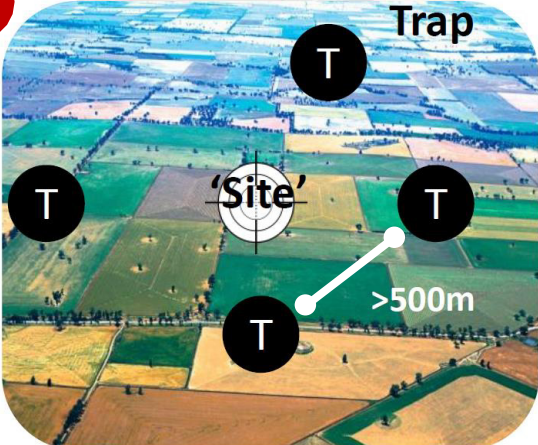# DUNG BEETLE
Ecosystem Engineers

Dung beetle sampling guide

What you need to do:
Steps 1 to 4: Set up trap and report trap location
Steps 5 to 11: After 24 hrs collect beetle samples

1 Identify site to sample

Trap

'Site'

>500m

How many traps? 4 traps per site

☑ Site selected to be representative of soil and climate zones in the region
✓ Traps within 2-3 km of livestock
✓ Traps >500 m apart (but no more than 1 km apart) if possible
✓ Traps placed in the open, >50 m from trees
✓ Traps safe from livestock interference
✓ Short grass <10 cm

2 Set up trap
(morning is best)

25 x 25 mm wire mesh

metal pegs

Labels on ruler guide

✓ Tray flat and level
✓ Heavy mesh grid
✓ 4 corner pegs
✓ Dung bag secured to wire mesh (with cable tie)

✓ 1 kg dung wrapped in **muslin cloth** or placed in mesh bag
✓ 1 litre **pet-safe** preservative

3 Stick 2 labels to ruler guide
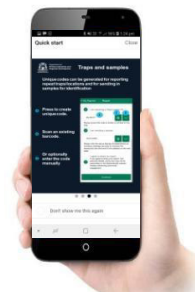
Trap code   Dung source

peg to ground

4 Submit report with MyDungBeetle™ Reporter

Open the MyDungBeetle™ Reporter app on your mobile device, and follow the instructions on the next page…. and start taking photographs!

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4 **Continued from previous page:**

How to submit a report using the MyDungBeetle™ Reporter app

Examples of the four photos required in the report:

(i) Close-up of trap and labels

(ii) Landscape shot facing North (0°)

(iii) Landscape shot facing ESE (120°)

(iv) Landscape shot facing WSW (240°)

Download free App from store

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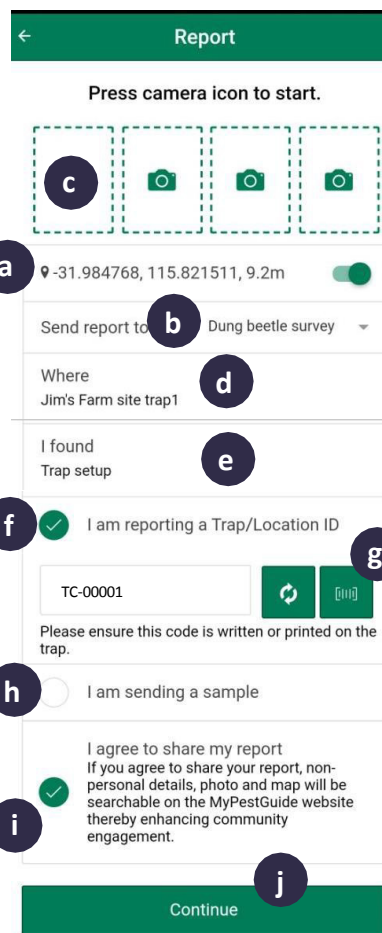
MyDungBeetle™ Reporter

Open the App. Select the ⊕ symbol, then:

a. Check **GPS** location is turned on (automatic).

b. Select '**Dung beetle survey**' from the drop-down list.

c. Press the top left camera icon. Select '**Take Photo**', close up of whole trap and labels, filling the frame.

Repeat for photos 2-4,: this time step back 3 paces from trap, face the trap, take landscape photos pointing North 0°, ESE 120° and WSW 240° with the trap squarely in the centre of the frame each time (mobile held vertical).

d. In box labelled '**Where**', write site name & trap name

e. In box labelled '**I found**', write "**Trap setup**"

f. Select '**I am reporting a Trap/Location ID**'

g. When it appears, **press** the 🔲 icon, focus camera on **'Trap code'** barcode; wait for number to appear in box. Check that the number in the app matches the number on the label.

h. In this case, **skip** 'I am sending a sample'

i. Select '**I agree to share my report**'.

j. Press '**Continue**'. Check your '**State**', '**Email**' and '**Mobile**' details are correct then press **'Send'.**

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After 24 hours

5 Check trap and take photo

✓ Trap not damaged

✓ Labels still present

Take photo

(b) Put wire mesh and dung bait to one side

6 Drain old trap fluid

Strain fluid through fine mesh sieve

Recycle fluid if not diluted by rain

Pour slowly avoiding spillage

Never pour fluid on ground

7 Wash insects into collecting jar

(a) First wash sieve...

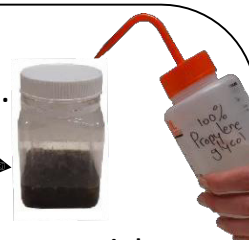new clean preservative

Paint brush and fine tweezers

(b) ...then wash tray

8 Add clean preservative...

Fluid just covers beetles

...stick **Sample code** label to jar...

Sample code

...and then pull labels off ruler and stick both on to jar.

Trap code   Dung source

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9 Submit report with MyDungBeetle™ Reporter

Download **free** App from store

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**Primary Industries and
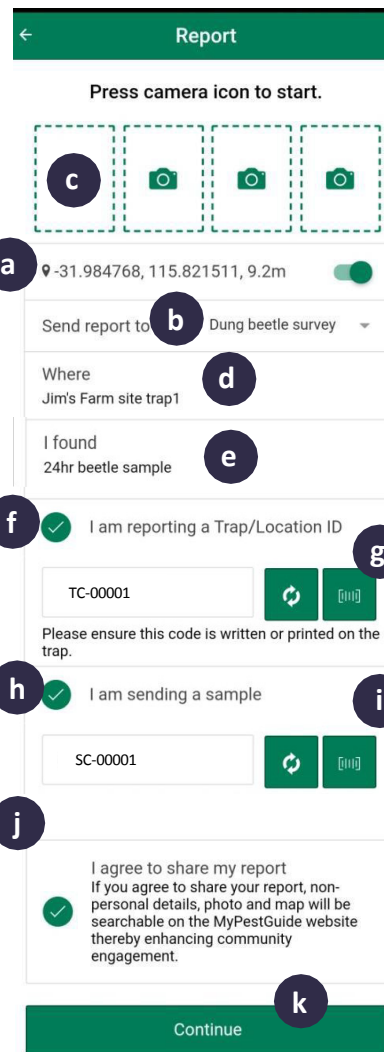Regional Development**
GOVERNMENT OF
WESTERN AUSTRALIA

MyDungBeetle™ Reporter

Open the App. Select the ⊕ symbol, then:

a. Check **GPS** location is turned on (automatic).

b. Select '**Dung beetle survey**' from the drop-down list.

c. Press the top left camera icon. Select '**Attach Photo**', allowing you to attach close-up trap photo from step 5.

d. In box labelled '**Where**', write site name & trap name

e. In box labelled '**I found**', write "**24 hr beetle sample**"

f. Select '**I am reporting a Trap/Location ID**'

g. When it appears, **press** the [▥] icon, focus camera on '**Trap code**' barcode and wait for number to appear in box. Check that the number in the app matches the number on the label.

h. **Select** 'I am sending a sample'

i. When it appears, **press** the [▥] icon, focus camera on '**Sample code**' barcode and wait for number to appear in box. Check that the number in the app matches the number on the label.

j. Select '**I agree to share my report**'

k. Press '**Continue**'. Check your '**State**', '**Email**' and '**Mobile**' details are correct then press **'Send'.**

Report

Press camera icon to start.

c | 📷 | 📷 | 📷

a ⚲ -31.984768, 115.821511, 9.2m

Send report to b Dung beetle survey ▾

Where
Jim's Farm site trap1 d

I found
24hr beetle sample e

f ✓ I am reporting a Trap/Location ID g

TC-00001 ↻ [▥]

Please ensure this code is written or printed on the trap.

h ✓ I am sending a sample i

SC-00001 ↻ [▥]

j ✓ I agree to share my report
If you agree to share your report, non-personal details, photo and map will be searchable on the MyPestGuide website thereby enhancing community engagement.

k Continue

10 Clean up all equipment and store jar for transport

Upright! → Cool

11 Store beetle samples in a cool dark place (eg fridge/freezer) and when you have a box full of samples ready, either mail to an address below or arrange with your university partner to collect

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What happens if......

➤ **I don't know which site to choose**
See the information in the background document provided on 'Site selection'.

➤ **I don't know what 'pet-safe' preservative is**
Antifreeze is a cheap effective preservative.
BUT many automotive coolants contain ethylene glycol, which is toxic to pets and livestock. Use only non-toxic propylene glycol antifreeze.

NEVER use 'ethylene glycol' (only pet-safe propylene glycol)

➤ **I lost some trap equipment**
You could contact the Survey Advisory Group, but if you are in a rush use the details on your 'Equipment list' to get replacements from the local hardware store.

➤ **I don't know which label to use**
All barcode labels will be provided for you on pre-printed sticky labels.
'Dung source' barcode: Eight identical labels provided per dung source batch. Every trap that uses the same 'dung source' MUST have matching codes.
'Trap code' barcode: When you set up a new trap, pull off the lefthand label from the next row of 2 identical 'Trap code' barcodes on the sheet (labels are not pre-assigned)
'Sample code' barcode: When you collect any kind of sample, pull the next 'Sample code' barcode off the sheet (they are not pre-assigned)

➤ **There is no mobile reception in my area**
No problem. Make your reports on MyDungBeetle™ Reporter as normal. When back in range, the device will sync the next time you open the app.

➤ **My mobile device has a flat battery** **Reminder: carry a spare battery!**
Always carry a waterproof field notebook and pencil. Write out all necessary information on the day, and make the report when your mobile is charged.

➤ **Rain has diluted the preservative**
If tray is over half full with rain, pour off fluid into 20 L 'WASTE' container (do not recycle)

➤ **The trap is damaged and beetle sample spilled.**
Still make the MyDungBeetle™ report as normal – type "Partial sample" in the 'I found' box if there are some beetles left (still collect the beetles into a jar as normal); type "No sample" if the whole sample is lost (do not collect beetles or send sample).

➤ **The beetles won't all fit in one jar**
Use the smallest possible jar, as this saves money on postage. If the biggest jar is still too small, use two jars (label them identically, and write '1 of 2' and '2 of 2')

➤ **I forgot my sieve**
Carefully pour the entire trap contents directly into four jars (or more if needed). Label the jars identically, and write '1 of 4', '2 of 4', '3 of 4' and '4 of 4'.

Need more help?

☞ **Contact the Survey Advisory Group:**
East: Paul Weston 02 6933 4815; 0429 318 570; dungbeetle@csu.edu.au
West: Raphael Didham 08 9333 6762; 0401 514 718; dungbeetle@uwa.edu.au
We can help tailor the sampling program to best meet your needs