

Researchers conduct first worldwide survey of non-native flora

August 20 2015, by Bob Yirka



Gorse (*Ulex europaeus*) large scale invasion at Hinewai preserve in Banks Peninsula, New Zealand. Gorse was introduced from Europe in the early stages of the European settlement. Millions of dollars are spent on the control. Credit: Pieter Pelter

(Phys.org)—A large international team of researchers has conducted a global survey of non-native flora that included 481 mainland regions (covering 83 percent of total land area) and 13,168 species of plants foreign to the places where they currently reside. In their paper published in the journal *Nature*, the group describes their study and why they believe it may help instigate a discussion on whether measures should be taken to prevent the transfer of plants from one region to another. Marcel Rejmánek with the University of California offers a News & Views [piece](#) on the work done by the team in the same journal edition.

Most people are aware that humans have been carrying [plants](#) from one place to another for many years, and that oftentimes those plants grow and adapt to their new environment becoming a naturalized species. But up till now, the researchers claim, no one has ever bothered to conduct a survey to find out just how many there are, or to catalogue them. In this new effort, the team has done just that, listing all of the known species that humans have caused to migrate. And in a bit of a surprise, when they counted them all, and then compared them to [native species](#), they found that naturalized species now account for approximately 4 percent of all currently known vascular [plant species](#) on the planet.

The team also found that North America is home to the largest number of non-native species, which they suggest isn't surprising as many of

those plants were carried over and planted intentionally as people migrated. Europe came in second. They also found that islands in the Pacific had the highest number of [invasive plants](#) in proportion to native species and also noted that one of the most prevalent naturalized species was *Sonchus oleraceus*, a weed related to the common dandelion. The castor oil plant came in second. They noted too that areas in the northern hemisphere were the source of the most species transfer.

The researchers believe that most of the transfer of plant species came about in the century after explorers in Europe discovered the New World—many plants were carried on purpose for growing crops. They also note that their research could help initiate a discussion about whether stronger efforts should be made to control the transfer of species between regions, due to the many problems that have been associated with some naturalized [species](#).



Giant hogweed (*Heracleum mantegazzianum*) is one of the most prominent invasive plants in Europe, with invasive stands covering hectares of abandoned pastures. The invasion of this site in the Czech Republic, central Europe, started in the 1950s. Credit: Jan Pergl

More information: Global exchange and accumulation of non-native plants, *Nature* (2015) [DOI: 10.1038/nature14910](https://doi.org/10.1038/nature14910)

Abstract

All around the globe, humans have greatly altered the abiotic and biotic environment with ever-increasing speed. One defining feature of the Anthropocene epoch is the erosion of biogeographical barriers by human-mediated dispersal of species into new regions, where they can naturalize and cause ecological, economic and social damage. So far, no comprehensive analysis of the global accumulation and exchange of alien plant species between continents has been performed, primarily because of a lack of data. Here we bridge this knowledge gap by using a unique global database on the occurrences of naturalized alien plant species in 481 mainland and 362 island regions. In total, 13,168 plant species, corresponding to 3.9% of the extant global vascular flora, or approximately the size of the native European flora, have become naturalized somewhere on the globe as a result of human activity. North America has accumulated the largest number of naturalized species, whereas the Pacific Islands show the fastest increase in species numbers with respect to their land area. Continents in the Northern Hemisphere have been the major donors of naturalized alien species to all other continents. Our results quantify for the first time the extent of plant naturalizations worldwide, and illustrate the urgent need for globally

integrated efforts to control, manage and understand the spread of alien species.

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