Management information for the giant hogweed *Heracleum mantegazzianum* (Sommier & Levier)

IUCN SSC Invasive Species Specialist Group

Preventative measures

The establishment of policies and guidelines preventing the importation and planting of *Heracleum mantegazzianum* may prevent its establishment in new locations and further spread (Neilson et al, 2005). In the UK it is an offence to grow or cause the growth of *H. mantegazzianum* in the wild (EPPO, 2005). In King County, Washington, USA, laws make selling, buying, or transporting it illegal. Furthermore, property owners are required to eradicate it on private and public lands (King County, Department of Natural Resources and Parks, 2007). Efforts should also be made to intercept *H. mantegazzianum* at airports and ports of call. It is one of the most frequently intercepted noxious weeds at the SeaTac International Airport by the USDA-APHIS (Smither-Kopperl, 2007).

Physical

Physical control can be the more environmentally sound method for control for small populations of *H. mantegazzianum* but requires frequent attention throughout the year (Dawson & Holland, 1999). Hand-pulling is effective with younger and smaller plants and infestations but impractical with larger plants (EPPO, 2006). The stems of young plants are not woody and will break easily. The use of a trowel is recommended (King County, Department of Natural Resources and Parks, 2007). Gloves and full protective clothing should be worn by workers managing *H. mantegazzianum* to avoid the phototoxic effects of its sap (CEH, 2004).

Mechanical cutting before flowering is frequently used to clear river banks or certain locations but provides no long-term control since it re-grows rapidly. Cutting after flowering has no benefit except to clear dying vegetation (EPPO, 2006; CEH, 2004). Mowing above ground 2-3 times during the season (May-June) hinders re-sprouting and is useful for managing large areas but is not capable of eradicating populations (EPPO, 2006; King County, Department of Natural Resources and Parks, 2007). Cutting through the stem must be done below ground level, at least 10 cm, to ensure damage to the rootstalk can kill the plant completely or at least reduce its chances of re-growth (CEH, 2004; EPPO, 2006). Removal of the tap root may further increase chances of killing the plant (King County, Department of Natural Resources and Parks, 2007). Removal of umbels before the seeds are formed has also been recommended (EPPO, 2006). Continued management of sites is recommended for at least three years (King County, Department of Natural Resources and Parks, 2007).

Chemical

The use of herbicides to control *H. mantegazzianum* should only be applied at the rates, sites, conditions specified by the label and Federal, State, and local law. Glyphosate (Roundup Pro, Aquamaster) can provide effective control and should be combined with effective re-vegetation of the site. It can be injected into the stems. One leaf cane should be injected per plant 12" above the root crown with 5 ml of 5% v/v solution of Roundup Pro. Foliar applications of glyphosate can also control large infestations or where stem stalks cannot be injected (King County, Department of Natural Resources and Parks, 2007).

Selective broadleaf herbicides, such as Triclopyr (Brush-B-Gon, Garlon 3A) or 2,4,-D are most effective for treating *H. mantegazzianum* in open grassy areas (King County, Department of Natural Resources and Parks, 2007). They should be applied to foliage and stems during the growing season (March-May) (EPPO, 2006). Imazapyr is a non-specific herbicide that is also effective and has residual effects on soil that prevent germination but may affect non-target species (EPPO, 2006).

Biological control

No organisms evaluated so far have proven very good candidates for a biological control of *H. mantegazzianum* (Tiley et al, 1996). Curculionid *Liophloeus tesselatus* was found to cause damage to its roots. *H. mantegazzianum* appears to be attacked by only a narrow range of insects seemingly due to the presence of furanocoumarins (EPPO, 2006). Intensive grazing by sheep and the rooting of pigs can be effective at controlling populations of *H. mantegazzianum* (Tiley et al, 1996). Sheep were found capable of greatly reducing populations after 2 years and completely eliminating it after 5 years when no viable seeds remained in the soil (Anderson & Calov, 1996).