, via Wikimedia Commons
https://commons.wikimedia.org/wiki/File:Vicia_americana_3230.JPG
All other images – Dave Hanson, MnDOT

Cherries & Plum (pg 77)
All images – Dave Hanson, MnDOT

Common Hops (pg 78)
Common hops and Japanese hops (leaf, bract, petiole), and glands on leaf underside – Christina Basch, MnDOT
Leaf with fruit, dried fruit, female and male flowers, and stem – Dave Hanson, MnDOT

Common Yarrow (pg 79)
Close up of common yarrow and water hemlock flowers – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Cow Parsnip (pg 80)
UGA1460060 - Giant hogweed leaf - Donna R. Ellis, University of Connecticut, Bugwood.org
UGA5272016 - Giant hogweed umbel - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
Cow parsnip leaf comparison, cow parsnip stem, great angelica umbel and leaf– Christina Basch, MnDOT
Cow parsnip flowers, seed, basal leaves, and plant – Dave Hanson, MnDOT

Cucumbers (pg 81)
All images – Dave Hanson, MnDOT

Eastern Red Cedar (pg 82)
5405637 - Saltcedar leaf - Bonnie Million, Bureau of Land Management, Bugwood.org
All other images – Dave Hanson, MnDOT

Fireweed (pg 83)
All images – Dave Hanson, MnDOT

Golden Alexanders (pg 84)
Wild parsnip flower and leaf – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Goldenrods (pg 85)
Common tansy leaf – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

CITATIONS - PHOTOS

Minnesota Noxious Weeds

Honey Locust (pg 86)
All images – Dave Hanson, MnDOT

Marsh Marigold (pg 87)
Marsh marigold flower close-up, lesser celandine close-up and seed head – Maggie Barnick, MDA
Lesser celandine and marsh marigold form – Christina Basch, MnDOT
Marsh marigold in bloom (3 images), marsh marigold seed head, marsh marigold leaf – Dave Hanson, MnDOT

Native Honeysuckles (pg 88)
All images – Dave Hanson, MnDOT

Native Phragmites (pg 89)
Fall native Phragmites stems - Dave Hanson, MnDOT
Close up of native Phragmites leaf sheath and red stem, native Phragmites stand next to non-native Phragmites stand, non-native Phragmites inforescence - Ken Graeve, MnDOT
Lower native Phragmites stems in nature, groups of stems of native and non-native Phragmites, non-native Phragmites leaf sheath, native and non-native Phragmites ligules, and native Phragmites inflorescence - Julia Bohnen, University of Minnesota

Northern White Cedar (pg 90)
5477202 - Saltcedar seed - Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
All other images – Dave Hanson, MnDOT

Red Maple (pg 91)
Red maple bark – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Riverbank Grape (pg 92)
Grape and bittersweet bark side by side – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Silver Maple (pg 93)
All images – Dave Hanson, MnDOT

Speckled Alder (pg 94)
All images – Dave Hanson, MnDOT

Sugar Maple (pg 95)
All images – Dave Hanson, MnDOT

Sumacs (pg 96)
Amur cork tree fruit – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Swamp Thistle (pg 97)
Musk thistle flower – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Water Hemlock (pg 98)
Poison hemlock leaf, and seed. Water hemlock seed, bracts, leaflet, and umbel – Dave Hanson, MnDOT
All other images – Christina Basch, MnDOT

Woodbines (pg 99)
Poison ivy leaf – Christina Basch, MnDOT
All other images – Dave Hanson, MnDOT

Treatment timing graphics
Dave Hanson and Christina Basch, MnDOT

Knapweed Comparison (pg 101)
Brown knapweed leaf, diffuse knapweed flower and leaf, meadow knapweed flower and leaf, spotted knapweed flower, yellow starthistle leaf – Monika Chandler, MDA
Brown knapweed flower, spotted knapweed leaf – Dave Hanson, MnDOT
Yellow starthistle flower– Christina Basch, MnDOT

Knotweed Comparison (pg 102)
Japanese knotweed leaf – Dave Hanson, MnDOT
Giant knotweed leaf – Christina Basch, MnDOT
All other images – Monika Chandler, MDA

Minnesota Noxious Weeds

http://www.dot.state.mn.us/roadsides/vegetation/index.html

Minnesota Noxious Weed Law
Find more information at:
Minnesota Department of Agriculture

DEPARTMENT OF TRANSPORTATION

Prepared by:

Christina Basch
Minnesota Department of Transportation
Office of Environmental Stewardship
Roadside Vegetation Management Unit
Christina.Basch@state.mn.us
(612) 257-0244

Dave Hanson
Minnesota Department of Transportation
Office of Environmental Stewardship
Roadside Vegetation Management Unit
David.L.Hanson@state.mn.us
(651) 366-3632

Reviewed by:

Tina Markeson
Minnesota Department of Transportation
Office of Environmental Stewardship
Roadside Vegetation Management Unit

Laura Van Riper
Minnesota Department of Natural Resources
Ecological and Water Resources Division
Invasive Species Program

Emilie Justen
Minnesota Department of Agriculture
Plant Protection Division
Noxious and Invasive Weed Unit

Play Clean Go

STOP INVASIVE SPECIES IN YOUR TRACKS.®

PlayCleanGo.org