

# Weed Risk Assessment: *Heracleum mantegazzianum*

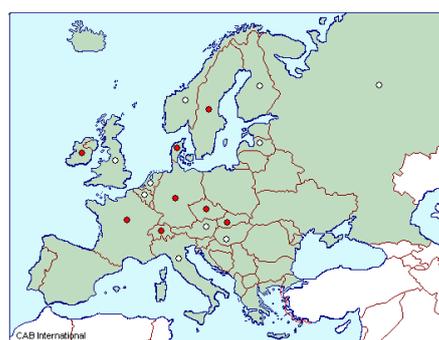
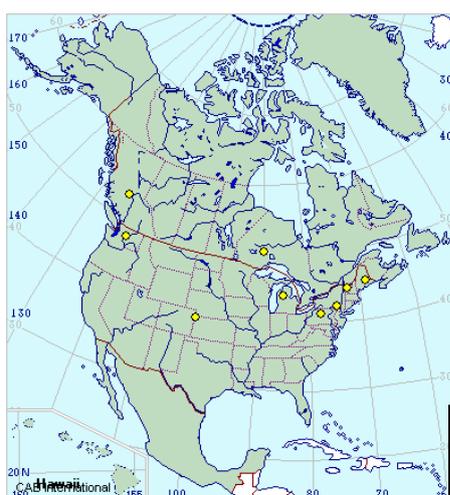
## 1. Plant Details

**Taxonomy:** *Heracleum mantegazzianum* Sommier & Levier. Family Apiaceae (also placed in Umbelliferae) Synonym: *Heracleum giganteum* Fisch & Hornem, *Heracleum asperum* M. Bieb., *Heracleum lehmannianum* Bunge, *Heracleum persicum* Desf. Ex Fischer, *Heracleum sibiricum* Sphalm, *Heracleum stevenii* Manden., *Heracleum villosum* Fischer ex Sprengel (Crop Protection Compendium, 2004).

**Common names:** giant hogweed, giant cow parsnip, cart wheel flower, giant bearclaw, wild rhubarb, golpar (spice trade).

**Origins:** Native to temperate Asia, originating from south west Asia and Caucasus mountains (GRIN website).

**Distribution:** Naturalised widely in Europe and also occurring in the British Isles, New Zealand, Canada and the United States of America.



Distribution maps from the Crop Protection Compendium.  
Red dots mean widespread in the region.  
Yellow dots mean present in the region.  
White dots mean present and localised

**Description:** An erect perennial or biennial herb distinguished by its size. It can grow to 3.5m tall when in flower but sometimes reaches nearly 7m. Stems are stout, hollow, with reddish purple blotches and leaf stalks are also spotted. Stalks and stems are bristly. Leaves are large, compound and deeply incised and may expand to more than a metre in breadth. They are platter shaped and broadly resemble rhubarb leaves. Undersides of leaves are densely hairy. The flower head is a broad, flat topped umbel composed of many small white florets. The florets produce large, elliptic, dry fruits. The roots are tuberous, robust and spreading and give rise to buds each year. The plant also produces a stout taproot (Westbrooks, 1991, Lloyd, 2002). Apart from its size, the plant resembles angelica (*Angelica atropurpurea*) and cow parsnip (*Heracleum lanatum*).



#### **Biology and ecology:**

**Habitat.** *H. mantegazzianum* occurs in a wide variety of habitats but appears to prefer moist areas. USA authorities call it a freshwater weed however there is nothing to suggest it is restricted to permanently wet areas. It is found in coastal areas, ravines, riparian situations and roadside ditches and is frost tolerant (Lloyd, 2002). It is also naturalised along rail lines and on neglected land, usually near human settlements (Westbrooks, 1999). In its native distribution it is a plant of forest edges, glades, stream sides, mountain areas with rainfall between 1000-2000mm per annum (Crop Protection Compendium, 2004)

**Life cycle.** The first flowering stalk is produced when the plant is several (three) years old and, after setting seed throughout summer, dies in autumn. Plants may delay flowering until the 4<sup>th</sup> or 5<sup>th</sup> year. The tall, hollow stems remain standing through winter. Plants may produce additional flowering stalks from crowns or root buds (Robson, 1998).

**Reproduction and dispersal.** Reproduction occurs via seeds and buds formed on the crown and tuberous roots. Flowers are insect pollinated and self-compatible though outcrossing usually occurs. Seed production is prolific (5000-10 000 per plant) and the root stalk is relatively persistent. Seed longevity is not confirmed but some authors report seed can persist in the soil for up to 8 years (Robson, 1998). In dry storage, seed can remain viable for up to 15 years (Crop Protection Compendium, 2004). Seed viability data are minimal but tests of seeds imported for culinary purposes have shown 35% viability (Westbrooks, 1991). Seeds require moist chilling to break dormancy and exposure to light is not required for germination. Natural dispersal occurs via water and the seed can float for at least 3 days before becoming waterlogged, thus allowing travel over considerable distances. Bird dispersal of seeds is also reported (Westbrooks, 1991). Human assisted dispersal occurs via the ornamental plant trade, garden waste dumping and spice trade. Seed may also be dispersed as a contaminant (GRIN database).

**Hybridisation.** *H. mantegazzianum* is reported as hybridising with *H. sphondylium*, in the British Isles (Grace and Stewart, 1982) and in Germany (Crop Protection Compendium, 2004).

Hybridisation is infrequent and the hybrids are described as virtually sterile (Crop Protection Compendium, 2004).

**Competition.** *H. mantegazzianum* is generally described as highly competitive because of its ability to colonise rapidly and persist, and because its growth habit allows it to form a dense canopy over other vegetation.

**Harmful properties.** All parts of the plants are highly toxic due to furanocoumarins. Contact with sap results in photo-sensitivity in humans and recurrent dermatitis (Crop Protection Compendium, 2004).

**Economic benefit:** *H. mantegazzianum* attained its current distribution largely through the ornamental plant trade and it continues to be promoted and sold as a curiosity species (for its size) in many countries, including Australia (Lloyd, 2002). The seeds also have some culinary value and are used by some Middle Eastern cultures as a spice (Westbrooks, 1991). One study suggested extracts have allelopathic effects on other weeds (Crop Protection Compendium, 2004).

## 2. Weed Risk

### World weed status

*H. mantegazzianum* is a well documented, serious weed in a range of temperate areas. It is listed as a federal noxious weed in the USA, meaning it cannot be imported or moved within or between states. It is also subject to eradication in several states. It has the distinction of being 1 of only 2 weeds listed as noxious in the United Kingdom (Lloyd, 2002). NZ?

### Australian weed status

*H. mantegazzianum* has been recorded as naturalised near Devonport, northern Tasmania, on one occasion but it does not appear to have naturalised anywhere else to date. It is not prohibited entry to Australia however submissions to have it banned from import, and trade within the country have been made to the Australian Weeds Committee (Lloyd, 2002). It is currently prohibited entry to Western Australia and is regulated in Victoria (Weeds Australia website). Groves et al. (2003) list it as an environmental weed in Australia.

### Weed potential in Tasmania.

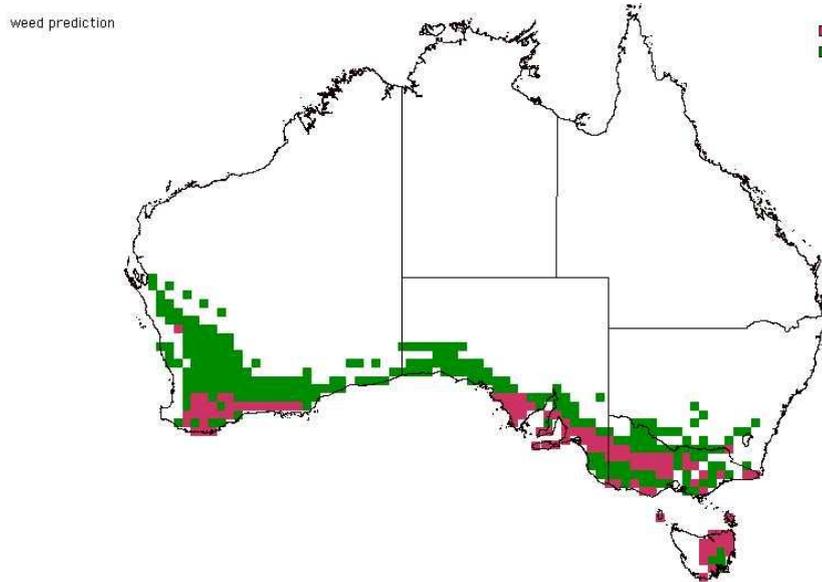
The Tasmanian occurrence was in association with roadside garden waste dumping (Boersma, 1998). The specimen was collected in October 1990 but several years later the Tasmanian Herbarium asked for additional material as it suspected the original specimen may have been mis-identified. DPIWE weed officers who returned to the site could not locate any surviving plants.

Climate matching indicates the plant is likely to grow well in Tasmanian environments (see Figure 5). The following analyses indicate the weed potential of *H. mantegazzianum* in Tasmania is relatively significant.

### Weed risk assessment

Weed risk assessment undertaken by DPIWE involves use of a point scoring system devised by Pheloung (1996). *H. mantegazzianum* scores 22 on a scale that is positively correlated to weediness. The nominal score for rejection of a plant on this scale is 7 or greater (see Appendix 1 for risk assessment scoring).

Potential distribution of *Heracleum mantegazzianum* in Australia using CLIMATE (Pheloung, 1995)



### 3. Weed Impact Assessment

Weed impact assessment is based on the DPIWE scoring system designed for that purpose. *H. mantegazzianum* scores 5 points on a scale where 4 points or more indicates a plant has significant potential impact. The impact scoring system requires that questions be answered with a particular land use and density in mind. *H. mantegazzianum* was assessed for its potential impacts upon natural environments at moderate to high densities.

**Economic impact.** The economic impact of *H. mantegazzianum* in Tasmania is difficult to gauge because it is not likely to affect primary production directly. The plant is a host for carrot fly, *Psila rosea* and *Sclerotinia sclerotiorum* but there are no records of direct impacts of this on agriculture (Crop Protection Compendium, 2004). There are reports of encroachment into field crops such as potatoes in Sweden (Crop Protection Compendium, 2004). Overall though, it is unlikely to establish in cultivated areas or well maintained pasture. (Rubow, 1979??). However, once established, it would cause a degree of economic loss in the form of health costs associated with human poisoning and control costs along roads, rail lines, amenity and natural areas. It might also compromise tourism operations where natural, riparian areas were affected.

**Environmental impact:** *H. mantegazzianum* is widely described as invasive in natural environments due to its colonising and dispersal ability, its capacity to persist via long lived seed and tenacious, bud-producing root system. It is also a known weed of riparian areas from which it may exclude other flora and precipitate soil erosion when it dies back over winter.

**Social impact.** *H. mantegazzianum* is likely to have significant social impacts in Tasmania due to its highly poisonous nature. Sap contact with skin results in photo-sensitivity, a painful condition in which the skin becomes highly sensitised to light and will swell, blister and erupt. A number of severe cases were reported in the United Kingdom in the 1970s, many associated with children using the hollow stalks as peashooters or telescopes (Westbrooks, 1991).

#### **4. Management Feasibility.**

Since this plant is not naturalised in Tasmania at this time, management feasibility is not an issue. However, maintaining freedom from *H. mantegazzianum* is highly dependent upon effective import prohibition, early detection and reporting of any occurrences and, community and industry education.

#### **5. Declaration Recommendation.**

*H. mantegazzianum* appears to have potential to establish, reach moderate to high densities and cause significant environmental and social harm in Tasmania. Therefore it should be nominated for declaration under the *Weed Management Act 1999*. This will support removal of the plant from trade in Tasmania and timely eradication of any future occurrences or incursions.

#### **6. References.**

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