Cost-benefit analysis of strategies against severely harmful giant hogweed in Germany

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While invasive species are considered to be a primary driver of biodiversity loss across the globe, species such as the alien for Germany giant hogweed pose even greater risks, including health hazards to humans, limited accessibility to sites, trails and amenity areas, as well as ecological damages.

Since 1st January 2015, EU member states are obligated to develop concrete action plans against (further) spread of invasive alien species. In order to do so, however, policymakers need adequate knowledge about data of the current spread situation as well as information about costs and benefits of control measures. Therefore, German researchers analyse the present situation and control measures, as well as the cost-effectiveness of the possible eradication strategies. Their analysis is published in the open access journal *NeoBiota*.

Largely spread across Germany, the giant hogweed (*H. mantegazzianum*) grows in a wide range of habitats, including roadsides, grasslands, riparian habitats and woodland margins. The highest invasion percentage (18.5%) was found for abandoned grasslands, field and grassland margins, and tall-forb stands.

While the species poses a serious threat on native biodiversity through competitive displacement of native plants, it is particularly dangerous to human health. Its watery sap contains several chemical agents. In contact with the skin, this sap can cause severe blistering if the person is simultaneously exposed to sunlight. Furthermore, the hypersensitivity of

the skin towards sunlight may persist for a number of years. Additionally, the giant hogweed can limit public accessibility to sites, trails and amenity areas, as well as inflict ecological damages, such as erosion at riverbanks.

In order to provide policymakers with the information needed for adequate control measures, Dr. Sandra Rajmis from the Julius Kühn-Institute, Dr. Jan Thiele from the University of Münster, and Prof. Dr. Rainer Marggraf from Georg-August-Universität Göttingen examine costs and benefits of controlling giant hogweed in Germany.

To address these challenges, the scientists firstly study the present state and costs of control measures, based on survey data received from German nature authorities. Then, they analyse the identified control options in terms of cost effectiveness with regard to the invaded area types and sizes in the infested German districts. To estimate the benefits of the eradication strategies, they turn to a choice experiment survey conducted in German households.

"Only in light of these findings, policymakers can properly understand about the societal costs and benefits of alternatives and decide about societal favored control options in Germany," point out the researchers.

The team also notes that cost-effectiveness of eradication strategies depends on the length of the period over which they are implemented and observed.

"As this is the first cost-benefit analysis estimating welfare effects and societal importance of giant hogweed invasion control, it could serve as guideline for assessments of eradication control in other European countries and support the implementation of the EU directive 1143/2014," they conclude.

More information: Sandra Rajmis et al, A cost-benefit analysis of controlling giant hogweed (Heracleum mantegazzianum) in Germany using a choice experiment approach, *NeoBiota* (2016). DOI: 10.3897/neobiota.31.8103

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