

# *Heracleum mantegazzianum*



Taxon	Family / Order / Phylum
<i>Heracleum mantegazzianum</i> Sommier et Levier	Apiaceae / Apiales / Plantae

## COMMON NAMES (English only)

Giant hogweed  
Giant cow parsnip  
Cartwheel-flower  
Siberian cow-parsnip

## SYNONYMS

*Heracleum Grossheimii* Mandenova  
*Heracleum circassicum* Mandenova  
*Heracleum caucasicum* Steven  
*Heracleum giganteum* Hornem.  
*Heracleum panaces* Willd. ex Steven  
*Heracleum speciosum* Weinm.  
*Heracleum tauricum* Steven

## SHORT DESCRIPTION

It is monocarpic perennial, which persists several (usually 3-5) years in rosette stage, with leaves up to 2.5m long. After reaching the mature stage it flowers and dies. The flowering stem can be up to 5m high and bears large umbels with small white flowers.

## BIOLOGY/ECOLOGY

### Dispersal mechanisms

The species reproduces entirely by seeds; fruits are oval-elliptical broadly winged mericarps (6-18 × 4-10 mm), which are dispersed by wind, water and humans.

### Reproduction

The species is monocarpic, that is, it reproduces only once in its lifetime. Plants are able to self-fertilize. A single plant produces about 20,000 seeds which have to be stratified in the soil in cold and wet conditions during winter and then are highly germinable.

### Known predators/herbivores

Insect or pathogens have little effect. Grazing by livestock can significantly decrease the reproductive output but also prolong the lifespan before flowering.

### Resistant stages (seeds, spores etc.)

Seeds form a short-term persistent seed-bank; the majority of them germinate the following year after release and only about 1% of seeds are able to survive more than 3 years in the soil.

## HABITAT

### Native (EUNIS code)

Native to mountain meadows below tree line. E4: Alpine and subalpine grasslands, E5: Woodland fringes and clearings and tall forb habitats.

### Habitat occupied in invaded range (EUNIS code)

E2: Mesic grasslands, E5: Woodland fringes and clearings and tall forb habitats, I: Regularly or recently cultivated agricultural, horticultural and domestic habitats, J: Constructed, industrial and other artificial habitats.



Plant of *Heracleum mantegazzianum*

Photo: Jan Pergl

### Habitat requirements

Occupies man-made or semi-natural habitats along roads and water corridors, abandoned meadows, forest clearings and areas near parks.

### DISTRIBUTION

#### Native Range

Distribution range is located in Western Greater Caucasus.

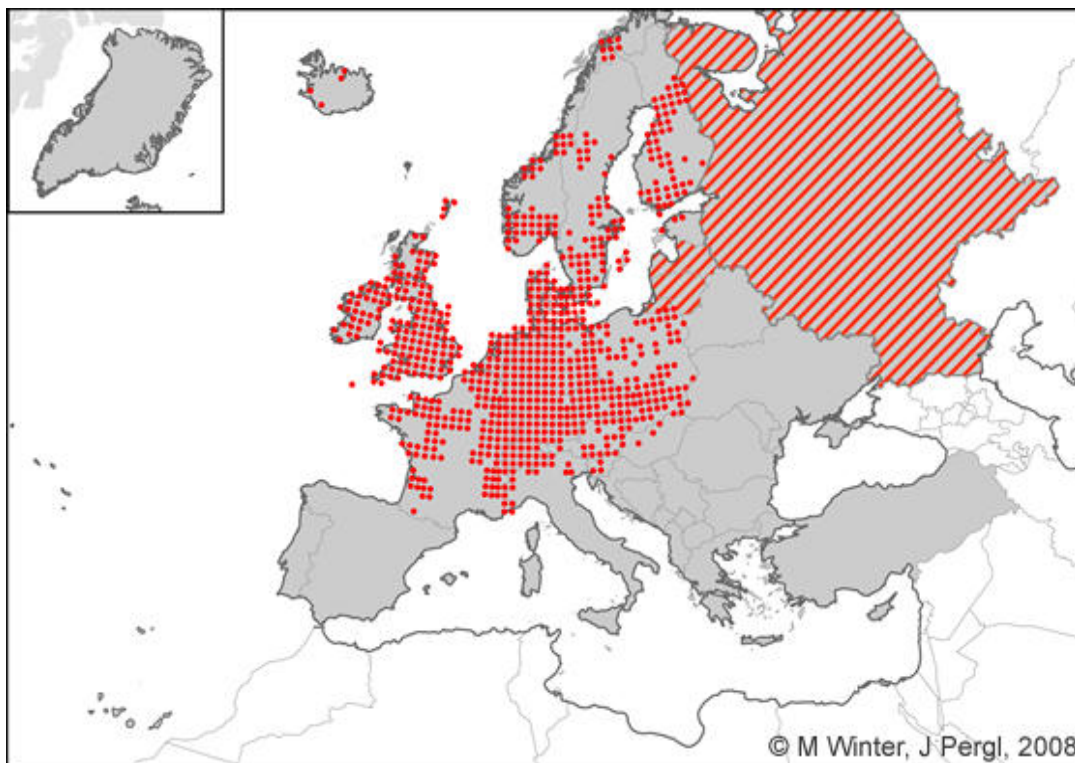
#### Known Introduced Range

Covers temperate Europe (with distribution clearly biased towards central and northern part of the continent) and parts of North America. Other invasive relatives, *H. sosnowskyi* and *H. persicum*, occur in northern and eastern European countries.




#### Trend

Unknown.

### MAP (European distribution)



#### Legend

	Known in country		Known in CGRS square		Known in sea
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### INTRODUCTION PATHWAY

The main mechanism of introduction was planting for ornamental purposes across temperate Europe. The first record from the area of secondary distribution relates to Great Britain in 1817 (Kew Botanic Gardens in London).

### IMPACT

#### Ecosystem Impact

The species may form dense stands reducing species diversity.

#### Health and Social Impact

The plant produces phytotoxic sap. The sap contains photosensitizing furanocoumarins, which in contact with human skin and combined with UV radiation cause skin burnings. The intensity of the reaction depends on individuals' sensitivity. The danger to human health complicates eradication efforts.

#### Economic Impact

It has not been defined but it clearly lowers the recreational value of the landscape due to human health risk.

## MANAGEMENT

### Mechanical

In large infested areas, repeated grazing with consecutive cutting of flowering stems is recommended. It is also necessary to control plants in neighbouring areas to prevent seed input. As the species has high regeneration potential, the success of eradication depends on the removal of all regenerating inflorescences. In small populations, the plants can be effectively killed by root cutting 10 cm below the ground level. As the plant flowers only once in its lifetime and dies after setting seeds, root cutting can be applied only to vegetative plants, together with destruction of all flowers/seeds from flowering plants.

### Chemical control

Possible for isolated populations, but the economic costs and environmental hazards have to be taken into account. The species is sensitive to both main herbicide groups based on glyphosate and triclopyr.

### Biological

None.

## REFERENCES

- Nielsen Ch, Ravn HP, Nentwig W, Wade M (eds) (2005) The giant hogweed best practice manual. Guidelines for the management and control of an invasive weed in Europe. Forest and Landscape, Hoersholm, Denmark. (Also available in eight language versions in electronic form at [www.giant-alien.dk](http://www.giant-alien.dk))
- Pyšek P, Cock MJ, Nentwig W, Ravn HP (2007) Ecology and management of giant hogweed (*Heracleum mantegazzianum*). CAB International, Wallingford
- Tiley, GED, Dodd FS, Wade PM (1996) *Heracleum mantegazzianum* Sommier & Levier. Journal of Ecology 84:297-319

## OTHER REFERENCES

- Hansen SO, Hattendorf J, Nentwig W (2006) Mutualistic relationship beneficial for aphids and ants on giant hogweed (*Heracleum mantegazzianum*). Community Ecology 7:43-52
- Hansen SO, Hattendorf J, Wittenberg R, Reznik SYa, Nielsen C, Ravn HP, Nentwig W (2006) Phytophagous insect fauna on the weed *Heracleum mantegazzianum* (Apiaceae) in the invaded areas of Europe and in the native area of the Western Caucasus. European Journal of Entomology 103:387-395
- Hattendorf J, Hansen SO, Reznik Sya, Nentwig W (2005) Herbivorous impact versus host size preference: Endophagous insects on *Heracleum mantegazzianum* in its native range. Environmental Entomology 35:1013-1020
- Krinke L, Moravcová L, Pyšek P, Jarošík V, Pergl J, Perglová I (2005) Seed bank in an invasive alien *Heracleum mantegazzianum* and its seasonal dynamics. Seed Science Research 15:239-248
- Moravcová L, Perglová I, Pyšek P, Jarošík V, Pergl J (2005) Effects of fruit position on fruit mass and seed germination in the alien species *Heracleum mantegazzianum* (Apiaceae) and the implications for its invasion. Acta Oecologica 28:1-10
- Moravcová L, Pyšek P, Pergl J, Perglová I, Jarošík V (2006) Seasonal pattern of germination and seed longevity in the invasive species *Heracleum mantegazzianum*. Preslia 78:287-301
- Müllerová J, Pyšek P, Jarošík V, Pergl J (2005) Aerial photographs as a tool for assessing the history of invasion by *Heracleum mantegazzianum*. Journal of Applied Ecology 42:1042-1053
- Pergl J, Perglová I, Pyšek P, Dietz H (2006) Population age structure and reproductive behavior of the monocarpic perennial *Heracleum mantegazzianum* (Apiaceae) in its native and invaded distribution ranges. American Journal of Botany 93:1018-1028
- Perglová I, Pergl J, Pyšek P (2006) Flowering phenology and reproductive effort of the invasive alien plant *Heracleum mantegazzianum*. Preslia 78:265-285
- Satsyperova IF (1984) Borshcheviki flory SSSR – novye kormovye rastenia. Leningrad, USSR [in russian: The genus *Heracleum* of the flora of the USSR – new fodder plants]
- Walker NF, Hulme PE, Hoelzel AR (2003) Population genetics of an invasive species, *Heracleum mantegazzianum*: implications for the role of life history, demographics and independent introductions. Molecular Ecology 12:1747-1756

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Date Last Modified: September 19<sup>th</sup>, 2006