

List of Terrestrial Invasive Species and Infested Areas in the 1854 Ceded Territory

Common Buckthorn: Noxious weed – Restricted list

- St. Louis County: large, dense areas, widespread
 - all of the greater Duluth area, Moose Mountain SNA, Ruffed Grouse WMA, MN Point Pine Forest SNA, Quad Cities area, Buhl, Aurora, Cook, Lake Vermilion-Soudan Underground Mine State Park, Bear Head Lake State Park, Ely area
- Carlton County: less dense, smaller distribution than SLC
 - Jay Cooke State Forest, Fond du Lac State Forest (Red River area), Blackhoof WMA
- Lake County: low distribution in a few dense patches
 - Two Harbors area
- Cook County: rare
 - Grand Marais (1 known male? planted in a yard)

Glossy Buckthorn: Noxious weed – Restricted list

- St. Louis County: large, dense areas, widespread (less than common buckthorn)
 - all of the greater Duluth area, Moose Mountain SNA, MN Point Pine Forest SNA, south of Eveleth (between Mud Lake and Saint Marys Lake), Lake Vermilion-Soudan Underground Mine State Park
- Carlton County: less dense, smaller distribution than St. Louis County
 - Hemlock Ravine SNA, Fond du Lac State Forest (Red River area), Blackhoof WMA, Moose Lake

Exotic Honeysuckle: Noxious weed – Restricted list

- St. Louis County: large, dense areas, widespread (less than Common Buckthorn)
 - all of the greater Duluth area, Moose Mountain SNA, Ruffed Grouse WMA, MN Point Pine Forest SNA
- rest of the counties: widespread, less dense, smaller distribution than SLC

Oriental Bittersweet: Noxious weed – Prohibited Eradicate list

- St. Louis County: pioneer population, rare
 - in Duluth (along I-35 around exit/entrance ramps 253A) and on private property in the East Hillside neighborhood, Fortune Bay

Canada Thistle: Noxious weed – Prohibited Control list

- All counties: widespread, multiple dense patches
 - Superior National Forest, Moose Mountain SNA, MN Point Pine Forest SNA

Spiny Plumeless Thistle: Noxious weed – Prohibited Control list

- St. Louis County: rare, wide distribution
 - Superior National Forest
- Lake County: rare, wide distribution
 - Superior National Forest and Tettegouche State Park

Bull Thistle: MN DNR – lists as invasive

- All counties: common, low density, few dense patches
 - Superior National Forest, Moose Mountain SNA

Common St. Johnswort: Non-native

- All counties: common, multiple dense patches
 - Superior National Forest, Moose Mountain SNA

Spotted Knapweed: Noxious weed – Prohibited Control list

- All counties: widespread, multiple dense patches
 - Superior National Forest, Moose Mountain SNA, MN Point Pine Forest SNA

Brown Knapweed: Noxious weed – Prohibited Eradicate list

- St. Louis County: pioneer population, rare

Meadow Knapweed: Noxious weed – Prohibited Eradicate list

- St. Louis County: two pioneer populations, rare
 - Cook, MN along Hwy 53, near intersection of State Hwy 73 and Hwy 53
- Lake County: pioneer population, rare
 - Silver Bay, MN along Hwy 61
- Pine County: pioneer population, rare
 - Audubon Center of the North Woods (not within the Ceded Territory)

Diffuse Knapweed: Noxious weed – Prohibited Eradicate list

- St. Louis County: pioneer population, rare
 - found on one Army Corps of Engineer property in Duluth, MN

Common Tansy: Noxious weed – Prohibited Control list

- All counties: widespread, multiple dense patches
 - Superior National Forest, Moose Mountain SNA, MN Point Pine Forest SNA

Leafy Spurge: Noxious weed – Prohibited Control list

- All counties: uncommon, few dense patches
 - Superior National Forest, City of Duluth, MN Point Pine Forest SNA

Wild Parsnip: Noxious weed – Prohibited Control list

- St. Louis County: uncommon, few dense patches
 - Superior National Forest, City of Duluth, along Hwy 23 between Boy Scout Landing and Perch Lake, along I-35, along Co. Hwy 4 in Rice Lake Township, along Hwy 53 in Hermantown, along Hwy 169 between Tower and Sudan, NE of Ely, MN
- In Bois Forte Reservation along Nett Lake Road (outside of the Ceded Territory)

Garlic Mustard: Noxious weed – Prohibited Control list

- St. Louis County: uncommon, multiple dense patches
 - Superior National Forest, the greater Duluth area, around Ely, MN
- Lake County
 - NE of Two Harbors, NW of Beaver Bay along Beaver River, in the Boundary Waters Canoe Wilderness Area between Gabimichigami Lake and Peter Lake

Crown Vetch: Noxious weed – Restricted list

- St. Louis County: rare, dense patches
 - in Duluth – along Hwy 53, at Abbot Landing of Island Lake Reservoir, in SNF along Co. Hwy 16, in SNF at Whiteface Reservoir, in SNF at McNair Site, at the SNF LaCroix Office

Queen Anne's Lace: Noxious weed – Restricted list

- St. Louis County: rare, isolated pockets
 - High density at the Lake Superior Zoo, escaped patches NE of the zoo on S 71 Ave. W
- Lake County: rare, isolated pockets
 - High density on private industry property in Silver Bay, MN, small patches in Finland, MN
- Cook County: rare, isolated pockets
 - USFS treatment efforts in the Gunflint area

Garden Lupine: Non-native

- St. Louis County: uncommon, few dense patches
 - National Forest, Moose Mountain SNA
- Lake County: uncommon, few dense patches
 - Superior National Forest
- Cook County: uncommon, few dense patches
 - Superior National Forest

Japanese Barberry: Noxious weed – Specially regulated

- St. Louis County: widespread, uncommon in the wild, commonly used in landscapes on private property (less than Exotic Honeysuckle)
 - all of the greater Duluth area, MN Point Pine Forest SNA, Hawk Ridge
- Carlton County: widespread, less dense, smaller distribution than SLC
 - Cloquet area, Fond du Lac State Forest (Red River area)
- Lake County: isolated known infestation of extreme high density (monoculture)
 - Two Harbor's area
- Cook County: rare, one known planting on private property
 - Grand Marais, MN

Siberian Peashrub: MN DNR – listed as invasive

- All counties: common, widespread, multiple dense patches
 - Superior National Forest, Ely area

European Highbush Cranberry: Non-native

- St. Louis County: rare, wide distribution in pockets, under reported
 - Moose Mountain SNA, Hawk Ridge, MN Point Pine Forest SNA, Chester Park
- Carlton County: rare, under reported
 - Chub Lake

Japanese Knotweed: Noxious weed – Specially regulated

- All counties: dense in the greater Duluth area, rare for the rest of the territory

Giant Knotweed: Noxious weed – Specially regulated

- St. Louis County: listed as being present in this county on the USDA's website

Bohemian Knotweed: Non-native

- All counties: dense in the greater Duluth area, rare for the rest of the territory

Solidstem Burnet-Saxifrage: Non-native

- St. Louis County: pioneer populations, rare, MDA considers this species under reported
 - north of Virginia, MN multiple patches along Pelton Road going towards Big Rice Lake, west of Fortune Bay on private properties along Hwy 169
- Pine County: rare, very high density, established population, under reported
 - Audubon Center of the North Woods (15 miles south of the Ceded Territory border)

Garden Valerian: Non-native

- St. Louis County: widespread, high density in southern area of county
 - high density in the greater Duluth area, spreading north along Hwy 61, Hwy 53, Co. Hwy 4, and Co. Hwy 44 (within southern area of SNF), and south along I-35 and Hwy 23. At Moose Mountain SNA, Hawk Ridge, MN Point Pine Forest SNA, Cloquet Valley State Park, along Co. Hwy 16, in Ely, MN
- Carlton County: widespread, less dense than in SLC
 - along I-35, Hwy 23, Co. Hwy 3, Fond du Lac State Forest (Red River area)
- Lake County: rare, spotty distribution
 - along Hwy 61, in SNF off of Co. Hwy 11, in Finland, MN
- Cook County: rare, spotty distribution
 - Along Hwy 61, in SNF along Co. Hwy 4

Dalmatian Toadflax: Noxious weed – Prohibited Eradicate list

- Cook County: pioneer population, rare
 - Lutsen, MN along Hwy 61

Cut-leaf Teasel: Noxious weed – Prohibited Eradicate list

- St. Louis County: pioneer population, rare
 - in Duluth, MDA is dealing with it, location not known to 1854

Bristly Bellflower: Non-native

- St. Louis County: uncommon, widespread, under reported
 - Moose Mountain SNA, Lincoln Park, along Hwy 61, along Co. Hwy 4, Boulder Lake Reservoir,
- Lake County: less dense, smaller distribution than SLC
 - Along Hwy 61, in middle of SNF east of Scott Junction
- Cook County: less dense, smaller distribution than Lake County
 - along Hwy 61 around Grand Marais

Tufted Vetch: MN DNR – listed as invasive

- St. Louis County: rare, few patches
 - along Hwy 53 in Cook, MN
- Lake County: rare, few patches
 - in SNF at McDougal Lake boat launch

Hairy Vetch: MN DNR – listed as invasive

- St. Louis County: rare, few patches
 - at the Fish Lake Reservoir's boat launch, along Fish Lake Dam Road
- Lake County: rare, few patches
 - in SNF along the NSSMT south of Co. Hwy 11

Amur Maple: Noxious weed – Specially regulated

- All counties: used in landscapes in private yards and as hedges. Has been seen spreading along road sides. Has yet to be seen escaping cultivation and spreading into forests within the Ceded Territory.

Black Locust: Noxious weed – Restricted list

- St. Louis County: rare, one known sighting
 - one small, dense patch seen along a road in Cloquet, MN

Emerald Ash Borer: Quarantines

- Carlton County: early detection, pioneer population
 - City of Duluth: Park Point and the Woodland Park Neighborhood
 - Special quarantine in place over the SE corner of county, containing the area west of Hwy 53 and Hwy 33 and south of Co. Hwy 49, through the area without roads along this line to Lake Superior

Gypsy Moth: Quarantines

- St. Louis County: uncommon, multiple low count detections
 - Most of this county is under STS Action Area
- Lake County: quarantine in place
- Cook County: quarantine in place

Terrestrial Invasive Species

Currently Established within the Ceded Territory

Below is a compiled list of listed terrestrial invasive species currently found and are well established in the 1854 Ceded Territory. Their populations are widespread and dense in many areas. Identification of these terrestrial invasive species are described on the following pages.

| | | | |
|------------------------|--------------------|-----------------------|----------------------|
| Common Buckthorn | Common Tansy | *Butter & Eggs | *Smooth Brome |
| Glossy Buckthorn | Japanese Barberry | *Creeping Charlie | *White Sweet Clover |
| Exotic Honeysuckle sp. | Siberian Peashrub | *Hoary Alyssum | *Yellow Sweet Clover |
| Canada Thistle | Garden Lupine | *Orange Hawkweed | Gypsy Moth |
| Bull Thistle | Garden Valerian | *Oxeye Daisy | |
| Common St. Johnswort | Bristly Bellflower | *Perennial So Thistle | |
| Spotted Knapweed | *Birdsfoot Trefoil | *Reed Canary Grass | |

Watch List for the Ceded Territory

Below is a compiled list of terrestrial invasive species that pose a threat to the 1854 Ceded Territory. Identification of these terrestrial invasive species are described on the following pages.

Legal to Buy and Plant, but Threatens to Spread into Wild Habitats

These species are still legal to buy and plant within Minnesota, but have invasive tendencies that run the risk of spreading into wild habitats, which would harm ecological processes in the 1854 Ceded Territory.

| | | | |
|-------------------|-------------------|--------------------|----------------|
| *Amur Maple | Bohemian Knotweed | *Amur Silver Grass | *Russian Olive |
| Japanese Knotweed | Giant Knotweed | *Norway Maple | |

Small New Infestations Discovered: Important Detection and Eradication Efforts Required

These species have recently been found in the 1854 Ceded Territory and pose the threat of spreading and causing large ecological and economical harm or is a human health hazard.

| | | | |
|-------------------------|----------------|-----------------------|----------------------------|
| Oriental Bittersweet | Wild Parsnip | Hairy Vetch | Solidstem Burnet-Saxifrage |
| Spiny Plumeless Thistle | Garlic Mustard | Queen Anne's Lace | *Black Locust |
| Brown Knapweed | Leafy Spurge | Dalmatian Toadflax | Emerald Ash Borer |
| Meadow Knapweed | Crown Vetch | Cut-leaf Teasel | |
| Diffuse Knapweed | Tufted Vetch | E. Highbush Cranberry | |

***Threat of Moving into the Ceded Territory**

These species threaten to invade the 1854 Ceded Territory. This list is not comprehensive, but is meant to highlight some invasive species that pose a high risk for spreading into the Ceded Territory in the near future.

| | | | |
|--------------------|------------------------|------------------------|----------------|
| Palmer Amaranth | Giant Hogweed | Porcelain Berry | Poison Hemlock |
| Yellow Starthistle | Japanese Hops | British Yellowhead | Yellow Iris |
| Black Swallow-wort | Common Barberry | Japanese Hedge Parsley | |
| Grecian Foxglove | Narrowleaf Bittercress | Multiflora Rose | |
| Common Teasel | Tree of Heaven | Musk Thistle | |

* indicates species that do not have identification information within this document but can be found on the [MN Department of Agriculture](#) and [MN DNR](#) websites. The [MN Department of Transportation](#) also has a great ID guide that is very helpful and can be printed for use out in the field.

Terrestrial invasive species currently in the 1854 Ceded Territory

Common (*Rhamnus cathartica*) & glossy (*Fangula alnus*) buckthorn

(Pictures and identifying characteristics from

<http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/id.html>)

Common buckthorn



1.



2.



3.



4.

Identifying characteristics (see above corresponding pictures):

- Leaves:** Egg-shaped, pointed at the tip, smooth, dark, glossy and finely-toothed. 3-5 pair of curved leaf veins. Leaves stay green late into fall.
- Branch:** Buds and leaves are sub-opposite, opposite, or alternate. Twigs often end in small (<1/4") sharp, stout thorns.
- Wood:** Brown bark with elongate silvery corky projections (caution: native plums or cherries have a similar bark). Cut branch exposes yellow sapwood and orange heartwood.
- Fruit:** Large, round, berry-like clusters of black 1/4" fruit. Ripens in August and September.

Glossy buckthorn



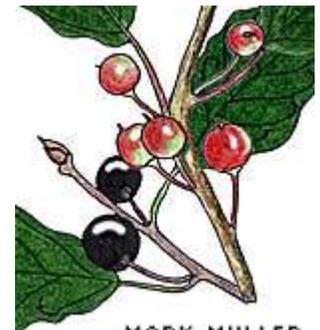
1.



2.



3.



4.

Identifying Characteristics (see above corresponding pictures):

- Leaves:** Oval, smooth, dark, glossy, and toothless edges. 8-9 pair of leaf veins. Leaves stay green late into fall.
- Branch:** Buds and leaves are alternate. No thorn at tip of twig.
- Wood:** Brown bark with elongate silvery corky projections (caution: native plums or cherries have a similar bark). Cut branch exposes yellow sapwood and orange heartwood.
- Fruit:** Small clusters of berry-like, 1/4" fruit. Ripens progressively from a distinctive red-brown to a dark purple in August and September. Each berry has 2 to 3 seeds.

Oriental bittersweet (*Celastrus orbiculatus*)

(Pictures and identifying characteristics from

http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/oriental_bittersweet.html)**Identifying characteristics:**

Appearance: Deciduous vine that grows up to 66 ft. long. Vines climb by winding around a tree or other support structure.

Leaves: Alternate, simple, vary in shape from oblong to almost round. Leaf size is also variable from 2-5" long to 1.4-2" wide. Leaf margins have rounded teeth.

Flowers: There are separate male and female plants. Flowering occurs in the spring and flowers are arranged in clusters of 2-7 at the leaf axils. Each flower has 5 petals and 5 sepals. Flowers are small and greenish-yellow.

Fruit: Fruits are round and change in color from green to bright red with a yellow capsule as they mature. Typical female plants can produce up to 370 fruits which ripen in the fall.

Roots: Underground rhizomes spread and can send up new plants.

To distinguish from the native vine, American bittersweet (*Celastrus scandens*):

- American bittersweet has orange capsules around red fruits, Oriental bittersweet has yellow capsules around red fruits.
- American bittersweet flowers and fruits are only found at the terminal ends of stems, Oriental bittersweet flowers and fruits are found all along the stem at leaf axils.
- Leaf shape is highly variable and not a good characteristic for distinguishing American vs. Oriental bittersweet.

Canada thistle (*Cirsium arvense*)

(Pictures from <http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/canadathistle.aspx>)



Identifying characteristics:

(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/canadathistle.html>)

- Perennial herbaceous plant, 2 - 5' tall with slender grooved stems that branch only at the top. It has male and female plants.
- Leaves are alternating, smooth, oblong, tapering, and directly attached to the stem, deeply divided, with prickly margins.
- Many small purple flowers appear on top of the upper branched stems between June and September.
- Seeds are small, light brown and tufted for dispersal by the wind. Seeds remain viable in the soil for over 20 years.
- Each plant has a fibrous taproot with wide spreading horizontal roots. Each small section of root can form a new plant enabling the plant to spread vegetatively.

Bull thistle (*Cirsium vulgare*)

(Pictures and identifying characteristics from

<http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/bullthistle.html>)

**Identifying characteristics:**

- **Appearance:** Biennial herbaceous plant, between 3 - 6' tall with one erect branched stem. It grows a rosette in its first year and blooms in its second year.
- **Leaves:** Alternate, coarsely lobed, each lobe with a spine at its tip. Spines extend downward from the leaves along prominent ridges of the stem. Upper leaf surface is rough.
- **Flowers:** Disk-shaped flowerheads contain hundreds of tiny individual purple flowers which bloom from July through August.
- **Seeds:** Numerous straw-colored seeds with plume-like bristles are dispersed by wind. They remain viable in the soil for over 10 years.
- **Roots:** Each plant has a fleshy taproot.

Spiny plumeless thistle (*Carduus acanthoides*)

(Pictures and identifying characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/plumelessthistle.aspx>)



Identifying characteristics:

- It is a biennial species that reproduces by seed.
- It grows 3- 5 feet tall.
- The stems are branched and covered with numerous spiny leaves.
- The rosettes have deeply lobed, narrow, and spiny leaves.
- In the second year, the plant bolts, forming branched stems with alternate spiny-lobed leaves that are narrower and wavier than the closely related musk thistle and extend onto and around the stem, giving it the appearance of having clusters of leafy spines throughout.
- Flowers are small, purple to pink, singular or in clusters, and subtended by numerous needle-like bracts. The plant blooms on the end of stems mid-June to August and can be bulbous in shape.

Common St. Johnswort (*Hypericum perforatum*)

(Pictures and identifying characteristics from <http://www.ag.ndsu.edu/pubs/plantsci/weeds/w1411.pdf>)



Identifying characteristics:

- Taproot perennial herb usually growing 1-5 feet tall.
- Stems are multi-branched, smooth, reddish and woody at the base.
- Leaves are opposite, entire, linear to oblong with in-rolled edges and 3/8 to 1 inch long. They are dark green above and light green below and dotted with tiny, translucent glands. The spotted leaf appearance (see above picture) is a key characteristic for identification.
- Flowers are yellow, star-like with five petals and 0.5 to 1 inch in diameter, with tiny black dots on the margins. Petals are twice as long as the sepals and numerous stamens are arranged in three groups.
- Seeds are egg-shaped and are held within a three-valved capsule that bursts at maturity. They are tiny, dark brown, 3/64-inch-long, somewhat cylindrical, slightly pointed at the ends and coarsely pitted.

Spotted knapweed (*Centaurea maculosa*)

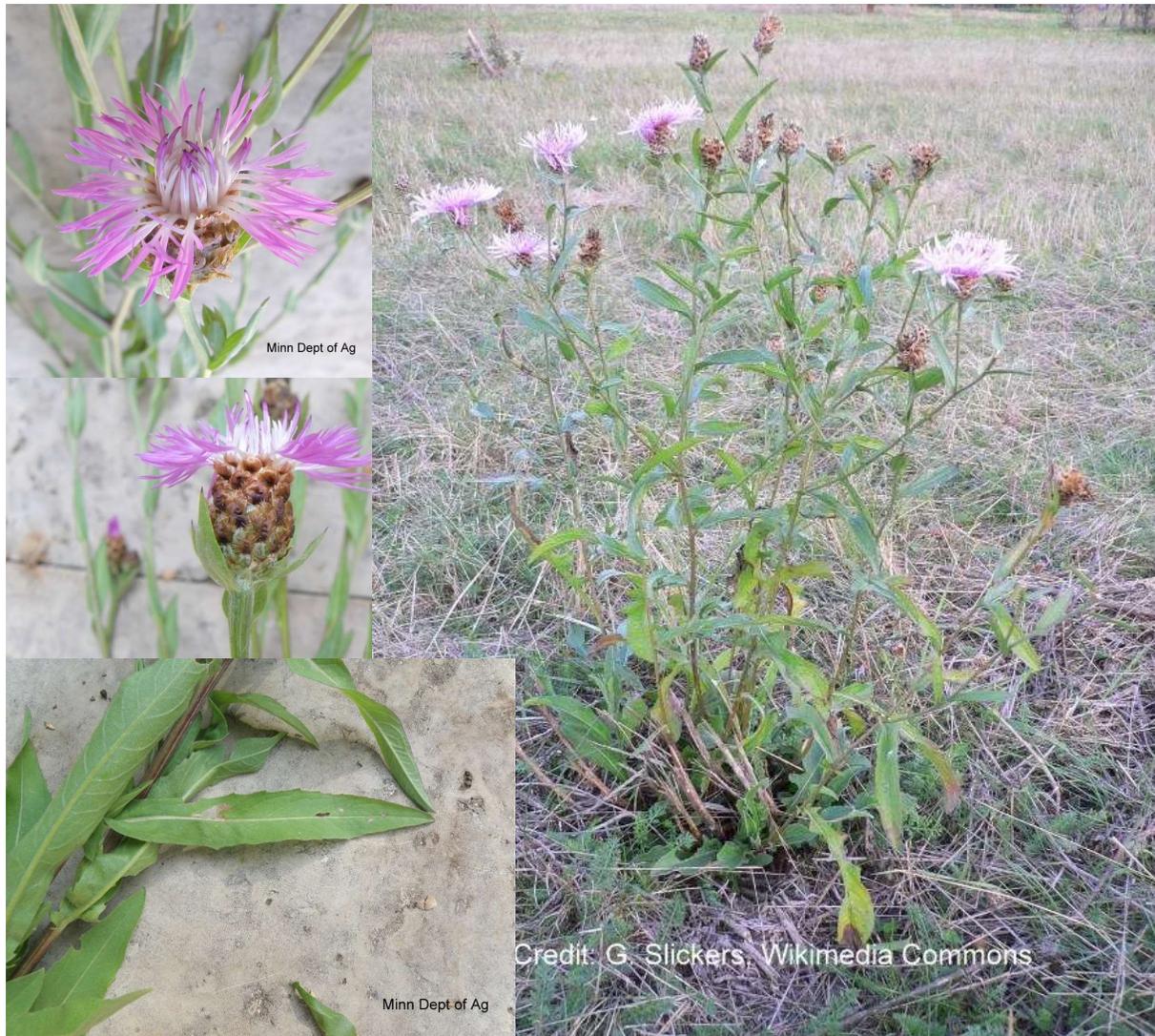
(Pictures from

http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_114216.pdf)**Identifying characteristics:**(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/spottedknapweed.html>)

- Biennial or short-lived perennial herbaceous plant, 2 - 3' high. Basal leaves form a rosette the first year from which grow 1- 20 wiry, hoary, branched stems during the second year.
- Leaves are alternating, grayish, hoary, and divided into lance-shaped lobes decreasing in size at the top.
- Thistle-like pink to purple flowers sit at the tips of terminal and axillary stems, bloom from July through September.
- Seeds are brownish, 1/4" long with small tuft of bristles, dispersed by rodents, livestock and commercial hay. Seed viable in the soil for 7 years.
- Root system consists of a stout taproot and lateral shoots forming new rosettes near the parent plant.

Brown knapweed (*Centaurea jacea*)

(Pictures and identifying characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/browknapweed.aspx>)**Identifying characteristics:**

- It is a perennial plant that has multiple upright, reddish stems that are 1 to 4 feet tall.
- Small, single flowers are clustered together to form composite flower heads. Flowers are mostly pink/purple, sometimes having white centers. They are borne at the ends of branches and are approximately 1 inch in diameter. Flowering occurs mid-summer until fall followed by the production of white to light brown seeds with short plumes.
- The bracts below the flowers are rounded and wide at the tip and often have brown tips.
- Leaves are alternate, lance shaped and pubescent (hairy), occasionally with wavy margins or lobed. Basal leaves grow up to 4 inches long. Seedlings are tap-rooted and mature plants develop a cluster of roots below the crown.

Meadow knapweed (*Centaurea x moncktonii*)

(Pictures and identifying characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/meadowkw.aspx>)**Identifying characteristics:**

- It is a perennial plant that has multiple upright, reddish stems that are 20-40" tall.
- Single flowers, mostly pink/purple but occasionally white, are at the ends of branches and are approximately $\frac{3}{4}$ " in diameter. Flowering occurs mid-summer until fall, followed by the production of white to light brown seeds with short plumes.
- Leaves are lance-shaped and pubescent, occasionally with wavy margins or lobed. Basal leaves grow up to 4" long. Seedlings are tap-rooted and mature plants develop a cluster of roots below the crown.

Diffuse knapweed (*Centaurea diffusa*)

(Pictures and identifying characteristics from <http://www.cwma.org/DiffuseKnapweed.html>)

**Identifying characteristics:**

- **Lifecycle:** Biennial or short-lived perennial
- **Growth form:** Forb
- **Flower:** Flowerheads are broadly urn-shaped, 0.6-0.8 in tall, solitary or in clusters of 2-3 at the ends of the branches. Floral bracts are yellowish with a brownish margin, sometimes spotted, fringed on the sides, and terminating in a slender bristle or spine. The heads contain two types of flowers, ray flowers around the edges surrounding tubular disk flowers. The ray flowers are white, rose-purple, to lavender. June-Aug.
 - The bracts surrounding each flower bear 4 to 5 pairs of lateral spines and one, long terminal spine. Diffuse knapweed can resemble spotted knapweed with the black tipped bracts. The difference is the sharp spine at the end of the bract that is characteristic of diffuse knapweed.
- **Seeds/Fruit:** Seeds are light brown to black.
- **Leaves:** Basal leaves are stalked and divided into narrow, hairy segments. Stem leaves are smaller, alternate, less divided, stalkless, and become bract-like near the flower clusters.
 - When leaves are young, they are covered by fine hairs.
- **Stems:** Stems are upright, 4-24 in tall, highly branched, angled, with short, stiff hairs on the angles.
- **Roots:** Taproot.
- **Seedling:** Seedlings have finely divided leaves that are covered with short hair.

Note: Diffuse knapweed may be distinguished from other knapweeds by the terminal spine on the floral bract.

Common tansy (*Tanacetum vulgare*)

(Pictures from <http://www.dot.state.mn.us/roadsides/vegetation/pdf/noxiousweeds.pdf>)



Identifying Characteristics:

(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/commontansy.html>)

- Perennial herbaceous plant, 3' tall, up to 5' in shaded areas, and erect. A single stem branches extensively toward the top into short stems forming a flat-topped cluster of numerous button-like flower heads; plants have medicinal properties.
- Alternating leaves, pinnately compound (leaflets arranged on both sides of a common stalk), irregularly lobed. Leaves become smaller towards the top of the stalk, and are strongly aromatic when crushed (strong, distinctive scent).
- Bright yellow flowers, daisy-like discs up to 0.5" wide, lacking rays, blooming from July through October.
- Numerous tufted seeds dispersed by wind and water.
- Roots spread vegetatively forming new plants from even small root fragments.

Leafy spurge (*Euphorbia esula*)

(Pictures from <http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/leafyspurge.aspx>)

**Identifying characteristics:**

(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/leafyspurge.html>)

- **Appearance:** Perennial herbaceous plant, 2- 3 1/2' tall, erect branching, smooth stems growing from a deep vertical root. Stems, flowers, and leaves emit a white milky sap when broken.
- **Leaves:** Alternate, small, oblong to lance-shaped, on the upper part of stem; scale-like on the lower part of the stem.
- **Flowers:** Small, borne by showy yellow-green bracts which open in late May; flowers bloom from June into fall. Umbrella-shaped flower cluster, 7-10, at the top of each stem, single, stemmed flowers grow from leaf axils below.
- **Seeds:** Explosive dispersal from a seed capsule up to 15'; high germination rate; seeds remain viable in the soil for 7 years.
- **Roots:** Extensive deep root system, vegetative reproduction from crown and root buds.

Wild parsnip (*Pastinaca sativa*)

(Pictures from <http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/wildparsnip.aspx>)

**Identifying characteristics:**

(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/wildparsnip.html>)

- **Appearance:** Monocarpic perennial herbaceous plant (plant spends one or more years in rosette stage, blooms under favorable conditions, and then dies), 6" high in the rosette stage and 4' high on stout, grooved stems in the flowering stage.
- **Leaves:** Alternate, leaf is made up of 5 -15 egg shaped leaflets along both sides of a common stalk; leaflets sharply-toothed or lobed at the margins; upper leaves smaller.
- **Flowers:** Flat-topped broad flower cluster 2 - 6" wide, numerous five-petaled yellow flowers; bloom from June to late summer.
- **Seeds:** Small, flat, round, slightly ribbed, straw-colored, abundant, takes 3 weeks to ripen before they can reseed; viable in the soil for 4 years.
- **Roots:** Long, thick, edible taproot.

Warning - Avoid skin contact with the toxic sap of the plant tissue by wearing gloves, long sleeves and long pants. The sap of wild parsnip in contact with skin in the presence of sunlight can cause a rash and blistering and discoloration of the skin (phytophotodermatitis) (bottom, center picture).

(Picture of rash is from <http://www.thisisinsider.com/poisonous-wild-parsnip-plant-causes-severe-rashes-2016-7>)

Garlic mustard (*Alliaria petiolata*)

(Pictures from <https://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist.aspx>)

**Identifying characteristics:**

(from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/garlicmustard.html>)

- **Appearance:** Biennial herbaceous plant, second year it bolts, forming weak single stems 12 - 36" high when it flowers. Only plant of this height blooming white in wooded environments in May.
- **Leaves:** Round, scallop-edged, dark green; first year, rosettes of 3 or 4 leaves; second year plants have alternate stem leaves. Leaves and stems smell like onion or garlic when crushed.
- **Flowers:** White, small and numerous, with four separate petals. Each plant has one or two flowering stems on second year plants.
- **Seeds:** Slender capsules 1-2 1/2" long, containing a single row of oblong black seeds. Seeds are viable in the soil for 5 years.
- **Roots:** White, slender taproot, "S"-shaped at the top.

Garden lupine (*Lupinus polyphyllus*)

(Pictures and identification characteristics from <https://www.minnesotawildflowers.info/flower/large-leaved-lupine>)

**Identification characteristics:**

- **Flowers:** A spike-like raceme 6 to 18 inches long of ½-inch pea-shaped flowers on stalks about ½ inch long. Flowers are typically blue to violet, but may be pink, white, or 2-tone. The upper petal (standard) curls or folds back on the sides and is a bit smaller than the lateral wings below it. The raceme may be tightly packed or looser, the flowers spiraling or nearly whorled around the stem.
- **Leaves and stem:** Leaves are palmately compound in groups of 9 to 17. Leaflets are 2 to 5 inches long, to 1 inch wide, toothless, hairless on the upper surface, silky/hairy on the underside, pointed at the tip, tapering at the base, on a long stalk. Stems are smooth and green.

Exotic honeysuckles (*Lonicera tatarica*, *L. morrowii*, *L. x bella*)

(Pictures and identification characteristics from

<http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/exotichoneysuckles.html>)



Identification characteristics:

- **Appearance:** Upright deciduous shrubs, 5 -12' high. *Lonicera x bella* is a horticultural hybrid. Older stems have shaggy bark and are often hollow.
- **Leaves:** Opposite, simple, oval, and untoothed. *L. tatarica* has smooth, hairless leaves, *L. morrowii* has downy (fuzzy feeling from short, soft, dense hairs) leaves.
- **Flowers:** Fragrant, tubular, bloom in May and June, white, red, but most often pink.
- **Fruit:** Fruits are red or yellow, situated in pairs in the leaf axils.
- **Roots:** Roots are fibrous and shallow.

Japanese barberry (*Berberis thunbergii*)

(Pictures and some identification characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/japanesebarberry.aspx>)**Identification characteristics:**(most from <http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/japanesebarberry.html>)

- **Appearance:** Small, compact, spiny shrub, 3-6' tall with slightly curving branches.
- **Leaves:** small, rounded, and arranged in clusters above the spines. Japanese barberry cultivars can range in color from chartreuse, gold, maroon, and green. Most naturalized Japanese barberry plants found to date have green leaves in the summer followed by vibrant orange and red fall foliage.
- **Flowers:** Yellow, single or in clusters of 2-4 blossoms; blooming in May.
- **Fruit:** Bright red, egg-shaped small berries, in clusters or single, mature in August and stay on the shrub through winter.
- **Seeds:** Dispersed by birds.

Siberian peashrub (*Caragana arborescens*)

(Pictures and identification characteristics from

<http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/siberianpeashrub.html>)

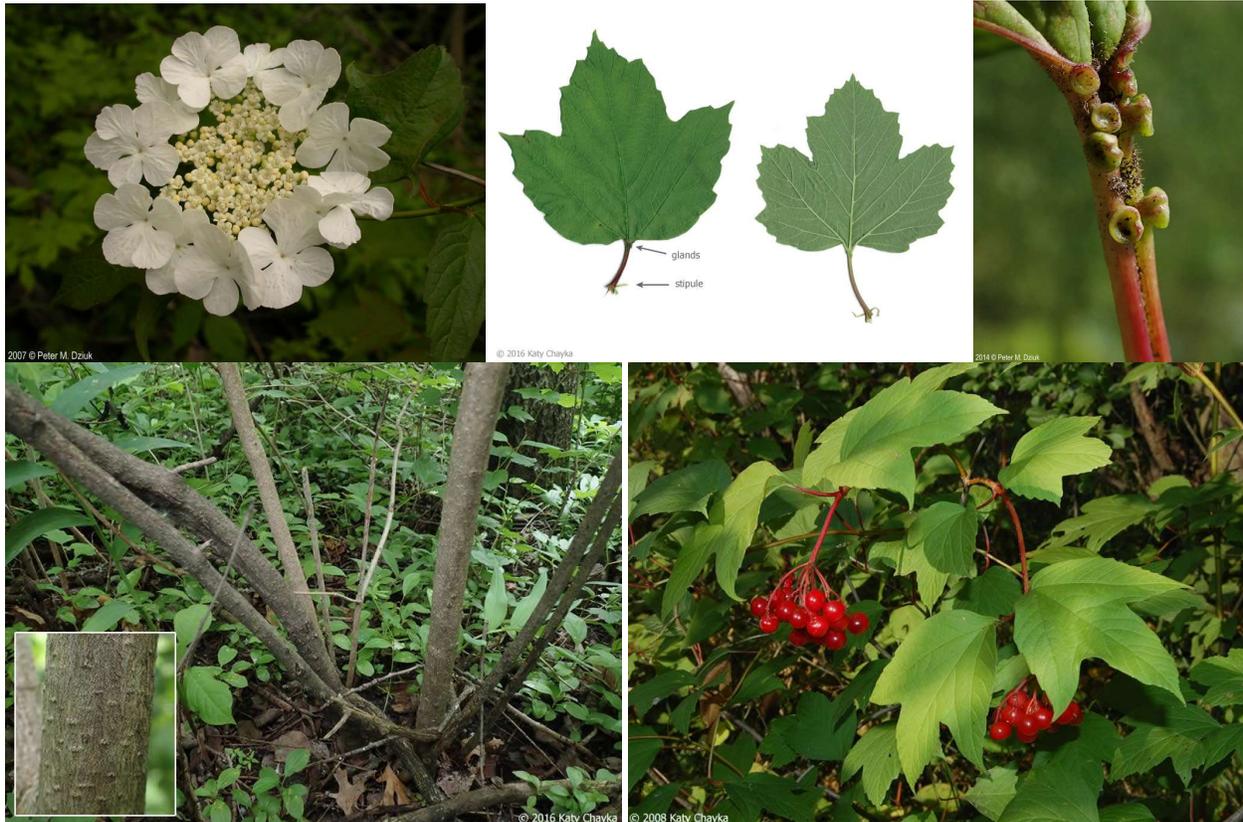


Identification characteristics:

- **Appearance:** Upright shrub or small tree, up to 18' high. Narrow branching, gray bark and branches; young twigs, yellowish-green.
- **Leaves:** Alternate, compound, 2- 4" long consisting of 8 -12 pairs of leaflets; leaflets elliptic.
- **Flowers:** Yellow, single, tubular, at the end of a stalk that grows from the leaf axil; blooms in May - June.
- **Fruit:** Pods 1- 2" long, sharply pointed, brown and smooth.

European highbush cranberry (*Viburnum opulus* var. *opulus*)

(Pictures from <https://www.minnesotawildflowers.info/shrub/guelder-rose>)

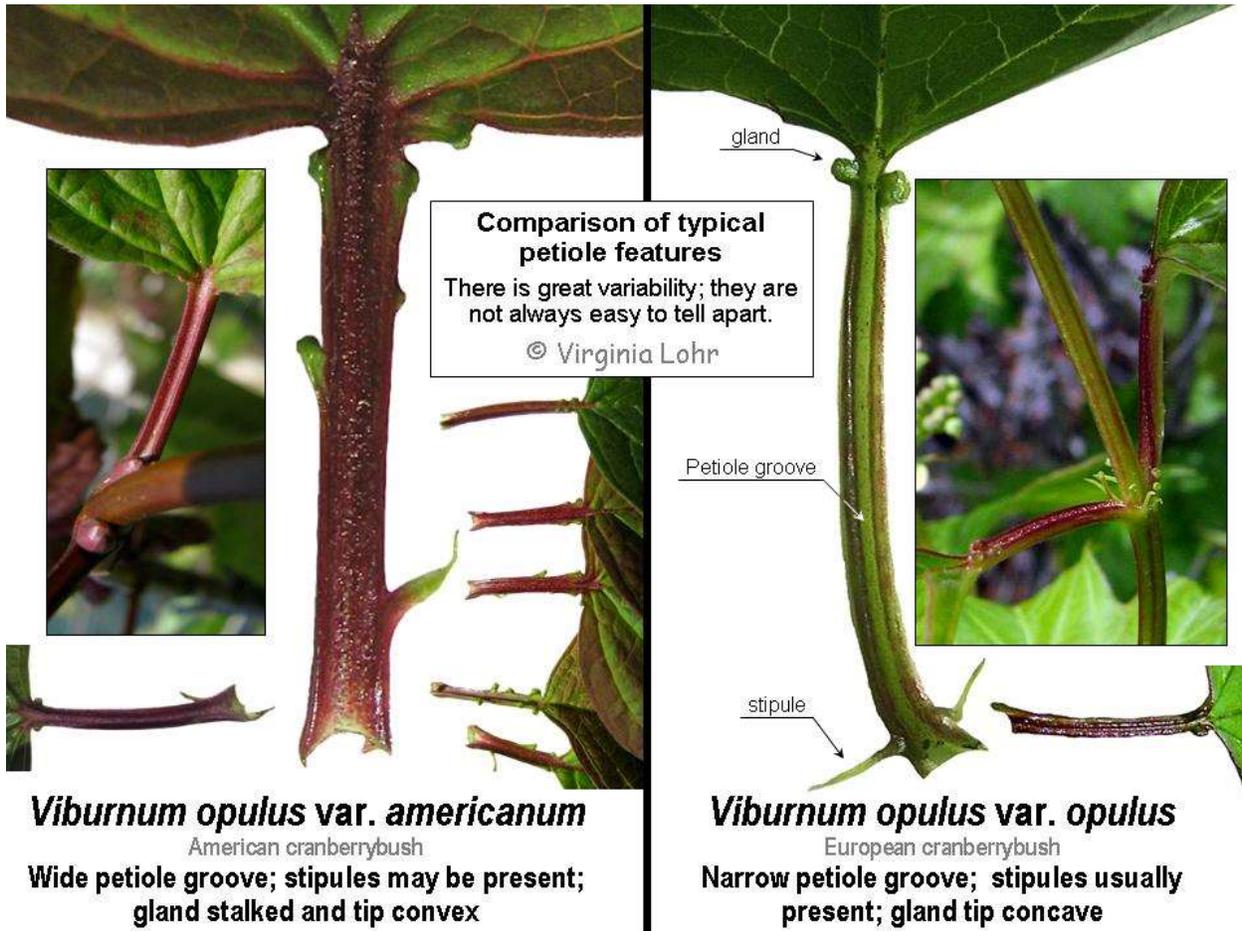


Identification characteristics:

(from <http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=402>)

- **Leaf:** Opposite, simple, 3 lobed and coarsely serrated, orbicular, 2 to 4 inches long, concave glands on petiole, dark green above, velvety below.
- **Flower:** White, very showy, 1/2 inch across, occurring in large clusters, outer ring of flowers sterile and larger, many cultivators have only sterile flowers, appearing in mid-spring.
- **Fruit:** Red, 1/4-inch drupe in clusters, ripening in late summer and persisting through the winter.
- **Twig:** Moderate, tan to gray-brown, distinctly ridged, with numerous lenticels; green to reddish brown buds are plump and have 2 visible scales.
- **Bark:** Light brown and stays largely smooth.
- **Form:** Multiple, arching stemmed shrub to 10 feet tall.

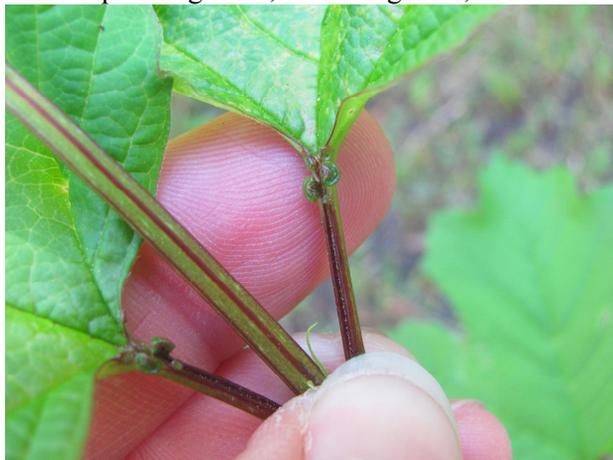
Comparison between our native and the non-native:
 (from <http://classes.hortla.wsu.edu/hort231/List02/VibOpVarCompare.html>)



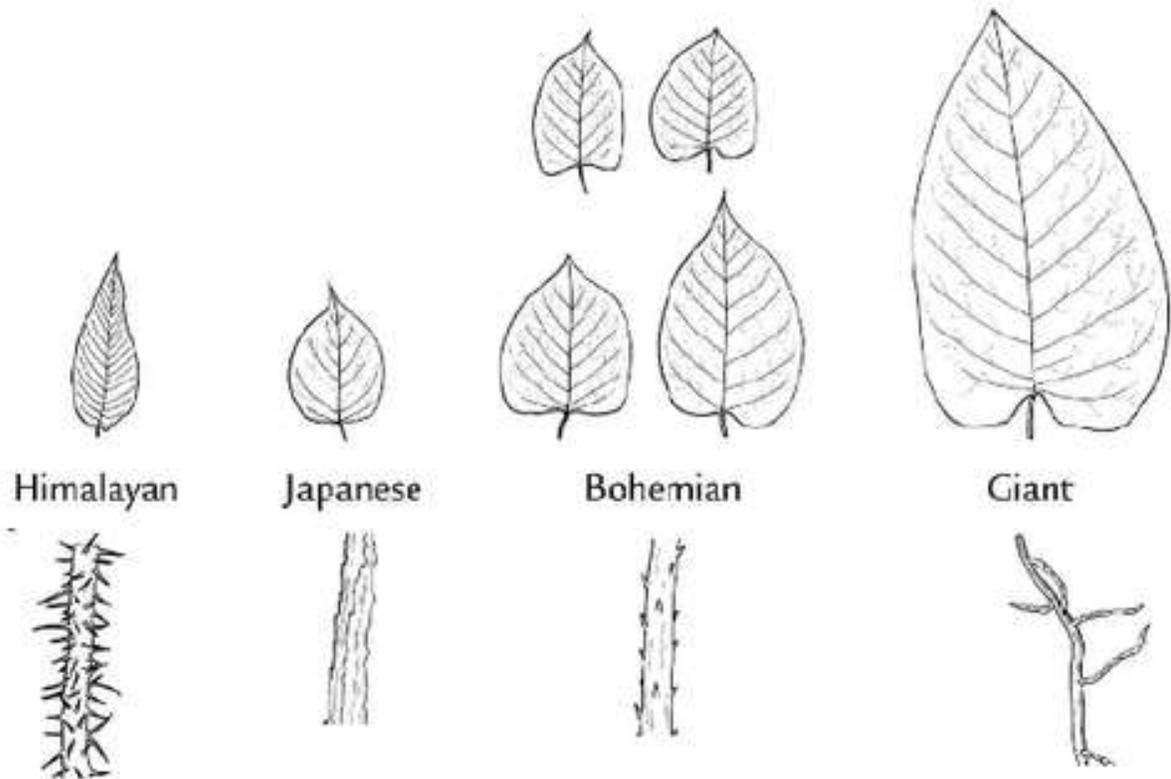
European highbush cranberry:

Narrow petiole groove; concave glands, wider than long

Dense infestation of invasive



both photos by Jeffrey Flory, at Moose Mountain in Duluth, MN, taken on 06/07/2016

The Knotweed Complex:**Japanese knotweed** (*Polygonum cuspidatum*)**Bohemian knotweed** (*Polygonum x bohemicum*)**Giant knotweed** (*Polygonum sachalinense*)(Pictures from <http://techlinenews.com/articles/2013/identification-and-management-of-invasive-knotweeds>)**Identification characteristics:**(from https://www.for.gov.bc.ca/hra/publications/invasive_plants/Knotweed_key_BC_2007.pdf)

| | Japanese knotweed | Bohemian knotweed | Giant knotweed |
|-----------------------------|--|---|---|
| Stems: | 1.5 to 2.5 m, multiple branches, Stems mottled purple-brown | 2 to 5 m, few to several branches, stems mottled purple-brown | 3 to 6 m, few or no branches, stems mottled purple-brown |
| Leaf Size and Shape: | Ovate, 3-10 cm, about 2/3 as wide, base straight, not curved, leaf tip abruptly pointed, leaf texture thick and leathery | Ovate, 5-30 cm, about 2/3 as wide, base variable in shape, from ± straight to moderately curved, leaf tip gradually to sharply tapered, leaf texture intermediate | Ovate, 20-40 cm, about 2/3 as wide, deeply indented at the base (cordate), leaf tip pointed, leaf texture thin and flexible |
| Leaf Hairs: | No stiff hairs on leaf margin, veins On leaf underside have blunt Knobs (scabers), giving them a Slightly rough, ridged appearance | Few or no hairs on leaf margin, veins on leaf underside have small, stout hairs | Tiny, stiff hairs on leaf margin, veins on leaf underside have long, multicellular hairs |
| Flower Gender: | Female | Either female or perfect | Perfect and fertile |
| Flower Arrangement: | Loose, drooping panicle | Erect or loose, drooping panicle | Compact, drooping panicle |
| Flower Color: | Greenish-white to creamy white | Greenish-white to creamy white | Greenish-white to creamy white |
| Seeds: | Occasionally produced | Occasionally produced | Usually produced |

Solidstem burnet-saxifrage (*Pimpinella saxifraga*)

(Pictures and identification characteristics from <https://www.minnesotawildflowers.info/flower/burnet-saxifrage>)



Identification characteristics:

- **Flower:** Flat clusters (umbels) made up of 7 to 20 groups (umbellets) of 10 to 20 flowers each. Flowers are white, sometimes tinged pink, about 1/6 inch across with 5 petals, a creamy colored center and a pair of styles at the top. The base of both the umbel and umbellets typically have no bracts, occasionally one. Umbellet stalks are 1 to 1½ inches long. Umbels are 2 to 3 inches across.
- **Leaves:** Leaves are few and widely spaced, alternate, pinnately compound and variously covered in short hairs. The lowest leaves are up to 12 inches long, its leaflets oval to nearly round with large, coarse teeth. Leaves become progressively smaller as they ascend the stem, becoming deeply lobed in the upper plant.
- **Stem:** At the base of the leaf is a sheath that wraps around the stem. In the upper stem a leaf may be absent leaving only the sheath. Stems are densely covered in very short hairs and have faint ribbing. Plants are few branched.
- **Fruit:** Fruit is a flattened oval pod with faint ribs, less than 1/8-inch-long, and splits into 2 seeds.

Garden valerian (*Valeriana officinalis*)

(Pictures and identification characteristics from <https://www.minnesotawildflowers.info/flower/garden-heliotrope>)

**Identification characteristics:**

- **Flower:** Flat to round clusters up to 4 inches across of tiny trumpet shaped flowers. Flowers are pinkish to white, up to ¼ inch long with five round lobes; 3 creamy white stamens poke out of the tube. A plant may have multiple clusters on branching stems in the upper plant.
- **Leaves and Stems:** The opposite, compound leaves are up to 8 inches long, each with 7-12 pairs of narrow lance-shaped, toothed leaflets with scattered hairs on lower surface. Leaves become smaller and leaflets become narrower as they ascend the stem. Stems are finely hairy, especially at nodes.
- **Fruit:** Fruit is a brown seed, about 1/8-inch-long, with an array of feathery hairs radiating at the top.

Dalmatian toadflax (*Linaria dalmatica*)

(Pictures and identification characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/toadflax.aspx>)**Identification characteristics:**

- Dalmatian toadflax looks like a large, yellow snapdragon.
- It is a short-lived perennial that grows up to 4 feet tall. Both leaves and stems are a waxy, bluish-green.
- Leaves are heart-shaped, 1 to 3 inches long and clasp the stem.
- Multiple flowers are arranged in spikes on the stems. They are bright yellow and sometimes have an orange center. The flowers are 1 to 1½ inches long and have spurs. Flowering occurs from early summer to early fall.
- Seed pods are ½ inch long and contain 140 to 250 small dark brown to black seeds with wings. Most of the upper stems die back in winter and new stems emerge in the spring.
- Yellow toadflax is common in Minnesota and looks similar. To distinguish the two species, compare the small, narrow, linear yellow toadflax leaves (A) to the thick, waxy, clasping, heart-shaped Dalmatian toadflax leaves (B).



Cutleaf teasel (*Dipsacus laciniatus*)

(Pictures and identification characteristics from

<http://www.mda.state.mn.us/plants/pestmanagement/weedcontrol/noxiouslist/teasel.aspx>)**Identification characteristics:**

- Teasels are monocarpic perennials (produce seed only once in a lifetime) that form basal rosettes for at least one year until enough resources are acquired to send up flower stalks. Rosettes develop oblong, hairy leaves and large tap roots.
- The small, dense white flowers occur on oval-shaped, terminal heads enclosed by stiff, spiny bracts. Flower stalks may grow to over 7 feet in height. Blooming occurs from July through September. After flowering and seed production, the plants die.
- Leaves on the flowering stalks are large, deeply-lobed, opposite, and wrap around the stem forming cups that can hold water. Both the leaves and stems are very prickly.
- Teasels also exhibit a characteristic shared by many weedy species – elasticity – that enables it to quickly produce abundant seeds on very short stalks after mowing.

Bristly bellflower (*Campanula cervicaria*)

(Pictures and identification characteristics from <https://www.minnesotawildflowers.info/flower/bristly-bellflower>)

**Identification characteristics:**

- **Flowers:** Tight clusters at the top of the stem and in upper leaf axils. Flowers are $\frac{1}{2}$ to $\frac{3}{4}$ inch long, blue to violet, bell-shaped with 5 fused lobes that are oblong with pointed tips. Short erect hairs are scattered along the outside lobe edges and the midvein. The calyx is about $\frac{1}{4}$ the length of flower tube, fused with 5 blunt lobes and bristly hairs on the outer surface. 5 stamens are retained in the tube with a style, 3-parted at the tip, extending beyond the lobes. Short, broad, leafy bracts with bristly outer surfaces wrap the base of clusters.
- **Leaves and Stem:** Leaves are 6 to 8 inches long, basal leaves with winged stalks, the blade narrow lance to spatula shaped, withering away at flowering. Stem leaves are few, alternate, becoming smaller, stalkless and more lance-linear as they ascend the stem. Leaf edges are irregular with rounded teeth and are often wavy. The lower leaf surface has short, bristly hairs, especially along the edges and midvein; the upper surface hairs are more scattered. Stems are unbranched, with sharp vertical ridges and densely covered in bristly hairs.

Crown vetch (*Coronilla varia*)

(Pictures and identification characteristics from

<http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/crownvetch.html>)**Identification characteristics:**

- **Appearance:** Perennial herbaceous plant, growing 2 - 6' long stems with a reclining and trailing growth pattern. In winter and early spring crown vetch can be easily recognized as brown unsightly patches.
- **Leaves:** Pinnately (feather-like) compound, (leaflets on both sides of a common stalk) with 15 - 25 pairs of oblong leaflets.
- **Flowers:** Clustered in flat-topped umbels ranging from pink, lavender to white on extended stalks which grow from the leaf axils; blooming from May through August.
- **Seeds:** Slender seeds are contained in finger-like pods; they remain viable in the soil for 15 years.
- **Roots:** Spread vegetatively with horizontal stems growing below the soil surface, called rhizomes, forming roots and producing new plants. They can grow up to 10' long, contributing to extensive vegetative spread.

Tufted (*Vicia cracca*) and hairy (*V. villosa*) vetches(Pictures and identification characteristics from <https://www.minnesotawildflowers.info/>)**Tufted vetch**

Flower: Dense, 1-sided raceme of 10 to 50 elongated pea-shaped flowers. Flowers are about ½ inch long, the upper petal (standard) flaring upward, lateral wings below it oval, extending outward, as long as the standard is high. The standard is typically pink to blue-violet with lighter colored lateral wings though flowers in a cluster may all be the same color.



The calyx holding the flower is hairless to minutely hairy, with 5 prong-like lobes, the upper lobes broadly triangular and shorter than the lower, and all shorter than the calyx tube. Flower stalks are minutely hairy.

Leaves and Stems: Leaves are compound with 5 to 12 pairs of leaflets, and a branched tendrils at the end that entwines surrounding vegetation for support. Leaves can be up to 10 inches long and 2 inches wide but 6 inches or less is typical. Leaflets are about ¾ inch long and 1/8 inch wide, linear to oblong, toothless, with a tiny, abrupt point at the tip (mucronate). Both surfaces are covered in short appressed hairs.



At the base of the leaf stalk is a pair of narrow, sharply pointed, leafy appendages (stipules) that are ¼ to 1/3 inch long and short hairy, particularly around the edges. Stems are vining, multi-branched and sprawling, 4-sided with distinct ridges

and variously covered in very short hairs.

Fruit: Fruit is a flattened pea pod up to 1 inch long, containing 2 to 8 round to oval seeds.

**Hairy vetch**

Flower: One-sided raceme of 5 to 20 pairs of drooping, elongated pea-shaped flowers. Flowers are ½ to ¾ inch long, the upper petal (standard) flaring upward, lateral wings below it oval, extending outward, as long as the standard is high. The standard is typically pink to deep purple with lighter colored lateral wings though sometimes all flowers in a cluster are all white.



The calyx holding the flower is swollen at the base and covered in spreading hairs, with 5 prong-like lobes, the upper lobes narrowly triangular and shorter than the calyx tube, the lower lobes longer than the upper and often longer than the tube. Flower stalks are covered in spreading hairs.

Leaves and Stems:

Leaves are compound with 8 to 12 pairs of leaflets, and a branched tendril at the end that entwines surrounding vegetation for support. Leaves can be up to 10 inches long and 2 inches wide but 6 inches or less is typical. Leaflets are about 1 inch long and ¼ inch wide, toothless, hairy, generally elliptical.



At the base of the leaf stalk is a pair of narrow, leafy appendages (stipules) that are ¼ to 1/3 inch long and densely hairy. Stems are vining, multi-branched and sprawling, with distinct ridges and covered in

spreading hairs.

Fruit: Fruit is a flattened pea pod up to 2 inches long, containing several round seeds.

Notes: Tufted vetch is most easily distinguished by the minute hairs rather than the longer, spreading hairs of hairy vetch on its stems and stalks, plus tuft vetch has lightly smaller flowers. Tufted vetch is a perennial whereas hairy vetch is mostly an annual.

Queen Anne's lace (*Daucus carota*)

(Pictures and identification characteristics from

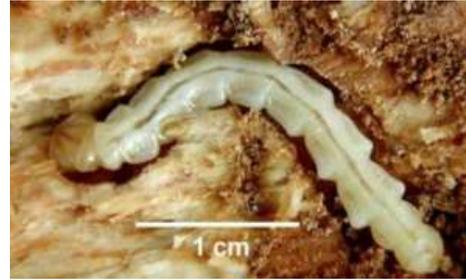
<http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/queenannslace.html>)

**Identification characteristics:**

- **Appearance:** Biennial herbaceous plant, 3 - 4' tall, consists of one or several hairy hollow stems, growing from one central stem, each with an umbrella-shaped flower cluster at the top. Plant smells like a carrot, it is the ancestor of the garden carrot. Appears as rosette in its first year.
- **Leaves:** Alternate, start immediately below the flower, increasing in size down the stem. They are pinnately divided (leaflets are arranged on both sides of a common stalk).
- **Flowers:** Compound, flat-topped umbels (small umbels within a large umbel) umbels becoming concave when mature; bloom May through October.
- **Seeds:** Barbed small seeds, promotes dispersal by animals and wind, seeds stay viable in the soil for 1- 2 years.
- **Roots:** Slender, woody taproot, carrot-like in smell and taste.

Emerald ash borer (*Agrilus planipennis*) (EAB)(Pictures and identifying characteristics from www.abs.russell.wisc.edu/eab/)

1



2

Identification characteristics of adults (1):

- Metallic green, 3/8" to 1/2" long, 1/8" wide.
- Emerge in June and are active through summer.
- Mate and lay eggs on ash tree bark during summer.

Identification characteristics of larvae (2):

- Cream colored with bell-shaped body segments.
- Can be over 1" long.
- Emerge from eggs and tunnel into cambial layer (just beneath the bark) and feeds on tree tissues.



1



2



3

Symptoms of infestation:

1. Sparse leaves and dying branches in upper canopy and green shoots (suckering) on the lower trunk.
2. S-shaped tunneling pattern under the bark from larvae.
3. D-shaped exit holes through bark from adult emergence.

Gypsy moth (*Lymantria dispar*)

(Pictures and identifying characteristics from <http://www.dnr.state.mn.us/invasives/terrestrialanimals/gyps moth/index.html>)



1



2



3

Identification characteristics of adults (1):

- Emerge in July in the south and August in the north.
- Males are brown to gray with dark markings in a scalloped pattern along the wing edge. They have large featherlike antennae used to pick up the female pheromone (sex attractant).
- Females are white with small brown markings, are much larger than the males and do not fly.
- Adults mate and die within one to two weeks of emergence without ever feeding.
- Females deposit egg masses in crevices, under loose bark, or in protected places on objects in infested areas near host trees.

Identification characteristics of larvae (caterpillars) (2 and 3):

- Five pairs of blue dots and six pairs of red dots down the back.
- Hatch between late April and early June
- Climbs to top of a tree after hatching, spins a silken thread and catches the wind to the nearest preferred host tree.
- Feed on leaves of host tree (2).
- Pupates late June through July.