

APPENDIX H

Noxious Weeds and Invasive Species Control Plan

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APPENDIX H1

Minnesota and North Dakota Noxious Weeds and Invasive Species Control Plan

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**Enbridge Energy, Limited Partnership
Enbridge Pipelines (Southern Lights) L.L.C.**

**MINNESOTA and NORTH DAKOTA
Noxious Weeds and Invasive Species
Control Plan**

**Alberta Clipper
and
Southern Lights Diluent
Pipeline Projects**

March 20, 2009

**Enbridge Alberta Clipper and
Southern Lights Diluent Pipeline Projects**

MINNESOTA AND NORTH DAKOTA

NOXIOUS WEEDS AND INVASIVE SPECIES CONTROL PLAN

Table of Contents

INTRODUCTION..... 1
NOXIOUS WEEDS AND INVASIVE SPECIES 1
SURVEYS 2
PREVENTION AND CONTROL MEASURES 2
 1. Pre-Construction Measures 2
 2. Construction Measures 3
 3. Post-Construction Measures 3

APPENDIX A – SPECIES IDENTIFICATION INFORMATION
APPENDIX B – EQUIPMENT CLEANING LOG

INTRODUCTION

During construction of the Alberta Clipper and Southern Lights Diluent Pipeline Projects, Enbridge intends to minimize the introduction and spread of noxious weeds and invasive species along the proposed construction right-of-way by implementing the measures found in this Plan. However, Enbridge's ability to control the spread of invasive species already present on lands adjacent to the construction right-of-way is limited. In addition, Enbridge implements separate operational measures for controlling invasive species already found on its existing right-of-way, measures that are not addressed here.

Enbridge has developed this Noxious Weeds and Invasive Species Control Plan (Noxious Weeds Plan) to minimize the introduction and spread of noxious weeds and invasive species along the proposed Alberta Clipper and Southern Lights Diluent construction right-of-way. Enbridge's Noxious Weeds Plan is based on applicable state regulations and information provided by the Minnesota Department of Natural Resources (MDNR), Minnesota Department of Agriculture, USDA Farm Service Agency (FSA), and USDA Natural Resources Conservation Service (NRCS).

NOXIOUS WEEDS AND INVASIVE SPECIES

Through Enbridge's consultations with the applicable agencies, thirteen (13) plant species were identified in either North Dakota or Minnesota as being noxious weeds and/or invasive plants that may occur within the counties being crossed by the pipeline corridor. These species include:

- **Canada Thistle**
- **Bull Thistle**
- **Perennial Sowthistle**
- **Poison Ivy**
- **Garlic Mustard**
- **Leafy Spurge**
- **Field Bindweed**
- **Common Tansy**
- **Spotted Knapweed**
- **Purple Loosestrife**
- **Tall buttercup**
- **Orange hawkweed**
- **Oxeye daisy**

Enbridge also consulted with the U.S. Forest Service (USFS) to identify noxious weeds and/or invasive plant species of special concern to the Chippewa National Forest (CNF). CNF staff identified 25 noxious weed species and/or non-native invasive plants of concern:

- **Hoary alyssum**
- **Spotted Knapweed**
- **Plumeless thistle**
- **Field sandbur**
- **Canada thistle**
- **Bull thistle**
- **Field bindweed**
- **Leafy spurge**
- **Orange hawkweed**
- **Purple loosestrife**
- **Common buckthorn**
- **Perennial sowthistle**
- **Common tansy**
- **Poison ivy**
- **Garlic mustard**
- **Curlyleaf pondweed**
- **Eurasian watermilfoil**
- **Wild parsnip**
- **Musk thistle**
- **Common St. Johnswort**
- **Oxeye daisy**
- **Siberian Peashrub**
- **Hemp**
- **Tall buttercup Wormwood**

SURVEYS

Enbridge conducted field surveys along the proposed route to identify existing locations of noxious weeds and invasive species. These field surveys are considered reasonably accurate in documenting the locations of invasive species within and adjacent to wetlands, although additional locations may be present. Surveys focused on natural areas, roadside ditches, and pastures. Surveyed areas were evaluated for presence of the target invasive species within and adjacent to the proposed construction work area (construction right-of-way and additional workspaces). Locations where the population of the targeted species comprised at least 20 percent of the species density within a 1,000 square foot area were recorded using a Global Positioning System (GPS) device. Areas containing the target species spotted knapweed with a species density of at least 20 percent within a 500 square-foot area were also documented. Additionally, all occurrences of purple loosestrife populations were recorded.

Results of the surveys, including location maps, will be provided to Enbridge's construction contractors for proper treatment prior to construction.

PREVENTION AND CONTROL MEASURES

1. Pre-Construction Measures

To prevent the introduction of the noxious weeds and invasive species listed above into the project area from other construction sites, construction equipment will be cleaned prior to arriving at the project site. This cleaning will consist of removing visible dirt from the equipment and blowing loose material from equipment using compressed air. The Contractor(s) will keep logs documenting the cleaning history of each piece of equipment and make the logs available to the Environmental Inspector (EI) or other Enbridge Representative upon request. Contractors may use the equipment cleaning log provided in Appendix A or an equivalent form approved by Enbridge. Equipment found to be in non-compliance with the cleaning requirement will not be allowed on the project site until it has been adequately cleaned.

Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Enbridge's EIs will be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. Enbridge's Contractor(s) will be required to obtain necessary permits and/or certifications for the use of the applicable herbicides and must comply with state laws regarding the use of those herbicides, such as the Minnesota Aquatic Nuisance Control permit required when spraying within the boundaries of MDNR Protected Waters. Contractor(s) must keep proper documentation of the locations where the herbicides have been used and provide such documentation to Enbridge if requested.

Treatment of known infestation areas will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction right-of-way. Treatment may be restricted in areas that are not readily accessible, such as areas where access is limited by topography or other site conditions such as saturated/inundated soils. In the event that an area is determined to be inaccessible, the EI or other designated Enbridge Representative will be notified and a site-specific alternative treatment method will be developed.

Pre-construction treatment will be conducted in areas where listed species are found, on an as-needed basis. In areas where thistle infestations occur, treatment will be conducted if the infestation area exceeds 1,000 square feet. For spotted knapweed, infestation areas 500 square feet or greater will be treated. Where identified, purple loosestrife plants will be pulled, bagged, and removed from the right-of-way.

Organic Farms

Weed control spraying is restricted on or near certified organic farms as defined in Enbridge's Agricultural Mitigation Plan.

2. Construction Measures

If additional noxious weed infestations are identified subsequent to herbicide applications, mechanical means (scrape down/blow down) will be used to remove weeds from tracked equipment prior to leaving the infested area. High pressure water wash stations may be established in select areas if the above measures do not adequately remove soil and vegetation debris from construction equipment. The EI will determine where this practice will be implemented. The Contractor(s) will keep logs documenting the cleaning history of each piece of equipment and make the logs available to the EI or other Enbridge Representative upon request. Any equipment found to be in noncompliance with the cleaning requirement will be removed from the project site until it has been adequately cleaned.

To prevent the spread of noxious weeds and invasive species during construction, mulch used on the project will be composed of weed-free material as specified in Enbridge's Revegetation and Restoration Monitoring Plan. Certified weed-free mulch may also be required at site-specific locations. The contractor(s) will be responsible for identifying and acquiring sources of weed-free and certified weed-free mulch. Sources must be approved by Enbridge prior to purchase and copies of the applicable documentation must be provided to Enbridge.

3. Post-Construction Measures

As specified in Enbridge's Revegetation and Restoration Plan, post-construction monitoring of the restored right-of-way will be conducted by Enbridge and revegetation in non-agricultural areas will be considered successful when the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. If this monitoring indicates a higher density and cover of noxious weeds on the right-of-way compared to adjacent off right-of-way areas, Enbridge will take appropriate measures to control the noxious weeds. These measures may include herbicide spraying, mowing, or burning. Within the Chippewa National Forest and Leech Lake Indian Reservation, Enbridge will continue to work with CNF and LLBO Division of Resource Management staff to develop a long term plan to control noxious weeds and invasive species along its pipeline corridor.

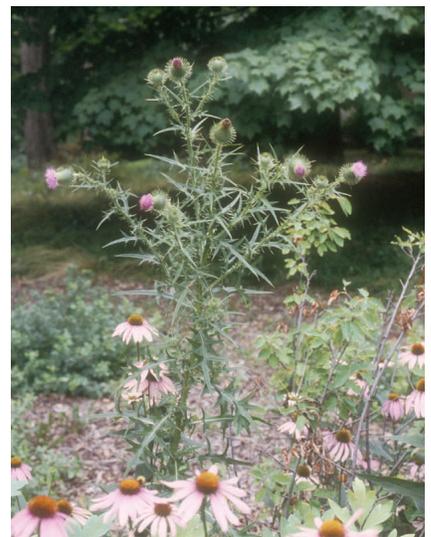
On land where Enbridge has aboveground facilities (e.g., valve sites, pump stations), Enbridge will control noxious weeds in a manner that prevents the spread of weeds onto adjacent agricultural land.

Appendix A – **SPECIES IDENTIFICATION INFORMATION**

Issued for Permitting

Bull Thistle— Upland invasive plant found throughout Wisconsin

BULL THISTLE



Bull Thistle— Upland invasive plant found throughout Wisconsin

Growth— Large biennial herb. Plants vary in height from two to six feet. Seedlings emerge from early spring to late fall, flowering can occur from 4 to 22 months later. Plants form a single tap root. Stems are lightly covered with fine, white, cobwebby hairs and become woody with age.

Flower— A purple brush of flowers emerges from a spiny green ovoid base.

Leaves— Coarse and spiny above with wholly white hairs below. Deeply lobed and dark green. The midribs and veins extend beyond the leaf blades to form , long fierce spines.

Blooming Period— June through October

Habitat— Disturbed areas such as pastures, roadsides, waste areas, and ditch banks. Also found in prairies, old fields, and hay fields.

Spread—The bull thistle reproduces only by seed, and individual plants set seed only once before dying. The seeds are wind-dispersed. Can be controlled by mowing or hand cutting shortly before blooming, if cut to early the flowers will resprout.

Canada Thistle— Noxious Weed found throughout Wisconsin

CANADA THISTLE



Canada Thistle— Noxious Weed found throughout Wisconsin

Growth—Two to five foot forb with slender grooved stems that branch only at the top. Stems are slightly hairy when young becoming more hairy as plant matures.

Flower—Small fragrant bristly clusters, light lavender to deep rose purple.

Leaves—Varies from light to dark green, oblong or lance shaped, deeply cut, spiny toothed margins; slightly hairy below.

Blooming period – July to September.

Habitat—Thrive in disturbed areas and a wide variety of soils. In undisturbed prairies or shady woodlands, the plant becomes tall and lanky with few flowers. Sometimes occurs in wetlands along stream banks and ditches. Also in wet prairies or sedge meadows adjacent to disturbed areas.

Spread—Seeds are spread by mowing after flowering has begun. Introduction to new areas occurs mostly by wind born seed, or sometimes by water runoff. Small sections of broken roots are capable of producing new plants. In a good quality natural area, routine mowing or selective cutting effectively reduces an infestation within 3 or 4 years. Late spring burns effectively discourage this species, whereas early spring burns can increase sprouting and reproduction. For light to moderate infestations, repeated pulling, hand-cutting or mowing with a brush cutter is also an option. This should be done at least three times during the growing season.

Common Buckthorn - Invasive plant found throughout Wisconsin

COMMON BUCKTHORN



Common Buckthorn - Invasive plant found throughout Wisconsin

Growth – Tall shrub or small tree reaching 20-25 feet in height and 10-inches in diameter. Most often they grow in a large shrub growth form, having a few to several stems from the base. The shrubs have spreading loosely-branched crowns with gray to dark brown bark. Cutting a branch exposes a yellow sapwood and a pinkish to orange heartwood. The twigs often end in thorns.

Leaves– Dull green, ovate-elliptic leaves which are smooth on both surfaces and have minute teeth on the margins. They vary from rounded to pointed on the tip.

Blooming Period— Produces flowers from late May through June, fruit ripens August through September.

Habitat– In the understory of southern oak, oak-beech, maple and riparian woods, prairies, and savannas. It also occurs in thickets, hedgerows, pastures, abandoned fields, roadsides, and on rock sites. Buckthorn aggressively competes with local flora, mainly on well-drained soils.

Spread— Long distance dispersal ability, prolific reproduction by seed and wide habitat tolerance. Control spread by removing isolated plants before they begin to produce seed. The plants have a very rapid growth rate and resprout vigorously after they have been cut.

Common St. Johnswort — Invasive upland plant found throughout Wisconsin

COMMON ST. JOHNSWORT



Common St. Johnswort — Invasive upland plant found throughout Wisconsin

Growth—An erect perennial herb in the Mangosteen family typically grow 1-2.5 feet in height.

Flower—Yellow star-like flowers have 5 petals with tiny black dots on the margins. Flowers occur in clusters at the ends of stems with 25-100 flowers per cluster.

Leaves—Reddish stems are single or multiple, smooth, somewhat two-edged, woody at base. The narrow, lance shaped leaves are 1-2 inches long, stalkless with pointed tip. Each leaf is spotted with tiny translucent dots.

Blooming Period— Unknown

Habitat—Prefers poor, sandy, dry soils and full sun. Can be found primarily in waste areas, railroads right-of-ways, sidewalk cracks, roadsides, meadows, dry pastures, rangelands, fields, open woods, dunes, and disturbed ground.

Spread—Spreads both by underground rhizomes, above-ground creeping stems, and by seeds that are dispersed by wind and animals. One plant can produce up to 100,000 seeds per year that are viable for 10 years.

Common Tansy— Invasive upland plant found throughout Wisconsin

COMMON TANSY



Common Tansy— Invasive upland plant found throughout Wisconsin

Growth— An erect perennial forb ranging from 1 1/2 to 5 feet tall. Very aromatic leaves and flowers.

Flower— 1/4" wide yellow disk flowers, which grow in 20 –200 head dense clusters.

Leaves— Mostly hairless, 4"-8" long and half as wide, dotted and winged between feathery divisions.

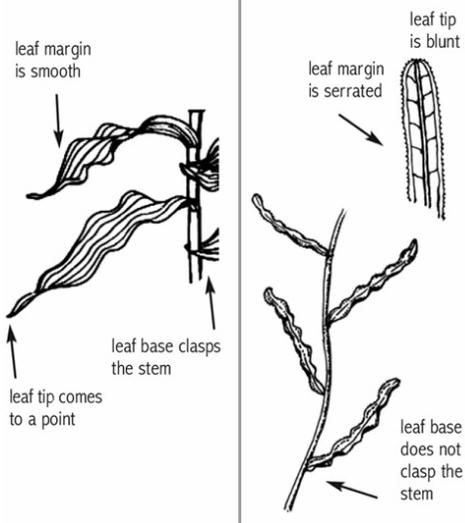
Blooming Period— July through October

Habitat – Occurs in fields, roadsides, and disturbed sites.

Spread—Spreads via an extensive, spreading root system and profuse seed production. Pulling and mowing have little effect on controlling the spread of the Common tansy. Common tansy is easy to control with common herbicides. However, the weed patches must be monitored and retreated to kill any Common tansy's that regenerate from the root.

Curly Leaf Pondweed — Invasive wetland plant found throughout Wisconsin, Minnesota, and North Dakota

CURLY LEAF PONDWEED



Curlyleaf Pondweed

Curly Leaf Pondweed — Invasive wetland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—A submersed aquatic perennial capable of rapid growth.

Flower—No flowers

Leaves—Reddish-green, oblong, and about 3 inches long, with distinct wavy edges that are finely toothed.

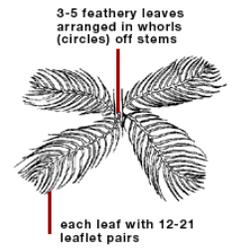
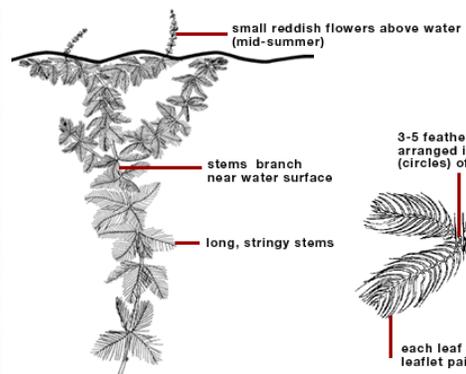
Blooming Period— Early Spring—Mid Summer

Habitat—Found commonly in alkaline and high nutrient water, preferring soft substrate and shallow water depths. It tolerates low light and low water temperatures.

Spread—Spreads from one body of water to another primarily by the unintentional transfer of turions, which have hardened stem tips, on plant fragments carried on trailered boats, personal watercraft, etc.

Eurasian Watermilfoil — Invasive wetland plant found throughout Wisconsin, Minnesota, and North Dakota

EURASIAN WATERMILFOIL



Eurasian Watermilfoil —Invasive wetland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—Forms thick underwater stands of tangled stems and vast mats of vegetations on the water's surface.

Flower—Small, reddish flowers in mid summer.

Leaves—Usually attached in whorls of four but sometimes 3-5. Leaflets are usually closely spaced, leaves are limp when out of water. Top of plants turn red.

Blooming Period—Mid Summer

Habitat—Grows best in fertile, fine-textured, inorganic sediments. In less productive lakes, it is restricted to areas of nutrient-rich sediments. Prefers highly disturbed lake beds, lakes receiving nitrogen and phosphorus-laden runoff, and heavily used lakes.

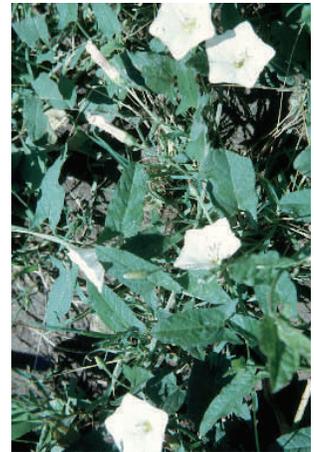
Spread—Spreads by boats and water birds.

Field Bindweed— Noxious Weed found throughout Wisconsin

FIELD BINDWEED



Elizabeth J. Czarapata



Field Bindweed— Noxious Weed found throughout Wisconsin

Growth—Creeping perennial herb. Stems twine around and over other plants or trail along the ground.

Flower-White or pink with white stripes, funnel shaped.

Leaves— Generally arrowhead shaped. Leaves size and shape can vary depending on environmental conditions.

Blooming period – April to October or until the first frost.

Habitat—Cultivated fields, waste and fallow land, roadsides, scrub and sand dunes. Seldom grows in wet soils.

Spread— By unclean seed or feed. Also spread by animals or humans walking from infested areas to weed free land. Always clean equipment when moving from infested areas to prevent spreading.

Field Sandbur — Invasive upland plant found throughout Wisconsin and Minnesota

FIELD SANDBUR



Fig. 10. Sandbur (Cenchrus ciliaris). Plant and enlarged spike with
an arrow pointing to the awn (the sharp, thin, hair-like structure). 10. 100x magnification. 10. 100x magnification. 10. 100x magnification.



Field Sandbur — Invasive upland plant found throughout Wisconsin and Minnesota

Growth—Stems may be erect or spreading, are often bent near the base, and are highly branched. They grow from 6 inches to 1.5 feet tall and appear flat in cross-section.

Flower—Does not flower. Produces numerous small, spiny burs that are green to straw colored. They are found at the ends of flowering stems in groups that are 0.8-2.0 in. long and contain 10-30 burs; each bur is about 0.10-0.25 inches in diameter with 8-40 sharp, spiny bracts.

Leaves— The plant's leaves are flat (folded when budding), 1.5-12 in. long and 0.10-0.25 in wide, usually with a raised midvein, and few to no hairs. The base of each leaf forms a sheath that extends down the stem, and the point where the leaf base joins the sheath is often lighter in color and hairy.

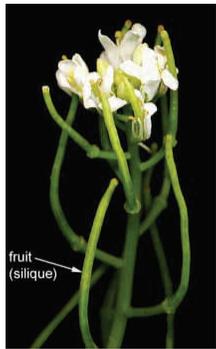
Blooming Period— May to August

Habitat—Occurs in dry, sandy cultivated and disturbed areas.

Spread—The sandbur spreads through seed dispersal.

Garlic Mustard- Invasive plant found throughout Wisconsin

GARLIC MUSTARD



Garlic Mustard- Invasive plant found throughout Wisconsin

Growth – Cool season biennial herb that ranges from 12 to 48 inches in height as an adult plant. Leaves and stems emit the distinctive odor of onion or garlic when crushed. Fruits are slender capsules 1—2.5 inches long that produce a single row of oblong black seeds with ridged seed coats.

Flowers—Small, white, 4 petals, on the end of the main stem and side branches.

Leaves— First year plants—clusters of 3-8 rounded to kidney shaped leaves developing on the ground during the first growing season. Second-year plants—Heart-shaped to triangular, 1-3 inches wide, coarsely toothed on edges, alternate on the stem.

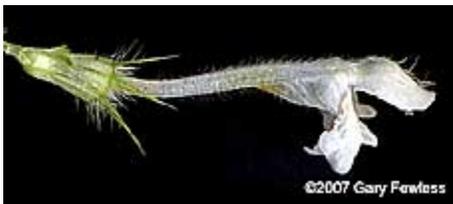
Blooming Period— April through June.

Habitat— upland and floodplain forests, savannas, yards and along roadways, occasionally in full sun. It does prefer shade and cannot tolerate acidic soils. Forest invasion usually begins along the wood's edge and progress via streams and trails.

Spread— Garlic mustard seeds are tiny and often distributed by clothing, shoes and mud. Clean shoes, clothes and equipment when traveling from infested areas. Small infestations can be hand pulled, if in the budding stage plants must be bagged, and the bag burned. Cutting the plants a few inches above the soil surface just after the flower stalks have elongated but before the flowers have opened can be an affective means of control. Monitor the area frequently.

Hemp-nettle— Invasive upland plant found throughout Wisconsin

HEMP-NETTLE



Hemp-nettle— Invasive upland plant found throughout Wisconsin

Growth— Member of the mint family, an annual weed reproducing only by seed. The plant is easily recognized by the bristly hairs that cover the stems that tend to penetrate the skin if handled. Grows up to 36'' in height.

Flower— Irregular tube-shaped pink to white flowers, approximately 3/4" long, often with 2 yellow or white spots.

Leaves— Hemp-nettle leaves are opposite and oblong to ovate, softly hairy on both sides but more densely covered on the upper surface, coarsely toothed.

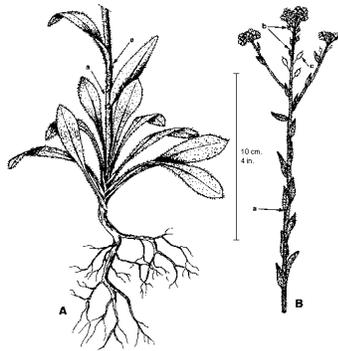
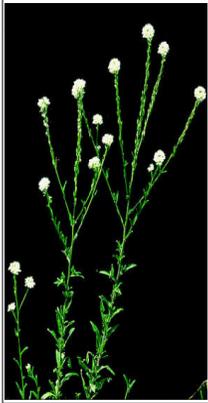
Blooming Period— July through October.

Habitat – Can form dense stands in pastures, roadsides and disturbed areas.

Spread— Mature seeds shed by the plant may be dispersed by wind and water, and in cultivated fields, seeds are scattered, and spread by farm machinery. Found very widely in mesic forests of northeastern Wisconsin. Grubbing early in the spring may curtail early flushes of the weed. Proven to be difficult to control via chemical means.

Hoary Alyssum — Invasive upland plant found throughout Minnesota, Wisconsin, and North Dakota

HOARY ALYSSUM



Hoary Alyssum — Invasive upland plant found throughout Minnesota, Wisconsin, and North Dakota

Growth—An annual, occasionally biennial herbaceous plant 1.5-2 feet tall with an erect branch downy stem.

Flower—Tiny white flowers are arranged in elongated clusters along a central stem, each flower with four deeply divided petals

Leaves—Alternate, small lance-shaped and covered with a grayish down.

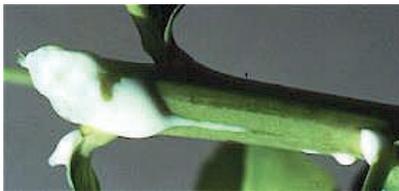
Blooming Period— June through August

Habitat—Most common on sandy or gravelly soils, establishes in dry, disturbed habitats, such as roadsides and railway embankments. Also found in meadows, pastures, and hay fields.

Spread—It is spread by seed. The plant emerged in spring and continues to flower and produce seed until frost.

Leafy spurge — Noxious Weed found throughout Wisconsin

LEAFY SPURGE



Leafy spurge — Noxious Weed found throughout Wisconsin

Growth—Ranges from 6 to 36 inches in height with erect stems. Stems originate from a crown just below the soil surface.

Flower—Small, yellowish-green flowers arranged in clusters and enclosed in yellow-green bracts.

Leaves— Narrow long leaves that are alternately arranged along the stems having a bluish green hue. When damaged, leaves and stems produce a milky latex.

Blooming period — Shoots emerge in late March, yellow-green bracts exist from May to end of July.

Habitat— Primarily in non-cropland habitats, including roadsides, prairies, and woodlands. Tolerant of a wide range of habitats. Usually found in lighter, dry soils.

Spread— Seeds can be shot 20 feet or more when seed capsule explodes. Also spreads when stem buds are broken into small segments by ground disturbing activities and are transported by birds, grazing animals, or in soil. No mechanical methods of control have been found to work effectively. Herbicide application is currently the only know control method.



Cypress spurge
closely related to
the leafy spurge

Musk Thistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

MUSK THISTLE



Muck Thistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—Plant height varies from two to seven feet.

Flower—The terminal flower is large—1.5 to 3 inches in diameter. It is solitary and usually nodding or slightly bend over.

Leaves— Dark green with a light-green midrib, smooth and hairless on both sides, coarsely lobed, slightly wavy, and arranged alternately on a stem that appears winged. Each lobe ends with a prominent spine.

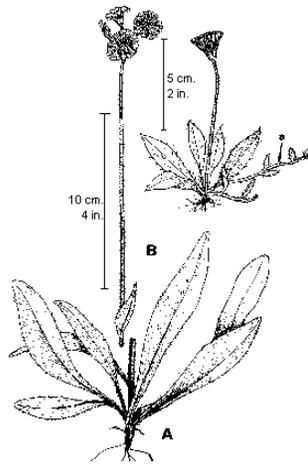
Blooming Period— June through August

Habitat—Most commonly found in disturbed areas such as pastures, roadsides, waste areas, and ditch banks. They are also a problem in prairies, old fields, and hay fields.

Spread—Spread happens through seed dispersal.

Orange Hawkweed — Invasive upland plant found throughout Minnesota and Wisconsin

ORANGE HAWKWEED



Orange Hawkweed — Invasive upland plant found throughout Minnesota and Wisconsin

Growth—Perennial herbaceous plant, that grows 10-20 inches high.

Flower—One dense cluster per stem of dandelion-like, orange or yellow flower heads. Flowers grow .5-.75 inches in diameter and are arranged in a flat-topped cluster.

Leaves—Hairy leaves sit at the base of the stem in a rosette formation. Leaves are made up of entire or minutely toothed leaves, spatula-shaped, 4-6 inches long. They are dark green above and lighter green beneath.

Blooming Period—June through July

Habitat—Found in urban sites, moist meadows, pasture, hay fields, roadsides, gravel pits, forested areas, tree plantations and riparian areas. The plant prefers full sun or partial shade and soils that are well drained and coarse-textured.

Spread—Spread through seed dispersal.

Oxeye Daisy— Invasive upland plant found throughout Wisconsin

OXEYE DAISY



© Patrick J. Alexander

Oxeye Daisy— Invasive upland plant found throughout Wisconsin

Growth— An erect perennial with stems that sprout laterally from a creeping rootstock. Plants vary in height from eight to twenty-four inches. The fruit is a cylindrical dry seed, with 10 ribs, and with no fluff. The number of flower stalks ranges from one to forty per plant. Thrives in a wide range of conditions and in full sun to semi-shade.

Flower— White flowers 2" wide with a yellow disk approximately 1/3" - 3/4" wide. One flower at the end of each branch.

Leaves— Dark green on both sides, one to two inches long, smooth, and lobed or toothed.

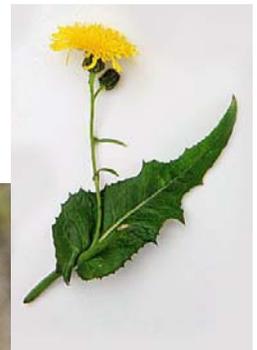
Blooming Period— June through August

Habitat —Found in a wide variety of plant communities including, prairie, scrub, wet meadows, riparian forests, and open canopy forests.

Spread—The oxeye daisy is spread by seeds commonly from walking or driving through wet soils. Little information available on mechanical or biological control of the plant, seeds remain viable in soil for at least two years.

Perennial Sowthistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

PERENNIAL SOWTHISTLE



Perennial Sowthistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—The sowthistle is an adventives perennial plant that grows 2-3.5 feet tall, branching occasionally in the upper half.

Flower—Bright yellow , up to 2 inches wide.

Leaves— Alternate, lower leaves are deeply lobed, upper leaves clasp the stem, similar to dandelion leaves except with teeth ending in small weak prickles.

Blooming Period— June through August

Habitat—Found in cropland, weedy meadows, edges of gardens, areas along roads, and miscellaneous waste areas.

Spread—Spread is caused by seed dispersal through wind.

Plumeless Thistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

PLUMELESS THISTLE



Plumeless Thistle — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—Plant height varies from two to seven feet. The thistle is a winter annual or biennial.

Flower—The terminal flower is large, around 1.5 to 3 inches in diameter. It is solitary, and usually nodding or slightly bent over.

Leaves—Dark green with a light-green midrib, smooth and hairless on both sides, coarsely lobed, slightly wavy, and arranged alternately on a stem.

Blooming Period—May through August

Habitat—Commonly found in disturbed areas such as pastures, roadsides, waste areas, and ditch banks. Also found in prairies, old fields, and hay fields.

Spread—Spread is caused by seed dispersal.

Poison Ivy — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

POISON IVY



Poison Ivy — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—Western Poison Ivy is a smallish, non-climbing shrub which usually grows to be about 4 inches to 4 feet tall. The ivy forms in colonies, sometimes 20 feet or more across.

Flower—The ivy can grow flower clusters up to 3 inches long with yellowish-white or greenish-white flowers.

Leaves—The leaves can be relatively large but always with three leaflets of three. They are dark green most of the year but turn to a bright yellow or red in the fall.

Blooming Period—May through July

Habitat—Western poison ivy is primarily a forest species, it is adapted to a remarkably wide range of ecological conditions. It occurs in the interior of mature hardwood forests but also in young successional forests, and brushy thickets. It is also found in native prairies, sand dunes, talus, rock fields, and floodplains.

Spread—Poison ivy spreads just by growing. It can spread aggressively, especially in damaged habitats.

Purple Loosestrife—Found throughout Wisconsin

PURPLE LOOSESTRIFE





Note: Do not confuse with the less common, native loosestrife which is smaller in size and has fewer flowers.

Native Loosestrife

Purple Loosestrife—Found throughout Wisconsin

Growth—Upright, semi-wood, hardy perennial with a dense bushy growth of 1-50 stems. The green to purple stems grow three to seven feet tall and die back each year.

Flower—Purple to magenta

Leaves— Linear shaped, smooth edges and attached directly to four-sided stems.

Blooming period —Early July into early September

Habitat—Moist soil to shallow water sites, marshes, stream and river banks, lake shores and ditches.

Spread— primarily by seed, but can also spread from broken-off stems that root themselves in moist soil. Any sunny wetland is susceptible to purple loosestrife invasion. Mechanical controls include cutting, pulling, digging and drowning. Cutting is best before the plant flowers. Chemical control should be done in late July or August but before flowering to prevent seed set.

Siberian Peashrub— Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

SIBERIAN PEASHRUB



Elizabeth J. Czarapata

Siberian Peashrub— Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—The small tree/upright shrub can grow up to 18 feet high.

Flower—Flowers are yellow, single, tubular, and grow at the end of the stalk that grows from the leaf axle.

Leaves—Leaves are alternating, compound, 2-4 inches long and consist of 8-12 pairs of leaflets.

Blooming Period—May through June

Habitat—Occurs on most well drained soils and is able to adapt to poor site conditions. It is tolerant of infertile soils, alkaline soils, de-icing salt, cold winter temperatures, drought conditions, and some shade.

Spread—The plant can out-compete native shrubs and vegetation for moisture and soil nutrients in savannas and woodland edge environments.

Spotted knapweed— Invasive plant found throughout Wisconsin

SPOTTED KNAPWEED



Spotted knapweed— Invasive plant found throughout Wisconsin

Growth— Herbaceous biennial or perennial plant with flowering stems, which vary between 4 two feet tall in upland sites to four feet on wetter sites. The slender, hairy stems grow in an erect and branched arrangement. Its name is derived from the black margins of the flower bract tips, giving the flower heads a spotted look. A basal rosette of deeply lobed leaves is produced the first year. Plants are one to four feet tall.

Flower— Single thistle like, purple to pink in color on small flower heads.

Leaves— Stem leaves are alternated and may be slightly lobed or linear. The leaf margins on lower leaves are indented or divided about halfway to the midrib and the leaf surface is rough. The upper leaves are more linear in shape.

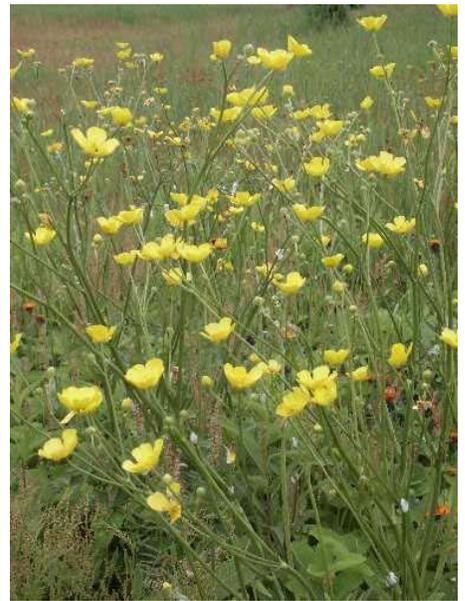
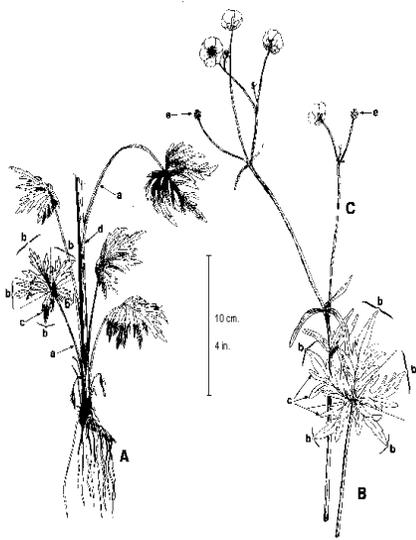
Blooming Period— June through October

Habitat— Disturbed areas such as pastures, roadsides, waste areas, ditch banks and pipelines. Also found in prairies, old fields, oak and pine barrens, and on lake dunes and sandy ridges.

Spread—Spotted knapweed readily spreads on vehicle undercarriages. Ensure vehicles are decontaminated prior to moving to uninfested areas. Caution is also necessary when using hay from the road ditches of primary roadways, or hay purchased from known infested areas. Once established, knapweed can be controlled by hot prescribed burns followed by selective pulling and digging. Mowing is not a successful means of control as plants will reflower at a lower height.

Tall Buttercup — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

TALL BUTTERCUP



Tall Buttercup — Invasive upland plant found throughout Wisconsin, Minnesota, and North Dakota

Growth—Tall buttercup is an upright, perennial broadleaf plant that grows from a cluster of fibrous roots. They usually grow to be 1-3 feet tall.

Flower—Flowers have five to seven shiny, oblong petals that are bright yellow, but may sometimes be cream-colored. Flower size varies from one eighth to one inch diameter.

Leaves—Leaves are alternate, and divided into narrow segments and usually three-cleft. Leaves are covered with hairs.

Blooming Period—June through August

Habitat—Found in damp open fields, low ground, meadows, and some cultivated fields or pastures.

Spread—Spreads through seed dispersal.

Wild parsnip— Invasive plant found throughout Wisconsin

WILD PARSNIP



Wild parsnip— Invasive plant found throughout Wisconsin

Growth— Flowering plants which produce a single, thick stem that contains hundreds of yellow umbellate flowers. Depending on habitat and growing conditions, individual flowering plants range to over four feet in height. Seeds are fairly large and many are produced on one plant.

Flower— Yellow flower clusters. The lateral flowers often overtop the terminal flowers.

Leaves— Alternate, pinnately compound, branched and have saw toothed edges. Each leaf has 5—15 ovate to oblong leaflets with variable toothed edges and deep lobes.

Blooming Period— Look for the large, coarse, flower spike and yellow flowers from the first of June to the middle of July.

Habitat — Tolerant of a wide range of conditions, including dry, mesic and wet-mesic prairies; oak openings; and calcareous fens. It is shade-intolerant and prefers sunny conditions.

Spread— Reproduces readily from seed, slowly invades an area in waves following initial infestation. Caution must be taken when control measures are used; if the plant juices come in contact with the skin in the presence of sunlight, a rash and/or blistering can occur, as well as skin discoloration that can last for months. The best control method is early detection and eradication, a very effective control method is to cut the entire root just below ground level. Chemical controls are effective, but should be used sparingly on quality natural areas.



Care should be taken to avoid skin contact with the juices of this plant. Wear gloves and a long-sleeved shirt.

Appendix B – Equipment Cleaning Log

Issued for Permitting



Equipment Cleaning Log

Form Completed By: _____
Date: _____
Time: _____
Location of Equipment: _____
Equipment Type: _____
Equipment ID: _____
(e.g., company, unique ID number)

Cleaning Method: (check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Scrape Down | <input type="checkbox"/> Steam Wash |
| <input type="checkbox"/> Blow Down (compressed air) | <input type="checkbox"/> Power/Pressure Wash (water) |
| <input type="checkbox"/> Other
(Describe): _____ | |

Comments:

APPENDIX H2

Wisconsin Noxious Weeds and Invasive Species Control Plan

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**Enbridge Energy, Limited Partnership
Enbridge Pipelines (Southern Lights) L.L.C.**

**WISCONSIN
Noxious Weeds and Invasive Species
Control Plan**

**Alberta Clipper
and
Southern Lights Diluent
Pipeline Projects**

March 20, 2009

**Enbridge Alberta Clipper and
Southern Lights Diluent Pipeline Projects**

WISCONSIN

NOXIOUS WEEDS AND INVASIVE SPECIES CONTROL PLAN

Table of Contents

INTRODUCTION..... 2
NOXIOUS WEEDS AND INVASIVE SPECIES 2
SURVEYS 3
PREVENTION AND CONTROL MEASURES 3
 1. Pre-Construction Measures 3
 2. Construction Measures 4
 3. Post-Construction Measures 4

APPENDIX A - SPECIES IDENTIFICATION INFORMATION
APPENDIX B - EQUIPMENT CLEANING LOG

INTRODUCTION

During construction of the Alberta Clipper and Southern Lights Diluent Pipeline Projects, Enbridge intends to minimize the introduction and spread of noxious weeds and invasive species along the proposed construction right-of-way by implementing the measures found in this Plan. However, Enbridge's ability to control the spread of invasive species already present on lands adjacent to the construction right-of-way is limited. In addition, Enbridge implements separate operational measures for controlling invasive species already found on its existing right-of-way, measures that are not addressed here.

Enbridge has developed this Noxious Weeds and Invasive Species Control Plan (Noxious Weeds Plan) to minimize the introduction and spread of noxious weeds and invasive species along the proposed Alberta Clipper and Southern Lights Diluent construction right-of-way. Enbridge's Noxious Weeds Plan is based on applicable state regulations and information provided by the Wisconsin Department of Natural Resources (WDNR), Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), USDA Farm Service Agency (FSA), and USDA Natural Resources Conservation Service (NRCS).

NOXIOUS WEEDS AND INVASIVE SPECIES

Enbridge's consultations with the applicable Wisconsin agencies identified thirty seven (37) species of concern:

- **Autumn Olive**
- **Spotted Knapweed**
- **Oriental (Round Leaved) Bittersweet**
- **Reed Canary Grass**
- **Queen of the Meadow**
- **Purple Loosestrife**
- **Poison Hemlock**
- **Oxeye Daisy**
- **Narrow-Leaved Cattail**
- **Meadow Hawkweed**
- **Leafy Spurge**
- **Japanese Knotweed**
- **Japanese Hops**
- **Japanese Hedge Parsley**
- **Hemp-Nettle**
- **Grecian Foxglove**
- **Glossy Buckthorn**
- **Giant Hogweed**
- **Garlic Mustard**
- **Garden Heliotrope**
- **Flowering Rush**
- **Field Bindweed**
- **European Marsh Thistle**
- **Devil's Paintbrush**
- **Dame's Rocket**
- **Bird's-Foot Trefoil**
- **Cut-Leaved Teasel**
- **Common Teasel**
- **Common Tansy**
- **Common Reed Grass**
- **Common Buckthorn**
- **Canada Thistle**
- **Bull Thistle**
- **Black Swallow Wort**
- **Black Alder**
- **Honeysuckle**
- **Wild Parsnip**

SURVEYS

Enbridge conducted field surveys along the proposed route to identify existing locations of noxious weeds and invasive species. These field surveys are considered reasonably accurate in documenting the locations of invasive species within and adjacent to wetlands, although additional locations may be present. Surveys focused on natural areas, roadside ditches, and pastures. Surveyed areas were evaluated for presence of the target invasive species within and adjacent to the proposed construction work area (construction right-of-way and additional workspaces). Locations where the population of the targeted species comprised at least 20 percent of the species density within a 1,000 square foot area were recorded using a Global Positioning System (GPS) device. Areas containing the target species spotted knapweed with a species density of at least 20 percent within a 500 square-foot area were also documented. Additionally, all occurrences of purple loosestrife populations were recorded.

Results of the surveys, including location maps, will be provided to Enbridge's construction contractors for proper treatment prior to construction.

PREVENTION AND CONTROL MEASURES

1. Pre-Construction Measures

To prevent the introduction of the noxious weeds and invasive species listed above into the project area from other construction sites, construction equipment will be cleaned prior to arriving at the project site. This cleaning will consist of removing visible dirt from the equipment and blowing loose material from equipment using compressed air. The Contractor(s) will keep logs documenting the cleaning history of each piece of equipment and make the logs available to the Environmental Inspector (EI) or other Enbridge Representative upon request. Contractors may use the equipment cleaning log provided in Appendix B or an equivalent form approved by Enbridge. Equipment found to be in non-compliance with the cleaning requirement will not be allowed on the project site until it has been adequately cleaned.

Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Enbridge's EIs will be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. Enbridge's Contractor(s) will be required to obtain necessary permits and/or certifications for the use of the applicable herbicides and must comply with state laws regarding the use of those herbicides. Contractor(s) must keep proper documentation of the locations where the herbicides have been used and provide such documentation to Enbridge if requested.

Treatment of known infestation areas will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction right-of-way. Treatment may be restricted in areas that are not readily accessible, such as areas where access is limited by topography or other site conditions such as saturated/inundated soils. In the event that an area is determined to be inaccessible, the EI or other designated Enbridge Representative will be notified and a site-specific alternative treatment method will be developed.

Pre-construction treatment will be conducted in areas where listed species are found, on an as-needed basis. In areas where thistle infestations occur, treatment will be conducted if the

infestation area exceeds 1,000 square feet. For spotted knapweed, infestation areas 500 square feet or greater will be treated. Where identified, purple loosestrife plants will be pulled, bagged, and removed from the right-of-way.

Organic Farms

Weed control spraying is restricted on or near certified organic farms as defined in Enbridge's Agricultural Mitigation Plan.

2. Construction Measures

If additional noxious weed infestations are identified subsequent to herbicide applications, mechanical means (scrape down/blow down) will be used to remove weeds from tracked equipment prior to leaving the infested area. High pressure water wash stations may be established in select areas if the above measures do not adequately remove soil and vegetation debris from construction equipment. The EI will determine where this practice will be implemented. The Contractor(s) will keep logs documenting the cleaning history of each piece of equipment and make the logs available to the EI or other Enbridge Representative upon request. Any equipment found to be in noncompliance with the cleaning requirement will be removed from the project site until it has been adequately cleaned.

To prevent the spread of noxious weeds and invasive species during construction, mulch used on the project will be composed of weed-free material as specified in Enbridge's Revegetation and Restoration Monitoring Plan. Certified weed-free mulch may also be required at site-specific locations. The contractor(s) will be responsible for identifying and acquiring sources of weed-free and certified weed-free mulch. Sources must be approved by Enbridge prior to purchase and copies of the applicable documentation must be provided to Enbridge.

3. Post-Construction Measures

As specified in Enbridge's Revegetation and Restoration Plan, post-construction monitoring of the restored right-of-way will be conducted by Enbridge and revegetation in non-agricultural areas will be considered successful when the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. If this monitoring indicates a higher density and cover of noxious weeds on the right-of-way compared to adjacent off right-of-way areas, Enbridge will take appropriate measures to control the noxious weeds. These measures may include herbicide spraying, mowing, or burning.

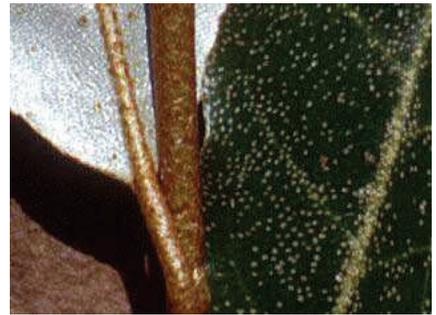
On land where Enbridge has aboveground facilities (e.g., valve sites, pump stations), Enbridge will control noxious weeds in a manner that prevents the spread of weeds onto adjacent agricultural land.

Appendix A – Species Identification Information

Issued for Permitting

Autumn Olive— Invasive upland shrub or small tree found throughout Southern Wisconsin

AUTUMN OLIVE



Autumn Olive— Invasive upland shrub or small tree found throughout Southern Wisconsin

Growth— A deciduous shrub or small tree that grows to approximately 20 feet in height. Autumn olive bears numerous small, round, juicy fruits which are reddish to pink in color and dotted with scales. The flowers and fruits, when present, are borne along twigs.

Flower— Small, light yellow flowers.

Leaves— Alternate leaves, generally oval, approximately 1-3 inches long, and untoothed. The upper surface of the leaves is dark green to grayish, while the underside is covered with silver-white scales.

Blooming Period— Late April and May after first leaves have appeared.

Habitat — Occurs in disturbed areas, successional fields, pastures and roadsides. Also found in prairies, open woodlands, and forest edges. Autumn olive is rarely encountered in dense forests or very wet sites.

Spread—Seed dispersal is mainly by falling fruits and birds. Burned, mowed, or cut plants will resprout vigorously. Seedlings and sprouts can be hand-pulled when the soil is moist to allow for complete removal of the root system. Glyphosate herbicides are recommended for a chemical control method.

Bird's-foot trefoil — Invasive upland plant found throughout Wisconsin

BIRD'S-FOOT TREFOIL



Bird's-foot trefoil — Invasive upland plant found throughout Wisconsin

Growth— A perennial herbaceous plant, 12—24-inches tall, clover-like plant with sprawling growth pattern. One-inch long brown seed pods, produced in clusters, resembling a bird's foot. Forms dense colonies that exclude other plants.

Flower— Yellow pea-like flowers occur typically in flat-topped clusters of 3 to 12. Flowers are approximately 1/2 inch long.

Leaves— Three clover-like leaflets on a short stem with two additional leaflets at the base of the stem.

Blooming Period— Blooms most of the summer.

Habitat — Includes fields, pastures, roadside embankments, slopes of drainage ditches, weedy corners of parks, and miscellaneous waste areas.

Spread—Bird's-foot trefoil reproduces by reseeding itself. Spreads primarily by birds and wildlife. Prescribed burns increase seed germination, therefore is not a recommended control method. Mowing frequently at a height of less than 2" for several years is the recommended mechanical control. Spot spraying affected areas (after re-greening from a burn or mowing) is the recommended chemical control method.

Black Alder (European Alder)— Invasive tree found throughout Wisconsin

BLACK ALDER



Black Alder (European Alder)— Invasive tree found throughout Wisconsin

Growth— Rapidly growing tree that can reach 65-feet in height. The tree often has a multi-stemmed trunk with smooth, dark brown bark. Small winged seed is produced in little woody cone-like fruits.

Flower— Catkins appear on the tree before the new growth in early spring.

Leaves— Smooth, 3-5 inches long, with a serrated margin.

Blooming Period— Mid-summer

Habitat — Grows on a wide variety of soils, from well drained to somewhat poorly drained with light to moderate textures. Does not do well on droughty or wet sites.

Spread— Dispersal by water may play a major role in its spread along waterways. Wind plays a minor role in its dispersal, most notably when seeds are to blow over the top of crusted snow. All trees and shrubs respond very strongly to effective control of weeds and sod. Mechanical or chemical controls are acceptable as long as they are used according to the label.

Black Swallow Wort—Upland invasive plant found throughout Southern Wisconsin

BLACK SWALLOW WORT



Black Swallow Wort—Upland invasive plant found throughout Southern Wisconsin

Growth—Swallow-wort vines twine 3 to 6 feet high, smothering nearby vegetation.

Flower-Dark purple and each of the five pointed petals are triangular covered with downy white hairs.

Leaves— Two to five inches long with alternate, toothless, oval-shaped tipped leaves.

Blooming period – May through mid-August

Habitat— Found in southern Wisconsin. Prefers upland habitats such as forests, woodland edges, old fields, fence rows, and roadsides. Grows in either sun or shade.

Spread— Ripe seeds are wind dispersed, control by removing pods before they open, and then burn to prevent seed release.

Bull Thistle— Upland invasive plant found throughout Wisconsin

BULL THISTLE



Bull Thistle— Upland invasive plant found throughout Wisconsin

Growth— Large biennial herb. Plants vary in height from two to six feet. Seedlings emerge from early spring to late fall, flowering can occur from 4 to 22 months later. Plants form a single tap root. Stems are lightly covered with fine, white, cobwebby hairs and become woody with age.

Flower— A purple brush of flowers emerges from a spiny green ovoid base.

Leaves— Coarse and spiny above with wholly white hairs below. Deeply lobed and dark green. The midribs and veins extend beyond the leaf blades to form , long fierce spines.

Blooming Period— June through October

Habitat— Disturbed areas such as pastures, roadsides, waste areas, and ditch banks. Also found in prairies, old fields, and hay fields.

Spread—The bull thistle reproduces only by seed, and individual plants set seed only once before dying. The seeds are wind-dispersed. Can be controlled by mowing or hand cutting shortly before blooming, if cut to early the flowers will resprout.

Canada Thistle— Noxious Weed found throughout Wisconsin

CANADA THISTLE



Canada Thistle— Noxious Weed found throughout Wisconsin

Growth—Two to five foot forb with slender grooved stems that branch only at the top. Stems are slightly hairy when young becoming more hairy as plant matures.

Flower—Small fragrant bristly clusters, light lavender to deep rose purple.

Leaves—Varies from light to dark green, oblong or lance shaped, deeply cut, spiny toothed margins; slightly hairy below.

Blooming period – July to September.

Habitat—Thrive in disturbed areas and a wide variety of soils. In undisturbed prairies or shady woodlands, the plant becomes tall and lanky with few flowers. Sometimes occurs in wetlands along stream banks and ditches. Also in wet prairies or sedge meadows adjacent to disturbed areas.

Spread—Seeds are spread by mowing after flowering has begun. Introduction to new areas occurs mostly by wind born seed, or sometimes by water runoff. Small sections of broken roots are capable of producing new plants. In a good quality natural area, routine mowing or selective cutting effectively reduces an infestation within 3 or 4 years. Late spring burns effectively discourage this species, whereas early spring burns can increase sprouting and reproduction. For light to moderate infestations, repeated pulling, hand-cutting or mowing with a brush cutter is also an option. This should be done at least three times during the growing season.

Common Buckthorn - Invasive plant found throughout Wisconsin

COMMON BUCKTHORN



Common Buckthorn - Invasive plant found throughout Wisconsin

Growth – Tall shrub or small tree reaching 20-25 feet in height and 10-inches in diameter. Most often they grow in a large shrub growth form, having a few to several stems from the base. The shrubs have spreading loosely-branched crowns with gray to dark brown bark. Cutting a branch exposes a yellow sapwood and a pinkish to orange heartwood. The twigs often end in thorns.

Leaves– Dull green, ovate-elliptic leaves which are smooth on both surfaces and have minute teeth on the margins. They vary from rounded to pointed on the tip.

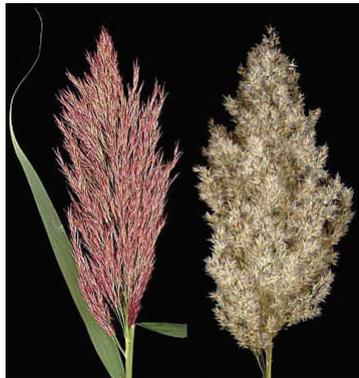
Blooming Period— Produces flowers from late May through June, fruit ripens August through September.

Habitat– In the understory of southern oak, oak-beech, maple and riparian woods, prairies, and savannas. It also occurs in thickets, hedgerows, pastures, abandoned fields, roadsides, and on rock sites. Buckthorn aggressively competes with local flora, mainly on well-drained soils.

Spread— Long distance dispersal ability, prolific reproduction by seed and wide habitat tolerance. Control spread by removing isolated plants before they begin to produce seed. The plants have a very rapid growth rate and resprout vigorously after they have been cut.

Common reed grass - Invasive plant found throughout Wisconsin

COMMON REED GRASS



©2003, Gary Rowless

Common reed grass - Invasive plant found throughout Wisconsin

Growth— Erect perennial , 3—13 feet tall, semi-aquatic , emergent grass, dense stands; stout rhizomes with summer forming buds.

Flower— Light brown to purple, inflorescence spreading spikelet of 3-7 florets with silky hairs.

Leaves— Leaf blades are flat; smooth; 1/2- 2 inches wide and up to 30-inches long, gray green in color.

Blooming Period—July through September

Habitat— Usually grows in sunny open areas especially disturbed areas such as roadside ditches, wetlands downhill from active farm fields and farmed wetlands that have been left fallow.

Spread—The seeds are dispersed by wind and water. To eradicate apply herbicide to young leaves or cut stems; repeatedly mow for several years.

Common Tansy— Invasive upland plant found throughout Wisconsin

COMMON TANSY



Common Tansy— Invasive upland plant found throughout Wisconsin

Growth— An erect perennial forb ranging from 1 1/2 to 5 feet tall. Very aromatic leaves and flowers.

Flower— 1/4" wide yellow disk flowers, which grow in 20 –200 head dense clusters.

Leaves— Mostly hairless, 4"-8" long and half as wide, dotted and winged between feathery divisions.

Blooming Period— July through October

Habitat – Occurs in fields, roadsides, and disturbed sites.

Spread—Spreads via an extensive, spreading root system and profuse seed production. Pulling and mowing have little effect on controlling the spread of the Common tansy. Common tansy is easy to control with common herbicides. However, the weed patches must be monitored and retreated to kill any Common tansy's that regenerate from the root.

Common Teasel— Upland invasive plant found throughout Wisconsin

COMMON TEASEL



Common Teasel— Upland invasive plant found throughout Wisconsin

Growth— Perennials that grow as a basal rosette for a year, then becomes a tall, flowering stalk that dies after flowering. Flowering stems may reach 6-7 feet in height.

Flower— Purple flowers that are small and packed in dense, oval-shaped heads. Have stiff, spiny bracts located at the end of the flowering stems.

Leaves— Flowering plants have large, oblong, opposite prickly leaves, especially on the lower midrib.

Blooming period — June through October

Habitat— Grows in open, sunny habitats that range from wet to dry levels. Optimal conditions seem to be mesic habitats.

Spread— Mowing equipment and inappropriate disposal of dried teasel heads can increase the spread; seeds can also be dispersed by water. Cutting the flowering stalk will cause the plant to send up new flowering stalks. Cut stalks should be removed from the area if the flowers have opened because seeds can mature on the stalk even after cutting.

Cut-Leaved Teasel— Upland invasive plant found throughout Wisconsin

CUT-LEAVED TEASEL



Cut-Leaved Teasel— Upland invasive plant found throughout Wisconsin

Growth— Perennials that grow as a basal rosette for a year then sends up a tall, flowering stalk and dies after flowering. Flowering stems may reach 6-7 feet in height.

Flower— White flowers that are small and packed in dense, oval-shaped heads. Have stiff, spiny bracts located at the end of flowering stems.

Leaves— Cut-leave teasels have broader leaves than the common teasel and have feathering lobes.

Blooming Period—July through September

Habitat— Grows in open, sunny habitats that range from wet to dry levels. Optimal conditions seem to be mesic habitats.

Spread— Mowing equipment and inappropriate disposal of dried teasel heads can increase the spread; seeds can also be dispersed by water. Cut stalks should be removed from the area if the flowers have opened because seeds can mature on the stalk even after cutting. Late spring burns can be useful in controlling teasel before it becomes dense.

Dame's Rocket - Invasive plant found throughout Wisconsin

DAME'S ROCKET



Dame's Rocket - Invasive plant found throughout Wisconsin

Growth— Short lived perennial with flowering stalks 2-3 feet in height. A member of the mustard family with seed produced in long, narrow fruits.

Flower— Large loose clusters of variable colors, ranging through many shades from white to pink and purple. The Dame's rocket is easily confused with the garden phlox. The phlox species has five petals, while the Dame's rocket has four.

Leaves— The leaves are oblong, sharply toothed, and alternately arranged. Leaves decrease in size as they ascend the stem.

Blooming Period— May to August—able to produce flowers and seeds at the same time.

Habitat— Usually grows in moist and mesic woodlands, on woodland edges, along roadsides, and also in open areas.

Spread— Locating and removing plants immediately before seed sets is the best way to prevent the spread of dame's rocket. There is not good documentation on control efforts. One method is to ensure that the "wildflower" seed mix does not contain Dame's rocket.

Devil's Paintbrush— Invasive upland plant found throughout Wisconsin

DEVIL'S PAINTBRUSH



Devil's Paintbrush— Invasive upland plant found throughout Wisconsin

Growth— A perennial with flowering branches, or shoots, which grow from a few inches to two feet in height. The shoots are leafless and covered with stiff black hairs. The entire plant contains a milky juice.

Flower— About an inch in diameter and usually red on the margin, merging into an orange – colored center.

Leaves— Lance shaped, hairy, basal leaves.

Blooming Period— June through October

Habitat —Disturbed areas, such as roadsides, drains and ditches, grasslands, pastures, meadows, and woodlands.

Spread—The small barbs along ribs on the seeds enable them to stick to hair, fur, feathers, clothing, and vehicles. Seeds can also be dispersed by wind and water. In scattered patches of small size, the simplest mode of control is to dig out the plant, ensure that all below ground growth is also removed. A new plant may develop if even a small piece is left in the soil. Carry away and either burn or place in refuse pile where the plant can do no harm.

European Marsh Thistle— Aquatic/wetland invasive plant found throughout northern Wisconsin

EUROPEAN MARSH THISTLE



European Marsh Thistle— Aquatic/ wetland invasive plant found throughout northern Wisconsin

Growth— Herbaceous biennial which, grows to 4 to 5 feet. Flowering stems are erect, thick, sometimes reddish in color, branched at the top and bristling with spiny “wings” aligned with the stem.

Flower— Clusters of spiny purple flower heads.

Leaves— On flowering plants, leaves are 6 to 8 inches long near the base and shorter toward the top. Leaves in first-year rosettes are spiny, long, deeply lobed and hairy on the underside.

Blooming Period— June through July

Habitat— Prefers moist, acidic soils, found along roadsides and in wetlands, forest edges and fields.

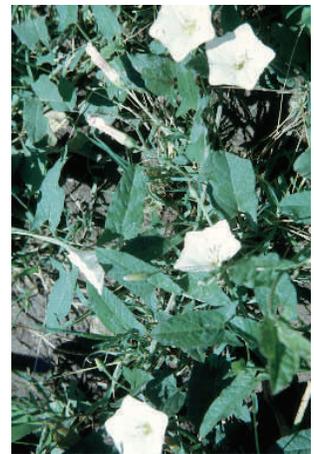
Spread— Like other thistles, its seeds are readily dispersed by wind. Repeated mowing or selective cutting close to the ground can reduce an infestation within three or four years. Flowering heads can be cut off while in the unopened bud stage. If cut during or after flowering, flower heads should be gathered and destroyed.

Field Bindweed— Noxious Weed found throughout Wisconsin

FIELD BINDWEED



Elizabeth J. Czarapata



Field Bindweed— Noxious Weed found throughout Wisconsin

Growth—Creeping perennial herb. Stems twine around and over other plants or trail along the ground.

Flower-White or pink with white stripes, funnel shaped.

Leaves— Generally arrowhead shaped. Leaves size and shape can vary depending on environmental conditions.

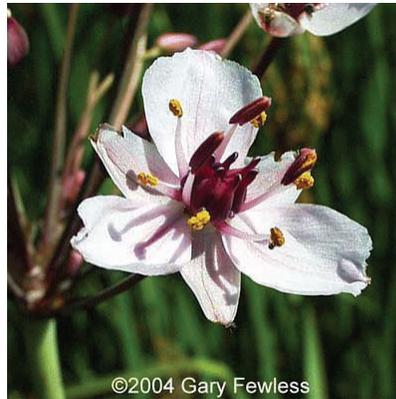
Blooming period – April to October or until the first frost.

Habitat—Cultivated fields, waste and fallow land, roadsides, scrub and sand dunes. Seldom grows in wet soils.

Spread— By unclean seed or feed. Also spread by animals or humans walking from infested areas to weed free land. Always clean equipment when moving from infested areas to prevent spreading.

Flowering Rush— Aquatic/wetland invasive plant found throughout Wisconsin

FLOWERING RUSH



Flowering Rush— Aquatic/ wetland invasive plant found throughout Wisconsin

Growth— Perennial aquatic herb that emerges each spring from winter-hardy creeping root-stalks. In deep water, the plant can be entirely submerged. Submerged plants have limp leaves and do not flower.

Flower— Distinctive spray of attractive white, pink, or purple flowers on a tall stalk. Flowers have 3 petals, 3 sepals and red anthers.

Leaves— Stiff, narrow, sedge-like (3-edged or triangular in cross-section).

Blooming Period— Late summer to early fall

Habitat— Prefers shallow or slow moving water where it grows as an emergent plant in marshes, backwaters and along shorelines.

Spread— Plants spread by underground creeping rootstalks. Plants can be cut below the water surface several times during the summer. If hand pulled must remove all root fragments. If root system is disturbed, the pieces can break off and spread to other areas. All plant parts should be composted away from aquatic environments.

Garden Heliotrope— Potentially invasive plant found throughout Wisconsin

GARDEN HELIOTROPE

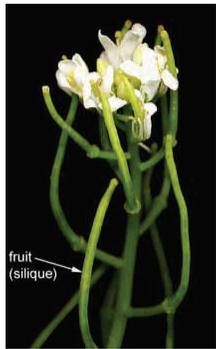


Garden Heliotrope— Potentially invasive plant found throughout Wisconsin

Introduced, escaped; potentially invasive perennial forb. Potential to see in Douglas, Jefferson and Dane Counties.

Garlic Mustard- Invasive plant found throughout Wisconsin

GARLIC MUSTARD



Garlic Mustard- Invasive plant found throughout Wisconsin

Growth – Cool season biennial herb that ranges from 12 to 48 inches in height as an adult plant. Leaves and stems emit the distinctive odor of onion or garlic when crushed. Fruits are slender capsules 1—2.5 inches long that produce a single row of oblong black seeds with ridged seed coats.

Flowers—Small, white, 4 petals, on the end of the main stem and side branches.

Leaves— First year plants—clusters of 3-8 rounded to kidney shaped leaves developing on the ground during the first growing season. Second-year plants—Heart-shaped to triangular, 1-3 inches wide, coarsely toothed on edges, alternate on the stem.

Blooming Period— April through June.

Habitat— upland and floodplain forests, savannas, yards and along roadways, occasionally in full sun. It does prefer shade and cannot tolerate acidic soils. Forest invasion usually begins along the wood's edge and progress via streams and trails.

Spread— Garlic mustard seeds are tiny and often distributed by clothing, shoes and mud. Clean shoes, clothes and equipment when traveling from infested areas. Small infestations can be hand pulled, if in the budding stage plants must be bagged, and the bag burned. Cutting the plants a few inches above the soil surface just after the flower stalks have elongated but before the flowers have opened can be an affective means of control. Monitor the area frequently.

Giant Hogweed— Upland invasive plant found throughout Wisconsin

GIANT HOGWEED



Giant Hogweed— Upland invasive plant found throughout Wisconsin

Growth— Member of the parsley family. Flowering plants are 5-15 feet tall. The plant produces thousands of seeds then dies after flowering. Hollow stems with dark reddish purple hairs.

Flower— Flat many branched white flowers that can reach 2 1/2 feet across.

Leaves— Deep palm like cuts up to 5' wide, coarse hairs on underside.

Blooming Period— Mid June to Mid July

Habitat— Found in disturbed areas, prefers areas with moist soils and some shade. Found along streambanks where it crowds out native vegetation, leads to soil erosion.

Spread— Air born and waterway dispersion of seeds. Repeated mowing or cutting weakens the plants, but the root can remain alive for many years.



Can cause severe skin irritation. Immediately wash with soap and water if sap contacts exposed skin. Cover all skin and protect eyes if working around the Giant Hogweed.

Glossy Buckthorn - Invasive plant found throughout Wisconsin

GLOSSY BUCKTHORN



Glossy Buckthorn - Invasive plant found throughout Wisconsin

Growth – Tall shrub or small tree reaching 20-25 feet in height and 10-inches in diameter. Most often they grow in a large shrub growth form, having a few to several stems from the base. The shrubs have spreading loosely-branched crowns with gray to dark brown bark. Cutting a branch exposes a yellow sapwood and a pinkish to orange heartwood.

Leaves– Thin, glossy, ovate, or elliptic leaves. The upper leaf surface is shiny; the lower surface is can be hairy or smooth.

Blooming Period— Produces flowers from late May until the first frost, produces fruit early July through September.

Habitat– Aggressive invader of wet soils. Problematic in wetlands as varied as acidic bogs, calcareous fens, and sedge meadows. Grows well in both full sun and in heavily shaded habitats. Also grows well in a wide variety of upland habitats, including old fields and roadsides..

Spread— Long distance dispersal ability, prolific reproduction by seed and wide habitat tolerance. Control spread by removing isolated plants before they begin to produce seed. The plants have a very rapid growth rate and resprout vigorously after they have been cut.

Grecian Foxglove— Introduced/Escaped plant found throughout Wisconsin

GRECIAN FOXGLOVE



Grecian Foxglove— Introduced/Escaped plant found throughout Wisconsin

Growth— The plant is herbaceous biennial or perennial, with erect stems three to six feet high. Adapted to fine and medium textured soils with pH ranging from 5.5 to 7.

Flower— Purple to white, spotted, thimble-shaped flowers 1.25 inches long.

Leaves—Ovate to lance-shaped soft-hairy, toothed, leaves up to one foot long in a basal rosette.

Blooming Period—Summer

Habitat—This plant invades roadsides, disturbed areas, moist meadows, open woodland, grasslands, woodlands, and pastures.

Spread— Reproduces only by seed, seeds remain viable in soils at least five years. Foxglove readily colonizes in disturbed areas, forming dense patches that displace natural vegetation. Hand pulling can be an effective control of foxglove. Herbicides are more effective with large infestations. Control efforts are required for at least five years. Biological control has not been pursued.

Hemp-nettle— Invasive upland plant found throughout Wisconsin

HEMP-NETTLE



Hemp-nettle— Invasive upland plant found throughout Wisconsin

Growth— Member of the mint family, an annual weed reproducing only by seed. The plant is easily recognized by the bristly hairs that cover the stems that tend to penetrate the skin if handled. Grows up to 36'' in height.

Flower— Irregular tube-shaped pink to white flowers, approximately 3/4" long, often with 2 yellow or white spots.

Leaves— Hemp-nettle leaves are opposite and oblong to ovate, softly hairy on both sides but more densely covered on the upper surface, coarsely toothed.

Blooming Period— July through October.

Habitat – Can form dense stands in pastures, roadsides and disturbed areas.

Spread— Mature seeds shed by the plant may be dispersed by wind and water, and in cultivated fields, seeds are scattered, and spread by farm machinery. Found very widely in mesic forests of northeastern Wisconsin. Grubbing early in the spring may curtail early flushes of the weed. Proven to be difficult to control via chemical means.

Honeysuckle - Invasive plant found throughout Wisconsin

HONEYSUCKLE



Bella Honeysuckle



Tartarian Honeysuckle



Morrow's Honeysuckle



Honeysuckle - Invasive plant found throughout Wisconsin

Growth— Very bushy growth height usually in the range of 3-10 feet, occasionally taller with shallow roots. The shaggy-barked older stems and branches of the shrubs are often hollow. The bush produces yellow, orange, or red berries. Easy to find in early spring when they begin leaf development, one or two weeks before native shrubs.

Flowers- Tartarian flowers are generally pink to crimson in color. Flowers of the other bush honeysuckle species are white and become yellow with age.

Leaves— The leaves of the Tartarian are smooth, hairless, and bluish-green. Leaves of the Morrow are downy and the Bella is a hybrid between the two.

Blooming Period— Produces flowers from May through June.

Habitat— Lives in a broad range of plant communities with varying moisture and shade levels. Woodlands are most affected, and most vulnerable when the area is disturbed. Thrive in sunny, upland habitats, including forest edges, roadsides, pastures, and abandoned fields. Also found in fens, bogs and lakeshores.

Spread— Long distance dispersal ability aided by birds. Mechanical control includes digging or pulling the plant in the spring. In fire-adapted areas, spring prescribed burning may kill seedlings and top kill larger plants. Chemical control includes cutting the stems at the base and treating with herbicide using a low-pressure hand-held sprayer, sponge applicator or contact solution bottles.



Fruit and Flower of
Amur Honeysuckle

Japanese Hedge Parsley— Upland invasive plant found in Dane, Rock and Walworth Counties, Wisconsin

JAPANESE HEDGE PARSELY



Japanese Hedge Parsley— Upland invasive plant found in Dane, Rock and Walworth Counties, Wisconsin

Growth— Parsley-like annuals with taproots and erect, ridged stems. Grow in a spreading form up to 3 feet in height.

Flower— Small, white flowers cluster in small, open flat-topped umbels.

Leaves— Alternate, feather like leaves, 2 to 5 inches long and may be slightly downy.

Blooming Period— June through August.

Habitat— Found in Dane, Rock and Walworth counties. Found in disturbed upland sites including roadsides, urban areas, right-of-ways and woodlands.

Spread— The small fruiting structure is covered in Velcro-like hairs which attaches to clothing and fur, readily dispersing the seed. Pull or mow prior to flowering. Treating foliage with herbicide is effective if done in early spring or on resprout after cutting.

Japanese Hops— Upland invasive plant found throughout Wisconsin

JAPANESE HOPS



Japanese Hops— Upland invasive plant found throughout Wisconsin

Growth— Climbing annual vine that can grow to 8 feet in length. Stems have a very rough texture. Stems and leaves have rough hooked climbing hairs to grasp and twine clockwise up nearby vegetation.

Flower— Small dull green flowers.

Leaves— Opposite, 2 to 5 inches long, serrated on the edges and palm like. Upper leaves have 3 to 5 lobes

Blooming Period— Mid to late summer

Habitat— Found in southern and western counties. Prefers moist soils, can form dense stands in floodplains and along streambanks and lakeshores, but can thrive in disturbed areas such as roadside and urban lots. Can be found in full sun or shade.

Spread— Seeds are dispersed by mechanical means, such as wind and by moving water along rivers and streams. Plants can be hand-pulled and removed from the area before seeds ripen. Herbicide can be used on foliage before plants flower

Japanese Knotweed — Introduced, persistent and spreading plant found throughout Wisconsin

JAPANESE KNOTWEED



Japanese Knotweed — Introduced, persistent and spreading plant found throughout Wisconsin

Growth— Perennial species with spreading rhizomes and numerous reddish-brown, freely branched stems. This shrubby plant can reach four to eight feet in height. Stems are smooth stout, and swollen at joints where the leaf meets the stem. Seeds are triangular, shiny, and very small.

Flower— Greenish white flowers occur in branched sprays.

Leaves— Size varies, normally 6-inches long by 3 to 4-inches wide, shiny, broadly oval to somewhat triangular and pointed at the tip.

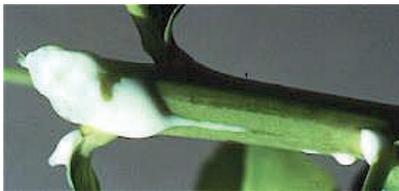
Blooming Period— Flowers bloom in summer followed soon after by small winged fruits.

Habitat — Along streams and rivers, low-lying areas, utility right-of ways, and around old homesteads, considered to be a freshwater invasive weed.

Spread— Often transported to new sites as a contaminant in fill-dirt seeds, sometimes distributed by water, and carried by the wind. Grubbing is effective for small initial populations or areas where herbicide cannot be used. Chemical methods include cut stem application of herbicide best for areas where knotweed is established around non-target plants. For large populations a foliar application is recommended.

Leafy spurge — Noxious Weed found throughout Wisconsin

LEAFY SPURGE



Leafy spurge — Noxious Weed found throughout Wisconsin

Growth—Ranges from 6 to 36 inches in height with erect stems. Stems originate from a crown just below the soil surface.

Flower—Small, yellowish-green flowers arranged in clusters and enclosed in yellow-green bracts.

Leaves— Narrow long leaves that are alternately arranged along the stems having a bluish green hue. When damaged, leaves and stems produce a milky latex.

Blooming period — Shoots emerge in late March, yellow-green bracts exist from May to end of July.

Habitat— Primarily in non-cropland habitats, including roadsides, prairies, and woodlands. Tolerant of a wide range of habitats. Usually found in lighter, dry soils.

Spread— Seeds can be shot 20 feet or more when seed capsule explodes. Also spreads when stem buds are broken into small segments by ground disturbing activities and are transported by birds, grazing animals, or in soil. No mechanical methods of control have been found to work effectively. Herbicide application is currently the only know control method.



Cypress spurge
closely related to
the leafy spurge

Meadow Hawkweed— Invasive upland plant found throughout Wisconsin

MEADOW HAWKWEED



Meadow Hawkweed— Invasive upland plant found throughout Wisconsin

Growth— A perennial forb having stems and leaves that exude milky juice when broken. Meadow Hawkweed has very hairy stems that grow to a height of 1—3 feet.

Flower— Yellow flowers approximately 1-inch across with compact clusters containing 5– 50 short –stalked heads of ray flowers.

Leaves— Basal leaves arise directly from the crown of the plant. 1 to 2 smaller leaves on the stem.

Blooming Period— May to September

Habitat —Disturbed areas, such as roadsides, drains and ditches, grasslands, pastures and fields. Does not tolerate shade well.

Spread—The small barbs along ribs on the seeds enable them to stick to hair, fur, feathers, clothing, and vehicles. Seeds can also be dispersed by wind and water. In scattered patches of small size, the simplest mode of control is to dig out the plant, ensure that all below ground growth is also removed. A new plant may develop if even a small piece is left in the soil. Carry away and either burn or place in refuse pile where the plant can do no harm.

Narrow-Leaved Cattail— Invasive aquatic plant found throughout Wisconsin wetlands

NARROW-LEAVED CATTAIL



Native Cattail

Male Flower



Female Flower

Narrow-Leaved Cattail— Invasive aquatic plant found throughout Wisconsin wetlands

Growth— An emergent aquatic plant, common in Wisconsin wetlands, grows to a height of 3 to 6 feet. On narrow-leaved cattail, there is a gap of 1/2 to 5-inches between male and female flowers.

Flower— Velvety, brown flow head shaped like an elongated cylinder, with a compact spike at the terminal end of the stem.

Leaves— The leaves originate at the base of the stem and spread outward as they rise into the air.

Blooming Period— May to July

Habitat —Found in damp soil or shallow water where sufficient nutrients are available. Common site along expressways, in artificial ditches and shallow ponds, at the edges of calm waters, and in freshwater marshes.

Spread—Seeds are wind dispersed, seeds remain viable in the seed bank for up to 100 years. Cattail seeds prefer freshwater. The optimal control will depend on the hydrologic state of the site and the size of the area to be managed. Cutting, crushing, shearing and discing in the late spring will eliminate cattail colonies. Herbicide application in mid to late summer enhances the effectiveness of the chosen chemical, although the herbicides have little effect on seed production.

Oxeye Daisy— Invasive upland plant found throughout Wisconsin

OXEYE DAISY



© Patrick J. Alexander

Oxeye Daisy— Invasive upland plant found throughout Wisconsin

Growth— An erect perennial with stems that sprout laterally from a creeping rootstock. Plants vary in height from eight to twenty-four inches. The fruit is a cylindrical dry seed, with 10 ribs, and with no fluff. The number of flower stalks ranges from one to forty per plant. Thrives in a wide range of conditions and in full sun to semi-shade.

Flower— White flowers 2" wide with a yellow disk approximately 1/3" - 3/4" wide. One flower at the end of each branch.

Leaves— Dark green on both sides, one to two inches long, smooth, and lobed or toothed.

Blooming Period— June through August

Habitat —Found in a wide variety of plant communities including, prairie, scrub, wet meadows, riparian forests, and open canopy forests.

Spread—The oxeye daisy is spread by seeds commonly from walking or driving through wet soils. Little information available on mechanical or biological control of the plant, seeds remain viable in soil for at least two years.

Poison Hemlock— Globally invasive plant found throughout Wisconsin

POSION HEMLOCK



Poison Hemlock— Globally invasive plant found throughout Wisconsin

Growth— Poison Hemlock can grow to be approximately 6 to 10 feet tall. It is usually a biennial, with first-year plants producing ground-level rosettes. The stem is ribbed, hollow, and has purplish streaks or splotches.

Flower— Small, white flowers grow in many umbrella-shaped clusters, each supported by a stalk.

Leaves— Has a somewhat fern-like appearance and are finely pinnately divided. When crushed, they have a rank odor.

Blooming Period— Mid-summer

Habitat — Commonly occurs in sizable stands of dense, rank growth along roadsides, field margins, ditch banks, and in low-lying waste areas. Also invades native plant communities in riparian woodlands, and open flood plains of rivers and streams. Most common on shady or moist ground below 5,000 feet.

Spread— Reproduced only by seed, which is dispersed by water, clothing, boots and machinery. Poison hemlock can be easily controlled with herbicide. Mechanical removal (hand pulling, grubbing, or mowing) is effective if done prior to flowering.

Purple Loosestrife—Found throughout Wisconsin

PURPLE LOOSESTRIFE





Note: Do not confuse with the less common, native loosestrife which is smaller in size and has fewer flowers.

Native Loosestrife

Purple Loosestrife—Found throughout Wisconsin

Growth—Upright, semi-wood, hardy perennial with a dense bushy growth of 1-50 stems. The green to purple stems grow three to seven feet tall and die back each year.

Flower—Purple to magenta

Leaves— Linear shaped, smooth edges and attached directly to four-sided stems.

Blooming period —Early July into early September

Habitat—Moist soil to shallow water sites, marshes, stream and river banks, lake shores and ditches.

Spread— primarily by seed, but can also spread from broken-off stems that root themselves in moist soil. Any sunny wetland is susceptible to purple loosestrife invasion. Mechanical controls include cutting, pulling, digging and drowning. Cutting is best before the plant flowers. Chemical control should be done in late July or August but before flowering to prevent seed set.

Queen of the Meadow— Potentially invasive plant found throughout Wisconsin

QUEEN OF THE MEADOW



Queen of the Meadow— Potentially invasive plant found throughout Wisconsin

Introduced, rarely escaped; potentially invasive perennial forb. Potential to see in Douglas, Taylor Counties.

Reed canary grass - Invasive plant found throughout Wisconsin

REED CANARY GRASS



Reed canary grass - Invasive plant found throughout Wisconsin

Growth— A large, coarse grass that reaches 2—9 feet in height. It has an erect, hairless stem and is the first grass to sprout in spring. Seeds are shiny brown in color. The compact panicles are erect or slightly spreading and range from 3 to 16 inches long with branches 2 to 12 inches in length.

Flower— Single flowers occur in dense clusters and are green to purple at first changing to beige over time.

Leaves— Tapering leaf blades 1 1/2 to 10 inches long and 1/4 to 3/4 inches in width. Blades are flat and have a rough texture on both surfaces.

Blooming Period— May through mid-June

Habitat— Grows on dry soils in upland habitats and in the partial shade of oak woodlands, but does best on fertile, moist organic soils in the full sun. This species can invade most types of wetlands, including marshes, wet prairies, sedge meadows, fens, and stream banks. It also grows in disturbed areas such as spoil piles.

Spread—The seeds ripen in late June and shatter when ripe. Seeds may be dispersed from one wetland to another by waterways, animals, humans or machines. Mowing, burning, hand-pulling or digging may be used for removal in small patches. Herbicides may be used after removal of dead leaves. Always replant area with native species.

Oriental (Round Leaved Bittersweet) - Invasive plant found throughout Wisconsin

ORIENTAL (ROUND LEAVED) BITTERSWEET



Oriental (Round Leaved Bittersweet) - Invasive plant found throughout Wisconsin

Growth— Round-leaved bittersweet is a deciduous twining vine (older individuals become spreading, trailing shrub). The green, globose fruit is born in clusters of 1-3 in July and later becomes orange in color.

Flowers- The small greenish flowers occur in a cluster terminating the small branches, with terminal flowers blooming first.

Leaves— Alternate, round, toothed, glossy leaves

Blooming Period— May through June.

Habitat— Round-leaved bittersweet mainly is associated with old homesites where it has escaped from cultivation into surrounding natural communities. It occurs in a variety of forest types, including undisturbed mesic and dry-mesic forest. It also is found in disturbed open areas such as roadsides

Spread— Spreads rapidly into openings and undisturbed woodland and reproduces prolifically by seed. It is shade tolerant, and seedlings may stay suppressed for some time before released by disturbance. Where practical, individual vines should be pulled up by the roots and removed from the area by hand. If hand removal is not feasible, vines should be cut by hand and cut stems spot-treated with herbicide. The herbicide applicator should carefully avoid contacting nontarget plants when applying herbicide. To maintain control, round-leaved bittersweet should be totally eradicated from the surrounding area where possible.

Spotted knapweed— Invasive plant found throughout Wisconsin

SPOTTED KNAPWEED



Spotted knapweed— Invasive plant found throughout Wisconsin

Growth— Herbaceous biennial or perennial plant with flowering stems, which vary between 4 two feet tall in upland sites to four feet on wetter sites. The slender, hairy stems grow in an erect and branched arrangement. Its name is derived from the black margins of the flower bract tips, giving the flower heads a spotted look. A basal rosette of deeply lobed leaves is produced the first year. Plants are one to four feet tall.

Flower— Single thistle like, purple to pink in color on small flower heads.

Leaves— Stem leaves are alternated and may be slightly lobed or linear. The leaf margins on lower leaves are indented or divided about halfway to the midrib and the leaf surface is rough. The upper leaves are more linear in shape.

Blooming Period— June through October

Habitat— Disturbed areas such as pastures, roadsides, waste areas, ditch banks and pipelines. Also found in prairies, old fields, oak and pine barrens, and on lake dunes and sandy ridges.

Spread—Spotted knapweed readily spreads on vehicle undercarriages. Ensure vehicles are decontaminated prior to moving to uninfested areas. Caution is also necessary when using hay from the road ditches of primary roadways, or hay purchased from known infested areas. Once established, knapweed can be controlled by hot prescribed burns followed by selective pulling and digging. Mowing is not a successful means of control as plants will reflower at a lower height.

Wild parsnip— Invasive plant found throughout Wisconsin

WILD PARSNIP



Wild parsnip— Invasive plant found throughout Wisconsin

Growth— Flowering plants which produce a single, thick stem that contains hundreds of yellow umbellate flowers. Depending on habitat and growing conditions, individual flowering plants range to over four feet in height. Seeds are fairly large and many are produced on one plant.

Flower— Yellow flower clusters. The lateral flowers often overtop the terminal flowers.

Leaves— Alternate, pinnately compound, branched and have saw toothed edges. Each leaf has 5—15 ovate to oblong leaflets with variable toothed edges and deep lobes.

Blooming Period— Look for the large, coarse, flower spike and yellow flowers from the first of June to the middle of July.

Habitat — Tolerant of a wide range of conditions, including dry, mesic and wet-mesic prairies; oak openings; and calcareous fens. It is shade-intolerant and prefers sunny conditions.

Spread— Reproduces readily from seed, slowly invades an area in waves following initial infestation. Caution must be taken when control measures are used; if the plant juices come in contact with the skin in the presence of sunlight, a rash and/or blistering can occur, as well as skin discoloration that can last for months. The best control method is early detection and eradication, a very effective control method is to cut the entire root just below ground level. Chemical controls are effective, but should be used sparingly on quality natural areas.



Care should be taken to avoid skin contact with the juices of this plant. Wear gloves and a long-sleeved shirt.

Appendix B – Equipment Cleaning Log

Issued for Permitting



Equipment Cleaning Log

Form Completed By: _____
Date: _____
Time: _____
Location of Equipment: _____
Equipment Type: _____
Equipment ID: _____
(e.g., company, unique ID number)

Cleaning Method: (check all that apply)

- Scrape Down Steam Wash
 Blow Down (compressed air) Power/Pressure Wash (water)
 Other
(Describe): _____

Comments:
