

**ANIMAL SPECIES:**

# Dung Beetles

Dung beetles serve a number of very important ecological functions including soil aeration and nutrient transfer as well as breaking down dung and preventing flies from breeding in it.



M Bulbert © Australian Museum

## Standard Common Name

Dung Beetle

## Identification

- Dung beetles have three body parts - a head, a prothorax and an abdomen.
- The body consists of a hard outside cuticle and folded wings that lie over the upper surface of the abdomen and are covered by wing covers.
- The wings are transparent or whitish in colour and are only visible if the beetle is in flight.
- Dung beetles have six legs that are specialised for shovelling dung and earth.
- Dung beetles come in a variety of colours. The most common colour of dung beetles in Australia is black.

## Size range

2 mm - 30 mm

## Seasonality

Most dung beetle species reproduce in the warmer months of spring, summer and autumn.

## Feeding and Diet

The majority of dung beetles feed on dung, both in their adult and larval phase. However, many dung beetles feed on a variety of things, including mushrooms, decomposing leaves and other rotting matter. Adult dung beetles have mouth parts which are specially adapted to feed on liquefied material and can break down a dung pad very efficiently by burying the dung underground to use when breeding.

## Life cycle

A pair of dung beetles (a male and a female) may work together, digging a nest to create a burrow beneath the dung pad. The dung is taken into the burrow in either a ball or an irregular mass. The female lays her eggs in the burrow. The eggs hatch into larvae, which feed on the dung surrounding it.

The larvae will go through three skin changes to reach the non-feeding pupal stage. Male larvae develop into major or minor males depending on how much dung is available to them during their larval phases. Some dung beetle larvae are able to survive unfavourable conditions, such as droughts, by stopping development and remaining inactive for several months. The pupae turn into adult dung beetles, which break out of the dung ball and dig their way to the surface. The newly formed adults will fly to a new dung pad and the whole process starts over.

## Economic/social impacts

Dung beetles serve a number of very important ecological functions. The digging activity of tunnelling beetles results in the aeration of soil as well as the transfer of nutrients to the soil by releasing the nutrients in the dung. Also, dung beetles break down dung and prevent flies from breeding in it.

## Management

### Studying dung beetles

Scientists use invertebrates such as dung beetles for research. Traditionally, plants (especially trees) and vertebrates such as birds, and lizards have been used for biodiversity and conservation research. This is because they are easy to see and easily identified. But this only looks at a tiny proportion of biodiversity.

Too often, invertebrates have been ignored in biodiversity studies because they are considered too difficult to work with because there are too many of them, many have

not been named, and their biology remains largely unknown. While these objections are true for most invertebrates, they do not apply to dung beetles. Dung beetles have a well-defined biology, the species are all named and have keys for their identification, and there are not too many of them - at most there are only 200 kinds of dung beetle in the whole of New South Wales compared to 800 kinds of ants). Moreover, dung beetles are easy to sample because they are attracted to baited traps.

In recent research, the Australian Museum was interested in obtaining more accurate knowledge about the distribution of dung beetle species in New South Wales for the following reasons:

- many species of dung beetles have small distribution ranges;
- some species may be endangered;
- some areas are rich in species while others are not;
- many areas have not been sampled.

Such a study may also give us other valuable information, such as the relationship between soil type and vertebrate abundance. Also, researching dung beetles is useful when studying beetles' competitive and sexual behaviour.

## Classification

Family:

Scarabaeidae

Superfamily:

Scarabaeoidea

Order:

Coleoptera

Class:

Insecta

Phylum:

Arthropoda

Kingdom:

Animalia

WHAT DOES THIS MEAN?

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*Tags dung beetles, scarabaeidae, Coleoptera, biological control agent, insects, invertebrates, identification,*

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