



# Managing invasive alien species to protect wild pollinators

Pollination is an essential step in the successful reproduction process of most flowering plants, including many plants we rely on for food. The species that is most commonly assumed to provide the majority of pollinator services is the honeybee (*Apis mellifera*), but most pollination is actually undertaken by wild pollinators. In Europe, these wild pollinators are primarily insects - including bees, hoverflies, butterflies, moths, beetles and other flies. Without pollinators, many plants would not be able to reproduce, causing vegetation diversity to decline, depriving many animal species of a primary source of food and unleashing knock-on effects along trophic chains. In addition, we would lose many fruits, nuts and vegetables from our diets, and many other important food stuffs and materials, such as vegetable oils, cotton and flax.

In recent years, insect declines have been recorded around the world, and Europe is no exception. In the last few decades, populations of wild pollinators have declined significantly across Europe, with 77 wild bee species being threatened with extinction. They face an array of different threats, including land-use change, pollution, and invasive alien species.



*Vespa velutina* (Asian hornet), © Gilles San Martin, Flickr, CC BY 2.0

Invasive alien species	Native range	Current alien range in EU	Introduction pathway into the EU	Native pollinators impacted	Impact mechanism	Known effective measures
Giant resin bees <b><i>Megachile sculpturalis</i></b> (and <b><i>Megachile disjunctiformis</i></b> )	East Asia, including China, Korea, Taiwan and Japan	<i>M. sculpturalis</i> - France, Italy, Switzerland, Germany, Hungary, Slovenia, Austria, Spain <i>M. disjunctiformis</i> - Italy	Introduced accidentally, likely with imports of wood products or other potential nesting materials	Solitary bees <i>Xylocopa</i> spp., <i>Lithurgus</i> spp., <i>Osmia</i> spp., <i>Megachile lagopoda</i> , and some <i>Anthidium</i> spp.	Competition	Monitoring (research needed)
Asian hornet <b><i>Vespa velutina nigrithorax</i></b>	Southeast Asia	Established in Belgium, Spain, France, Italy, and Portugal	Introduced as a transport stowaway, probably in pottery	Different pollinator groups, primarily bees and wasps	Competition, Predation	Early detection and rapid eradication through nest destruction
Invasive garden ant <b><i>Lasius neglectus</i></b> and Argentine ant <b><i>Linepithema humile</i></b>	<i>L. neglectus</i> - Turkey, Russia, Iran <i>L. humile</i> - Argentina, Uruguay, Paraguay, Bolivia and Brazil	Both widespread in Europe	Probably introduced as a contaminant of soil and turf attached to potted plants or as a hitchhiker on ship/boat	Ants and butterflies: <i>Lasius grandis</i> , multiple butterflies	Competition	Prevention through biosecurity measures, surveillance, and chemical application for eradication and control
Common rhododendron <b><i>Rhododendron ponticum/baeticum</i></b>	Northern Turkey and Caucasus (Georgia, Russia)/ northern Spain and Portugal	Ireland	Introduced via the horticulture trade	Bees and bumblebees	Ecosystem modification and poisoning/toxicity	Early detection, and integrated physical and chemical management to control and eradicate
Goldenrods, <b><i>Solidago canadensis</i></b> , <b><i>Solidago gigantea</i></b> and <b><i>Solidago altissima</i></b>	North America	<i>S. canadensis</i> & <i>S. gigantea</i> - widespread across EU <i>S. altissima</i> - Belgium	Introduced via the ornamental trade	Bees, bumblebees, butterflies, hoverflies	Ecosystem modification	Control through integrated physical and chemical management measures

Alien, or non-native species, are animals, plants, or other organisms introduced by humans, either intentionally or accidentally, into areas outside their natural range.

Alien species that establish populations and have negative impacts upon native biodiversity and ecosystems, are known as 'invasive' alien species (IAS).

IAS are having a detrimental impact upon native wild pollinators across Europe. IAS can have both negative and positive impacts upon pollinators, and in general they affect pollinators in the following ways:

### Ecosystem modification

Invasive alien plants can dominate an area, replacing a diverse set of native floral species that may provide nutrition to pollinators at different times of year. The invasive plant may provide resources for only a short period of the year, and this may only favour certain pollinator groups or species, and usually those with generalist feeding behaviour.

### Competition and hybridisation

When invasive alien pollinators establish they can compete or hybridise with native pollinators. This is most often seen with managed domesticated alien pollinators that are usually social and possess generalist feeding and nesting behaviours. These managed pollinators are often introduced

recurrantly, and once they escape and establish in the wild, they can directly compete with native wild pollinators for resources, or hybridise with them.

### Predation

Once established, invasive alien species can exert strong pressure on native pollinators through predation. There have been numerous recorded pollinator extinctions, particularly on islands, due to this interaction. Furthermore, IAS with aggressive or territorial behaviour (e.g. some ant species) can displace and deter native pollinators.

### Disease transmission and parasitism

The movement of domesticated pollinators to areas outside their native range has resulted in the transfer of their pathogens and parasites to native pollinators.

The table above provides examples of invasive alien species harmful to wild pollinators in Europe. The table provides a summary of the characteristics of these IAS, the native pollinators that they impact and the main impact mechanisms. In addition, in line with the EU Regulation 1143/2014 on IAS, it also presents the most effective or available measures that can be taken to prevent their introduction and spread, and to rapidly eradicate or manage established populations.