

Ants in our ecosystems



Why take an interest in Australian ants?

- Ants are one of the most abundant and conspicuous groups of Australian fauna
- They play vital roles in our ecosystems, and could be termed 'keystone species' in many habitats
- Relatively little is known about their ecology and distribution

Origins

- Ants first appeared over 100 million years ago in the Cretaceous period
- With several other insect orders, they went through a period of rapid diversification following the appearance of flowering plants
- Hymenoptera includes ants, bees, wasps and sawflies, but not termites

Distribution patterns

- The highest diversity of genera is found in the high rainfall environments of north-east Australia, however the highest diversity of species is found in the more arid inland. This suggests that although less genera have invaded the inland, the ones that have done so have been highly successful
- Australia has roughly 103 genera and 1275 species

Sharing the niche

- In the inland, up to 150 species can occur in a single hectare
- This many species are able to occupy such a small area by sharing time, food and space in various ways.

Life in a colony

- A new colony is usually started when a young queen leaves an existing colony and goes off to breed
- A typical colony contains an egg-laying queen, many workers and their brood (eggs, larvae and pupae)
- Workers are all female
- Workers can be dimorphic, with small workers and large 'soldier' ants.

Communication

- Ants communicate using pheromones, touch and sound
- Detailed information can be communicated by laying trails of pheromones
- A crushed ant may emit an 'alarm pheromone' sending the colony into a frenzy
- Sometimes 'propaganda pheromones' are used

Seed dispersal

- Ants are very important for dispersing many plant species, such as wattles, peas and chenopods
- Most wattle seed contains an aril, an edible attachment to encourage ants to disperse seeds
- Ants also structure vegetation communities by preying on some seeds, thus influencing recruitment

Nutrient cycling

- Ants play a large role in nutrient cycling by feeding on dead organisms.
- In arid Australia, this role is crucial due to the lower abundance of fungal activity.

Food for other fauna

- Ants are the main food for many of our reptiles, another of Australia's most distinctive and diverse faunal groups
- They are also the main diet for other fauna such as the charismatic Echidna
- Without ants our ecosystems would not be able to sustain such diverse fauna communities

Soil aeration

- Ant diggings help to churn up the ground, aerating the soil profile
- In arid landscapes they take over this role from earthworms
- This is very important for plant growth
- Remember there can be up to 20 million ants per hectare!

Myrmecophily

- Myrmecophily refers to mutualistic relationships between ants and other species, particularly plants and other insects
- Many of our native butterflies are dependant on ants to complete their life cycle

Role in Monitoring

- In some parts of Australia, ants are considered very useful for monitoring because they are abundant and sensitive to environmental change
- They have been used successfully for monitoring fire regimes and mine sites in northern Australia
- Ants have certainly not been used extensively for monitoring in Victoria

Some ants of central Victoria -

Meat Ant (*Iridomyrmex* spp.)

- One of the more common species in the area
- Forms large mounds in open areas, often on tracks
- Very important group across Australia
- Very aggressive to other ants

Sugar Ant (*Camponotus* spp.)

- Many species are nocturnal
- Often live in rotting wood
- Includes the characteristic honey-pot ant of northern Australia

Bull Ant (*Myrmecia* spp.)

- Solitary workers often seen foraging
- Have a very potent sting, particularly jumping-jacks
- Nests are usually relatively small
- One of Victoria's few threatened ant species, *Myrmecia* sp. 17, has been recorded north-east of Bendigo

Metallic Ant (*Rhytidoponera metallica*)

- Very common genus throughout Australia
- Often found under rocks in the forest and even in peoples gardens
- Most species lack true queens and instead have fertilised workers

