

The Coastal Brown or Big Headed Ant

(Pheidole megacephala)

G. Young, formerly Senior Entomologist, Darwin

INTRODUCTION

The coastal brown or big headed ant is a pest of houses, gardens and natural environments in the Northern Territory. It is thought to be a native of southern Africa but has spread over much of the tropical and sub-tropical world. The ant is spread mainly by human activity, such as the transfer of infested pot plants and landscaping materials to uninfested houses and gardens. The coastal brown ant also poses an ecological threat to Top End rainforests by destroying native fauna and flora.

DESCRIPTION

The coastal brown or big headed ant, *Pheidole megacephala*, is a small ant 1.5 to 2.5 mm long. The colour of the ant varies from light yellowish brown to dark brown. Coastal brown ants travel in trails from the nest to food.

The ant has four castes or body forms. The largest form is the queen, which lays eggs. Unfertilised eggs produce males and fertilised eggs produce females. There are many queens in coastal brown ant nests. Males are the next largest form and are elongated in shape. By far the most numerous forms are the workers. Workers are sterile females who care for the young, collect food, build and defend the nest. There are two worker castes, a more numerous form with a small head and the other less numerous with a large head. The large headed form defends the colony and is sometimes known as the soldier caste. One of the ant's common names is taken from this form. Queens and males are rarely seen outside the nest.



Figure 1. *Pheidole megacephala* (soldier and workers)

DISTRIBUTION

The ant is thought to have originated in southern Africa and has now spread all over the Old World tropics and into many temperate areas. In Australia the ant has long been established along the east coast and the south western corner of WA, around Perth. It is commonly found in the urban areas of Alice Springs, Katherine and Darwin, where it is a domestic nuisance feeding on food scraps and invading kitchens and bathrooms in search of food.

GENERAL LIFE HISTORY OF ANTS

There are four stages in the life history of ants:

- Eggs are laid by the queen.
- The eggs hatch and grub-like larvae emerge, which are fed by the workers. Queen larvae are fed a special diet to ensure their development to reproductive females.
- When the larvae are fully-grown, they go into a resting stage, known as a pupa.
- Adults emerge from the pupal stage. Eggs, larvae and pupae are collectively known as brood. Initially the queens and males have wings and when conditions are favourable they take off in a mating flight. After mating the male dies and the queen sheds her wings, establishes a nest and lays eggs. After the eggs hatch the queen feeds the larvae until adult workers mature.

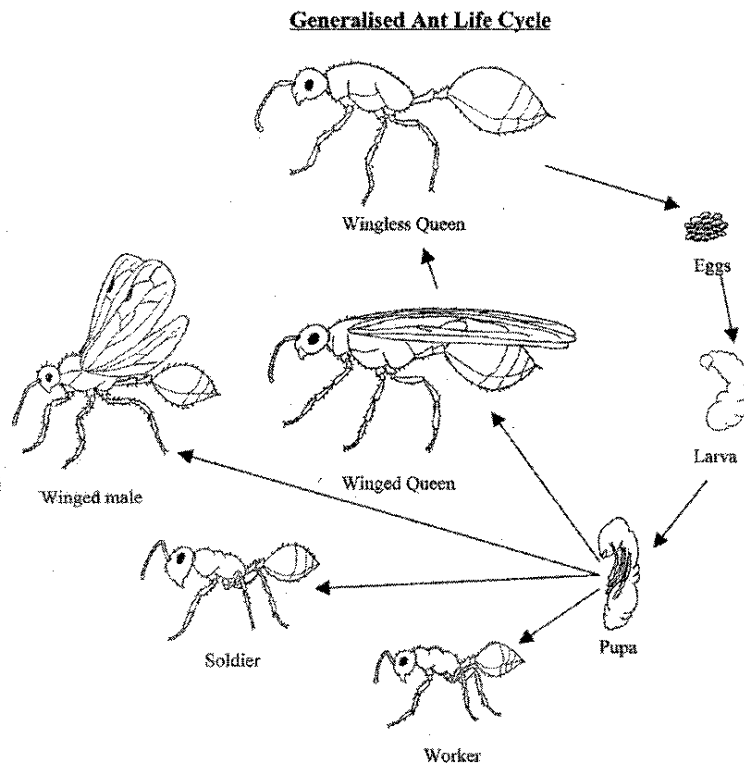


Figure 2. Life cycle of ants

The coastal brown ant differs from this generalised life history in one important exception. This species does not have a mating flight as mating occurs within the parent colony. Wingless queens accompanied by workers carrying larvae and pupae walk to a new nest site, which is quite close to the original nest.

BIOLOGY

In the Top End the coastal brown ant avoids bright sunlight and prefers lower temperatures and high humidity. As a result the ant is more numerous in moist shaded areas. When temperatures are high workers forage only at night. Covered galleries or runways made of soil and organic matter are constructed on the trunks of shrubs and trees. This allows workers to travel up and down the trunk without being exposed to the high temperatures and lower humidities outside the runways.

Heavy rainfall and waterlogged soils are unfavourable to the coastal brown ant. Ant activity and populations are lowest during the wet season. To avoid waterlogged soil the ant will invade houses and make subsidiary nests in trees and shrubs.

Since the coastal brown ant does not have a mating flight, it is spread mainly by human activity. In suburban areas the transfer of infested pot plants and landscaping materials to un-infested houses and gardens appears to be the main method by which the ant is spread over longer distances.

NESTS

Nests are constructed in gardens, (particularly when landscaping materials and mulch are placed over garden soil), in pot plants and in crevices between brickwork, in cavity walls, under pavers, under concrete paths and under poorly constructed concrete slabs.

FEEDING HABITS

The ant prefers food of animal origin such as meat particles, urine, fat and grease, and dead insects. A fine layer of grease over kitchen walls, stoves, dish cloths and kitchen utensils is attractive to the workers. Soiled clothing may also attract the ant.

DOMESTIC NUISANCE

The coastal brown ant enters houses in search of food. Kitchens and bathrooms are the most attractive to the ant, although other parts of houses are also invaded. Ant trails inside the house usually lead to cracks and crevices between brickwork and tiles, around skirting boards and gaps in wooden floors. Once inside houses the ant can nest in light switches, computers and household appliances.

In the garden the ant will excavate nests in soil at the base of trees and shrubs. The excavation disturbs the root system of the plant, sometimes resulting in the death of the tree or shrub.

THREAT TO HORTICULTURE

In other parts of the world the coastal brown ant is a pest of tree crops. It tends and protects sap-sucking insects particularly mealybugs and soft scales. Sap sucking insects excrete sugars on which the ant feeds and in return the ant protects the sap suckers from natural enemies. The

excess sugar produced by the sucking insects drips onto leaves where it is colonised by fungi causing sooty mould. The black coating on the leaves greatly reduces photosynthesis, resulting in reduced plant growth.

As yet there is no sign of the coastal brown ant invading local orchards but there is potential for it to be a problem in plant nurseries, especially with potted stock in shaded areas.

THREAT TO BIODIVERSITY

The rainforests of the Northern Territory are fed by permanent ground water. Shaded and moist conditions within rainforests appear to offer ideal conditions for the coastal brown ant. The rainforest at Howard Springs Nature Park is dominated by the coastal brown ant, which has eliminated almost all species of native ants, other insect species, snails, spiders and centipedes. The ant is also changing vegetation on the outer edges of the Howard Springs rainforest. The CSIRO Tropical Ecosystems Research Centre believes the coastal brown ant is a threat to the biodiversity of other NT rainforests, such as those in Kakadu National Park.

CONTROL

Permethrin wettable powder, sold as Coopex Residual Insecticide[®], is a safe pesticide to use inside houses. Cracks, crevices and skirting boards in kitchens and bathrooms can be treated with the spray mixture. Areas outside houses that are protected from rain, such as the junction at the base of walls and concrete slabs, can also be treated with permethrin wettable powder. One thorough treatment can keep a house ant free for up to 12 weeks. The disadvantage of this product is that it leaves a deposit on walls, concrete and timber. The deposit can be brushed off building structures, but with some difficulty.

Amdro[®] is an ant bait, which contains the insecticide, hydramethylnon. The bait can be applied in gardens, around buildings, in plant nurseries and non-crop agricultural land. Hydramethylnon is fairly slow acting, so workers take the bait back to the nest and feed the brood before the chemical starts to act on the workers. This ensures that a large proportion of the colony is killed. However several treatments may be needed before control is complete. Hydramethylnon breaks down rapidly in sunlight and is best applied during the late afternoon or at night.

Both Amdro[®] and Coopex Residual Insecticide[®] should be used strictly in accordance with the instructions on the label.

For further information on the coastal brown ant, please contact the Entomology Branch at the Department of Business, Industry and Resource Development, Berrimah Research Farm, on 8999 2260.

Please visit us on our website at www.nt.gov.au/dbird/dpif/pubcat

Published: Wednesday 22 March 2000.

While all care has been taken to ensure that information contained in this Agnote is true and correct at the time of publication, the Northern Territory of Australia gives no warranty or assurance, and makes no representation as to the accuracy of any information or advice contained in this publication, or that it is suitable for your intended use. No serious, business or investment decisions should be made in reliance on this information without obtaining independent/or professional advice in relation to your particular situation.