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# Giant Hogweed: A Hazarous Invasive Weed in Ohio

*David J. Goerig and David L. Marrison*

Giant Hogweed from Pierpont, Ohio, in Ashtabula County. *Photo courtesy of David Marrison, OSU Extension.*

## Introduction

The state of Ohio recently added *Heracleum mantegazzianum*, better known as giant hogweed, to the state noxious weed list. Giant hogweed is also on the federal noxious weed list, making the propagation, sale, or transportation of this weed unlawful. Giant hogweed has been included on these lists because of its ability to spread and its potential hazard to human health.

Giant hogweed is native to the Caucasus region of Eurasia and was introduced into Europe in the 1800s. It has been found in Australia, Austria, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, the former Soviet Union, Sweden, Switzerland, and the United Kingdom.

Giant hogweed was first recorded in the United States in 1917 in an ornamental garden in New York. This weed has also been cultivated for its fruit, which is used as a spice (golmar) in Iranian cooking. To date, giant hogweed has been recorded in the states of Connecticut, Maine, Maryland, Massachusetts, Michigan, New York, Ohio, Oregon, Pennsylvania, and Washington.

One giant hogweed plant can produce 20,000 seeds, thus allowing it to spread easily when not managed. This plant, once found exclusively in ornamental gardens, has escaped and has become established in rich, moist soils along roadside ditches, stream banks, vacant farmland, and tree lines. Giant hogweed plants form a dense canopy and will out-compete and displace many native species.

Giant hogweed's greatest danger, however, is the effect its sap has on humans. Furocoumarins in the sap can cause a skin reaction known as photodermatitis. This causes the skin to be highly sensitive to ultraviolet light. Swelling and blistering of the skin may occur

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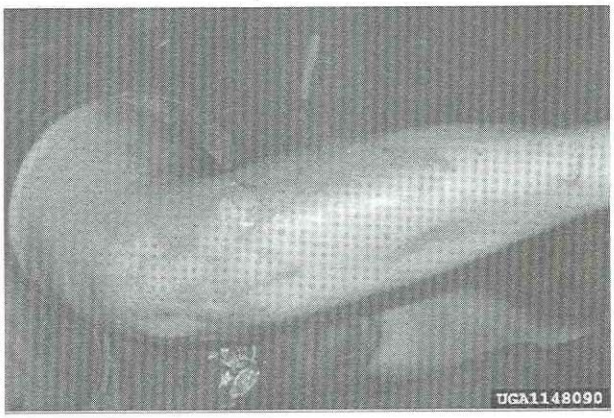
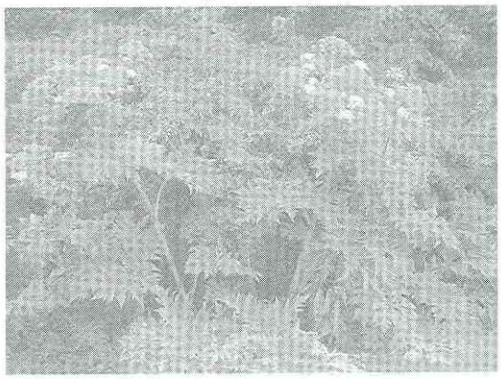



The sap of giant hogweed can cause severe burns on the skin. *Photo courtesy of USDA-APHIS.*



Giant Hogweed can grow up to 15 feet in height and flowers in late June to early July. *Photo courtesy of David Marrison, OSU Extension.*

which can result in permanent scarring. Contact with the eyes can cause temporary or sometimes, permanent blindness.

Ohio's population of giant hogweed is primarily found in northeastern Ohio, especially the counties that border the state of Pennsylvania. Ashtabula County, which borders Erie County, Pennsylvania (which has more than 100 confirmed sites of giant hogweed), has reported the highest number of hogweed sites to date.

## Identification

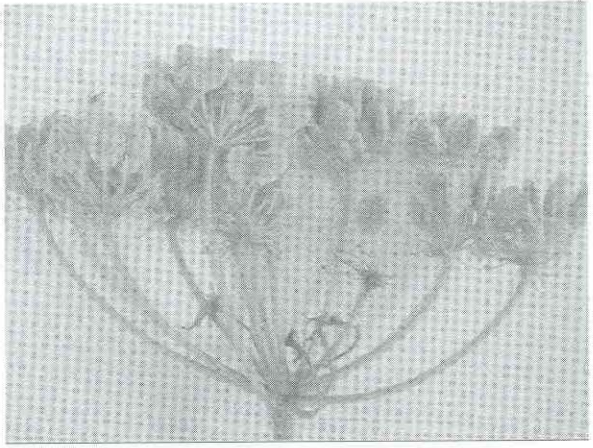
*Heracleum mantegazzianum* is an herbaceous dicotyledon plant that is a true biennial. It is a member of the Apiaceae (Umbelliferae) family of plants, commonly known as the carrot or parsley family. Despite being labeled a biennial, giant hogweed appears at times to give rise to new plants from the branched taproot it develops; however, it does not reproduce vegetatively. It can live for several years, but once it flowers and bears fruit, it dies. Giant hogweed is hardy to Zone 3. It prefers full sun and moist, well-drained soil but will dominate space in any site in which it is planted.

Giant hogweed is a prolific seed (fruit) producer and propagates itself exclusively each year in this way. The fruit can be described as a dry, flattened, oval, two-winged mericarp, approximately 3/8 inches long, containing one seed.

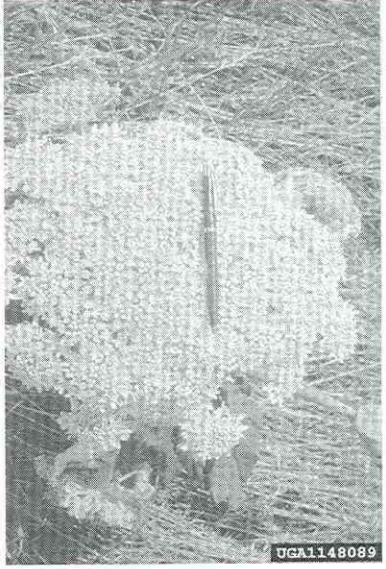
Seeds are an earth-tone tan color with brown lines running vertically away from their withered flower petals. An average plant bears approximately 20,000 seeds. Current year seed of *H. mantegazzianum* is dormant and does not germinate in the fall. Dormancy of these seeds is overcome by cold and wet weather conditions that occur during normal winters.

Seeds produced by giant hogweed are said to remain viable in the soil for many years, although no formal study has been conducted to support that claim. It is known, though, that all it takes is for one seed to germinate in an area to give rise to a new infestation.

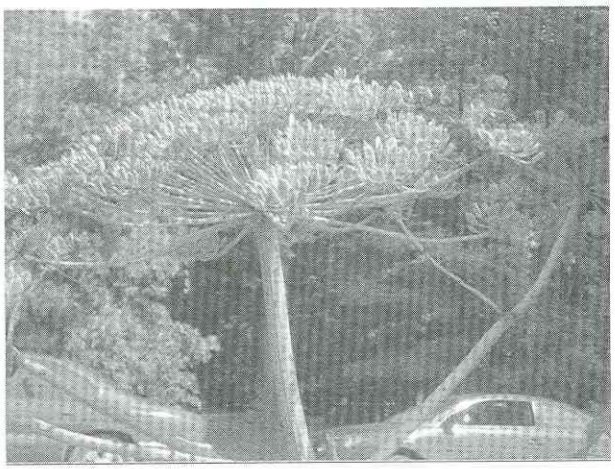
Seed in the field is not easily disbursed by animals, although it is possible. Water and wind can move seed from its source, especially in flood plains and during winter storms. The most efficient seed dispersal is known to be through human activity. Giant hogweed seed heads have been used in dried flower arrangements and other decorations.



Giant hogweed seeds. *Photo courtesy of David Marrison, OSU Extension.*




A cut umbel from giant hogweed. *Photo courtesy of the USDA-APHIS.*



Terminal umbel of giant hogweed. *Photo courtesy of David Marrison, OSU Extension.*

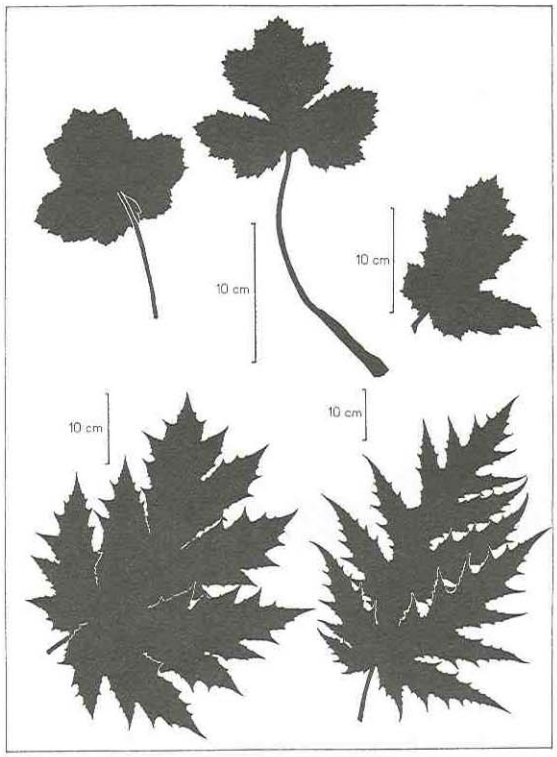
The inflorescence on giant hogweed is a distinct set of thousands of tiny, white flowers, arranged together in compound umbels. Together, they appear flat topped and give the impression of looking at white umbrellas. Giant hogweed flowers in late June to early July, and inflorescences can grow to a size of 2-1/2 feet in diameter.

This plant remains in the rosette stage until it develops sufficient root reserves to bloom. In moist, fertile soil this happens in the third to fifth season of its life.

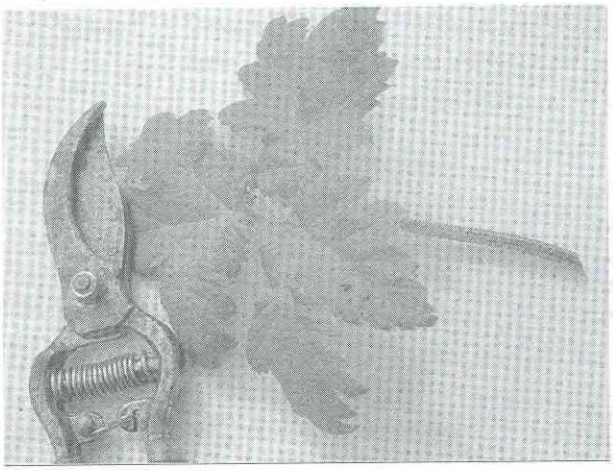
This plant has been a somewhat popular ornamental plant in Europe, and now in the United States, because of its massive size and eye appeal. It is easily distinguishable from many look-a-likes as it can grow to a height of 15 feet.

Giant hogweed foliage along the base of the plant is ternately compound and unfolds in the early summer into deeply incised, lobed leaves measuring up to 5 feet in width. The leaflets attached higher on the stem are not as large; they are triangular-lanceolate and also are deeply cut. Leaves are arranged randomly on the stem of the plant.

The stem of giant hogweed is coarse and ridged with protruding white hairs that are more noticeable at the base of the leaf stalks. Stem color is mostly green with purple blotches that contrast easily with the white hairs. Giant hogweed stems grow to a height of 10 to 15 feet and can measure between 2 to 4 inches in diameter. This herbaceous plant's stem is hollow.




Variable leaves of giant hogweed. Cotyledon or seed leaf shape (top, left). Juvenile leaf shape (top, center and right). Typical spring and summer leaf shape (bottom, left). Fall leaf shape (bottom, right). *Photo reprinted with permission from Dr. Jörg Ochsmann, Germany.*



A young giant hogweed seedling. *Photo courtesy of David Marrison, OSU Extension.*

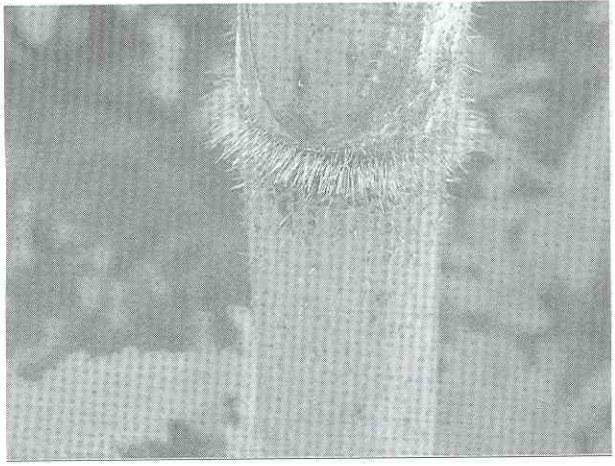
Giant Hogweed leaves develop into deeply incised, lobed leaves measuring up to 5 feet in width. *Photo courtesy of David Marrison, OSU Extension.*

### *Heracleum lanatum*

Plants belonging to the parsley family share the same growth characteristics, which is why giant hogweed is commonly confused with other plants each year. *Heracleum lanatum,* or cow parsnip, a native plant, is one of the plants most likely to be confused with giant hogweed. Cow parsnip is smaller and very seldom reaches a height above 8 feet. Mature leaves of *H. lanatum* seldom grow beyond 2 to 2-1/2 feet in size. Although the bloom is similar to hogweed, it never reaches the magnitude of *H. mantegazzianum,* and the plant typically blooms a few weeks earlier.

### *Angelica atropurpurea*

Angelica is another plant mistaken for giant hogweed. Angelica is shorter, normally only growing to 8 feet in height. Its flowers are small, white, and arranged on compound umbels that appear globular, not flat-topped like hogweed, and not much bigger than 6 inches in diameter. Stems are green or purple, hollow, and appear waxy, not coarse. The foliage differs in that it is biternately compound, not ternately compound.



Prominent white hairs circle stem junctions of the giant hogweed. *Photo courtesy of David Marrison, OSU Extension.*

A broken stem can expose humans to the harmful sap of the giant hogweed. *Photo courtesy of David Marrison, OSU Extension.*

An older giant hogweed stem late in the growing season. *Photo courtesy of David Marrison, OSU Extension.*

### *Conium maculatum*

Poison hemlock is a common biennial in Ohio that grows from 4 to 9 feet tall. The stem is waxy and green with purple blotches. It is confused with *H. mantegazzianum* because the stems appear to look like it, but closer inspection reveals they are smooth and absent of the white hairs. Additionally, poison hemlock's flower clusters, even though they are white, are less densely arranged on the stem, giving them an overall smaller appearance. *C. maculatum* foliage looks more fern-like as its leaves are twice or three times pinnately compound.

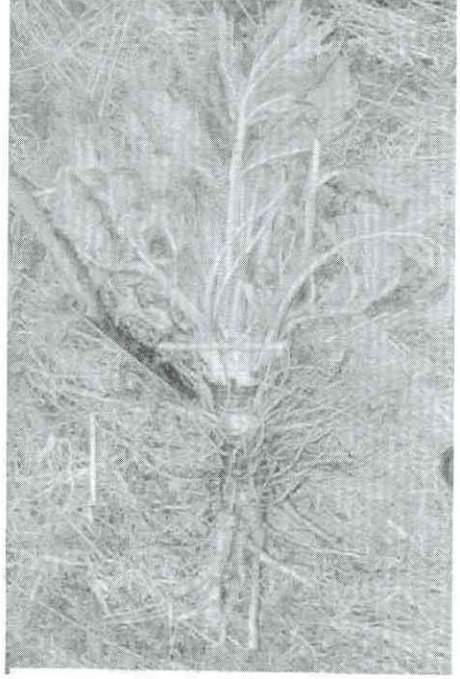
## Control

Control of giant hogweed usually involves such practices as digging, mowing, cutting, removal of umbels, grazing, and herbicide application. The control strategies selected will be dependent on the area covered by the plant, accessibility, and plant density. Because giant hogweed is a prolific seed producer, continuous management to prevent regeneration is important. Most research indicates that five years of intensive control is required.

Regardless of the method selected, protective water-resistant clothing and eyewear should be worn when working around this plant, especially when cutting, as the risk of splashing the toxic sap on the skin will be the greatest.

### Manual Control

Manual control of giant hogweed can be accomplished by root cutting, mowing, and umbel removal. Root cutting involves



The root structure of giant hogweed. *Photo reprinted with permission from Mads A. Sorensen, Denmark.*

using a shovel to cut the deep tap root of the plant. It is recommended to dig and cut the root 4 to 6 inches below the soil line. This control method is partially effective and labor intensive. Monitoring of the area should continue for regenerated plants. Care must be exercised because of the sap in the stems.

Mechanical mowing using a mower or a scythe can also be a good control method but will need to be undertaken multiple times during the growing season. This will hinder re-sprouting plants from growing and storing reserves in their root systems. If accessibility to plants is limited, flowering plants could be cut once during mid-flowering.

An innovative European developed a special Hogweed Tool consisting of a curved saw blade on a long handle. This allows a safety zone for the person eradicating the hogweed. It is not recommended that a weed-eater be used to cut giant hogweed because of the splattering of the hogweed sap.

Removal of the flower umbels can also be utilized as part of a control program. Timing of the removal of umbels is critical. It is most effective to remove the umbels when the terminal umbels begin to flower. If cutting is performed too early, then rapid regeneration will occur and often with increased seed production. Cutting too late will increase the likelihood that seeds may be lost to the seed bank. The practice of cutting umbels is recommended as a supplement to other control practices.

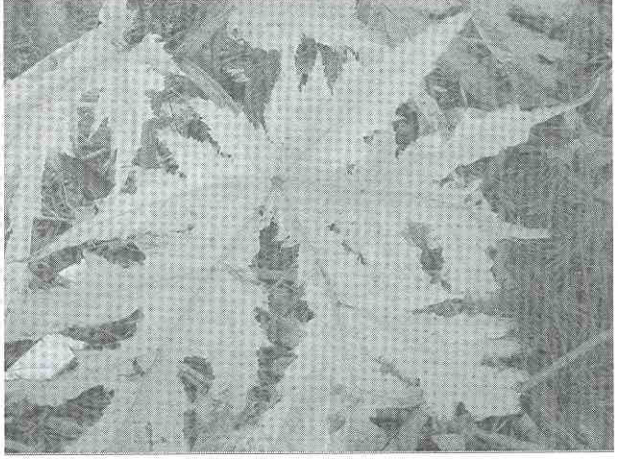
### Use Extreme Caution

Gardeners, landscapers, and nursery workers should exercise caution around this plant. As was mentioned previously, the plant juices can cause phytophotodermatitis to the skin. If the plant sap comes in contact with the skin in the presence of sunlight, a severe rash and/or blistering can occur. Extreme caution should be taken when eradicating this plant. Warn others standing at the site to keep a clear distance from brush cutting mowers. Launder all work clothes separately from other clothing.

## Grazing

Europeans also have used sheep or beef cattle to control large stands of young hogweed vegetation. Over time, grazing depletes the energy reserves of plants, thus leading to eradication. Best control is obtained when grazing begins early in the season when the plants are small. It should be noted that hogweed can cause inflammation of the skin, lip, and nostrils of the grazing animal. Livestock with dark pigmentation of the skin, like black-faced sheep, are recommended for grazing to help reduce potential inflammation

Sheep have been used in Europe to graze large populations of giant hogweed. *Photo reprinted with permission from Charlotte Nielsen, Forest & Landscape Denmark.*



A giant hogweed plant after a chemical application of glyphosate. *Photo courtesy of David Marrison, OSU Extension.*

problems. If problems occur, the sheep or cattle should be removed from the grazing site.

## Chemical Control

Chemical control is the most common control strategy tool utilized. Numerous research trials in Europe and the United States have demonstrated that giant hogweed can be effectively eradicated using chemicals; however, multiple applications are generally necessary.

Glyphosate and triclopyr have both been shown to be effective due to their systemic control. Glyphosate should be used cautiously around desirable species as it is non-selective. Other products such as 2,4-D, TBA, MCPA, and Dicamba will control giant hogweed above the ground but are relatively ineffective at killing the root system.

It is recommended that chemical sprays be used in early spring when the hogweed plants are approximately 8 to 20 inches tall with a follow-up spray in late July or August. Any bare areas should be seeded with appropriate native vegetation to reduce the probability of a re-infestation of hogweed. It is important to use chemicals in accordance with the directions on the label.

**Final Note:** Obviously, giant hogweed should never, ever be planted in the garden or landscape.

## Other Information Links

It is recommended that landowners who find giant hogweed on their property contact their Ohio State University Extension county office or a regional USDA-APHIS office for current spray recommendations or to determine the status of any governmental spray program being conducted.

## References

Neilson, C., Ravn, P., Nentwig, W., and Wade, M. 2005. *The Giant Hogweed Best Practice Manual.* Horsholm, Denmark: Forest & Landscape Denmark. On-line. Retrieved August 2005. **www.giant-alien.dk**

United States Department of Agriculture, Animal and Plant Health Inspection