ENVIRONMENTAL MONITORING METHOD:

2 Ha 20 Min Area Search for Terrestrial Birds

About This Method

This document helps you to monitor terrestrial birds by listening for calls and looking for birds. This method has been adapted from: How to do a 2 hectare, 20 minutes Standardised Areas Search, BirdLife Australia. You can find more information on the Monitoring Country website: monitoringcountry.org.au or scan the QR code.

This method has three parts: **1. Get Ready**, **2. Out on Country** and **3. Back in the Office.** Each part can be undertaken separately but you must complete all three parts to finish the method. At the end of the document, you will find guidance for all the gear you need - **Gather Your Gear – Complete List**.

We recommend you read the whole document before you start.

Part 1: Get Ready

GATHER YOUR GEAR

Equipment required for this part:

- ☐ Tablets/phones with:
  - ability to take photos
  - data collection and navigation apps
- ☐ Laptop/computer with software for:
  - mapping
- ☐ GPS device (recommended)
- ☐ Reference documents or field guides:
  - Australian Bird apps (recommended; at least one)
    - Birdly (App Store or Google Play)
    - Morcombe & Stewart (App Store or Google Play)
    - Pizzey & Knight (App Store or Google Play)
  - Australian Bird books (optional)
    - The Australian Bird Guide (CSIRO)
    - The Field Guide to the Birds of Australia (Pizzey & Knight)
    - Field Guide to the Birds of Australia (Simpson & Day)
- ☐ BirdLife birdata app (recommended for collecting data)

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KEEP IN MIND

Why?

Make sure there is a clear monitoring question and that the method you have selected will answer the monitoring question.

If this is the first time you are monitoring, you will need to design the survey: what are you monitoring, where will you survey, and when and how often you will survey?

When?

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

Who?

1 ranger/staff to plan and prepare.

2 rangers/staff to ground truth sites.

Training and skills

Staff involved in planning are trained and competent in:

- ☐ Mapping software (like QGIS or Google Earth) and/or monitoring point generator
- ☐ Navigation systems (like Avenza app or GPS device)
- ☐ Data collection systems (like Fulcrum app or paper datasheets)
- ☐ Using bird apps and/or field guides
- ☐ Identifying terrestrial birds

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 licences or ethics permits
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.

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ACTIONS

Make a plan and prepare

If you have done this monitoring before, it is best to do the surveys at the same time and same sites so that you can compare the data to previous surveys and see if there have been changes.

1. Plan which dates you will survey for birds
   - Consider the season or time of year – birds may be less active when it is very hot or very cold, or if it is raining heavily
   - Spring is often a good time to do bird surveys
   - Try to do the surveys at the same time (season) each year so that you can monitor trends over time
2. Gather bird species records in your area and identify where potential bird habitat on your Country is
   - Such as from Traditional Owners, Atlas of Living Australia (ALA) or government databases
   - It is usually best to survey for birds across all habitat types on Country (or as many as possible) so that you can compare data across habitats
3. Use the monitoring point generator or mapping software to select your sites
   - Aim to have at least 2 sites per habitat type
   - Space sites at least 400 m apart if possible
   - Place sites between 200 m and 1 km away from roads if possible
   - Try to keep each site within only one habitat type – you don't want a site to be spread across multiple habitat types
4. Decide on the shape of the 2 Ha areas you will survey
   - Regular rectangle (200 m long x 100 m wide) or
   - Long rectangle (400 m long x 50 m wide) or
   - Circle (80 m radius)
5. Give each site a unique name, and export and save the location data in your data management system
   - i.e. FOR01, FOR02, FOR03 for forest sites, DAM01, DAM02, DAM03 for dam sites etc
   - If using circle shape 2 ha sites – label the centre point as the site name
   - If using regular rectangular 2 ha sites – label each corner so that you stay inside of the shape when you are surveying (e.g. FOR01_NE, FOR01_SW etc)
6. Prepare maps of sites and load sites onto navigation devices

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7. Plan how you will record information on Country (electronic data forms or paper datasheets)
    - If you are planning to submit your data to BirdLife, you can record your data on the Birdata app
    - It is sometimes easier and quicker to keep a tally on paper and use shorthand names for birds. This is useful when lots of birds are calling all at once. You will have to transcribe (type out) this information into a spreadsheet later though, and bird surveys can record a lot of data!
8. Plan how many, and which sites, each team will survey each day
    - It is best practice to survey the same sites multiple times in the same day (repeat visits), to improve species detections
    - Consider how long it takes to drive between sites, particularly when repeating sites
    - Repeat visits should be done by different teams (to reduce bias)
9. Plan your data management system (how you will store bird detection data)
10. Check **GATHER YOUR GEAR** lists for **Get Ready, Out on Country** and **Back in the Office** (complete list on last page) and get any equipment you don't have.
    - See buying guide(s) for advice on which binoculars may be suitable to buy
11. Charge electronic devices (tablets/phones, power banks, GPS) and batteries
12. Download Birdata app and bird identification apps (if using)

Train

1. Check the **Training and skills** requirements for **Get Ready, Out on Country** and **Back in the Office** steps and arrange any training or expertise that you need.
2. Run everyone involved in the survey through the plan.
    - Be clear on how many people will be involved, what everyone will be doing, and what they will need to do the survey.
3. OPTIONAL: Prepare guides for identifying birds (if not using apps)
4. Run a training session for all rangers involved in the survey to learn or refresh:
    a. How to use the devices (like tablets/phones and GPS)
    b. How to use data collections apps and record data
    c. How to identify birds and their habitat

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Get bird identification experience

Each team will need at least one person who has experience identifying birds:

1. Reach out to the ecological community (e.g. BirdLife Australia) to organise volunteers or contractors who have bird and bird call identification skills.
   - Check that they have experience with the species found on your Country
2. Run training sessions leading up to the survey for rangers/staff to learn or refresh their skills in identifying birds, including from their calls
   - Focus on the most common species first
   - If you are based on Country, going on regularly short walks and looking and listening for birds is a great way to learn

Ground truth sites

If this is the first year you are monitoring, you will need to:

1. Drive and walk to each site, checking that it is easy to get to.
   - Use a navigation device to record the easiest route
2. Walk around the 2 Ha site to check that there is only one type of habitat inside the search area and that it matches the mapped habitat type
3. If needed, move sites so that they are more accessible and/or in the correct habitat type
4. If a site is moved, record new location coordinates

Next Section – Part 2: Out on Country

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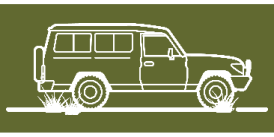
Part 2: Out on Country



GATHER YOUR GEAR

<u>One set</u> of this equipment for <u>each team</u>:

- ☐ Tablets/phones
- ☐ Power bank (optional)
- ☐ GPS device and spare batteries (recommended)
- ☐ Reference documents or field guides:
  - Bird ID apps or field guide books
- ☐ Clipboard with pencils and datasheets (if not using Birdata app)
- ☐ Head torch (optional)
- ☐ Binoculars

KEEP IN MIND

When?

Surveys are done when most birds are calling, starting at sunrise and finishing roughly 3 hours later. You should plan to arrive at your first site at least 10 mins before sunrise.

Survey mornings should be cancelled or rescheduled if weather conditions aren't good for detecting birds: winds over 10 kilometres per hour, rainfall above a drizzle, heavy mist/fog, or temperature well above or below normal can all impact bird activity.

Who?

2 rangers per team

Training and skills

Make sure everyone knows the plan.

Field staff are trained and competent in:

- ☐ Navigation systems (like Avenza app or GPS device)
- ☐ Data collection systems (like Fulcrum app or paper datasheets)
- ☐ How to use bird ID apps or field guide books
- ☐ Identifying birds and bird calls
- ☐ Using binoculars

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ACTIONS

Check that your electronic devices (tablets/phones, power banks, GPS, batteries) are charged before you head out.

Search for birds

For each morning of the survey:

1. Head to your first site, aiming to arrive 5-10 minutes before sunrise
2. When you are about 50 m away from the site, stay as quiet as possible
3. Walk to the outside edge of the site or the start point of the transect
4. Stand quietly for 5 minutes. Avoid talking or making sudden movements, and put mobile phones on silent mode.
5. Record **survey effort data**
6. The note taker starts a timer for 20 minutes
7. The observer starts walking slowly and quietly through the site, with the note taker following along behind
    - Aim to walk through the entire 2 Ha area in the 20-minute survey time
    - Use the navigation device to keep track of where you are and where you have already walked in the site
8. The observer looks and listens for birds within the site, flying over the site or just outside of the site
9. If the observer sees or hears a bird, they will identify the bird and tell the notetaker
    - Avoid double counting the same birds by keeping track of where they are in the site and if they are moving around
10. If the bird is in a flock, count or estimate how many birds are in the flock
11. The notetaker records the **bird data**
    - If you are using paper datasheets, you can use shorthand names for the birds and keep a tally of how many are seen
12. After 20 minutes, stop the survey
13. Record **survey effort data**
14. Look back over the data and check that it all looks correct
    - If you used shorthand names for birds, write down at least once what each shorthand means (e.g. WW = *Rhipidura leucophrys*, Willie Wagtail)
15. Continue to your next sites, aiming to finish surveying all sites by 3 hours after sunrise.

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RECORD DATA

Data to record about each area search (survey effort data)

What to record	Required?	Notes
Information to record about each area search		
Project name	Yes	Make it clear which project this data belongs to and its purpose
Date	Yes	Record the date site was surveyed
Personnel	Yes	Record the name of the people who surveyed (the observer and the notetaker) - this is helpful if any questions come up about the data, and can be used as part of the analysis
Site name/number	Yes	This is the name/number of the site
Start time	Yes	This is the time that the 20min search started
Weather conditions	Optional	Record weather conditions (temperature, wind speed, cloud cover, rainfall)
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.
Information to record about each site (once per survey)		
Location coordinates	Optional	Record an accurate location (using a handheld GPS if possible) (latitude and longitude or eastings and northings)
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.
Habitat description	Optional	Describe or take a photo of the habitat type and landscape features at the site (e.g. open Eucalypt woodland)
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)

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Data to record when a bird is seen or heard

What to record	Required?	Notes
Information to record about each bird seen or heard		
Bird species name	Yes	Record the species (preferably scientific name) of the bird.
Number of individuals	Yes	This is how many of the same species was heard/seen at the same time and place. If it was a flock, you can estimate size (e.g., 5, 20, 100)
Seen or heard	Optional	Record whether the bird was seen or heard calling, or both
Within site, flyover or outside	Optional	Record whether the bird was inside the site, flying over the site or outside the site.

Next section – Part 3: Back in the Office

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Part 3: Back in the Office

GATHER YOUR GEAR

Equipment required for this part:

- ☐ Tablets/phones or paper datasheets that you used to record data
- ☐ Data management system
- ☐ Laptop or computer with software for:
  - Spreadsheets
  - Mapping

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?

1 person to manage the data

Training and skills

Staff managing data are trained and competent in:

- ☐ Mapping software (like QGIS or Google Earth)
- ☐ Spreadsheet software (like Microsoft Excel)
- ☐ Data collection systems (like Fulcrum app or paper datasheets)
- ☐ Data management systems (like databases, cloud storage and external hard drives)

ACTIONS

Transcribe (type out) paper data (if required)

1. If you used paper datasheets to record bird surveys, you will need to type it out into a spreadsheet or your data management system
   a. Ensure that shorthand species names used across teams were similar – people often have different shorthand names or codes
   b. Have someone else check the data you have typed out

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Data entry, analysis and reporting

1. Record a summary of what you did and why, any observations (like weather conditions, fire history and site condition), anything that went wrong or didn't work and things that worked well.
2. Upload the **survey effort and bird 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. Import the data into a spreadsheet and calculate things like
   a. Species Diversity = create a list of all the different bird species detected during the survey
   b. Species Richness = using the Species Diversity list, add up how many species were detected
   c. Total survey area = 2 Ha multiplied by number of site visits
   d. Total survey time = 20 minutes multiplied by number of site visits
   e. Index of abundance or activity:
      i. Total bird count = total number of birds detected during the survey
      ii. Species counts = total number of birds of each species detected during the survey
      iii. Birds per hectare = species count divided by total survey area
      iv. Proportional abundance = species count divided by total bird count, multiplied by 100
      v. Detection rate = total bird count divided by total survey time
5. Use the mapping software to create a map of
   a. All survey sites (layered over all habitat types on Country)
   b. Maps of where species of interest were detected – distribution maps
   c. Heatmaps of the most abundant bird species and where they were detected
6. Discuss with the ranger team or community the results of the monitoring, any reasons for the presence or absence of certain species, or how many or where species were being detected, and if there have been any changes to previous years.
   - Consider whether trends might be related to your management (like feral cat control) 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** list for **Get Ready**, **Out on Country** and **Back in the Office**.

Gear List	Required?	Get Ready	On Country	In Office
Tablets/phones: • Ability to take photos • Apps for data collection (like Fulcrum) and navigation (like Avenza)	✓	✓	✓	✓
Laptop or computer with software for: • Mapping (like QGIS or Google Earth) • Spreadsheets (like Microsoft Excel)	✓	✓		✓
GPS device & spare batteries	**Recommended**	✓	✓	
Power bank	**Recommended**		✓	
Reference documents and/or field guides: • Bird ID apps and/or • Bird field guide books	✓		✓	
Head torches	**Recommended**		✓	
Binoculars	✓		✓	
Data management system (like databases, cloud storage and external hard drives)	✓			✓

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Document version: GA-JH-210426