

Fighting crimes against biodiversity: How to catch a killer weed

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Invasive species which have the potential to destroy biodiversity and influence global change could be tracked and controlled in the same way as wanted criminals, according to new research from Queen Mary, University of London.

Geographic profiling (GP) was originally developed as a [statistical tool](#) in criminology, where it uses the locations of linked crimes (for example murder, rape or arson) to identify the predicted location of the offender's residence. The technique is widely used by police forces and investigative agencies around the world.

Now, a team led by Dr Steven Le Comber from Queen Mary's School of Biological and Chemical Sciences has shown that this technique can also be used to identify the source of populations of invasive animals and plants such as Giant hogweed and Japanese knotweed.

Invasive species are now viewed as the second most important driver of world biodiversity loss behind habitat destruction and have been identified as a significant component of global change. The cost of invasive species can run from millions to billions of pounds. For these reasons, prevention and control of invasive species has been identified as a priority for conservation organisations and government wildlife and agriculture ministries globally.

Writing in the journal *Ecography*, the team describe how they used computer simulations to compare GP to existing ways of monitoring

invasive species. The team also analysed historical data from the Biological Records Centre (BRC) for 53 invasive species in Great Britain, ranging from [marine invertebrates](#) (such as the Japanese oyster) to woody trees (for example, Norway spruce), and from a wide variety of habitats (including coastal habitats, woodland and man-made habitats) to attempt to identify the source of each species. In both the [computer simulations](#) and the real datasets, GP dramatically outperformed other techniques, particularly as the number of sources (or potential sources) increased. Dr Steven Le Comber who led the study, explains:

"We found that existing methods performed reasonably well finding a single source, but did much less well when there were multiple sources – as is typically the case as invasive species spread. The results show that [geographic profiling](#) could potentially be used to control the spread of [invasive species](#) by identifying sources in the early stages of invasions, when control efforts are most likely to be effective."

Provided by Queen Mary, University of London

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