



Wild Parsnip
Pastinaca sativa L.

DESCRIPTION: The thick taproot of the wild parsnip is long, conic, and fleshy. Branching from the fleshy root is the light green, hollow, deeply-grooved stem that stands erect at 2-5 feet (0.6-1.5 meters) tall. Leaves are alternate, pinnately compound, and branched with saw-toothed edges. Each leaf has 5-15 ovate to oblong leaflets with variably toothed edges and deep lobes. The petiolate lower leaves are often 1.5 inches (3.8 cm) long, while upper leaves are sessile and much reduced. The small, 5-petaled, yellow flowers are arranged in 2-6 inch (5-15 cm) broad umbels at the top of slender stems and branches. Each compound flat umbel has 15-25 primary rays that contain yellow blossoms during the June-September flowering season. The blossoms give rise to a fruit termed a schizocarp that is broadly oval and 0.25 inch (6 mm) long. The abundant 0.25 inch (6 mm) mericarps (segments of the fruit) of this parsnip are flat, round, smooth, straw-colored, and have low ribs across them.



Photos: Upper right: Chris Evans, University of Georgia,
www.forestryimages.org

Others: © John M. Randall/The Nature Conservancy

SIMILAR SPECIES: Wild parsnip is distinguished from other species in the parsley family by its yellow flowers and its pinnately compound leaves that are divided once into more than five leaflets. Wild parsnip should be accurately identified before attempting any control measures. If identification of wild parsnip is in doubt, the plant's identity should be confirmed by a knowledgeable individual and/or by consulting appropriate books.

DISTRIBUTION: This member of the parsnip or umbel family has escaped from cultivation and is common throughout the northern United States and Canada, from British Columbia to California and Vermont, and south to Florida. In Illinois, wild parsnip has become a serious problem in some mesic prairies, and it has been recorded from every county.

HABITAT: Although this Eurasian native thrives when growing in rich, alkaline, moist soils, it can survive under almost any conditions. Wild parsnip commonly can be found along roadsides, in pastures, and in fields.

LIFE HISTORY: Wild parsnip is a perennial that exists as a basal rosette for at least one year and then flowers and dies. Like its relative the carrot, wild parsnip produces a rosette of large, grooved, upright leaves and stores reserves in a large, fleshy taproot during the first year. A hollow flowering stem whose leaves are much smaller is sent up from the center of the rosette in a subsequent growth season. Wild parsnip often flowers and sets seed during its second year, although it may not flower until subsequent years. The edible roots of wild parsnip were consumed in ancient Greece and Rome and cultivars are still grown for food today. The root develops its sweet taste after being exposed to cold. Some people are sensitive to the touch of the leaves and soon develop a rash if their skin contacts the leaves or plant sap in the presence of sunlight. A very painful rash can develop that in some people leaves scars that can persist for several months or longer. Wild parsnip is most irritating at the time of flowering.

EFFECTS UPON NATURAL AREAS: Well-established prairies are not likely to be invaded by parsnip, but it can become quite abundant on prairie edges and in disturbed patches within otherwise high-quality prairies. Once established at the edges, parsnip can spread into adjacent high-quality areas.



Photo: © John M. Randall/The Nature Conservancy

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For more information on wild parsnip, please contact:

Illinois Nature Preserves Commission, Vegetation Management Guidelines,

<http://www.inhs.uiuc.edu/chf/outreach/VMG/VMG.html>

Mid-Atlantic Exotic Pest Plant Council, Inc., <http://www.ma-eppc.org>

National Invasive Species Information Center, <http://www.invasivespeciesinfo.gov>

The Bugwood Network, MA-EPPC Plant List, <http://www.invasive.org/maweeds.cfm>

The Nature Conservancy, Invasive Species Initiative, <http://tncweeds.ucdavis.edu/esadocs.html>

USDA - NRCS PLANTS Database, <http://plants.usda.gov/>

Wisconsin Department of Natural Resources, Invasive Plant Fact Sheets,

<http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/parsnip.htm>

REFERENCES:

Eckardt, N. 1987. Element stewardship abstract for *Pastinaca sativa* - wild parsnip. The Nature Conservancy, Arlington, Virginia. 4 pp.

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Jeffery, L. S. and H. J. Lorenzi. 1987. *Weeds of the United States and their control*. Van Nostrand, Reinhold Co., New York. 257 pp.

Kline, V. M. 1981. Mowing to Control Wild Parsnip (Wisconsin). *Restoration and Management Notes* 1(1):33.

Kline, Dr. V. M. 1976. Effects of mowing on wild parsnip: six year study (Wisconsin). Restoration and Management Notes 4(2):113.
Mohlenbrock, R. H. 1986. Guide to the vascular flora of Illinois. Southern Illinois University Press, Carbondale. 507 pp.

Information on this species was also taken, in part, from the Illinois Nature Preserves Commission, Illinois Vegetation Management Guidelines for Wild Parsnip, <http://www.inhs.uiuc.edu/chf/outreach/VMG/VMG.html>. . Modifications include additional pictures from www.invasives.org and <http://tncweeds.ucdavis.edu/photos.html>. Check the website links for future updates. The last update for this information is February, 1990.

SPECIES MANAGEMENT AND CONTROL INFORMATION

GENERAL MANAGEMENT CONSIDERATIONS:

Illinois Nature Preserves Commission - Vegetation Management Guidelines -
<http://www.inhs.uiuc.edu/chf/outreach/VMG/parsnip.html> - Vol.1, No. 26 - Authors: Jill Kennay and George Fell - February 6, 1990.

Warning-- Care should be taken to avoid skin contact with the toxic sap of the plant tissues by wearing gloves, sleeves, and long pants. Although eradication of this exotic is desirable from a human safety as well as ecological standpoint, in some situations the best control measure is to do nothing. In high-quality prairies, aggressive growth by other species sometimes can outcompete and eventually displace the parsnip.

MANUAL AND MECHANICAL CONTROL:

Illinois Nature Preserves Commission - Vegetation Management Guidelines -
<http://www.inhs.uiuc.edu/chf/outreach/VMG/parsnip.html> - Vol.1, No. 26 - Authors: Jill Kennay and George Fell - February 6, 1990.

The best control is achieved mainly through hand-pulling. Plants should be pulled and removed so that seeds do not develop and plants do not resprout. Wild parsnip is easiest to pull right after a good rain or during a drought when the root shrinks. Another effective practice involves cutting the plant below the root crown before seed set during spring of the second year. The best time is as soon as blooms show, but have not matured. Since the plants do not all flower at once, the area should be rechecked several weeks after the first cutting and the following 2-3 years for newly flowering plants. After a spring burn, wild parsnip rosettes are among the first plants to emerge and may be detected easily and dug out to control its abundance along prairie edges. Seeds do not remain viable if dormant in the ground more than 4 years, so the species can be controlled if there is no outside seed source. Although the practices of hand-pulling, cutting, and digging have been successful in small areas with scattered plants, these practices can become difficult and time-consuming if patches containing hundreds of plants have been allowed to spread unchecked.

Mowing or cutting the base of the stem with a scythe can be effective if it takes place after flowering the second year when the plant is mature and blooming, but before seed set. Parsnip must be removed or recut often and checked later for small bloom shoots near the ground. Poorly timed mowing, as is likely along roadsides, may increase both number of seedlings and percentage surviving to maturity. Mowing probably favors parsnip maturation by allowing more sunlight to reach immature parsnip plants, which are too low to be damaged by the mower. Mowing also reduces the density, height, and flowering of other species that are potentially good competitors against parsnip, such as common goldenrod.

The Nature Conservancy - Invasive Species Initiative - Species Management Summary (ESA or Element Stewardship Abstract): Wild Parsnip - <http://tncweeds.ucdavis.edu/esadocs/pastsati.html> - Author: Nancy Eckardt - July 23, 1987.

Wild parsnip can become abundant along roadsides that are regularly mowed as mowing seems to encourage the production of flowering plants. If mowing occurs too early (in June or early July), the plants may resprout and still have time to flower and set seed; if too late in July, the primary umbel may have mature seeds that will germinate

after cutting. Mowing also stresses other species that have the potential to be good competitors against parsnip, such as Solidago spp. Kline (1986) tested annual mowing of parsnip in July before seed set over a six- year period and observed increases in the abundance of flowering plants in the mowed plots, but a steady decline in parsnip density in the unmowed control plot. The common goldenrod, Solidago altissima, was abundant in all plots at the start of the experiment. The July mowing reduced density, height, and flowering of the goldenrod, allowing more sunlight to reach immature parsnip seedlings. The steady decline in parsnip density in the unmowed plot suggested that in situations where other plants are able to offer competition, the best parsnip control measure is to do nothing (Kline 1986).

Where *P. sativa* occurs on a recovering prairie, the best treatment may be to simply encourage good prairie growth. For example, prescribed burning encourages the growth of native grasses, which in turn outcompete and eventually displace the wild parsnip (Kline 1987).

For small patches, weeding with a shovel is the best control measure. Flowering plants should be chopped off just below ground level before seed set. Care should be taken to avoid contact with the plant tissues. Wear gloves, long pants, and sleeves. Since the plants do not all flower at once, the area should be rechecked several weeks after the first cutting. The vegetative rosettes can also be dug up if enough labor is available, otherwise, the area should be revisited the following year to remove any newly flowering plants.

Wisconsin Department of Natural Resources - Invasive Plant Fact Sheets - Wild Parsnip -
<http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/parsnip.htm>

The best way to control wild parsnip is early detection and eradication. A very effective control method is to cut the entire root just below ground level with a sharp shovel or spade. Cutting below ground level prevents resprouting. In some soil types in wet conditions, the plants can be pulled out of the ground by hand. All seeds must be removed from the site and disposed of in a landfill or by burning.

If the population is too large to hand-cut or pull, a power brush-cutter can be used just after peak flowering and before the seeds set. Plants may resprout when cut above the ground, and should be cut again a few weeks later to prevent flowering. Cutting done after seed set will greatly reduce the likelihood that the plants will be able to resprout and flower. Plants cut at this time must all be gathered and removed from the site to prevent mature seed from developing and falling to the ground. Another effective way to eliminate reseeding is to hand-collect all seeds after they have set. If control of flowering or seeding plants is carried out over several years, the population will decrease as the seed bank is depleted.

PRESCRIBED FIRE:

Illinois Nature Preserves Commission - Vegetation Management Guidelines -
<http://www.inhs.uiuc.edu/chf/outreach/VMG/parsnip.html> - Vol.1, No. 26 - Authors: Jill Kennay and George Fell - February 6, 1990.

Burning does not successfully control parsnip because it removes litter and taller plants, providing favorable conditions for parsnip rosettes to develop. However, periodic burning maintains the vigor of native plants, allowing them to compete with parsnip.

The Nature Conservancy - Invasive Species Initiative - Species Management Summary (ESA or Element Stewardship Abstract): Wild Parsnip - <http://tncweeds.ucdavis.edu/esadocs/pastsati.html> - Author: Nancy Eckardt - July 23, 1987.

Burning removes litter and taller plants allowing parsnip rosettes to develop rapidly. When present, wild parsnip rosettes are among the first plants to green up after an early spring burn and they become easy to detect and dig up with a shovel.

Wisconsin Department of Natural Resources - Invasive Plant Fact Sheets - Wild Parsnip -
<http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/parsnip.htm>

Burning does not seem to impact the plants themselves -- they quickly resprout. However, in the darkened soil following a burn, these rosettes are easy to recognize and can be controlled by hand-digging. Prescribed burning stimulates increased growth in prairie species that may potentially decrease parsnip populations through competition.

BIOCONTROL:

Illinois Nature Preserves Commission - Vegetation Management Guidelines - <http://www.inhs.uiuc.edu/chf/outreach/VMG/parsnip.html> - Vol.1, No. 26 - Authors: Jill Kennay and George Fell - February 6, 1990.

The parsnip webworm damages some individual plants severely, but is not known to eradicate whole patches and is not likely to be useful as a biocontrol agent.

The Nature Conservancy - Invasive Species Initiative - Species Management Summary (ESA or Element Stewardship Abstract): Wild Parsnip - <http://tncweeds.ucdavis.edu/esadocs/pastsati.html> - Author: Nancy Eckardt - July 23, 1987.

The parsnip webworm damages some individual plants severely, but is not known to devastate whole patches and is not likely to be useful as a biocontrol agent (Martin 1987).

CHEMICAL CONTROL*:

Illinois Nature Preserves Commission - Vegetation Management Guidelines - <http://www.inhs.uiuc.edu/chf/outreach/VMG/parsnip.html> - Vol.1, No. 26 - Authors: Jill Kennay and George Fell - February 6, 1990.

If mechanical methods have failed to control wild parsnip or are not feasible, a 2% spot application of the herbicide Roundup (glyphosate) to basal rosettes is a recommended treatment. Roundup should be applied to individual plants with a hand sprayer in late fall after most native vegetation is dormant. Late fall application minimizes the potential harm to nontarget species. It may be necessary to treat the same area again annually until missed plants and plants originating from the seed bank are eliminated. Roundup is a nonselective herbicide (kills all vegetation) and should not be used in high-quality natural communities during the growing season because of the possibility of harming nontarget plants.

The herbicide 2,4-D (available under a variety of trade names) mixed according to label directions and applied to individual parsnip basal rosettes between March-May or August- October is effective. This herbicide should only be used on buffer or severely disturbed sites, and not in high-quality natural communities if it is applied during the growing season. Repeated early spring applications of this chemical before the flower stalk begins to elongate will reduce infestation of wild parsnip.

Care should be used to avoid contacting nontarget plants when applying either herbicide. **Do not spray so heavily that herbicide drips off the target species.** Native nontarget species will be important in recolonizing the site once the parsnip dies. The herbicide should be applied while backing away from the treated area to avoid contact with wet herbicide. By law, herbicides only may be applied according to label instructions and by licensed herbicide applicators or operators when working on public properties.

Wisconsin Department of Natural Resources - Invasive Plant Fact Sheets - Wild Parsnip - <http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/parsnip.htm>

Chemical controls are effective, but should be used sparingly on quality natural areas. The best method is to burn the site, then follow with spot application of 1-3% active ingredient glyphosate. Immediately after a burn, wild parsnip is one of the first plants to green. Glyphosate can be spot applied to the basal rosette of the parsnip with little effect on dormant species.

* Mention of pesticide products in this document does not constitute endorsement of any particular material.

Source: The following information is taken from a number of sources and those sources are identified at the beginning of the referenced information. The intent of this resource is to provide the user with as much of the information that exists for management and control of this species as is practical. It is important to note that new and improved methods are added regularly which will require you to visit the websites provided for updates on this

information. Bibliographies and resources referenced by these sources are not included here, but are included at the websites from which this information was extracted.

Before administering any of the following management and control options, it is imperative that you are familiar with the background information provided under the [General Management and Control](#) Section.

For additional, and potentially more current, information on management and control of this species, use the Mid-Atlantic Exotic Pest Plant Council (MA-EPPC) listserv or any of the other listservs identified in the [Resource - Listserv](#) section of this tutorial. You will find directions for subscribing to the list serve there. The MA-EPPC listserv has an archives feature that saves past discussions (beginning in 1999) about specific species control. These messages are at: <http://groups.yahoo.com/group/ma-eppc/messages>.