Australia's National
Science Agency

Using the Koala Counter App to Survey for Koalas

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What is Koala Counter?

Koala Counter is one of two apps developed by CSIRO as part of the National Koala Monitoring Program (NKMP) to assist partners and community members in recording koala locations. The Koala Spotter app is aimed at citizen observers and casual users. If you are going for a walk and stumble upon a koala, and would like to record your sighting, then Koala Spotter is for you.

If you are a koala researcher, wildlife manager, ranger or a citizen observer who wants to take the next step and carry out a structured survey of an area looking for koalas, then Koala Counter is for you.

Both apps are available in the Apple App Store and Google Play.

Koala Counter is built around the idea of a transect. This is simply a line along which you travel, specifically looking for koalas as you go. It's a "structured survey". Transects can be walked, driven or flown with a drone. They can be done alone or in pairs or groups, with binoculars, spotlights or thermal cameras or drones but the basic concept is the same. Mark out a line on a map and follow that line while recording any koalas you find. The line doesn't have to be straight or of set length, so long as you record what you did and the area you covered.

How to Use Koala Counter

NOTE**: **This guide covers using the Koala Counter app to record your koala data. It will assume that you have already chosen your study area, decided where your transects should be, what method you are using to find koalas and how to carry out your survey. If you need some guidance on the different methods available to figure out what might be best for you, have a look at the Methods page on the NKMP website: nkmp.org.au . This will show you how NKMP teams carry out our surveys. If you already have your own method that is fine, the app can handle data from single or double count transects, and distance sampling.

Getting Started

When you open the app, you will see a welcome screen that asks you to either login to an existing account or to register for a new one. If you are using a shared device, make sure you log out and log back in again at the start of every field trip. If someone else is logged into the device, their name will be attached to your data which will cause confusion.

Figure 1:Koala Counter Title Page

Once you have logged in you will see the "Transects" page. Here you will find a list of all the transects you have already done (if there are any). In the top right you will see a person symbol which will allow you to see your login details, what version of the app you are using and allow for deleting your account or contacting us.

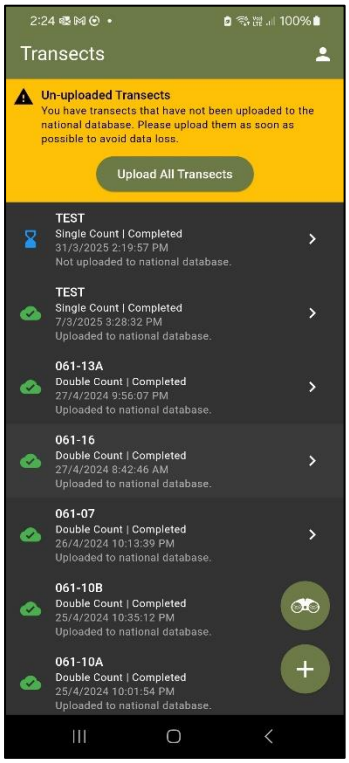

Figure 2:Transect list page in Koala Counter

In the bottom right you will see two symbols.

Clicking on the binoculars symbol will allow you to add an incidental sighting record. This is useful if you have the Koala Counter App open and you happen to see a koala while not on a transect. For example, while commuting between the end of one transect and the start of the next.

NOTE**: **If you are going for a walk/drive and spotting koalas, and are not engaged in a structured survey, please consider using the Koala Spotter app instead of entering incidental sightings into Koala Counter

When you click on the incidental sighting button your device will take your GPS location. You will see tabs for entering information on the sighting, the koala (sex, health etc), the tree it is in and a Media tab to take photos or select one from your phone. When you are ready to upload your sighting click on the 'Share' icon and you can upload your sighting to the national database and/or generate a pdf report of your sighting. If you have any transects that have not been uploaded to the NKMP database, there will be a banner reminding you of this. The remainder of this guide will focus on carrying out structured transects. You can also export your transect data using the 'Share" button. More information on this is included below.

Transect Details

Before starting a new transect, you need to fill out the details about where you are, what kind of transect it is and other important information. These details ***cannot be edited once you upload the transect***. Be sure you and your partner have all the details correct before you upload.

You will need to fill out the following fields:

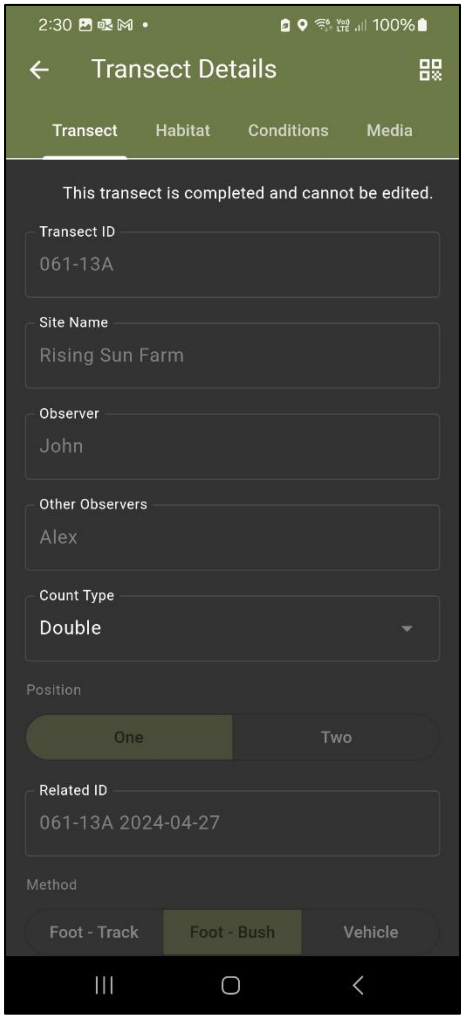

Figure 3: Transect Details page of Koala Counter

Transect ID: This is a unique name for the particular path you are walking. If you are following the NKMP sampling design, this should be the number of your cluster followed by the number of the sampling point. For example, Point 6 in Cluster 47 should be "C047-P06".

If you are doing 4 short transects at a point, you can arrange them in whatever orientation is most efficient as long as the observable areas do not overlap. If doing a double count it is important that both observers both follow the same path (see Figure 2).

You can name each one with letters. For example, if I did 4 transects at Point 6, Cluster 47 I would name them "C047-P06a", "C047-P06b" "C047-P06c" and "C047-P06d". If you are using your own sampling design, then use any ***unique*** name that makes sense for your data.

If you are doing a double count transect it is crucial that your partner uses the same transect ID for their transect.

NOTE**: **If you are setting up a transect just to test the app, set the transect and site names to "TEST" this will help us to filter out tests from real data.

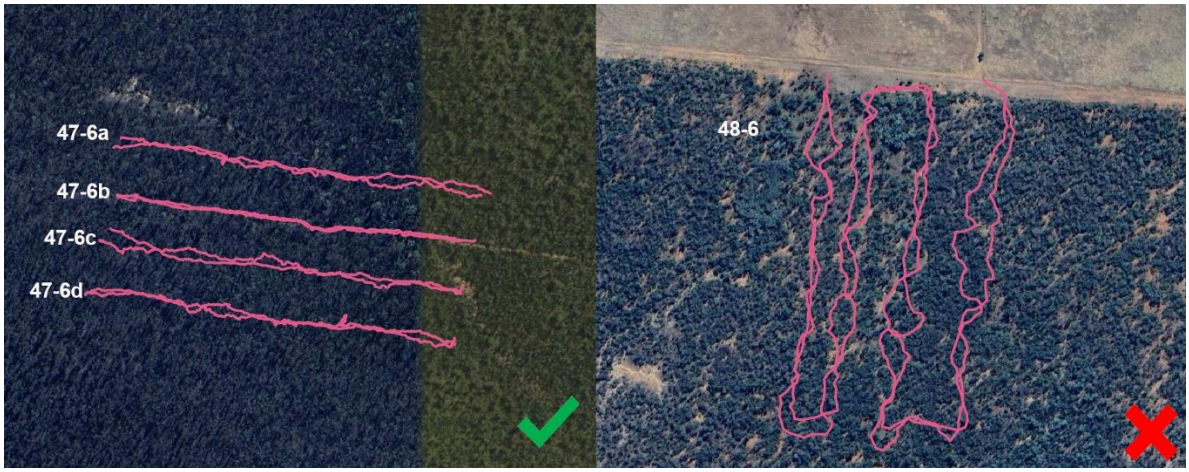

Figure 4: Examples of a set of 4 short transects for double counts. On the left the observers closely follow the same path. On the right the observers' paths are variable. Some variation is to be expected but observers must be surveying the same patch of habitat

Site Name: This is a more general name for the site at which you are working, e.g. “Millmerran” or “Pluto Timber Reserve”. If you are doing multiple transects at the same site, be consistent with the site name (including things like capitalisation) to help keep the data organised.

Observer: The name of the observer using this device

Other Observers: Names of any other people observing. This could be a single count with multiple people walking together in a group, or a ‘double count’ with two independent observers starting at different times or different ends of the transect.

Count Type: This is the type of transect you are doing. Select from the drop-down list of “Single”, “Double” or “Distance”

A single count means that there is one person, or a group of people walking the transect together at the same time acting as a single observer. A single observation is recorded for the person or group as a whole. If it is a single count with multiple observers, make sure that each sighting is recorded only once.

A double count is a special kind of transect where two observers work independently. The observers either start from opposite ends and cross in the middle, or both start from the same end with one observer setting out 20mins before the other. The observers do not share information with each other until after they are done, when they look at their observations and figure out which animals were seen by observer 1 only, by observer 2 only, or by both. For more info on how to do a double count transect see the methods section of nkmp.org.au

Position and Related ID: If you are doing a single count these fields will be greyed out and can be ignored. There are some special procedures for setting up a double count that are explained below.

Method: How are you traveling along your transect? Is it by foot on an established track? By foot in the bush? Or by car?

Width: To get a good idea of how much effort was put into your survey it is important that you estimate (by eye or using a laser rangefinder) how far you can see on each side of the transect. If you can see 25m each side, then the width is 50m. If the visibility changes with different habitat along the length of the transect, update this field with an average value before you stop the transect.

Figure 5: A to B line shown on a map

Map- Point A and Point B: This feature is intended to help you navigate along the transect while in the field. The app tracks your movement but **does not work while running in the background.** This means that you need to keep the app open while you are moving along. Koala counter will draw a straight line between these two points that you can navigate along while looking for koalas. You can click on the map pointer icon and use the map to position the A and B points where you want them.

Tools: If you are using spotlights (including headtorches), thermal scopes, or drones select them here. If you are searching by eye, during the day, leave these options blank.

Safety: This check box is intended as a reminder to do a rapid risk assessment or "Take 5" before starting your work. Click the help button to see the 5 elements to think about and discuss with your field partner(s) before starting.

Notes: Any extra notes about this transect, the people involved, habitat or other general information that could be useful.

Media Tab: This is a good place to take a few snaps of the habitat if possible.

Sharing Your Transect Details

In the top right of the Create Transect page you will see a QR code symbol. Clicking this symbol will allow you to share the details of your transect with someone else via a custom QR code or scan a code from someone else to get their details.

Special Instructions for Double Counts

When you select "Double" as your count type, you will have to tell the app if you are "Observer One" or "Observer Two" using the "Position" field. If you select position one you are considered the survey leader and your partner will be in position two.

You can use the "A to B" function here to ensure that your partner is following the exact same line as you. Remember they may be travelling from "B to A".

The "related ID" field can be filled with a unique code that identifies this particular pair of transects. A suggested code that would be unique to your survey could be the transect name followed by the date, for example, "C047-P06c 2024-03-12", or "Smith Farm west 2024-03-12".

Figure 6: Sharing transect details is now done with QR codes

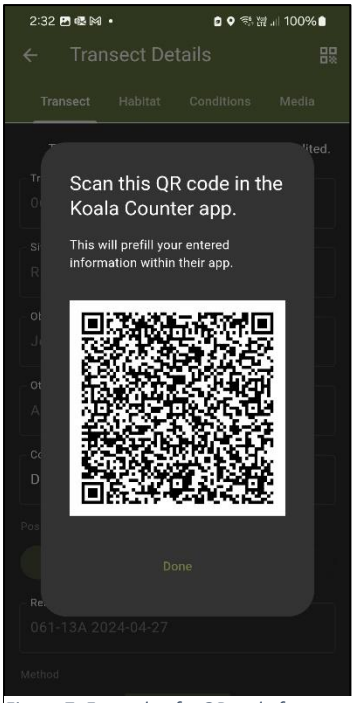

Figure 7: Example of a QR code for sharing transect details

If you are the survey leader you should be the person to set up the original transect details and then share your QR code with your partner. Your partner should click the "+" button an open a blank transect. When they click on the sharing icon, they can select "scan" from the list of options, and they will get your transect details.

When you are ready to go, click the big green “Start” button on the bottom of the screen. If doing a double count, make sure you are either starting from opposite ends at the same time or from the same end but stagger your start times.

Starting a Transect

#NOTE: ***The “A to B” function will let you generate a simple straight line for guidance. Or you can load a pre-made map overlay of lines (see appendix). At the moment, for more detailed navigation, we use some third-party mapping software, e.g. Touch GIS, Avenza Maps. If you are more familiar with some other platform, that’s fine, but remember to keep the Koala Counter open app, because it does not track you while running in the background. Alternatively, you can mark out the transect on the ground with flagging tape or use your phone/GPS to try to navigate as straight a line as you can.***

When you click start, you will see a map page with your location and the A to B line you have entered in the transect details. There will be an orange banner telling you that this is a draft transect, and recording hasn’t started yet. If you are working on a set of transects and want to create and share them all before starting, you can do that by just going back to the transect page and starting the above steps again.

If you are ready to start recording, move to the start point of your line and click “Start Transect” on the banner.

At the top of the screen you will see that you are in an “Active Transect”. There will be a banner with information about the transect. This will tell you that your location is being recorded, the duration and distance of the transect so far, the area covered and the number of sightings.

In the top right of the map, you can select the map background. In the bottom right corner of the map you will see a locator icon (clicking on this will zoom the map to your location) and a binoculars icon. Clicking on the binoculars icon will add a sighting. The details of this will be discussed below.

At the bottom of the screen you will see the transect details icon and a sightings icon. Transect details can be edited before the transect has been uploaded. **Once a transect has been uploaded, details about the transect and observations can no longer be edited** so be sure you have the details correct.

In the top right corner you will see a “Done” button. Clicking here will allow you to either end your transect or pause your transect. Pausing the transect can be useful if you want to wander off track for a bit to investigate something, take a rest or if you need to use a different app for navigation. Remember the **GPS tracking doesn’t work if the app is in the background** so it must be open on the screen if you are walking along your transect. To restart your transect, click on it in the list of transects and you will be asked if you want to carry on or end the transect.

Once you have started your transect, more tabs will appear in the Transect Details section.

Habitat Assessment

The “Habitat” page allows you to do a rapid assessment of the habitat conditions as they relate to koalas, focussing on their food trees. The idea here is that as you move along the transect you keep an eye on a few key habitat characteristics and at the end you fill out an assessment that represents the average conditions along the transect. This assessment is largely qualitative so you won’t need to measure anything but it is good to know what you should be looking out for before you start. Clicking on the “?” symbol in the top right will give you an information sheet that explains each of the fields. The fields in the habitat assessment are grouped into four categories. Once you have filled out some values in those categories, the scale bar at the bottom of each one will show a value from 0-5 (green to red) based on a weighting of those values determined through consultation with our partners.

- Koala Habitat Trees
    - Abundance of Koala Food Trees – Focusing on tree species that koalas could potentially use; are they scarce, dominant etc?
    - Diversity of Koala Food Trees – How many different types of koala food trees did you see?
    - Dominant Size (DBH) of Koala food Trees – Focusing on koala feed species only, are most of them very big, medium or very small? DBH stands for ‘diameter at breast height’ which is a standard measure of tree size and is measured in cm.
    - Recruitment of Young Koala Food Trees (<5cm DBH) – Did you see a lot of young saplings of koala-food trees? This can tell us if the habitat is in good shape for the longer term or if all the food trees are very old with no new young ones coming in.
- General Habitat
    - Canopy Health – This is a qualitative assessment of how healthy the canopy looks. For example are you seeing lots of dead branches high up in the trees? Is there are lot of regrowth after a fire? (epicormic growth of leaves directly on the tree branches).
    - Canopy Cover – Give an overall average estimate of how closed over the canopy is overhead along your transect, in percentage categories.
    - Sub-Canopy/Understorey – Are you walking through dense vegetation full of saplings and bushes? Or is the area dominated by tall, older trees with no undergrowth?
- Pest Weed Species
    - Percentage Cover of Invasive Weeds – Are you seeing a lot of invasive weeds (e.g. Lantana)?
- Recruitment of Young Non-Habitat Trees (<5cm DBH)
    - Similar to the question above, are you seeing lots of young saplings of species that koalas don't feed on, , e.g. acacias, pine trees?
- Predators
    - Predators – Have you seen any predators, such as dogs, carpet pythons, foxes or powerful owls in the area?
    - Predator Signs – Have you seen any signs of the above?

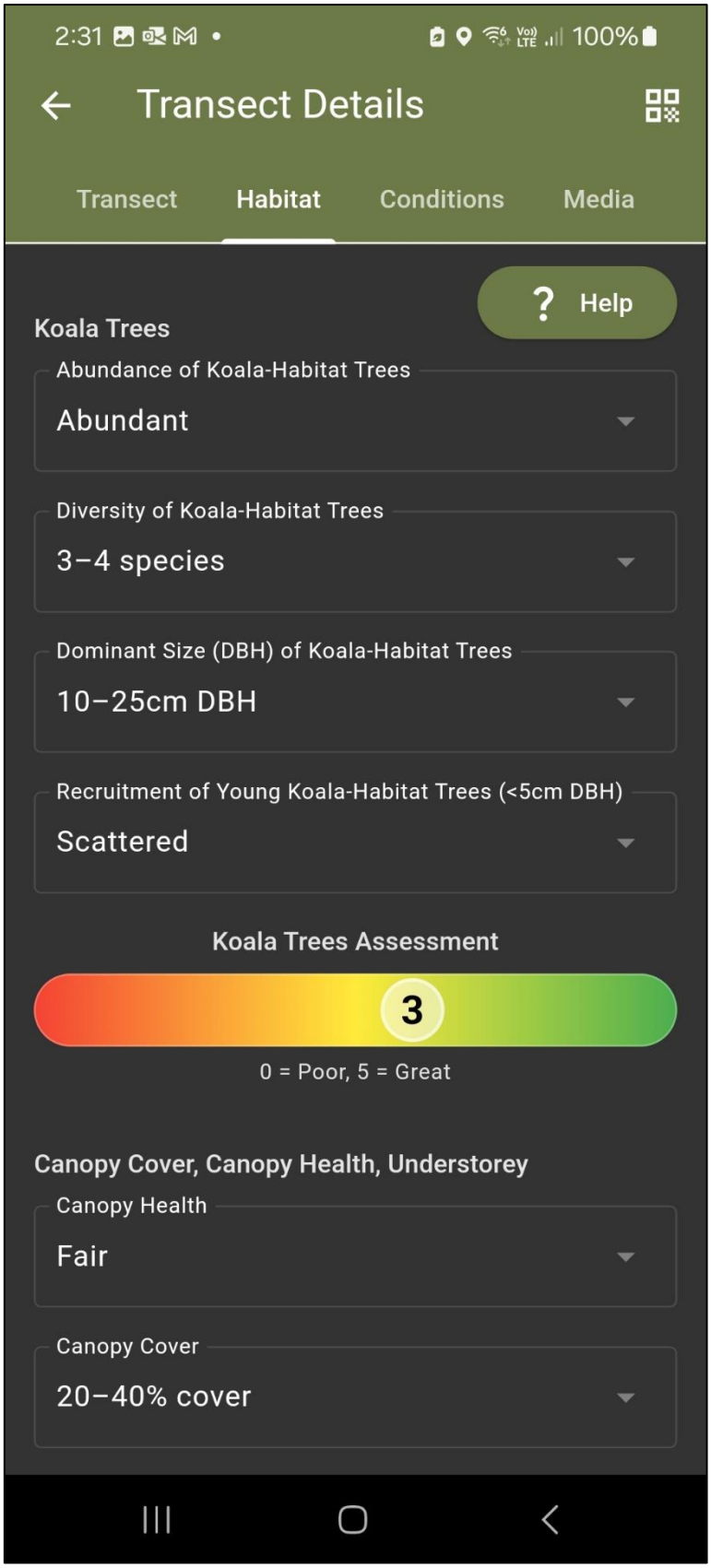

Figure 8: Habitat Assessment page of the Koala Counter App

Conditions

This page allows you to document the general conditions in the area including the weather and cloud cover. The Visual Obstructions field allows you to record the degree to which things like buildings, powerlines, large boulders etc. are obstructing your view.

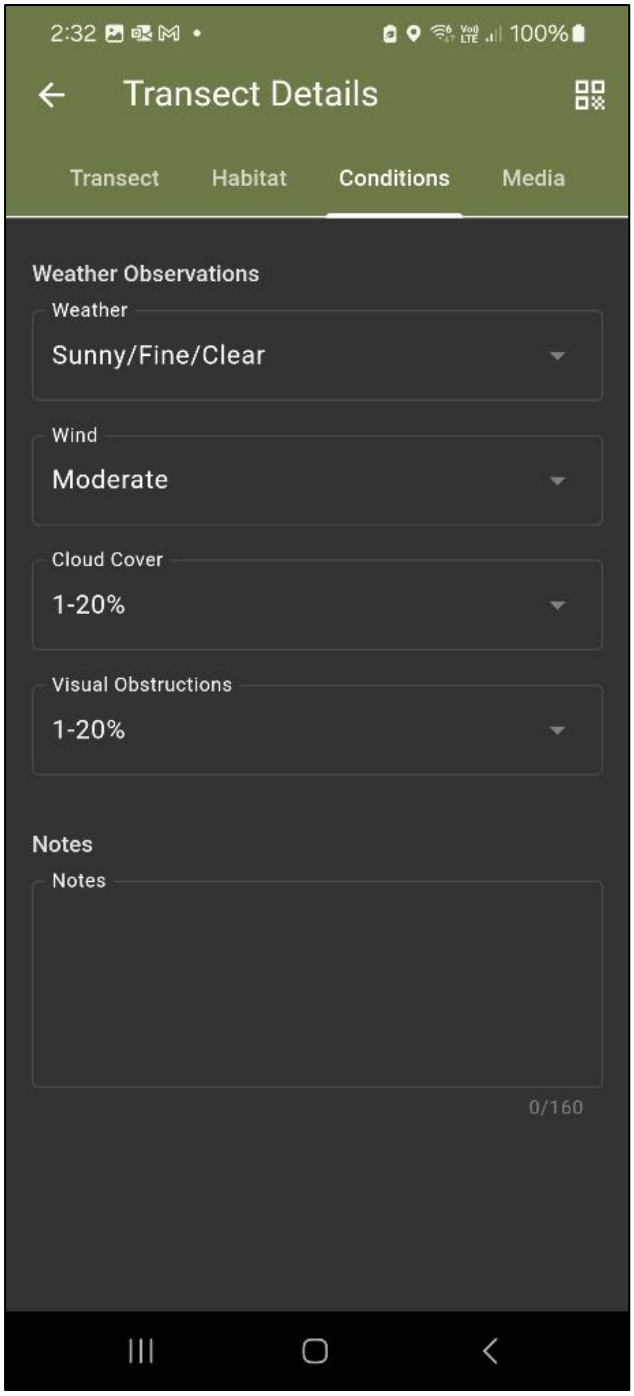

Figure 9 Conditions page in Koala Counter

You See a Koala, What Now?

There are two potential approaches to recording the location of the koala.

Option 1: Leave the Transect, Get Exact GPS Location

- As soon as you see your koala, stop walking and enter a sighting by clicking the binoculars icon.
- This will mark the position on the transect where you sighted the koala.
- The recording of your track will be paused here and you will see a banner telling you this.
- Enter the distance at which you sighted it (judged by eye or by using a laser rangefinder).
- Take note of your place on the transect so you can find your way back. On the map you should see where the red line behind you has stopped. This will be the point where you restart.
- Walk directly to the tree the koala is in and open the “Koala” tab in the sighting page. This will allow you to update the position by clicking on the map pointer icon.
- Record any details you can about the koala, it’s age, health status and the tree it is in.
- You can also enter the tree species if you can identify it. If in any doubt, write "unknown".
- Take photos if you can in the “Media” tab.
- Return to the transect at the point where your left and click on the banner to resume your transect. **Do not forget to restart tracking once you are back on your line**.

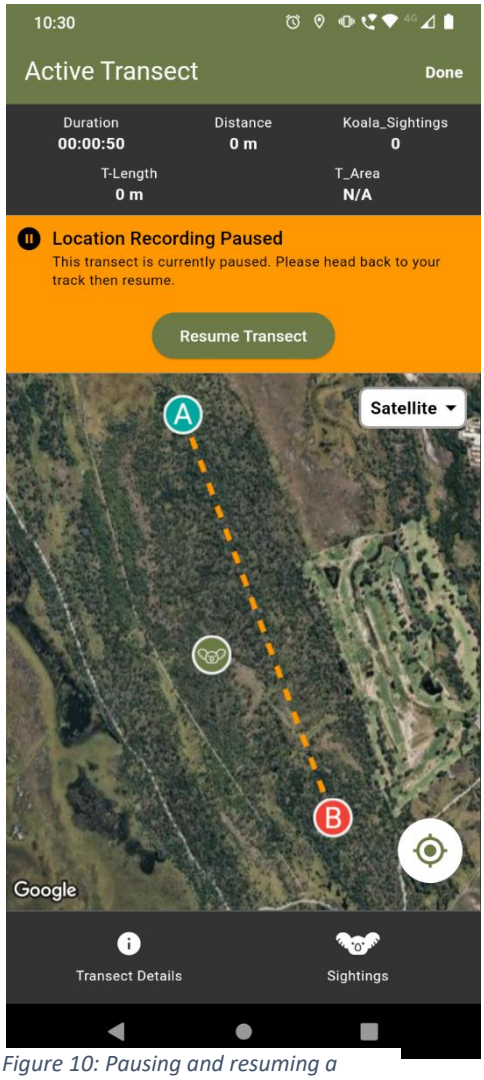

Figure 10: Pausing and resuming a transect when you make a sighting

Option 2: Stay on the Transect, Get Distance to the Koala

If it is not possible to leave the trail either due to difficult terrain or a strong possibility of getting lost in dense vegetation, you can record its location in relation to you and the transect. You can do this by clicking on the “koala” tab and in the “position” field you will see a little map balloon icon. As with the A and B points, clicking here will allow you to position the koala sighting in the correct position on the map. If for some reason the map is not helpful, you can always record the perpendicular distance and bearing (from north) to the koala.

Once you add an observation you will see a few sub-pages, the first of which is the “Record” page. There are several fields to fill out here.

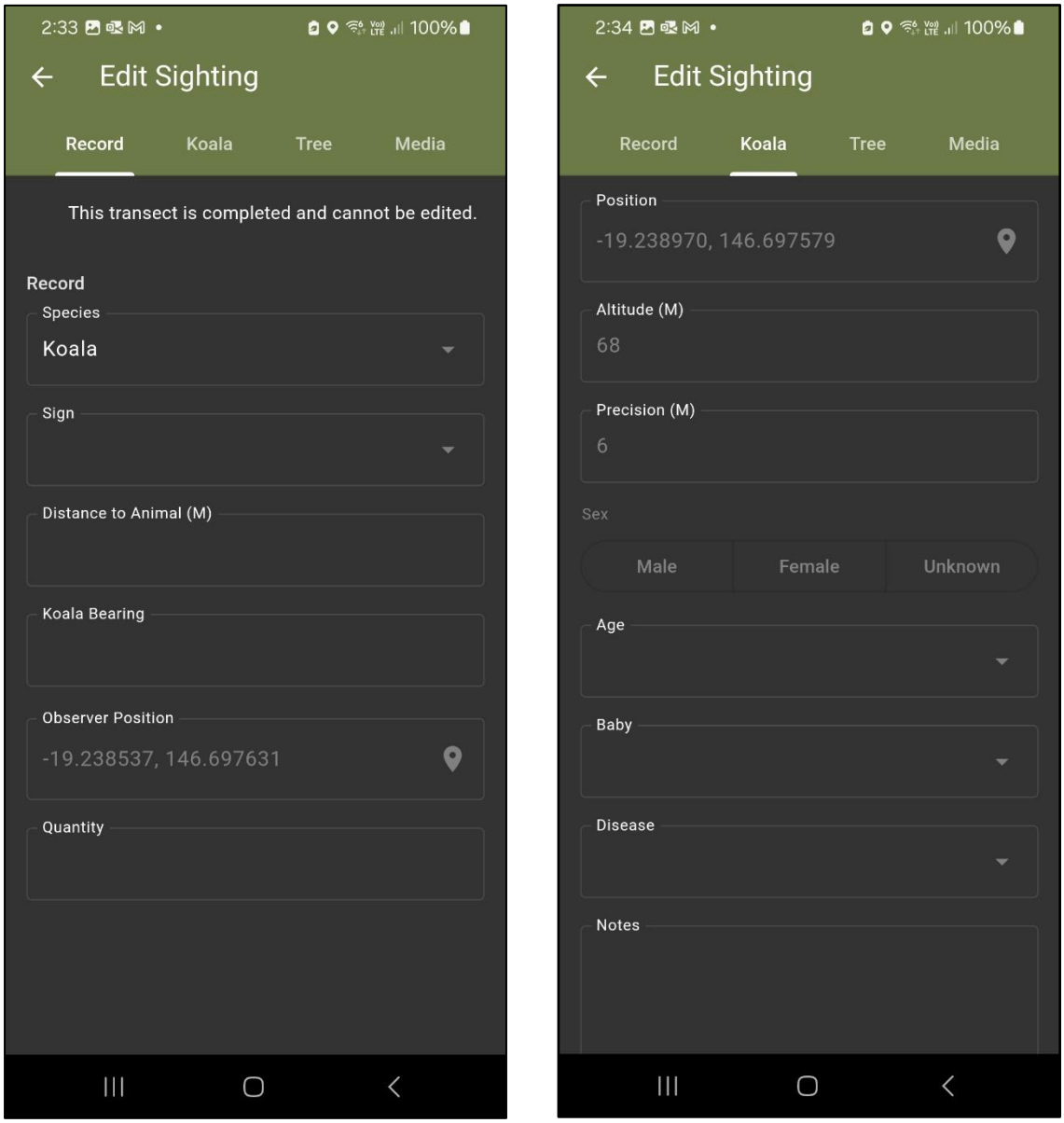

Figure 11: Adding and observation brings up the Record Details page

Record Details

- Species: This field will have a drop-down menu of the most commonly sighted species on these surveys. You can also select “Other”. If you select “Other”, use the common name for the animal. If you can’t identify the animal to species, the general animal group (e.g. “glider”, or “possum”) is fine. Please keep this concise and don’t add extra notes here, keep them for the notes section. For example instead of “unknown possum species” or “I thought it was a possum but turned out it was a bird”, just use the best level of ID you can, i.e., “possum”.
- Sign: How did you identify the animal? Was it by a direct sighting? Did you find scat or scratches on a tree?
- Distance to Animal (m): How far away from the observer (perpendicular distance from the transect if possible) is the animal in metres. You can estimate this by sight or use a laser rangefinder. If you have left the track to stand directly under the animal (preferable) then mark this distance as 0.
- Koala Bearing: If you can’t get to the location of the koala, you can put the estimated bearing from true north in this field. This is a number from 0 to 360 degrees. You will need a compass to get this number – most phones have inbuilt compasses. Be sure your compass settings use "true north" rather than "magnetic north". If you have a magnetic compass, you need to work out the difference between magnetic and true north.
- Observer Position: This field should be filled out automatically when you add your observation. If for some reason you think that the position you were at when you saw the animal is incorrect, you can change it by clicking on the map icon. It is not recommended that you change this field unless you are certain.
- Quantity: How many individuals of this species did you see at this location?
- Seen By: For a single count you can fill in this field straight away. If you are doing a double count, when the transect is finished, coordinate with your partner and go through your observations marking each one as seen by just you, just them or both of you.

Koala

On this page you can record any details you notice about the animal. The fields here are specific to koalas and koala health (e.g. discharge from eyes or bottom indicating chlamydia), but you can fill in notes about any species you find.

- Altitude: auto-filled
- Precision: GPS position (auto-filled)
- Sex: Can you tell if it is male of female?
- Age: Select age from list of classes
- Baby: If female, is it carrying a baby?
- Disease

Tree

Further details about the tree species that the animal is in. These include height of the tree, the height at which the animal is sitting, the thickness of the tree (Diameter at Breast Height, DBH) and two other measures of Crown Size (length x width in metres, e.g. 10x15) and Crown Density (%) which are used by government partners.

Media

Try to take photos of the animal with your device. Even it is quite zoomed out it can help to decide if you and your partner in a double count were looking at the same animal and can also help with tree ID and habitat assessment. You can also upload a photo from your device's gallery. This means if you have a better camera and can transfer your photos onto your device you could upload higher quality images if you have them.

Finishing your Transect

Once you've walked/driven your transect and recorded all your observations, there are a few things you need to do.

Firstly **STOP THE TRANSECT** This is absolutely critical. If you don't, the transect will keep recording and will produce a track that goes beyond your intended transect. You can do this by clicking on the "Done" button in the top left of the transect page. You will have the option to stop or pause the transect. Choose "End Transect". When doing a set of four short transects, stop after each straight line and start a fresh one, instead of just linking them all together (see Figure 2). Once you've stopped your transect you can open it up again from the list and edit the details where appropriate.

This is the time to enter your assessment of the habitat as detailed above. Remember it is an average, qualitative measure of the habitat you saw along the transect. At the bottom of the habitat page there is a section for "Habitat Assessment Rationale". In this section you can note how you came up with your assessment. For example, if working in a group, was it a consensus arrived at after a team discussion? Was it an independent assessment?

If you are doing a double count, this is the time to sit with your partner and discuss who saw which koalas and where. You can go through each of your observations and mark it as seen by "Only Me" or "Both" on each of your devices.

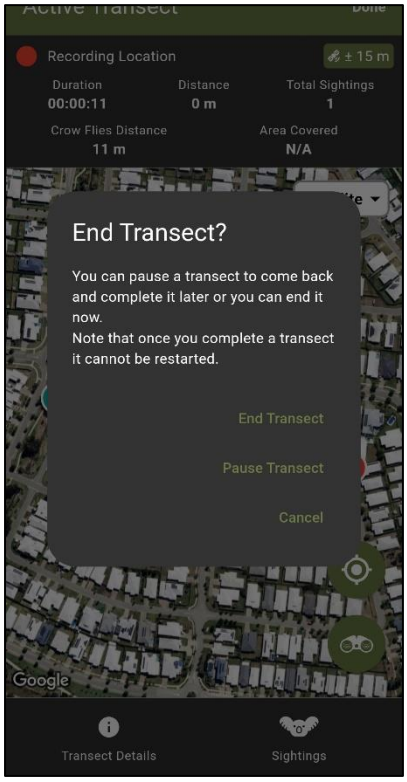

Figure 12: It is important to stop your transect recording once you are finished. Do no leave it recording as you walk to the next transect or drive to a new location

When you have entered and checked all the data for your transect, click "Done" and you will return to your list of transects. You will see a reminder that you have some transects that are not uploaded yet. Transects that have been uploaded have a green tick next to them. Transects that are not yet uploaded have a blue hourglass symbol next to them.

To upload your transect, you can simply tap the “upload all data” on the banner. Alternatively, while you have the transect open and tap the “Share” icon in the bottom right of the page. You will have the option to “Upload to National Database”, this will send your data to the NKMP database and it will be locked for editing from here onwards. Uploading data will require an internet connection. If you click “upload” while out of internet range, the next time you open the app with an internet signal (e.g. when you get home) the transect will upload automatically. Another option is to “Generate Report”. This allows you to generate a brief PDF report with a summary of your transect that can be shared with anyone who needs to see it. If you are not sure if your data has been uploaded, contact the NKMP team and they can check for you

Finally, you can also export your data locally to keep for your own records. When you click on “Export Data” you will be presented with options for the level of detail you would like to export (just the metadata about your transects, just your sightings, your transect paths or the complete data set) and the format you would like to export to (.csv, a full JSON or a simplified JSON text).

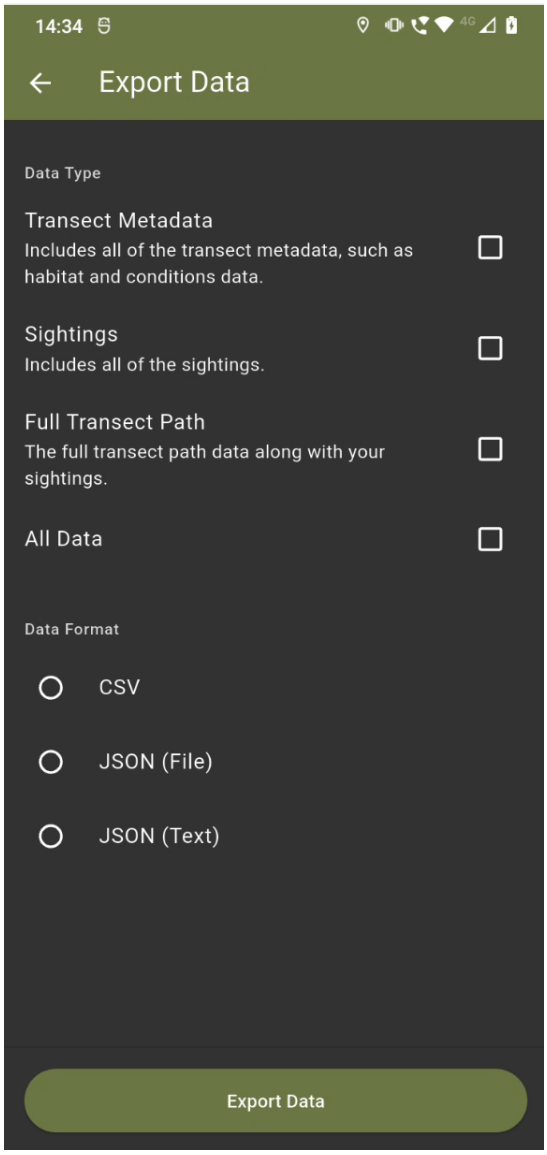

Figure 13: Options for locally exporting your transect data

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Contact us
1300 363 400
+61 3 9545 2176
csiro.au/contact
csiro.au
For further information
www.nkmp.org.au
koalamonitoring@csiro.au