Food and Agriculture Organization of the United Nations

International Plant Protection Convention

Invasive ants as a biosecurity threat

Solenopsis geminata
© Ben Hoffmann

Invasive ants are a diverse group of aggressive, competitive ant species that can rapidly establish and spread. Several ant species are amongst the most serious global invasive species. Their broad diets, nesting habits, ability to breed rapidly and adaptability to varied habitats make them excellent invaders. Agricultural, economic, environmental and social wellbeing are threatened by these ants, many of which have been introduced to, and established in, many countries.

About invasive ants

Invasive ants include a variety of aggressive ant species that displace native species through competition and predation. Commonly recognized invasive ant species include African big-headed ant (*Pheidole megacephala*), Argentine ant (*Linepithema humile*), little fire ant (*Wasmannia auropunctata*), yellow crazy ant (*Anoplolepis gracilipes*), red imported fire ant (*Solenopsis invicta*), tropical fire ant (*Solenopsis geminata*), Singapore ant (*Trichomyrmex destructor*), Asian needle ant (Pachycondyla chinensis), raspberry ant (Nylanderia fulva) and browsing ant (Lepisiota frauenfeldi).

Invasive ants are often difficult to distinguish visually from native ants, as most species are tiny (under 5 mm), have few evident distinguishing features and do not construct obvious nests.

Where are invasive ants found?

Invasive ants originate from many global locations and occupy all major biomes, except the poles and the coldest habitats. Many species originate from South America including red imported fire ant, Argentine ant, raspberry ant and little fire ant. Tropical fire ant originates in the Americas. Browsing ant is native to Europe, African big-headed ant and Singapore ant from Africa, Asian needle ant is native to eastern Asia and yellow crazy ant is thought to originate from South East Asia.

Tropical environments are particularly prone to ant invasions as most invasive ant species are tropical. However, some invasive ants originate from or are capable of surviving in temperate climates.

How do invasive ants disperse?

Increasing trade and commerce have led to the unintended transport of ants across the world. Invasive ants can be introduced internationally by hitchhiking on imported sea and air cargo, machinery and cargo containers. Plants, soil, nursery stock, timber and various other imported commodities can harbor hitchhiking ants. As these diverse entrance pathways may not be subject to phytosanitary inspection, intercepting and preventing the establishment of invasive ants is difficult.

Most invasive ant species form "supercolonies" with multiple queens, allowing rapid colonization and population growth. Regional dispersal often occurs when people accidentally disperse the ants. Ants may also be further spread over greater distances through accidental human transport.

Worker and queen *Anoplolepis gracilipes* © Phil Lester

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Ants damaging electric infrastructure © Creative commons

Impacts

Invasive ants can negatively impact agriculture and forestry. Many species directly damage plants by eating fruit and seeds, tunneling into stems and removing bark from seedlings. Some ant species farm phytophagous sap feeding insects such as scale insects or mealybugs for the honeydew they produce. This may result in high densities of the sap-feeding insects that may reduce crop productivity and even cause host plant death. Ants increase the risk of disease transmission to plants by enhancing populations of insects virus and bacteria vectors.

Invasive ants have the potential to severely affect human health and social amenity. Several species of invasive ants such as red imported fire ant and little fire ant have extremely painful stings that can cause anaphylactic shock in persons allergic to the ants' venom and blindness in animals when stung in the eyes.

Many ant species can damage infrastructure, especially electrical equipment by chewing through wires, causing short-circuits and sometimes fires.

Environmental impacts

Invasive ants are often able to completely displace or extirpate other native ant species, and a majority of other native invertebrates. Similarly, they can have significant impact on vertebrates, especially ground-dwelling species such as lizards and nesting birds. For example, on Christmas Island the yellow crazy ant has killed over 20 million land crabs which has had a dramatic effect on seedling recruitment, weed spread, and leaf litter breakdown in the forest, completely changing forest structure.

How ant invasions can be prevented and controlled

Preventing ants arriving with international goods is the most effective method of preventing invasion through thorough inspections and sanitation. When an incursion occurs, a rapid and thorough response to the incursion is paramount. Public awareness and support is critical when eradication is undertaken. Public assistance is also critical in the early detection of new incursions. Pre-developed risk assessments and rapid response protocols will assist in responding quickly to new incursions.

Many methods are used to find invasive ants at high risk locations, including visual inspections, regular use of baits and lures and odour detection dogs.

Wasmania auropunctata foraging on crops © Cas Vanderwoude

This factsheet was produced by the IPPC pilot programme on surveillance with the collaboration of the Animal and Plant Health Quarantine Agency of the Republic of Korea; CSIRO Australia; TNC USA, James Cook University, Australia; University of Guam, Guam.

Animal and Plant Quarantine Agency

The Animal and Plant Quarantine Agency of the Republic of Korea provides financial support to this programme.

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I8939EN/1/03.18