

Science for Environment Policy

Invasive hogweed plant's impacts decrease over time

The damaging impacts of the invasive alien plant, giant hogweed, decline over time, new research from the Czech Republic has concluded. Although this plant initially reduces the native species richness of the grasslands it colonises, the study found that numbers of native species increased again in sites that had been colonised by hogweed for 40 years or longer.

Invasive alien species are one of the greatest threats to [biodiversity](#), often leading to declines or even extinctions of native species. While there has been much research into the immediate environmental impacts of invasive species, whether these impacts change over time is often overlooked.

In this study researchers examined the impacts of the giant hogweed (*Heracleum mantegazzianum*) on grassland habitats in the western Czech Republic. Giant hogweed, which was introduced to Europe in 1817, has become invasive in a number of countries including Belgium, Finland, France, Germany, Ireland, Sweden and the UK, as well as the Czech Republic. As an invader, it has been shown to substantially reduce the number of native species in grasslands.

The researchers identified 24 sites that had been invaded by giant hogweed at different times since 1963. Time since invasion was divided into age classes: 48 years or older; 42; 28; 11 and finally 0, for un-invaded sites. In 2010, the researchers surveyed the sites and recorded the groundcover of the hogweed, the number of different species, and biomass of the native species.

As expected, sites with hogweed had lower average species richness (31.3 species per site) than those without (40.8). However, the impacts of giant hogweed varied over time. Species richness and biomass of native plants were reduced at 11 year old sites and were lowest at 28 year old sites. After this point, however, both species richness and native biomass began to increase, although they did not return to un-invaded levels. The groundcover of the giant hogweed was highest (66.2%) in the recently invaded 11 year old sites and slowly declined with age, reaching 56.2% in sites that were 48 years or older.

The researchers also conducted a further experiment in order to understand why the impacts of this invasive plant had declined. They took [soil](#) samples from 20 of the sites and sterilised half of these to kill any pathogens, so that there were sterilised and unsterilised samples from each site. Hogweed seedlings were then grown in the soil for one year between 2010 and 2011. The results of this experiment revealed that hogweed had lower biomass and survival in soil from sites that had been invaded longer ago. However, this was only true if the soil was unsterilised.

This suggests, say the researchers, that soils from older sites contained pathogens that affected the plants. These may either be because hogweed-specialist pathogens also became invasive, or because local pathogens had evolved to attack the invasive plant.

These results provide valuable guidance for conservation managers, showing that more recently colonised sites should be a priority, since this is where hogweed does the most damage. However, these results do not advocate 'doing nothing', simply because impacts reduce over time, the researchers warn. These plants also have other impacts, and they can also spread from old sites into new areas.



28 November 2013
Issue 352

Subscribe to free
weekly News Alert

Source: Dostal, P.
Mullerova, J. Pysek, P. *et al.* (2013). The impact of an invasive plant changes over time. *Ecology Letters* 16: 1277-1284. DOI: 10.1111/ele.12166.

Contact:
dostal@ibot.cas.cz

Theme(s):
[Biodiversity](#), [Soil](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.