

## ENVIRONMENTAL MONITORING METHOD:

# Frog Spotlight & Listen 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
  - FrogID app
- ☐ Laptop or computer with software for mapping (e.g. QGIS, ArcGIS, Google Earth) and [other software types/names]
- ☐ GPS device (recommended)
- ☐ Reflective flagging tape (optional)



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 set up sites, gather equipment or train staff, if needed.



#### Who?



At least one ranger/staff to plan and prepare, including ground truthing sites.



#### 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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- ☐ Using the FrogID app
- ☐ Identifying frog habitat



### 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 what species you want to survey by gathering a list of potential frog species for your area, when the frogs on your list of species are going to be calling, what habitat they prefer, and which species respond to call playback.
2. Plan which dates and times you will spotlight and listen for frogs.
  - The timing of your survey should be at peak activity periods when most of your frog species are active and calling.
  - You may need to repeat the survey several times of the day/night and during the year to detect different species of frogs.
  - It is important to be flexible with dates in case of unfavourable conditions.
  - Results from nearby frog surveys or advice from a frog expert can help guide when you should plan to survey.
3. If this is the first year you are monitoring, gather frog records your area and identify where potential frog habitat is. Such as from traditional owners, ALA or government agencies with databases.
4. Select your sites
  - Your sites should have different types of waterbodies and be spread at least 1 km apart.
5. Decide whether you need to do a transect or point survey at each of your sites.
  - Transect surveys should be used for linear waterbodies like creeks, rivers or drainage lines or for larger waterbodies like big dams and lakes.
  - Transects should be between 200-500m long along, around or through the waterbody.

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- Point surveys should be used for small water bodies like waterholes, puddles or ponds.
- 6. Give each site and transect a unique name, and export and save the location data in your data management system
- 7. Prepare maps of sites/load transect start and end points onto navigation devices
- 8. If using FrogID app, install app onto device(s) and download offline content.
- 9. Plan how you will record information on Country e.g. Fulcrum electronic data forms.
- 10. Plan your data management system e.g. how you will store frog call recordings and frog detection data.
-  11. 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. See headtorch buying guide(s) for advice on which headtorches may be suitable to buy.
- 12. Be clear on how many people will be involved and what everyone needs to do the work.
- 13. 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 frogs, frog calls and frog habitat.



### Ground truth sites

If this is the first year you are monitoring, you will need to check that your sites are accessible and in the correct habitat type. You can also mark out the site/transect ahead of time.



*Remember to clean boots and equipment with disinfectant before you arrive at the site (see hygiene protocol information in **Out on Country**)*

1. Drive/walk to each site to check what is the best way to access the site at night
  - You can use the GPS to record a track or use reflective flagging tape to mark the easiest route (e.g. through more open vegetation)
2. Walk around the site and check that is near a waterbody, the waterbody has water in it, and that the survey type (transect or point) is suitable for that waterbody type.
3. If needed, move sites so that they are more accessible and/or in the correct habitat type.
4. Mark out the survey location with reflective flagging tape so that it can be easily found at night
  - Flagging tape at 50m intervals along the transect is a good starting point but this can be less or more depending on the habitat type.

**Next Section – Part 2: Out on Country**

## Part 2: Out on Country



### GATHER YOUR GEAR



One set of this equipment for each team:

- ☐ Electronic device(s) – charged and ready to record data, take photos and navigate to sites
  - Frog ID app installed for recording frog calls, call playback and frog descriptions
- ☐ Power bank – charged and ready to charge devices (optional)
- ☐ GPS device and spare batteries (recommended)
- ☐ Bright head torch (minimum 300 lumens) and spare batteries – 1 per person
- ☐ Boot disinfectant (e.g. 1% sodium hypochlorite solution)
- ☐ Reference documents or field guides: list of potential frog species that may be calling, and whether they respond to call playback.

### KEEP IN MIND



**When?**

Is the weather suitable for hearing and seeing frogs? Peak calling periods are usually on warm, wet nights and in still or light wind conditions.



**Where**

If recent rain has made your site(s) inaccessible, you may need to postpone the survey or prepare for longer walks.

If your site has strong or fast running water that will prevent you from hearing calls, you may only complete the spotlighting portion of the survey.



**Who?**



2 people per team

It is useful to have at least one person per team with experience identifying frogs.



**Training and skills**

Make sure everyone knows the plan.

Field staff are trained and competent in:

- ☐ Navigation systems (e.g. Avenza, GPS)

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- ☐ Data collection systems (e.g. Fulcrum, paper datasheets)
- ☐ Using FrogID app
- ☐ Identifying frogs and frog calls

## ACTIONS



### Hygiene protocols

*Chytrid fungus is a disease that can kill frogs. Consult with relevant government agencies and authorities to find out whether you need to follow specific measures for target species or your area. As a precaution, also follow these steps:*

1. Clean and disinfect boots/shoes and equipment (e.g. headtorches) before starting fieldwork, between each sampling site and after finishing the survey.
2. You may need to spray tyres and wheel arches with disinfectant if your site is in a high-risk disease area.
3. Do not handle frogs.



### Option 1: Transect Survey

1. On arrival at your site, navigate to the start of the transect.



2. Record **survey effort data**

#### Listen

3. Open the FrogID app or alternate recording device.
4. Turn off headtorches and stand still and silent.
5. Listen for frog calls for 5 minutes.
6. Once a frog is heard calling, start recording the calls on the FrogID app or alternate recording device.



7. Record **detection data**

#### Call Playback



*Remember, not all frogs respond to call-playback so only broadcast calls for target species.*

8. Keep headtorches turned off and remain still and silent.
9. Using the FrogID app, play the advertisement calls of target species (e.g. threatened species) for 2 minutes.
10. The volume should be loud enough to hear the calls from 20 metres.
11. Listen for frog calls for 2 minutes.
12. Once a frog is heard calling, start recording the calls on the FrogID app or alternate recording device.



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 13. Record **detection data**

### Spotlight

14. Turn on headtorches.
15. Walk slowly and quietly along the transect, scanning the ground along and around the transect as you walk.
  - Focus on habitats where frogs are most likely to be found, like rocks on the edge of the waterbody.
16. Once a frog is seen, stop walking and approach the frog to identify it and take photos.
  - If you leave the transect to identify the frog, you should return to the same point on the transect that you left.
  - *Remember, do not handle frogs.*

 17. Record **detection data**

18. Every 50 m, repeat steps 3-17 until you reach the end of the transect.
  - Each should take at least 5 minutes to walk 50 m

 19. Finishing recording **survey effort data** at the end of the survey.

### Option 2: Point Survey

20. Divide actions steps into logical sections e.g. selecting or setting up sites, setting up equipment etc., then list the action steps required to complete the work. Keep actions as simple and straightforward as possible.
  - Any tips/additional information relevant to the step should be included using a bullet point

21. Revert to numbers for additional steps:
  - a. Break down steps into substeps or options using letters

2. Navigate to 20 m from the site

 22. Record **survey effort data**

23. Walk quietly and with headtorches dimmed or turned off to within 5 m of the site.

### Listen

24. Open the FrogID app or alternate recording device.
25. Turn off headtorches and stand still and silent.
26. Listen for frog calls for 5 minutes.
27. Once a frog is heard calling, start recording the calls on the FrogID app or alternate recording device.

 28. Record **detection data**

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### Call Playback



*Remember, not all frogs respond to call-playback so only broadcast calls for target species.*

29. Keep headtorches turned off and remain still and silent.

30. Using the FrogID app, play the advertisement calls of target species (e.g. threatened species) for 2 minutes.

- The volume should be loud enough to hear the calls from 20 metres.

31. Listen for frog calls for 2 minutes.

32. Once a frog is heard calling, start recording the calls on the FrogID app or alternate recording device.



33. Record **detection data**

### Spotlight

34. Turn on headtorches.

35. Walk slowly and quietly around your site,, scanning the ground as you walk.

- Focus on habitats where frogs are most likely to be found, like rocks on the edge of the waterbody.
  - The length of the survey will depend on how large the waterbody is. A puddle or small waterhole may only take 2 minutes, but a large pond might take 30 minutes.
36. Once a frog is seen, stop walking and approach the frog to identify it and take photos.
- If you leave the transect to identify the frog, you should return to the same point on the transect that you left.
  - *Remember, do not handle frogs.*



37. Record **detection data**

38. Continue spotlighting until you have searched all of the waterbody.



39. Finishing recording **survey effort data** at the end of the survey.

## RECORD DATA



### Data to record about survey effort

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 of the survey
Personnel	Yes	Record the name of the people who did the survey - this is helpful if any questions come up about the data
Site and/or transect name/number	Yes	The name/number of the site and/or transect

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Location coordinates	Yes	Record an accurate location (using a handheld GPS if possible) (latitude and longitude or eastings and northings)
Survey type	Yes	Transect or point
Size of area searched	Yes	Length of transect or size of waterbody searched
Start and finish times	Yes	Time when the survey started and ended
Weather	Yes	Describe the weather conditions including air temperature and rainfall in past 48 hours
Habitat description and/or photo	Yes	Describe or take a photo of the waterbody type and landscape features at the site (e.g. puddle, large dam, creek)
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.



## Data to record when frogs are detected

What to record	Required?	Notes
<i>Information to record about each frog seen or heard</i>		
Site name/number	Yes	Name or number of survey site
Date	Yes	Date of survey
Time	Yes	Time when frog was seen or heard
Detection coordinates	Yes	Accurate location (using a handheld GPS if possible) of where you heard or saw the frog. i.e. latitude and longitude or easting and northing.
Species	Yes	Name of frog species seen or heard, if known
Number of individuals	Yes	Number of individuals seen or heard of each species
Recording ID	Yes	Make a note of which camera/tablet/phone the recording was taken on, and the Recording ID number
Photo	Yes	Take a photo of the frog and make a note of which camera/tablet/phone the photo was taken on, and the filename of the photo (usually ends in .JPG)
Pre/Post Callback	Optional	Note whether the call was heard before or after the call playback.
Habitat	Optional	Describe what habitat the frog was seen or heard in (e.g. on rock in creek, in dam, in muddy soil on edge of waterhole)

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 you don't lose the photos or recordings.



#### Who?



At least one person to manage the data

Consider contacting a frog expert to assist with photo and call identification.



#### 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)
- ☐ Using FrogID app

### 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 **survey effort and detection data** to your data management system.
  - Recommended: get someone else to proof the data to check for mistakes.

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3. Upload any photos or videos taken during the survey to your data management system.
4. Double check frog identification by reviewing the photos and recording of frog calls
  - Recordings taken in the FrogID app can be submitted for identification.
  - Contact experts separately if you want/need help identifying frogs.
5. Discuss with the ranger team or community the results of the monitoring, any reasons for the different species of frogs and numbers of frogs calling at each site and if there have been any changes to previous years.
  - Consider whether trends might be related to your management (e.g. fencing of waterbodies) 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**

## 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"> <li>Charged</li> <li>Ability to take photos</li> <li>App for data collection (e.g. Fulcrum)</li> <li>App for navigation (e.g. Avenza)</li> <li>FrogID app</li> </ul>	✓	✓	✓	✓
Power bank <ul style="list-style-type: none"> <li>Charged</li> </ul>	Recommended		✓	
Laptop or computer with software for: <ul style="list-style-type: none"> <li>Mapping (e.g. QGIS, ArcGIS, Google Earth)</li> <li>Spreadsheets (e.g. Microsoft Excel)</li> </ul>	✓	✓	✓	✓
GPS (e.g. Garmin handheld device) & spare batteries	Recommended	✓	✓	
Frog reference documents and/or field guides	✓		✓	
Reflective flagging tape	✓	✓		
Bright headtorch & spare batteries <ul style="list-style-type: none"> <li>1 headtorch per person</li> <li>Minimum 300 lumens</li> </ul>			✓	
Spray bottle with boot disinfectant (e.g. 1% sodium hypochlorite solution)	✓	✓	✓	
Data management system (e.g. cloud storage)	✓			✓