wheatbelt
natural resource
management

Go-To Guide For Dung Beetles Of The Wheatbelt

An easy-to-use reference in the preparation, trapping and identification of dung beetles on your property.

Introduction

Dung beetles are extraordinary creatures. They are willing workers who can deliver significant benefits in low chemical farming systems by recycling dung produced by livestock into the soil. They are a biocontrol against pest flies that breed in dung, boost soil carbon, limit greenhouse gases resulting from livestock production and improve pasture production among many other amazing things.

This guide has been prepared to help you in starting your journey into trapping, monitoring and understanding the type of beetles that reside on your farm.

When To Trap

Different species of beetles are active at different times of year so it is important to trap at in all seasons to gather all the potential species. Ideally early in each season, especially summer. Therefore, trapping in March, June, September and December is optimal.

Select Your Site

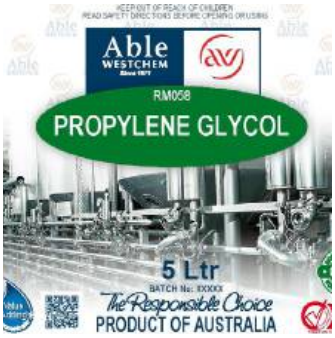
The site needs to be representative of your farm's soil and climate zone within the Wheatbelt. Here's a handy checklist to help you plan your area:

- [ ] Is the site located within 2-3 km of livestock?
- [ ] Can you space traps more than 500m apart (but not more than 1km)?
- [ ] Can traps be placed in the open (more than 50m from trees)?
- [ ] Will the traps be safe from livestock? (Laneways can be good.)
- [ ] Is the grass short (less than 10cm)?
- [ ] Can this location be used all year round? (It is best to use the same trapping location throughout the year.)

Getting The Right Stuff

Having the right equipment will be the key to a successful on-farm trapping and monitoring program. Here's a list of what you'll need and where you can source this equipment from.

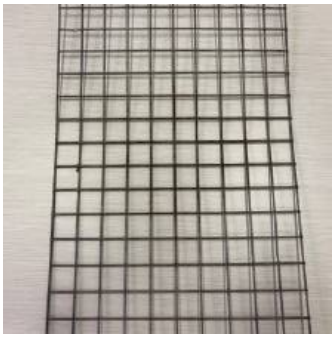
Getting The Right Stuff



4L Propylene Glycol or Ethanol (Pet-Safe) (1L per trap + allowance for wastage)
2 x jerry can (1 for clean chemical; 1 for dirty chemical)

2 x Trays (1 for each trap)
37cm long x 25cm wide x 6.8cm high (Approximately)

Source: Hardware, homeware or similar retailer



2 x Metal mesh (1 Per trap)
37.5cm long x 24.5cm wide (Approximately)

Source: Hardware, or similar retailer

8 x tent pegs (4 per trap) or other means to secure wire to the trap and the trap to the ground. E.g. Garden Stakes or Cables Ties

Source: Hardware or similar retailer

Getting The Right Stuff

Cable ties (at least 2 per trap)

Source: Hardware or similar retailer

Fine mesh sieve

Source: A fine kitchen strainer will be suitable

Sample jars (1-2 per trap)

Source: ProSciTech (or any clean jars with lids will suit)

Silicon/plastic spatula or scraper

Source: Hardware or kitchen retailer. Alternatively, a standard kitchen spatula is suitable

Getting The Right Stuff

Ruler

1L Measuring jug

Scissors

Labels

Getting The Right Stuff

Rinse bottles

Source: Kitchen supplier

Large funnel (removing liquid from trap back into “dirty bottle”)

Small funnel (putting bugs into smaller jar using rinse bottle)

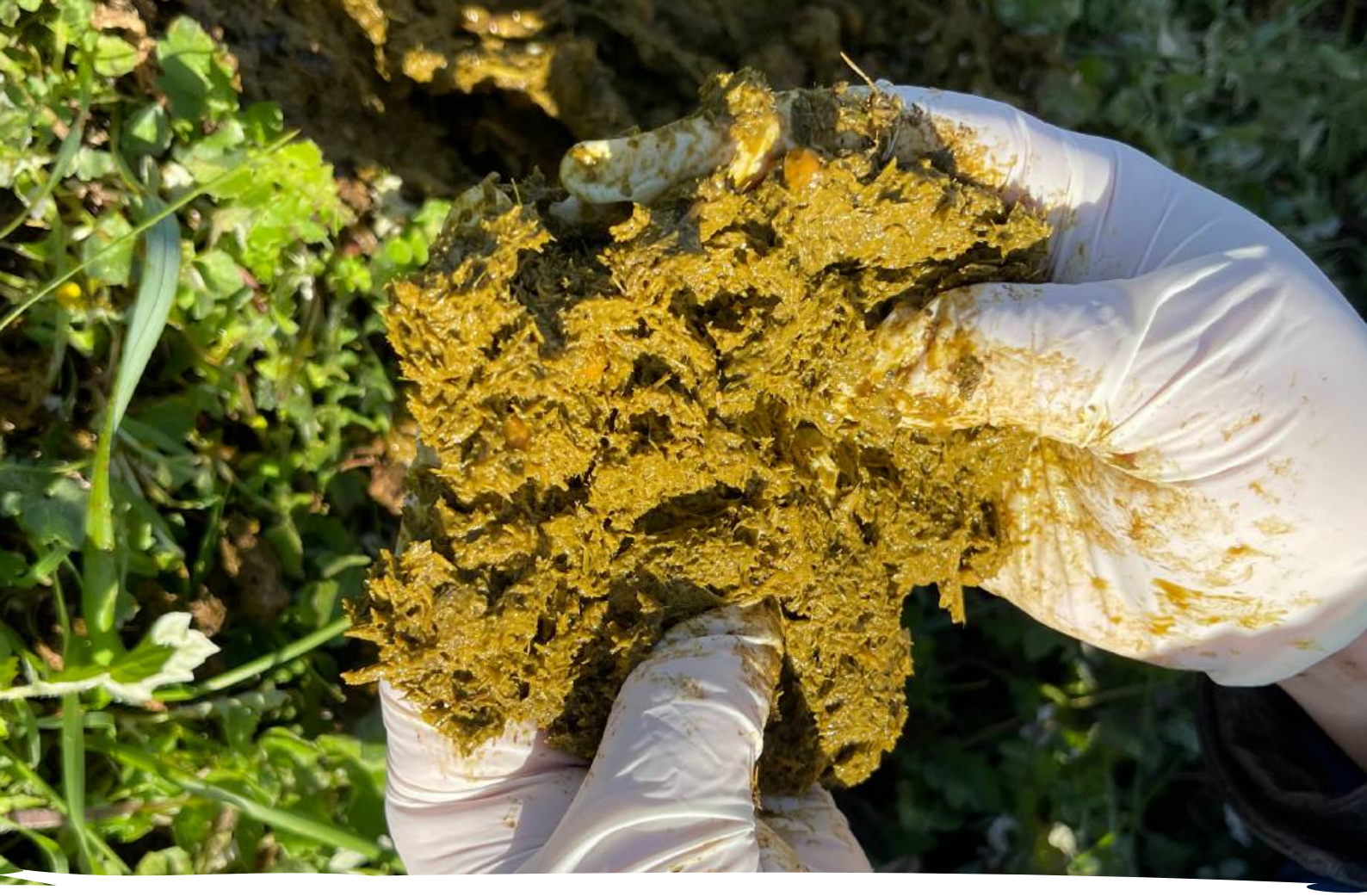
Source: Supermarket, hardware or similar retailer

Muslin cloth (50cm x 50cm)

Source: Kitchen supplier, haberdashery or similar retailer selling fabric

Mallet

Source: Hardware or similar retailer



Collecting The Dung

This is, perhaps, the most important step in the process. Before collecting, ask yourself a couple of questions.

- [ ] Is the dung fresh and being collected from animals that have not been freshly drenched?
- [ ] Is the dung from a local source?

If the answer is yes, continue with this process:

- [ ] Use a bucket with lid to collect enough dung to make two (2) 1kg dung pats
- [ ] Ensure the lid is firmly on the bucket (to keep insect out and keep dung moist)
- [ ] Line a foil tray with muslin. Scoop 1kg of dung into the tray and weigh (a full tray is roughly 1kg).
- [ ] Once 1kg weight is confirmed, wrap dung in muslin cloth and secure with a cable tie

Setting Up Your Trap

You've got the site and you've found the equipment. Now it's time to set your traps.

- Traps are best set up in the morning
- Ensure the tray is level and flat
- Attach the mesh grid and secure with four (4) pegs
- Place 1kg, muslin-wrapped dung on grid and secure with cable ties
- Add 1L of pet-safe preservative to tray

Checking In and Insect Collection

After 24 hours, it's time to check your traps to ensure they are intact and see what you have collected

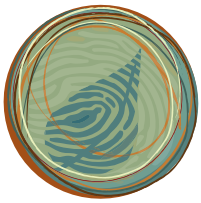
1. Take 3 photos of the trap for your records. It is also handy to have a GPS location of the site for future reference.
2. Carefully remove dung bag, tent pegs and metal mesh
3. Drain the preserving fluid slowly through a fine mesh sieve into the container we have provided for this purpose (never onto the ground). The fluid can be recycled if not diluted by rain.
4. Place a funnel inside a container and a strainer inside the funnel.
5. Gently pour the contents of the tray into the strainer. (The strained chemical can be reused for the next trapping time) the trapped beetles will be in the strainer.
6. Now carefully using the spatula, gently flick all beetles into a sample jar with fresh chemical and seal. Please take care when getting beetles out of strainer as not to damage them.
7. Label the jar with the date of collection and the name of the site (ie. JonesSite1)

The Identification Process

Refer to the identification reference guide at the end of this document.

By sending Wheatbelt NRM your beetle sample, you are contributing to a region-wide project to help better understand the spread and benefits of the Wheatbelt's dung beetles.

With dung beetle research still in its infancy, a comprehensive species list in still in development. A list of the species that think you may find on your property is included in this pack.



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DUNG
BEETLE
Ecosystem Engineers

Charles Sturt
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Australian Government

National
Landcare
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Introduced Dung Beetle Species Of The Wheatbelt

A quick reference guide to the introduced beetle species that may be found in the region.

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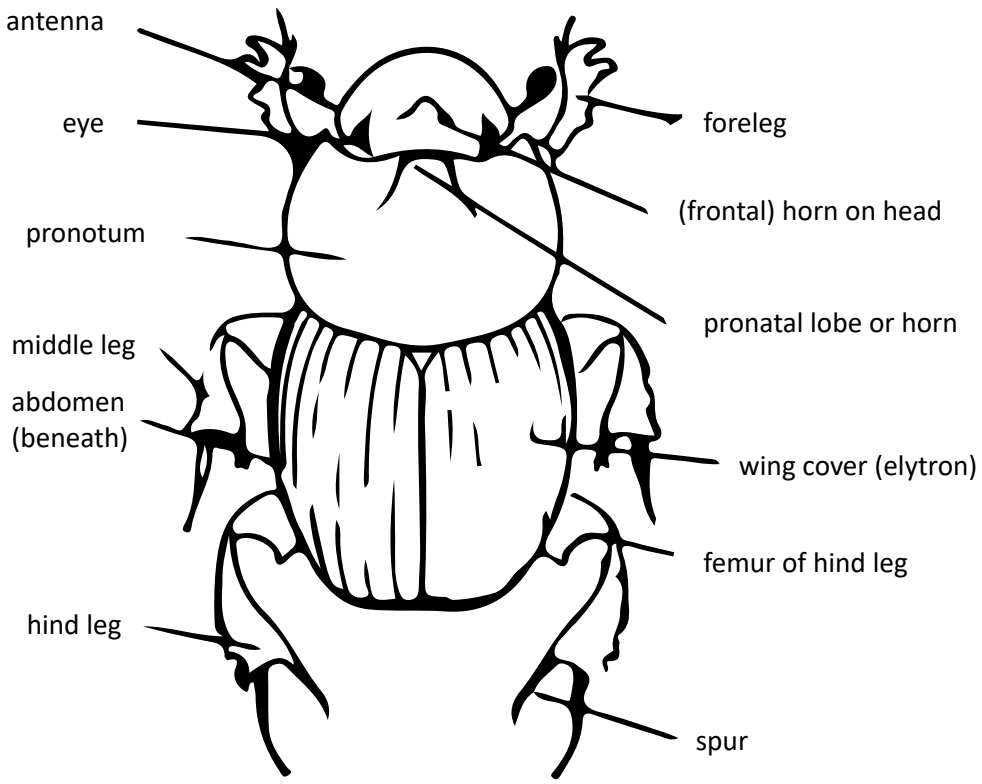
Dung Beetle Anatomy



Bubas bison

Image of Male (left) and Female (Right) Bubas Bison. Dung Beetle: Ecosystem Engineers.

www.dungbeetles.com.au/species/bubas-bison

Yearly Activity: Autumn to Winter (occasionally through early Spring)

Length: 13–19 mm

Colour: shiny black

Horns:

- long horn on each side of head
- Male: horn on pronotum
- Female: distinct ridge on head between eyes and on pronotum (female)

Euoniticellus intermedius

Image of Euoniticellus intermedius. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/euoniticellus-intermedius

Yearly Activity: Spring to Autumn

Length: 7–9 mm

Colour: yellow–brown, with diamond pattern on pronotum

Horns:

- Males: blunt horn in the middle of head;
- Females have a ridge be- tween the eyes

Euoniticellus pallipes

Images of Euoniticellus pallipes. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/euoniticellus-pallipes

Yearly Activity: Spring to Autumn

Length: 9–12 mm

Colour:
- Light to medium brown with speckling over pronotum and wing covers.
- 2–3 pairs of dark patches in centre of pronotum.

Horns:
- none;
- Male: arched ridge between eyes
- Female: small ridge between eyes

Onitis alexis

Image of Onitis alexis. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/onitis-alexis

Yearly Activity: Spring to Autumn

Length: 13–20 mm

Colour:
- green/coppery pronotum
- light brown wing covers

Horns:
- Both sexes have a ridge midway between eyes and front of head;
- Female: distinct bump at back of head

Onitis aygulus

Image of Onitis aygulus. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/onitis-aygulus

Yearly Activity: Spring to Autumn, but may be inactive in hot, dry summers

Length: 20–25 mm

Colour:
- dark brown pronotum with coppery or green sheen
- light brown wing covers

Horns:
- Female: distinct bump at back of head and a ridge near the front of head

Onitis caffer

Image of Onitis caffer and its rear leg showing the distinctive serrated edges on the femur. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/onitis-caffer

Yearly Activity: Autumn to Early Winter. A winter rainfall strain may become active again in spring.

Length: 15–20 mm

Colour: shiny black, with pronotum nearly as long as wing covers

Horns:

- None, however males have serrations on hind femur

Onthophagus taurus

Image of Male (left) and Female (Right) Onthophagus taurus. Dung Beetle: Ecosystem Engineers.

Male Specimen

Female Specimen

www.dungbeetles.com.au/species/onthophagus-taurus

Yearly Activity: Spring to Autumn

Length: 8–10 mm

Colour:
- Shiny Black

Horns:
- Male: long curved horns;
- Female: none