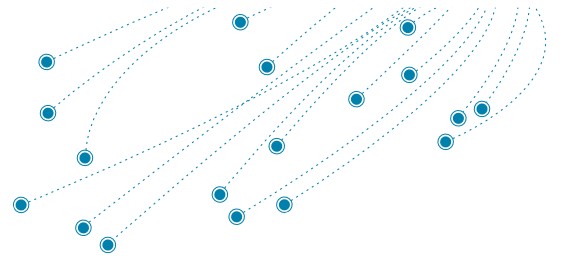


AFRICANISED HONEY BEE



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Invasive insects are a huge biosecurity challenge. We profile some of the most harmful insect invaders overseas to show why we must keep them out of Australia.

Species

Africanised honey bee / *Apis mellifera scutellata*. Also known as killer bees.

Main impacts

Competes with native species for flowers and nesting sites, attacks animals. Attacks and kills people. Takes over commercial hives and hinders bee harvesting by behaving aggressively.

Native range

Eastern and southern Africa.¹

Invasive range

South, central and north America.¹

Main pathways of global spread

Intentional release.²

ENVIRONMENTAL IMPACTS OVERSEAS

In Brazil, matings between African honey bees and European honey bees (both *Apis mellifera*) in the 1950s produced hybrids called Africanised honey bees, which have spread widely in the Americas. They are more aggressive than European honey bees and have other troubling behaviours³.

These bees compete with native pollinators. At the rainforest edge in French Guiana, when Africanised honey bees were introduced, stingless bee numbers fell as Africanised honey bee visits increased⁴. Evidence of Africanised honey bees competing with native bees has also been documented in Brazilian Atlantic rainforest⁵. The evidence suggests that Africanised honey bees may cause population declines of neotropical pollinators⁴.

Africanised honey bees compete with endangered Neotropical parrots for nest holes⁶. They are considered one of the main threats to the survival of the nearly extinct Spix macaw⁶. When nest boxes



Africanised honey bee colony. Photo: Sharon Suzuki-Martinez | Flickr | CC BY-NC 2.0



Africanised honey bee. Photo: Jeffrey W Lotz, Florida Department of Agriculture and Consumer Services | Bugwood.org | CC BY 3.0 US

were installed in south-eastern Brazil to encourage nesting by endangered vinaceous-breasted Amazons, three of four boxes were taken over by Africanised honey bees⁶. At a breeding facility in Sao Paula, five blue-and-yellow macaws were killed and three red-and-green macaws were stung badly in an unprovoked attack by honey bees⁷. These attacks, and attacks documented on cattle⁸ and fatal attacks on people⁹, imply that free-living wild animals are sometimes killed.

In southern Florida Africanised honey bees are displacing threatened barn owls from nest boxes, and have killed some of them¹⁰. Insecticides are now being applied in nest boxes to repel the bees.

Africanised honey bees are blamed for the disappearance from Mojave Desert sites in south-western Utah of the rare desert Mojave poppy bee (*Perdita meconis*), a specialised pollinator of the endangered bearclaw poppy (*Arctomecon humilis*) endemic to the Mojave Desert¹¹. A second native bee, *Eucera quadricincta*, also declined after the honey bees arrived. Honey bees begin foraging earlier in the morning and deplete the flowers of pollen before native bees become active. The endangered poppy is now producing less seed, with fruit production at one site more than halving in four years¹¹.

HUMAN AND ECONOMIC IMPACTS OVERSEAS

Africanised honey bees are extremely aggressive towards people¹². They attack in swarms, sting with much less provocation than European honey bees, and are more persistent in their attacks⁷. People have died from attacks, during which as many as a thousand bees sting en masse¹³. Attacks resulting in 300–500 stings have been survived without treatment, except by those who

are allergic, but more than 500 stings are 'commonly fatal'¹⁴. In Venezuela, about 400 people are thought to have been killed by the bees between 1975 and 1990, with death rates falling since then as knowledge of the bees has grown⁹. In Sao Paulo, Brazil, more than 1000 bee attacks are reported each year¹². The bees are very successful invaders of urban areas, because they are versatile about nesting requirements and willing to use small spaces, such as cavities in buildings, tyres and rubbish tins¹⁵, or will nest in the open under eaves or branches⁹. In Tuscon, Arizona, over a 12 year period, more than 8000 hives were removed from residential metre boxes¹⁵. Cattle have been stung in large numbers after approaching hives, resulting in massive swellings followed by necrosis and skin loss⁸.

The bees are an economic as well as a social problem, because in Latin America many commercial beekeepers have abandoned hives after being attacked⁹. In Brazil the initial impact on the honey industry was serious, with production falling by more than a third between 1964 and 1971⁹. The industry has largely recovered, because of considerable effort put into selecting usable Africanised stock and developing improved management procedures⁹. Other countries have been through similar cycles of decline and partial recovery, but the presence of Africanised bees continues to cause problems wherever they occur⁹.

AUSTRALIAN CONCERNS

In Australia, feral European honey bees are a serious environmental concern, because they commandeer tree hollows and floral resources, and pollinate weeds¹⁶. Some threatened species, including the endangered Kangaroo Island glossy black-cockatoo and the critically endangered orange-bellied parrot, are protected by removing feral honey bees from the artificial and natural hollows in which they breed¹⁷. Honey bees compete with native honeyeaters for nectar and reduce pollination rates of some native plants they attend, although for others they serve as effective pollinators^{16,18}.

Africanised honey bees are more successful than European honey bees in tropical climates^{3,9} and, unlike European honey bees, they enter rainforest⁵. This means they could increase the feral honey bee population in northern Australia, with greater ecological impacts, such as increased competition for nest holes and

nectar. By penetrating rainforest in the Wet Tropics they could impact on many species that rarely encounter honey bees.

The propensity of Africanised honey bees to attack could lead to deaths of native wildlife, including threatened species. Their willingness to nest in very small cavities means that all over Australia they could displace small native mammals and birds that are not displaced from hollows by European honey bees. In logged eucalypt plantations which lack natural hollows, small nest boxes have been found to suit feathertail gliders but not honey bees^{17,19}, but that would change if Africanised bees arrive.

Africanised honey bees will have serious impacts on people in Australia, with deaths to be expected, an increasing number of stings, and setbacks to the honey industry as Africanised bees take over commercial hives.

Africanised honey bees could achieve a wide distribution in Australia, given their success in the tropical climates of central and South America^{3,9}, their penetration of the Mojave Desert in Utah¹¹, and physiological evidence suggesting they could survive as far north as Canada²⁰.

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ABOUT THIS PROJECT

The Invasive Insects: Risks and Pathways Project is a partnership between Monash University and the Invasive Species Council. To find out more visit invasives.org.au/risks-and-pathways.