

Invasive garden ants as new pest insects in Europe

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Northern Europe has so far been free from invasive pest ants, but it seems just a matter of time until *Lasius neglectus*, a new ant that was discovered in 1990, will reach these latitudes and wreak havoc in parks and gardens of Northern Germany, Scandinavia and the British Isles.

A new study, published in the online, open-access journal *PLoS ONE*, illuminates where this ant comes from, how it organizes its supercolonies, and how it attained its pest status. The study provides a wake-up call for closer monitoring of urban ecosystems to eliminate infestations before they become problematic.

Invasive pests are an increasing problem for the preservation of natural biodiversity. Among the insects, ants are disproportionately well represented among the world's 100 worst invasive pests. The red imported fire ant causes about US\$ 750 million of damage in the US every year, and the Argentine ant has spread along 6000 km of coastline in southern Europe while exterminating the natural insect fauna. Several of these pest ants have been studied in parallel during recent years, which has given surprising insights in their evolutionary development.

"We found that invasive garden ants developed from species in the Black Sea region that have natural populations with small networks of interconnected nests with many queens that mate underground and don't fly. It is now becoming clear that rather many ant species share this lifestyle, so that it is no surprise that a number of them have become invasive pests with giant super-colonies based on the same principles,"

says Dr. Sylvia Cremer, the lead author of the new publication.

An international team of 20 researchers, coordinated from the Centre for Social Evolution (CSE) at the University of Copenhagen, Denmark, started this study more than five years ago. Dr Sylvia Cremer, initially a Marie Curie Fellow at CSE, later moved to the University of Regensburg, Germany to continue her studies of the invasive garden ant, *Lasius neglectus*, in cooperation with Drs Jes S. Pedersen and Jacobus J. Boomsma in Copenhagen.

As the ant's name aptly illustrates, the species was overlooked until it was described in 1990, when it already had infested an entire neighbourhood in Budapest, Hungary. Since then it has been found in more than 100 locations across Europe, where it prefers parks and gardens and quickly exterminates the native ant fauna. It resembles the common black garden ant but the number of workers crawling around is around 10 to 100 times greater.

"When I saw this ant for the first time, I simply could not believe there could be so many garden ants in the same lawn", says Professor Boomsma, one of the co-discoverers of *Lasius neglectus* almost 20 years ago.

The invasive garden ant is able to thrive in the temperate climate zones of Europe and Asia, and is therefore the first pest that will be able to make it to the colder temperate regions of Europe and Asia, unless we stop it from doing so. So far, it has reached Jena in Germany, Ghent in Belgium, and Warsaw in Poland.

The work by Dr. Cremer and colleagues clearly suggests that the preconditions for developing invasive ant syndromes develop naturally in the ants' native range. This is no problem as long as the ants are kept in check by their natural enemies, because the natural tendencies of these

non-flying ants to spread are very limited. However, when their colonies infest large potted plants and humans start moving these around across borders, such introductions can get out of control.

"The future will therefore see many more ants become invasive, so it is about time we understand their biology and this study is a major step in that direction", says Jes S. Pedersen, who coordinates the invasive ant program in Copenhagen.

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