

ENVIRONMENTAL MONITORING METHOD:

Great Desert Skink Active Burrow Search

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)
- Reference documents or field guides: Great Desert Skink sign 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. Plan to do your monitoring when Great Desert Skinks are active (between September to May) so that fresh signs will be present at burrows
 - March is a good time because it is before Great Desert Skinks go into hibernation (long sleep over colder months) but after breeding season, so you can see which families had babies that year.
 - Try to do the monitoring at the same time each year
2. If this is the first year you are monitoring, gather Great Desert Skink records in your area and identify where potential Great Desert Skink habitat is. Such as from Traditional Custodians , Atlas of Living Australia (ALA) or government databases.
3. Choose where and how many sites you will survey
 - Three sites or more is ideal. Consider choosing more sites than you think you can survey, so that you have options.
 - Separate sites by at least 500 metres.
 - Choose sites that are spread across the extent of your Great Desert Skink population, or areas where you think Great Desert Skink could be. Try to make sure that some sites are where you know Great Desert Skink burrows are present.
 - If you already have sites plan to continue monitoring these sites, even if they have been burnt.
4. Prepare rectangular 10 ha (500 m x 200 m) sites using mapping software.
5. Give each site a unique name, and export and save the location data in your data management system
6. Prepare maps that show the site boundaries and load sites/maps onto navigation device(s)
 - Add the locations of previously found burrows on the map, and include labels with the unique name of the burrow (ranger's initials and a number e.g. RL01)



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7. Print out and laminate a guide for identifying Great Desert Skink signs (burrows, scats and tracks).
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 burrow data and photos.
-  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.
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 Great Desert Skink habitat and signs.

Next Section – Part 2: Out on Country

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Part 2: Out on Country



GATHER YOUR GEAR



One set of this equipment for each site:

- 4 star pickets, or similar

One set of this equipment for each team:

- Electronic device(s) – charges 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 for burrows, scats and tracks that belong to Great Desert Skinks
- Hammet, mallet or picket drive
- Rulers

KEEP IN MIND



When?

On the day you are conducting monitoring, start as early as possible after sunrise to avoid the hottest part of the day.

Each 10 ha site may take 1 hour to search – it can take longer if spinifex is really thick or if you find lots of burrows, or it can take less time if you have more people searching.



Who?



At least 5 people – 4 to search, 1 to record data.



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 Great Desert Skink habitat and signs

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ACTIONS

✓ Set up site

If you are at a new site:

1. Use the navigation device to find the corners of the site.
2. Mark the boundary of the site by hammering a star picket into each corner

✓ Search

3. The group walks through the site in a line, about 20 m apart, searching for burrows.
 - The person carrying the device with the map walks along the edge.
 - The group walk from one side of the site to the other. When the group reaches the other side of the site, the group turns around and searches the remaining half of the site.
4. Make sure that all burrows within the site are found and recorded. To help you find them, look for:
 - Raised mounds of slightly redder sand.
 - Toilet spots (latrines) – the white (uric acid) in their poo can sometimes stand out.
 - Footprints.
5. Find the burrow's latrine.
 - Look at the scats in the latrine to confirm that each burrow found belongs to a Great Desert Skink and whether it is active (fresh scats and tracks).
 - Fresh scats are black, old scats are grey, and very old scats are broken down or have only white uric acid left.
6. Call over the person with the device to record the **site and burrow data**
 - You will need to tell them how many holes the burrow has, how fresh the scats are, measure the scats with a ruler, and take photos of the burrow and latrine.



Great Desert Skink scats with ruler for scale. Photo: Kate Cranney

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RECORD DATA



Data to record for when searching a site

What to record	Required?	Notes
<i>Information to record about each site</i>		
Project name	Yes	Make it clear which project this data belongs to and its purpose
Date	Yes	Record the date [the traps were checked/cameras deployed etc.]
Personnel	Yes	Record the name of the people who [completed the action] - this is helpful if any questions come up about the data
Site name/number	Yes	Record the name/number of the site you are searching
Location coordinates of the site corners	Yes	Record an accurate location (using a handheld GPS if possible) (latitude and longitude or eastings and northings)
<i>Information to record about each burrow you find during the search</i>		
Burrow name	Yes	If it is a burrow found in a previous year, record the name. If it is a new burrow, give it a unique name (Ranger's initials and a number e.g. RL01).
Location coordinates of the burrow	Yes	Record an accurate location (using a handheld GPS - if possible) i.e. Latitude and longitude or eastings and northings
Is the burrow active?	Yes	A burrow is active if there are fresh tracks and scats
How many holes are they using?	Yes	
Can you see tracks?	Yes	
How fresh are the scats in the latrine?	Yes	Fresh (some black ones), old (only grey ones), or very old (broken down, or only white uric acid left).
What are the different scat sizes in the latrine?	Yes	Measure the scat lengths with a ruler. Note down whether the measurement it is in cm or mm.
Photo of burrow	Yes	Use a ruler in the photo for scale.
Photo of latrine	Yes	Use a ruler in the photo for scale.
Photo of habitat	Optional	Take a photo of the site and make a note of which camera/tablet/phone it was taken on, and the filename of the photo (usually ends in .JPG)
Notes	Optional	Record notes about anything interesting you see at the burrow e.g. disturbances to the burrow, or if you see a Great Desert Skink or other animals also using the burrow.
<i>Information to record about the site when you finish your search</i>		
Survey effort	Yes	How many people searched the site and how much time was spent searching?
Is this a known Great Desert Skink site, or a new site?	Yes	



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Predators, or introduced species	Optional	Did you see, or see signs of predators or introduced species like cats and foxes e.g. tracks, scats or diggings?
Fire age	Optional	Record the fire history of the site.
Signs of disturbance	Optional	Are there signs of people or animals digging the burrows up?
Habitat description and/or photo	Optional	Describe or take a photo of the habitat type and landscape features at the site, e.g. spinifex near a soak
Vegetation description	Optional	Record the most common shrub and ground cover plant species, the size of spinifex, food plants etc.
Signs of disturbance	Optional	Types and causes of disturbance you can see at the site
Photo of habitat	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.

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 **site and burrow 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. Export the **site and burrow data** into a spreadsheet and:



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- a. Add up how many active burrows were found at each site
 - b. Make a simple graph showing the number of active burrows at each site for each year.
5. Discuss with the ranger team or community the results of the monitoring, any reasons for the burrow numbers to have increased or decreased since the previous year or why the number of active burrows was different between sites.
- 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.
6. 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	✓	✓	
Great Desert Skink signs (burrow, scats, tracks) reference documents and/or field guides	✓	✓	✓	
Star pickets, or similar	✓		✓	
Hammer, mallet or picket driver	✓		✓	
Rulers	✓		✓	
Data management system (e.g. cloud storage)	✓			✓