

ENVIRONMENTAL MONITORING METHOD:

2 Ha Plot: Tracks, Scats, Diggings & Signs Survey



Each section can be completed separately but you should read all three parts before starting. You need to complete all three parts to finish the monitoring method.

Part 1: Getting Ready



GATHER YOUR GEAR



Equipment required for this part:

- ☐ Electronic device(s) – charge ready for use and check that it has:
 - ability to take photos
 - data collection systems (app and form) (e.g. Fulcrum)
 - navigation system (e.g. Avenza) and site maps
- ☐ Laptop or computer with software for mapping (e.g. QGIS, ArcGIS, Google Earth)
- ☐ GPS device (recommended)
- ☐ Reference documents or field guides: animal signs guide to print and laminate



Remember to check **GATHER YOUR GEAR** lists for **Out on Country** and **Back in the Office**. See the full list of equipment needed to complete this monitoring method on the last page.

KEEP IN MIND



Why?

Make sure there is a clear aim for your monitoring project and that the method you have selected will give you the answers you need.



When?

Prepare well before heading out on Country so that you have time to gather equipment or train staff, if needed.



Who?



At least one ranger/staff to plan and prepare.



Training and skills

Staff involved in planning are trained and competent in:

- ☐ Mapping software (e.g. QGIS, ArcGIS, Google Earth)
- ☐ Navigation systems (e.g. Avenza, GPS)
- ☐ Data collection systems (e.g. Fulcrum, datasheets)

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Check permissions

Consult with Traditional Owners, landholders and relevant government agencies and authorities, to determine appropriate access and approvals for environmental monitoring:

1. Where you can go – consult with the owners/managers of the land.
2. What you can do – check if you need scientific licencing, approvals or ethics.
3. What or who can you take photos of
4. What can be done with data and photos – who owns them, where will they be stored and how will data be interpreted and communicated.

ACTIONS



Make a plan and prepare

1. If this is the first year you are monitoring, find out what species you can monitor with this survey and then gather records of these species in your area and identify where potential habitat is. Such as from Traditional Custodians , Atlas of Living Australia (ALA) or government databases.
2. If this is the first you are monitoring, decide what information you want to get from this survey
 - This survey is commonly used to check what species are present, what habitat they prefer and any changes over time.
3. Plan which dates you will do the monitoring
 - Try to do the survey at the same time each year.
 - If you can't survey every year, you should survey at least 2 times every 5 years.
4. Select your monitoring sites
 - You will need 40-80 sites for a typical property or Indigenous Protected Area that are usually between 100,000 ha to 400,000 ha.
 - Choose sites in sandy country where tracks are easy to see
 - Try to keep sites more than 4-5 km apart from each other.
5. Create a rectangular 2 ha (200 m x 100 m) plot for each of your sites in mapping software.
6. Give each plot a unique name, and export and save the location data in your data management system
7. Prepare maps of sites/load sites onto navigation devices
8. Plan how you will record information on Country e.g. Fulcrum electronic data forms.
9. Plan your data management system e.g. how you will store plot data
10. Check **GATHER YOUR GEAR** lists for **Get Ready**, **Out on Country** and **Back in the Office** (complete list of equipment on last page) and get any equipment you don't have.

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11. Be clear on how many people will be involved and what everyone needs to do the work.
12. Check the training requirements for **Get Ready**, **Out on Country** and **Back in the Office** steps to ensure that rangers know how to use the devices, data collection apps, navigation systems etc. and how to identify species signs and age of the signs.



Train

1. Print out and laminate a guide for identifying animal signs (tracks, scats, diggings and other signs).
2. Plan a training session for rangers to learn or refresh about animals and their signs, and how to decide how old the signs are.
 - This is also a good time to go over how to use the devices and what data to record.

Next Section – Part 2: Out on Country

Part 2: Out on Country



GATHER YOUR GEAR



One set of this equipment for each site:

- ☐ 4 star pickets

One set of this equipment for each team:

- ☐ Electronic device(s) – charged and ready to record data, take photos and navigate to sites
- ☐ Power bank – charged and ready to charge devices (optional)
- ☐ GPS device and spare batteries (recommended)
- ☐ Reference documents or field guides: printed/laminated signs guide of animal signs (tracks, scats, diggings etc.)
- ☐ Hammer, mallet or picket driver
- ☐ Rulers (to show scale in photographs)

KEEP IN MIND



When?

Do the survey when it is going to be sunny, and avoid when it is windy or if it has rained in the last few days.

Check the plots in the early morning when tracks are easier to see because the sun is slanted.



Who?



At least two people

At least one person should know how to correctly identify and age signs.



Training and skills

Make sure everyone knows the plan.

Field staff are trained and competent in:

- ☐ Navigation systems (e.g. Avenza, GPS)
- ☐ Data collection systems (e.g. Fulcrum, paper datasheets)
- ☐ Identifying animal signs, including age of the signs

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ACTIONS



Set up the 2 ha plot

If you are at a new site:

1. Use the navigation device (e.g. GPS) to find the corners of the 2 ha plot.
2. Mark out the plot by hammering in star pickets at each corner.
 - Each plot is a rectangular shape, 200 m long and 100 m wide
3. If you moved the plot, record new coordinates on your navigation device



Survey the 2 ha plot

4. Walk through the site slowly, zig zagging up one side and back down the other, searching for tracks, scats, diggings and other signs of animals.
 - Spend enough time to search the plot thoroughly, but try to keep your search effort similar at other plots.
 - If there are more signs of animals, it may take more time to search.
 - Avoid stepping on signs that haven't been recorded yet.
5. Record all signs of each species, including tracks, scats, diggings, burrows, other signs, sightings.
 - Only record animals you are certain of. If you are not sure, then leave it out of the data or take a photo (with a ruler for scale) to see if it can be identified later



6. Record **plot and signs data**

RECORD DATA



Data to record when surveying each plot

What to record	Required?	Notes
<i>Information to record about each plot</i>		
Project name	Yes	Make it clear which project this data belongs to and its purpose
Date	Yes	Record the date the plot was surveyed
Personnel	Yes	Record the name of the people who surveyed the plot- this is helpful if any questions come up about the data
Site name/number	Yes	Record the name/number of the plot that was surveyed
Location coordinates of site corner	Yes	Record an accurate location (using a handheld GPS if possible) (latitude and longitude or eastings and northings)
Habitat description and/or photo	Optional	Describe or take a photo of the habitat type and landscape features at the site

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Vegetation description	Optional	Record the most common plant species, and other useful notes about the vegetation (e.g. age/size of spinifex)
Fire age	Optional	Record the fire history of the site.
Signs of disturbance	Optional	Types and causes of disturbance you can see at the site
Photo of site	Optional	Take a photo of the site and make note of which camera/tablet/phone it was taken on, and the filename of the photo (usually end in .JPG)
Stories and notes	Optional	Record information or stories from Elders, and anything else worth noting about the area or animals.
Video	Optional	Record videos of information or stories from Elders, and rangers performing or describing the work they are doing.
<i>Information to record about each animal sign</i>		
Species	Yes	What species left the sign
Sign type	Yes	Record what sort of sign it is, e.g. track, scat, digging, burrow, sighting etc.
Number of signs	Yes	How many of each type of sign was seen
Freshness of signs	Yes	How fresh is each type of sign, e.g. fresh (1-2 days), old (3 days to 1 week) or very old (more than 1 week)
Photo of signs	Optional	Take a photo of the signs, with a ruler in the field of view to show scale, and make note of which camera/tablet/phone it was taken on, and the filename of the photo (usually end in .JPG)

Next section – **Part 3: Back in the Office**

Part 3: Back in the Office



GATHER YOUR GEAR



Equipment required for this part:

- ☐ Electronic device(s) that you used to record your data
- ☐ Data management system, e.g. cloud storage
- ☐ Laptop or computer with software for spreadsheets (e.g. Microsoft Excel) and mapping (e.g. QGIS, ArcGIS, Google Earth)

KEEP IN MIND



When?

Always try to complete this work as soon as you can after returning from your time on Country so that what you did and what you saw is fresh in your memory.



Who?



At least one person to manage the data



Training and skills

Staff managing data are trained and competent in:

- ☐ Mapping software (e.g. QGIS, ArcGIS, Google Earth)
- ☐ Spreadsheet software (e.g. Microsoft Excel)
- ☐ Data collection systems (e.g. Fulcrum, datasheets)
- ☐ Data management systems (e.g. databases, cloud storage, external hard drives)

ACTIONS



Data entry, analysis and reporting

1. Record a summary of what you did and why, any observations (e.g. weather conditions, fire history, site condition), anything that went wrong or didn't work and things that worked well.
2. Upload the **plot and signs data** to your data management system.
 - Recommended: get someone else to proof the data to check for mistakes.
3. Upload any photos or videos taken during the survey to your data management system.
4. Double check the identification by reviewing any photos of signs.

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5. Export the signs data into a spreadsheet. You can do a simple analysis and make a simple graph or map.
 - a. Calculate how many species, and which ones, were found at each plot.
 - b. Calculate how many times each species was detected across all plots.
 - c. Make a simple map that show where each species was detected (or not detected).
6. Discuss with the ranger team or community the results of the monitoring, any reasons for the presence of species in different plots and if there have been any changes to previous years.
 - Consider whether trends might be related to your management (e.g. feral cat control or fire management) to check how well management is working, or if you need to make adjustments.
7. Share the data according to any data sharing or funding agreements you have made

Next section – Full Equipment List

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Gather Your Gear – Complete List



The complete **GATHER YOUR GEAR** lists for **Get Ready**, **Out on Country** and **Back in the Office**.

Gear List	Required?	Get Ready	On Country	In Office
Electronic device(s): <ul style="list-style-type: none"> Charged Ability to take photos App for data collection (e.g. Fulcrum) App for navigation (e.g. Avenza) 	✓	✓	✓	✓
Power bank <ul style="list-style-type: none"> Charged 	Recommended		✓	
Laptop or computer with software for: <ul style="list-style-type: none"> Mapping (e.g. QGIS, ArcGIS, Google Earth) Spreadsheets (e.g. Microsoft Excel) 	✓	✓	✓	✓
GPS (e.g. Garmin handheld device) & spare batteries	Recommended	✓	✓	
Animal signs reference documents and/or field guides	✓	✓	✓	
Star pickets <ul style="list-style-type: none"> 4 for each plot 	✓		✓	
Hammer, mallet or picket driver	✓		✓	
Rulers	✓		✓	
Data management system (e.g. cloud storage)	✓			✓