

A race against pine: Wood-boring wasp in North America threatened by a Eurasian invader

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A woodwasp. Credit: Ann Hajek

Invasive species have diverse impacts in different locations, including biodiversity loss, as a result of native species being outcompeted for

similar resources. A U.S. research team, led by Dr. Ann Hajek, Cornell University, studied the case of an aggressive Eurasian woodwasp that has recently established in North America and poses a threat to a native species. Their study is published in the open-access journal *NeoBiota*.

Most woodwasps play an essential part in the forest ecosystem, as they decompose wood, preferring dying or felled trees. They do so by laying their eggs in the wood underneath the tree bark. Curiously, the wasps also deposit a symbiotic fungus and venom that shuts down the tree's defenses. As the tree weakens, the fungal infestation begins and the tree starts to rot. When the eggs hatch, the larvae feed on the rotten wood before they emerge. This relationship is called obligate since the survival of the wasp is impossible without the fungal infestation.

Originating from Eurasia, the presence of the [invasive species](#) is dangerous because it can kill healthier pines. It has long been established in the southern hemisphere causing economic issues due to its attacks on pines. While pines have been introduced to that part of the world, they are native to North America, where the invasive wasp could be far more devastating.

Now that the invasive woodwasp has already been identified in the States, the scientists seek to find a way to protect its frail competitor, reporting a rapid decline in the North American [species](#).



Pine tree. Credit: Ann Hajek

"We would often observe both species emerging from the same infested [pine](#) trees, but the ratios changed with time," explains Dr. Ann Hajek.

"Shortly after the invasive colonizes an area, the native wasps emerging from the trees would equal the invasive. However, a few years later, the natives started to get fewer and fewer."

It turned out that the Eurasian woodwasp has larger venom glands and produces more eggs, thanks to its greater body size. Furthermore, it emerges earlier than the North American species, so that it can find and colonize the most suitable trees first. By the time the [native species](#) lays

its eggs, the authors speculate, most of the preferred trees are already occupied by the invasive, leaving a reduced supply of habitat for the newcomer's larvae.

"Woodwasps are difficult to study and their biologies are generally poorly understood," note the authors. "While the native species appears to be outcompeted from pines that both species prefer, it is possible that populations of the native can be sustained in [trees](#) less desirable to the invasive or unavailable during the time and place that the invasive is present."

The scientists call for additional research on the native woodwasp in southeastern pine forests in USA, before the invaders spread to that area with extensive pine forests.

More information: Ann E Hajek et al, Comparing functional traits and abundance of invasive versus native woodwasps, *NeoBiota* (2017). [DOI: 10.3897/neobiota.36.14953](https://doi.org/10.3897/neobiota.36.14953)

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