



birdlife
NORTHERN
QUEENSLAND



Birds With Altitude

Your guide to
monitoring Wet Tropics
birds in Wooroonooran
National Park

BIRDLIFENQ.ORG

Contents

Wet Tropics birds in trouble	1
The effects of climate change	6
The Wooroonooran Challenge	7
Birddata methods	22
Health and safety	26
Useful resources	27
References	27
Appendix 1. Health and safety risk assessment	28

**Written by Amanda Freeman and Ceri Pearce
October 2022**

This project is supported by a Queensland Government Community Sustainability Action Grant – Round 6 for Conservation – Community Engagement on Queensland’s National Parks and State Forests: CSAP059.

BirdLife Northern Queensland acknowledges the Traditional Owners of Wooroonooran National Park. We pay our respect to their elders past, present, and emerging, and extend that respect to all Aboriginal and Torres Strait Island people.

Cover photo by Rob Shepherd via birdlifephotography.org.au.

Wet Tropics birds in trouble

The Wet Tropics (WT) is a hot spot for bird diversity. Within this region, that covers only 0.1% of Australia’s land area, more than 45% of Australia’s bird species can be found. Twenty-three of these are either endemic or largely confined to the region ([Birds | Wet Tropics Management Authority](#)).



The Wet Tropics region – a precious 0.1%

Unfortunately, evidence is mounting that Wet Tropics populations of rainforest-dependent birds are declining because of climate change (Williams & de la Fuente, 2021; Kowalski et al, 2022) and the Action Plan for Australian Birds 2020 (Garnett & Baker, 2021: APAB) identifies 14 threatened, or near threatened, Wet Tropics birds (Table 1).

Table 1. Threatened and near threatened birds in the Wet Tropics

Endangered	Vulnerable	Near Threatened
<ul style="list-style-type: none"> • Fernwren • WT King-Parrot • WT Brown Gerygone 	<ul style="list-style-type: none"> • Atherton Scrubwren • Mountain Thornbill • Bower’s Shrikethrush • Victoria’s Riflebird • WT Large-billed Scrubwren • WT Eastern Whipbird 	<ul style="list-style-type: none"> • Golden Bowerbird • Tooth-billed Bowerbird • WT Satin Bowerbird • Grey-headed Robin • Little Treecreeper

According to IUCN criteria, as listed in the Action Plan for Australian Birds 2020.

These threatened and near threatened birds tend to be rainforest specialists, not ranging far from closed forest, and are mostly confined to the Wet Tropics midlands and uplands (>600m elevation). Information from the APAB is summarised below:

Endangered

Fernwren

Endemic to the Wet Tropics where they occur mostly in upland rainforest favouring moist areas such as near streams. Have undergone a steep decline in population, particularly at lower altitudes. Appears to have disappeared from some lower sites (360-400m).

Fernwren Photo: Martin Willis



Wet Tropics Australian King-Parrot

Endemic to the Wet Tropics where they live in upland rainforests. A recent rapid decline in population is evident from Williams & de la Fuente 2021 (77% decline) and lower Birddata reporting rates between 1999 and 2018 (2 ha, 20 mins = down 81%; 500 m area search = down 36%).

WT Australian King Parrot Photo: Peter Valentine



Wet Tropics Brown Gerygone

Endemic to the Wet Tropics, occurring in upland rainforest. A decline in population is evident from Williams & de la Fuente 2021 (54% decline) and lower Birddata reporting rates between 1999 and 2018 (2 ha, 20 mins = down 84%; 500 m area search = down 60%).

*Brown Gerygone Photo: (C) John Barkla 2011
birdlifephotography.org.au*



Vulnerable

Atherton Scrubwren

Endemic to the Wet Tropics where they occur in upland rainforest. A decline in population is evident from Williams & de la Fuente 2021 (43% decline) with almost none at lower altitudes. Birddata reporting rates between 1999 and 2018 have also declined (2 ha, 20 mins = down 98%; 500 m area search = down 27%). Difficulties in identification may bias reporting rates.

Atherton Scrubwren Photo: Peter Valentine



Mountain Thornbill

Endemic to the Wet Tropics where they occur in upland rainforest. Williams & de la Fuente (2021) report a 46% decline in population. May be more abundant outside than inside protected areas.

Mountain Thornbill Photo: Doug Herrington



Bower's Shrikethrush

Endemic to the Wet Tropics where they occur in upland rainforest. A substantial decline is likely but not all data are consistent. Williams & de la Fuente (2021) report a 72% decline and there was a 71% decline in reporting at the School for Field Studies (Kowalski et al. 2022). However, there hasn't been any significant change in reporting rates between 1999 and 2018 for 2 ha, 20 mins or 500 m surveys in Birddata. This may be to do with the distribution of surveys, or misidentification with Little/Rufous Shrikethrush.

Bower's Shrikethrush Photo: Peter Valentine



Victoria's Riflebird

Endemic to the Wet Tropics. Williams & de la Fuente (2021) report a 35% decline in population (Williams & de la Fuente 2021).

*Victoria's Riflebird Photo: (C) Bill Harding 2018
birdlifephotography.org.au*



Wet Tropics Large-billed Scrubwren

Sub-species endemic to the Wet Tropics. A 31% decline in population is evident from Williams & de la Fuente (2021). Reporting rates also indicate a decline at the School for Field Studies (down 51%; Kowalski et al. 2022). Birddata reporting rates between 1999 and 2018 have also declined (2 ha, 20 mins = down 88%; 500 m area search = down 46%).

*Large-billed Scrubwren Photo: (C) Ian Wilson 2016
birdlifephotography.org.au*



Wet Tropics Eastern Whipbird

Sub-species endemic to the Wet Tropics. A 42% decline in population is evident from Williams and de la Fuente (2021).

*Eastern Whipbird Photo: (C) Peter Owen 2022
birdlifephotography.org.au*



Near Threatened

Golden Bowerbird

Endemic to higher altitudes in the Wet Tropics region, with 90% of bowers above 900m. A 57% decline in population is suggested (Williams & de la Fuente 2021) but data is highly variable from year to year and there has been little change in the number or distribution of bowers. Population trends need further confirmation.

Golden Bowerbird Photo: Peter Valentine



Tooth-billed Bowerbird

Endemic to the WT where they live in upland rainforests. There is evidence for population decline (Williams & de la Fuente 2021 = down 95%; Birddata reporting rates 1999-2018, 2 ha, 20 mins = down 51%). However, there has been no change in the number or distribution of known courts. The ambiguous results could be consistent with slow recovery from cyclones Larry and Yasi which damaged court sites, probably killed many birds, and reduced the frequency of calls and thus detection rates. There probably has been a decline, but population trends need further confirmation.

Tooth-billed Bowerbird Photo: Alastair Freeman



Wet Tropics Satin Bowerbird

Endemic to higher altitudes in the Wet Tropics region. Declines indicated but not confirmed due to lack of data.

*WT Satin Bowerbird Photo: (C) Harry Charalambous 2014
birdlifephotography.org.au*



Grey-headed Robin

Endemic to the Wet Tropics where they occur in upland rainforest. There is evidence of population decline (Williams & de la Fuente 2021 = down 26.6%; Birddata reporting rates 2 ha/20min = down 44%; 500 m = down 12%).

Grey-headed Robin Photo: Peter Valentine



Little Treecreeper

This subspecies of White-throated treecreeper is endemic to the Wet Tropics where it mainly occurs in upland rainforest. Scarce at low altitudes. A 26.5% decline in population is indicated.

*Little Treecreeper Photo: Subspecies of White-throated
Treecreeper (C) Keith Fisher 2009 birdlifephotography.org.au*



The effects of climate change

Not all bird species in the Wet Tropics are declining. The extensive surveys conducted by Stephen Williams and colleagues between 2000 and 2016 (Williams & de la Fuente (2021: Table 1) revealed that overall, lowland species (<400m elevation) had increased moderately as had many habitat generalists.

The changing climate is probably affecting different species in different ways, both directly and indirectly. For example, species may be impacted directly, suffering increased mortality during heat waves and other extreme weather events such as cyclones which may be more intense. Or, their food supply may be reduced due to longer, hotter, and drier dry seasons.

Other possible effects of climate change are indirect, the result of changing species interactions. These include a wide array of possible changes ranging from reduced food availability due to lower leaf nutrition and altered fruiting seasons, to competition with increasing populations of habitat generalists and invasive species. The effects of climate change may also be aggravated by habitat loss and fragmentation.

What can you do?

Many of our special Wet Tropics birds are in trouble. The climate is changing, habitats and resources are shifting, but we lack information about some species' population trends. Not enough is known about most species' specific requirements to understand how or why climate change is affecting them. You can help by surveying Wet Tropics birds and recording your observations. In particular, you can join the challenge to survey birds in Wooroonooran National Park.



The Wooroonooran Challenge

Birdlife North Queensland's Wooroonooran Challenge aims to re-establish bird monitoring in Wooroonooran National Park by harnessing the skill and interest of Birdlife members and other interested bird observers and using the Birdata app to capture and store data.

Wooroonooran National Park

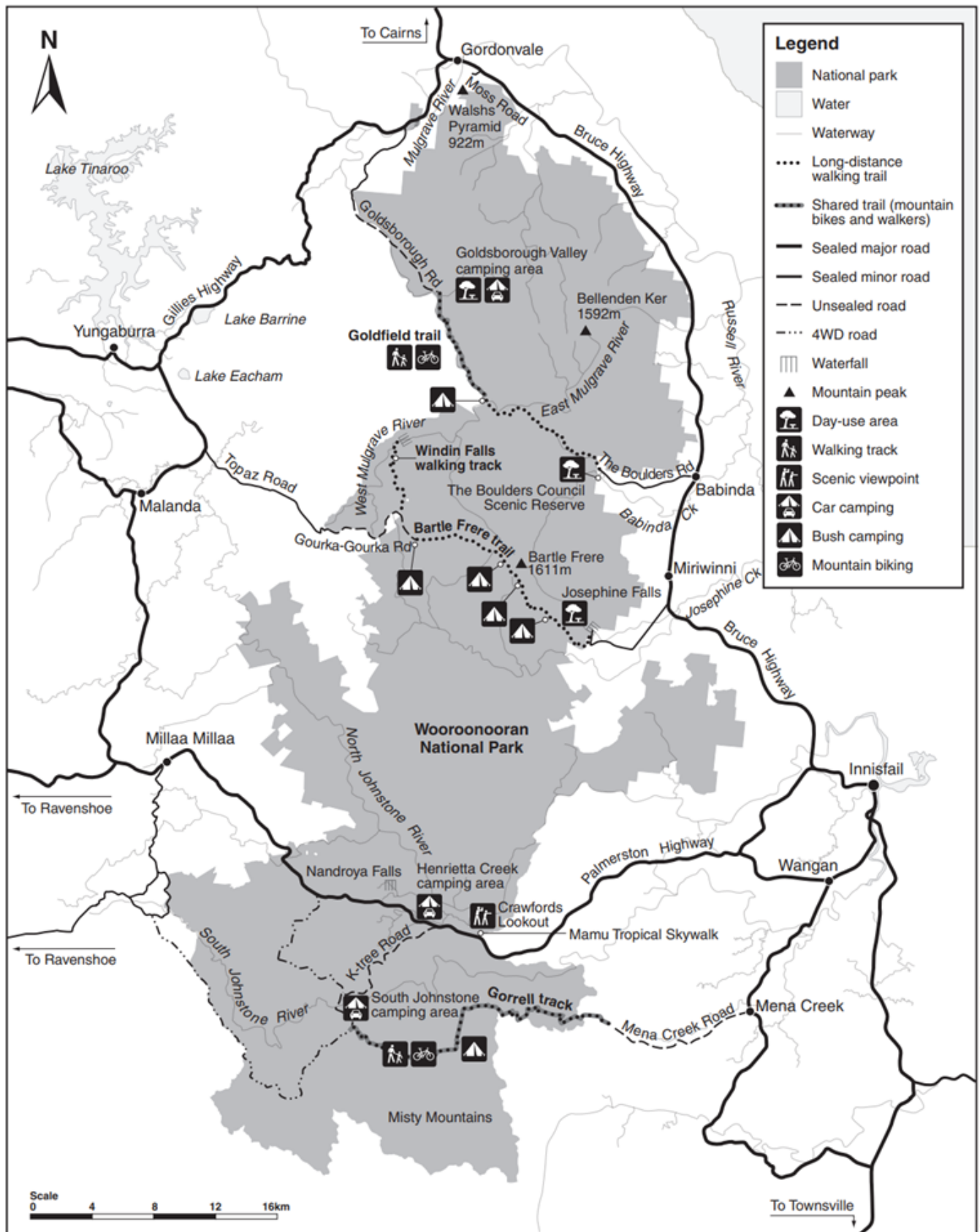
Wooroonooran is a very special national park. It's World Heritage listed forests cover the full range of elevation from the coastal lowlands to the tops of Queensland's highest mountain ranges at Mt Bartle Frere and Bellenden Ker. It is home to all the Wet Tropics endemic bird species, including those threatened by climate change. With globally threatened species, many with a very restricted range, Wooroonooran National Park is also an important section of the wider Wooroonooran Key Biodiversity Area or KBA ([Key Biodiversity Areas \(KBAs\) - Nature's Hotspots | BirdLife](#)).

We have identified bird monitoring sites in Wooroonooran National Park that we need your help to survey using Birdata compatible methods. We aim to provide ongoing monitoring at these sites which are readily accessed and cover a range of altitudes. They range from wheel-chair traversable, paved paths to unformed hiking trails. More sites will be added in consultation with the Queensland Parks and Wildlife Service, and you are welcome to carry out additional surveys wherever your Wooroonooran adventures take you.

Map source: https://parks.des.qld.gov.au/_data/assets/pdf_file/0016/160900/wooroonooran-np-map.pdf



Wooroonooran National Park map



© State of Queensland, Queensland Parks and Wildlife Service, MA361 December 2021



Wooroonooran National Park bird monitoring sites

Scenic Drive (near entrance from Palmerston Highway)

-17.587209; 145.703105 | 680m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is located on a section of the old Palmerton Highway (now called Scenic Drive) through mid-elevation rainforest within Wooroonooran National Park. It is accessed from the Palmerston Highway, about 16km from Millaa Millaa. This one-way road is narrow old bitumen and accessible by two-wheel drive vehicles, though roadside parking is limited. Be sure to park out of the way of occasional other road users. Commence surveys about 100 m from the Palmerston Highway entrance into Scenic Drive and by walking further along the road, being careful of any traffic.

Upland endemic bird species can be found here including species of conservation concern such as Grey-headed Robin, Bower's Shrike-thrush, Brown Gerygone, Large-billed Scrubwren and Wet Tropics King-parrot.



Malaan Road (near entrance from Palmerston Highway)

-17.59011; 145.7036 | 700m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is centred on a narrow gravel road through mid-elevation rainforest within Wooroonooran National Park. It is accessed from the Palmerston Highway, about 16km from Millaa Millaa, and 39km from the junction of the Palmerston and Bruce Highways, near Innisfail. Note that a 4WD vehicle may be required beyond the survey site which begins at the gate. Park in the small roadside areas where safe, to park out of the way of occasional other road users. Complete surveys by walking along the dirt road, being careful of any traffic.

Upland endemic bird species can be found here including species of conservation concern such as Fernwren, Grey-headed Robin, Bower's Shrike-thrush, and Wet Tropics King-parrot.



South Johnstone River Campground, Misty Mountains

-17.6529, 145.7178 | 460m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

Accessible by two-wheel drive vehicles in good weather. From the Palmerston Highway, follow the K-tree Road (a dirt road) for about 12.3km to reach the site. This is a day use area and camping ground, with amenities, bordered by the South Johnstone River and surrounded by rainforest. Complete surveys by walking around the clearing and adjacent dirt road, being careful of any traffic.

This low to mid altitude site should have a range of endemic Wet Tropics birds including Spotted Catbird, Victoria Riflebird and Eastern Whipbird.



Maple Creek Road Site (6A2), Misty Mountains

-17.6695708, 145.7173752 | 640m asl
Suitable for 2 ha, 20 min and/or 500 m area searches

This site is accessible by two-wheel drive vehicles in good weather only as the dirt road can become impassable after rain. From the South Johnstone Campground, cross the South Johnstone River bridge and drive for 3.4km along Maple Creek Road. You will pass the Gorrell Track western trailhead on the left. Park in the small roadside areas where safe, to park out of the way of occasional other road users. Complete surveys by walking further along the dirt road, being careful of any traffic.

Look for a range of species at this site including Wet Tropics Brown Gerygone and Eastern Whipbird.

Henrietta Creek Campground (Palmerston Highway)

-17.5986965, 145.7588140 | 380 m asl
Suitable for 2 ha, 20 min and/or 500 m area searches

Henrietta Creek Campground is accessible year-round by conventional vehicle and is on the Palmerston Highway about 38km from Innisfail and 25km from Millaa Millaa. The site includes a day use area and camping ground, with amenities, bordered by Henrietta Creek and surrounded by rainforest. Complete surveys by walking around the clearing and walking tracks to the creek, being careful of any traffic.

Look here for endemic species that venture into the lowlands such as the vulnerable Victoria's Riflebird and Wet Tropics Eastern Whipbird.



K-Tree Rd (near entrance from Palmerston Highway)

-17.60788; 145.77319 | 400m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is centred on a narrow gravel road through low-elevation rainforest within Wooroonooran National Park. It is accessed from the Palmerston Highway about 25km from Millaa Millaa and 30km from the junction of the Palmerston and Bruce Highways, near Innisfail. Two-wheel drive vehicles can travel beyond the survey site with care. Park in the small roadside areas where safe, to park out of the way of occasional other road users. Complete surveys by walking further along the dirt road, being careful of any traffic.

Look here for endemic species that venture into the lowlands such as the vulnerable Victoria's Riflebird and Wet Tropics Eastern Whipbird.

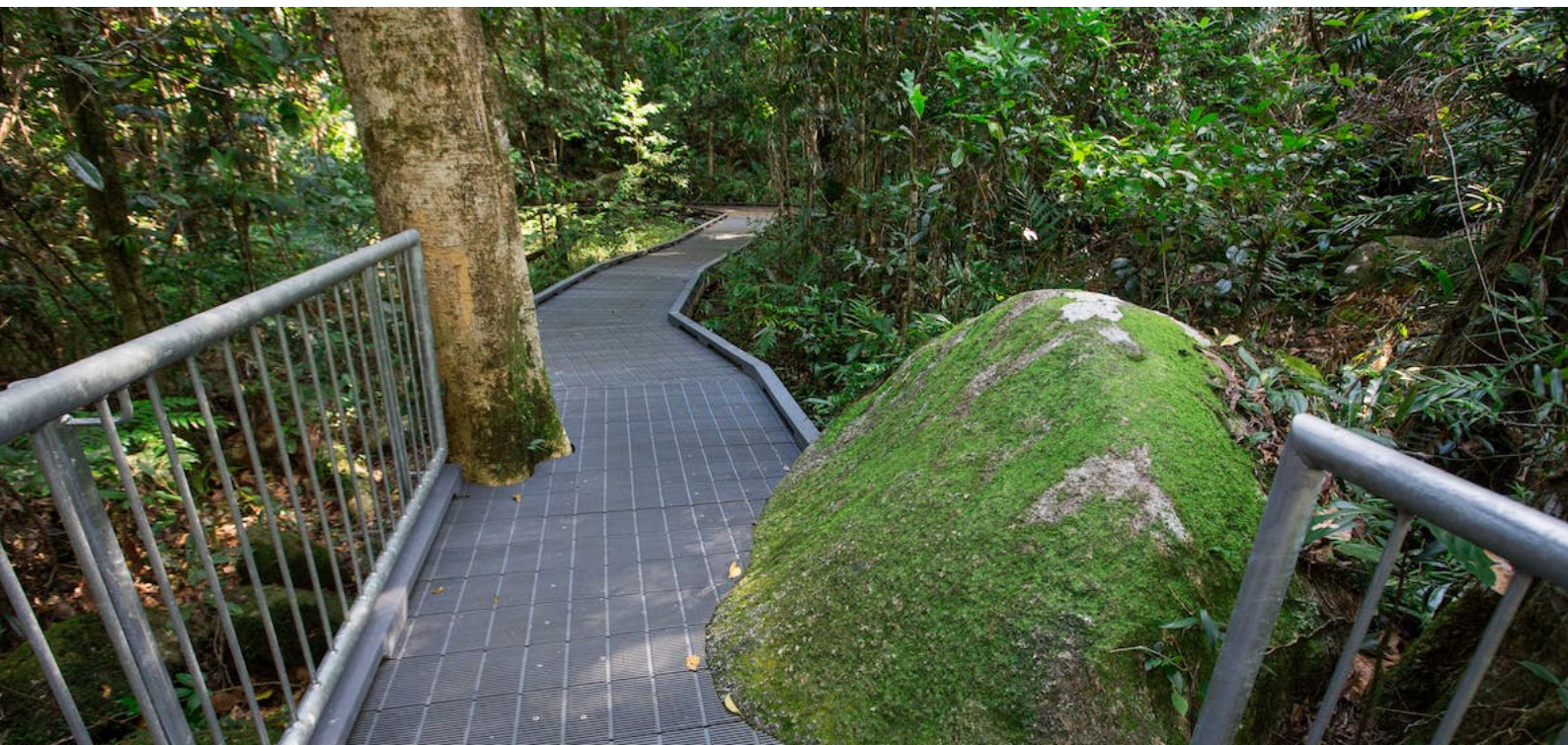
Josephine Falls

-17.43718; 145.85942 | 150m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is centred on a wheel-chair accessible paved path through lush lowland rainforest. Two hundred metre and/or 500 m transects are possible along the path by beginning 50m beyond the shelter at the track entrance. The track is very popular with visitors to the iconic Josephine Falls which are reached 600m from the carpark. Bird observers will need to be early to avoid the rush. Complete surveys by walking along the walking track.

Look here for endemic species that venture into the lowlands such as Chowchilla and the vulnerable Victoria's Riflebird.



Bartle Frere Walking Track (near entrance at Josephine Falls carpark)

-17.43750; 145.85776 | 150m asl
Suitable for 2 ha, 20 min survey

This site is situated at the eastern end of the narrow, rough hiking trail that leads to Broken Nose and the summit of Mt Bartle Frere. You can begin a 200m transect at the top of the first rise 50m from the track entrance at Josephine Falls carpark. From here the track is gently undulating, crossing a small stream around the 100m mark. Complete surveys by walking along walking track.

Look here for endemic species that venture into the lowlands such as Chowchilla and the vulnerable Victoria's Riflebird. Cassowaries are also present. For the very fit and well-prepared experienced hiker, further 2 ha, 20 min surveys are feasible further along the track with the potential to cover the full elevational range within Wooroonooran National Park. Because the track rises steeply, and the elevation changes rapidly, 500 m area searches (that cannot be tied to a specific elevation) are not recommended.

Goldfield Track (near entrance at Babinda Boulders)

-17.33355; 145.86571 | 80m asl
Suitable for 2 ha, 20 min and/or 500 m area searches

This site is accessed from the eastern entrance to the Goldfield Track which traverses lowland rainforest along Pandanus-fringed Babinda Creek. A small bridge marks the edge of Wooroonooran National Park and the start of this site, 1km from the track entrance at the Babinda Boulders carpark. Complete surveys by walking along walking track.

Look here for Wet Tropics endemics that venture into the lowlands including Macleay's Honeyeater and the vulnerable Wet Tropics Eastern Whiptail.



Gillies Highway Mulgrave River access

-17.13528; 145.76152 | 60m asl
Suitable for 2 ha, 20 min survey

Access this site behind the National Park sign in a small pull-over area on the south side of the Gillies Highway, approximately 5km west of Gordonvale. A small track behind the park sign leads through riparian vegetation and across a cane train track to the Mulgrave River. The site is affected by noise from the Gillies Highway so choose a quiet time of day and take care as there may be rubbish, such as broken bottles. Don't attempt to access the site if there has been a recent flood.

Look for a range of lowland and riparian bird species including Yellow Oriole and Yellow-spotted Honeyeater. Complete surveys by walking from the sign to the riverbank.



Behana Creek Gorge Track

-17.16756; 145.83130 | 60m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

The Behana Gorge Road turn off is about 6km south of Gordonvale, along the Bruce Highway. Follow the road for 4.6km until you reach the carpark. This site begins at the Wooroonooran National Park sign 500 m from the Behana Creek Gorge carpark on the paved walkers-only road to Clamshell Falls. Following a water supply pipe, the road traverses mixed vegetation with open forest species intermingled with riparian rainforest species. Complete surveys by walking along walking track.

Look here for Wet Tropics endemics that venture into the lowlands including Macleay's Honeyeater and the vulnerable Victoria's Riflebird.



Windin Falls Walking Track (near entrance from Gourka Road)

-17.364005; 145.7491817 | 740m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is situated at the beginning of the Windin Falls hiking trail. The site is reached via Gourka Road, which is 4WD only unless it is very dry. Location information can be found [here](#). The road into the National Park may be closed in the wet season. The initial kilometre or so of the walking trail is gently undulating and very birdy. Walk along the trail about 50m before commencing surveys. This track is also very popular with visitors to the iconic Windin Falls (Grade 4 track, 11.5km return). Bird observers will need to be early to avoid the rush. Complete surveys by walking along walking track. For the very fit and very well-prepared hiker, further 2 ha, 20 min surveys are feasible further along the trail with the potential to cover declining elevations. Because the track may change elevations rapidly, 500 m area searches (that cannot be tied to a specific elevation) are not recommended.

Upland endemic bird species can be found here including species of conservation concern such as bowerbirds, Atherton Scrubwren, Grey-headed Robin, Bower's Shrike-thrush, and Wet Tropics King-parrot.



Bartle Frere Walking Track (near entrance from Gourka Road, Butchers Creek) and/or Junction Camp site

-17.379351; 145.762748 | 700m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is situated at Junction Camp and the western end of the narrow, rough hiking trail that leads to the summit of Mt Bartle Frere. The camp site and trailhead are reached via Gourka Road, which is 4WD only unless it is very dry. Location information can be found here. The road into the National Park may be closed in the wet season. The initial section of the walking trail is wide and gently undulating. Begin surveys from Junction Camp and then enter the Bartle Frere trail from the carpark. Complete surveys by walking along walking track. For the experienced, very fit and very well prepared hiker, further 2 ha, 20 min surveys are feasible further along the trail with the potential to cover higher elevations on the western side of Mount Bartle Frere. Because the track rises steeply, and the elevation changes rapidly, 500 m area searches (that cannot be tied to a specific elevation) are not recommended.

Upland endemic bird species can be found here including species of conservation concern such as bowerbirds, Grey-headed Robin, Bower's Shrike-thrush, and Wet Tropics King-parrot.



Stockwellia Tree Track (on Gourka Road, Butchers Creek)

-17.378609, 145.740051 | 750m asl

Suitable for 2 ha, 20 min survey

The walking track can be found about 3.5km from the junction of Gourka Road and the old Cairns Track, on the right hand side of the road when heading to the Bartle Frere walking track. This site is along a rough, poorly marked trail, but you don't have to walk far to complete a 2 ha survey and the forest is lush and should be suitable for Fernwren amongst other high-altitude species. This walking trail drops in elevation so is not suitable for a 500 m area search. Complete surveys by walking along walking track.



Sutties Gap Road (Misty Mountains)

-17.637757; 145.633758 | 740m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is centred on a narrow gravel road through mid-elevation rainforest within Wooroonooran National Park. From Millaa Millaa, travel for 10.5km along the Ravenshoe–Millaa Millaa scenic drive (Old Palmerston Highway) and turn left into Maalan Road. After 6.5km turn left again into Sutties Gap Road and follow it until you reach the national park gate. Note that a 4WD vehicle is required in wet weather and the road may be closed in the wet season. The survey site is located about 400m from the national park gate. Park in the small roadside areas where safe, to park out of the way of occasional other road users. Complete surveys by walking along the dirt road being careful of any traffic.

Upland endemic bird species can be found here including species of conservation concern such as Fernwren, bowerbirds, Grey-headed Robin, Bower's Shrike-thrush, and Wet Tropics King-parrot.



Hinsen Creek trailhead off Sutties Gap Road (Misty Mountains)

-17.656266; 145.640895 | 680m asl

Suitable for 2 ha, 20 min and/or 500 m area searches

This site is centred on the first kilometre or so of the Hinsen Creek Trail, a narrow walking track through mid-elevation rainforest. From Millaa Millaa: travel for 10.5km along the Ravenshoe–Millaa Millaa scenic drive (Old Palmerston Highway) and turn left into Maalan Road. After 6.5km turn left again into Sutties Gap Road. Travel 7.4km along Sutties Gap Road (partially unsealed) to Hinson Creek trailhead. Note that a 4WD vehicle is required in wet weather and the road may be closed in the wet season. The survey site starts at the trailhead. Complete surveys by walking along walking track.

Upland endemic bird species can be found here including species of conservation concern such as Fernwren, bowerbirds, Grey-headed Robin, Bower's Shrike-thrush, and Wet Tropics King-parrot.



Birdata methods

Rainforest bird surveys

With dense vegetation and diverse species, surveying birds in the rainforest is a challenge. It is hard to see very far into the forest and so we are very dependent on hearing and identifying bird calls. As much as 80% of bird observations in the rainforest are identified from calls, and hearing a call is often what keys us in to later see a bird (Anderson et al. 2015). This complicates surveys because larger species are detectable over greater distances than smaller species and many species have seasonal differences in their calling behaviour (Anderson et al. 2015). Coupled with this, rare species can be hard to detect, and more time and area need to be covered to survey them sufficiently.

Birdata's 2 ha, 20 minute area search and 500 m area search survey methods both have features that make them useful tools for rainforest bird surveys. They each have advantages that make them complementary and, where possible, surveyors are encouraged to complete surveys using both methods. The free Birdata app and detailed instructions can be found here [Home | Birdata \(birdlife.org.au\)](https://birdlife.org.au).

2 ha, 20 minute area search

Generally, the more 'structured' or 'controlled' a survey is, the easier it is to compare with surveys done in different areas or at different times. The 2 ha, 20 min area search method is restricted both by survey area and duration so is our first choice of method for the Wooroonooran Challenge. This is because we're particularly interested in monitoring species affected by climate change, and we know that species are changing their elevational range in response to climate. To detect that change, being accurate with the elevations at which we conduct bird surveys is important. This method ensures altitude remains fairly consistent for the duration of the survey.

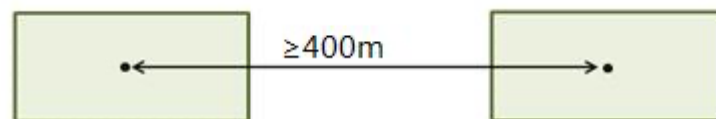
In theory, a 2 ha area can be configured in lots of different ways. In practice though, at our Wooroonooran monitoring sites where there is a road or walking track, a 200m x 100m search area is the most practical. A 200m walk along the road or track can be treated as a transect through the 2 ha area and this is appropriate because line transects are less prone to error than point counts in these settings (Anderson et al. 2015).



One of the useful things about this method is that it's constrained by time as well as area, and 20 minutes can be timed easily and accurately. You may walk a few meters more or a few meters less, but if you're watching and listening for birds systematically for 20 mins, you're going to be surveying around 2 ha.

Judging distances from bird calls, and whether they're 'in' or 'out' of the survey area is another factor surveyors are sometimes anxious about. Here we can take some assurance from a study on bird detectability in the Wet Tropics (Anderson et al. 2015) that found that the effective sampling distance for most species is within 30-60 m. A 200m x 100m search area is compatible with this because that's the approximate distance to survey either side of a 200m section of path, track, or road. Of course, some birds, such as large, loud species like the Pied Currawong, Victoria's Riflebird, and King Parrot can easily be heard beyond a 2 ha area. Try to judge the distance and be consistent, but don't let uncertainty put you off using this method. Remember the method is constrained by time as well as area.

If conducting multiple 2 ha, 20 min area searches, a minimum of 400 m should be left between surveys to avoid overlap.



500 m radius area search

The 500 m radius area search method is very flexible. Any sized area can be searched, so long as it is within 500 m of a central point. That means the area searched could be as much as 80ha, and cover as much as 1km. In Wooroonooran National Park, a survey over that large an area would have a high chance of covering more than one habitat or elevation. Sections of the Bartle Frere track, for instance, rise between 100 and 300m in elevation over 500 m of trail. In practice, area searches at Wooroonooran bird monitoring sites are best done over a maximum of 500 m of walking track or road so that changes in habitat or elevation are not excessive.

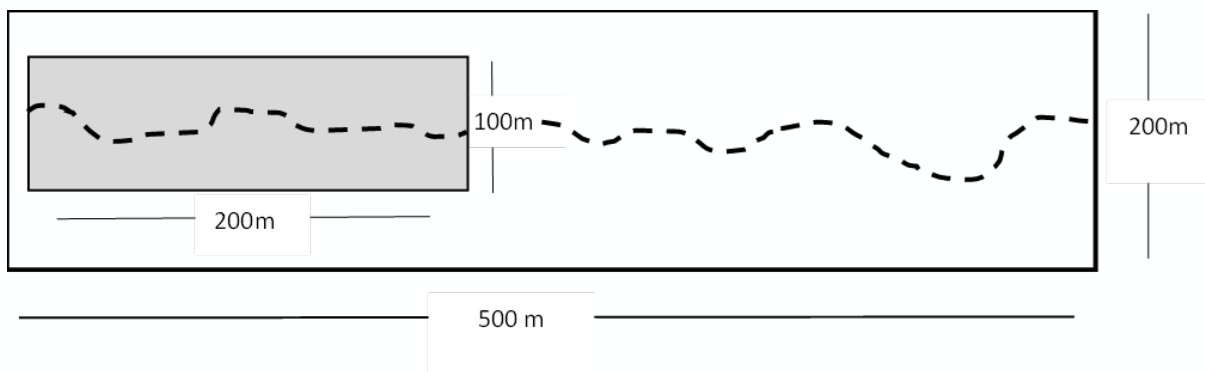
The duration of surveys is also flexible with this method. Surveys can last anywhere from 20 minutes to one week, though less than 24hrs is preferred by Birdlife.

Because it's not strictly time or area limited, this method is less rigorous than the 2 ha, 20 min area search and is less sensitive to changes in species' populations. However, this method does allow surveyors more time, and does allow a larger area to be sampled at one location. This can be very useful in rainforest where poor visibility, high species diversity, and rare species mean it can take longer than 20 minutes to survey accurately and thoroughly (Anderson et al. 2015). With a longer survey period, and larger area, there's a greater chance of finding the less common species – and many of the species we're most interested in are getting rarer, and harder, to detect. During rainforest surveys we

often need to follow up calls to ensure our identifications are correct so more time can be very useful, especially for less experienced bird watchers and visitors to the region. We suggest 30 minutes to one hour for the Wooroonooran bird monitoring sites.

Conducting 2 ha, 20 min and 500 m area searches in the same location

Many of the Wooroonooran bird monitoring sites can accommodate both 2 ha, 20 min and 500 m area search surveys. Where time allows, it's ideal to do both. These can be done sequentially using the Birdata app by first doing one survey and then the other (it doesn't matter which is done first)¹. The 2 ha search area is included in the wider area search but there is no overlap in records because the two surveys are separate in time. Areas effectively surveyed in sequential 2 ha, 20 min and 500 m area searches along a walking track would look like the diagram below.



To estimate distances, you can either:

- work out ahead of time how many steps you take to cover that distance
- measure road transects on your car's odometer
- use the Trip Computer function on your GPS if satellite coverage is reasonable (having it turned on before entering the forest helps)
- use a pedometer/fitness app

¹ Data entry for an embedded survey, which treats a 2 ha, 20-min survey as part of a 500 m area search, over-lapping in time, is only available on the Birdata website, not the mobile app.

Boost your Birdata

Ecological information is still lacking for many Wet Tropics species. We can value add to our Birdata surveys by recording any other potentially useful information in the sighting details. Observations of habitat use and breeding behaviour can help refine knowledge of species' preferred habitats and how they are coping in those habitats. This can give clues to the reasons for a species' sensitivity to climate change and whether there are any options for counteracting them.

Details you might record include:

- How many birds of each species are there? Count, don't just record presence.
- What's a bird eating? For example, is there lots of fruit available?
- Are any birds drinking? Which ones?
- Is there any courtship behaviour? Nesting? Young being fed?
- Is there feral animal sign? Invasive plants?

More Wooroonoran bird survey tips

- Have no more than three people doing a survey. More people may disturb the birds. Move slowly along the path or road, occasionally stopping quietly and listening for calls, also recording birds behind you if they are considered new birds. The amount of time spent at any point is dictated by bird activity. However, when doing a 2 ha, 20 min area search, it is important to balance watching bird activity against the need to cover the area during the survey time.
- Species totals represent a snapshot of individuals using the survey area. Look and listen ahead of you to reduce overcounting due to birds moving. Be conservative in recording detections as new individuals. Keep the search area in mind and try to discriminate between birds calling inside and outside the survey area.
- Complete surveys within one habitat type so records can be related to that one habitat. For example, if surveying along a road bordered on one side by forest and the other by paddock, survey the forest, or the paddock if you wish, but not both habitats at the same time. Include birds flying over the search area. They are traversing the habitat.
- Early mornings are best for bird surveys. Starting half an hour after dawn is a good way to avoid the noisy early risers that drown out quieter species and to avoid getting 'swamped' and unable to make realistic counts. Avoid wet, windy, or hot weather as these conditions may substantially depress bird activity. In summer, it's often too hot to survey birds past about 9 or 10 am.
- 8 x 42 binoculars are best for rainforest bird surveys.
- Don't use call recordings during surveys as this can disrupt the behaviour of birds at the site and affect survey results.

Health and safety

Familiarise yourself with BirdLife's Risk Assessment for this project (Appendix 1) and follow the guidelines for safe bird monitoring in Wooroonooran National Park including:

- Stay in pairs or small groups at all times.
- Ensure a responsible person (e.g. family member) knows where you are going and when you are expected to return.
- If surveying sites in more remote locations, carry maps and other navigations tools (phone navigational apps, GPS units) to navigate to and between the sites.
- Carry a mobile phone and keep it charged. Be aware that mobile reception is not available at some monitoring sites. Consider carrying a satellite phone and/or EPIRB/PLB (personal locator beacon).
- Wear appropriate clothing (generally long trousers and long-sleeved shirt in subdued colours) and sturdy footwear. Pack sunglasses, sun cream, gaiters, rainproof jacket and hat as appropriate.
- Check weather and road conditions before departing and postpone outdoor activities if road access is problematic or severe weather is likely.
- Carry a first aid kit, including snake bandage and wax strips for Stinging Tree stings.
- Consider COVID-19 requirements and carry hand sanitiser; disinfectant spray and/or wipes; tissues and mask.
- Take fresh drinking water and food.
- Pack a torch (with fully charged battery).
- Ensure your vehicle is equipped with recovery gear and that you know how to use it if you are accessing monitoring sites on remote National Park roads.



Useful resources

Birddata Web Portal <http://birddata.birdlife.org.au>

BirdLife [Home](#) | [BirdLife](#)

BirdLife Northern Queensland [Conservation & Birding](#) | [BirdLife Northern Queensland \(birdlifeq.org\)](#)

Bird calls: Xeno-canto [Australasia :: Collection Details :: xeno-canto](#)

Bird identification: <https://merlin.allaboutbirds.org/>

Climate change and the biodiversity of the Wet Tropics - Stephen Williams – Talk at Malanda, 5 April 2019 [\(119\) TKMG Tree Kangaroo & Mammal Group - YouTube](#)

Wet Tropics birds [Birds](#) | [Wet Tropics Management Authority](#)

Wooroonooran National Park [Wooroonooran National Park](#) | [Parks and forests](#) | [Department of Environment and Science, Queensland \(des.qld.gov.au\)](#)

References

Anderson, A.; Marques, T.A.; Shoo, L.P.; Williams, S.E. (2015) Detectability in audio-visual surveys of tropical rainforest birds: The influence of species, weather and habitat characteristics. PLOS One 10(6):e0128464

Garnett, S. T., Baker, G. B. (Eds) (2021). The Action Plan for Australian Birds 2020. CSIRO Publishing, Melbourne.

Kowalski, M.B., Soifer, L., Craig, M.D., Freeman, A.N.D. (2022). Lower reporting rates after two decades for most bird species at a Wet Tropics Field Station. Australian Field Ornithology 39: 31–41.

Williams, S.E. & de la Fuente, A. (2021). Long-term changes in populations of rainforest birds in the Australia Wet Tropics bioregion: A climate-driven biodiversity emergency. PLoS ONE 16, e0254307.

Appendix 1. Health and safety risk assessment

Remember you, as participants in this voluntary activity, have a responsibility to ensure your own health and safety and act in a manner that as far as possible does not compromise your safety or the safety of others. Check that the bird monitoring activity is within your capability. If in doubt check with your Doctor before you decide to participate.

It is important that each person undertaking bird monitoring activities in Wooroonooran National Park read the following risk assessment table and take personal responsibility for undertaking the risk mitigation measures to ensure your safety.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
Before and during activities. Includes travel to, from and within the field site.	Disease transmission between people and/or with other contacts. Bacteria or viruses may inadvertently be caught or passed on by people (e.g., COVID-19, influenza).	Illness from viral or bacterial infection. Transmission of bacteria/virus to vulnerable people who may suffer serious or fatal illness.	High Risk	<ul style="list-style-type: none"> • Check and follow Queensland's COVID 19 requirements. • It is everyone's responsibility to decide if they should participate in the activities (based on their own individual health, mobility and circumstances). If participants are uncertain whether they should participate, we suggest you consult with your doctor. • If feeling unwell, do not attend and/or go home, even if symptoms are mild. • Wearing of masks is at your own discretion. • Promote/practice good respiratory hygiene (e.g. cover nose and mouth when coughing/sneezing with tissue or mask, dispose of used tissues and masks safely, and perform hand hygiene after contact with respiratory secretions). • Carry own hand sanitiser and disinfectant wipes and use them. • Avoid direct contact with other people, such, as hand shaking and observe the 1.5 m distancing.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
				<ul style="list-style-type: none"> Where possible, people should also avoid sharing equipment (e.g. pens, binoculars etc.). <p>For more information: COVID-19 in Queensland</p> <p>➤ https://www.qld.gov.au/health/conditions/health-alerts/coronavirus-covid-19</p>
Driving to survey site	Vehicle accident.	Involvement in a vehicle accident could lead to injury or death to people and/or third parties.	High Risk	<ul style="list-style-type: none"> Ensure you hold a valid/up-to-date driver's licence. Plan trip in advance, check vehicle (e.g. tyre wear), and ensure it is safe to travel. Plan to avoid rush hour traffic. Check weather conditions before departing and postpone outdoor activities if severe weather is likely. Allow for rest periods. Never drive if drowsy. Identify appropriate travel route and directions prior to departure. Carry a map. Do not use a mobile phone whilst driving. Drive safely and sensibly (e.g. no alcohol, drugs, speeding, tail-gating). Ensure car has a first aid kit and you know how to use it. Call emergency services immediately, if necessary.
Driving to survey site.	Vehicle breakdown.	Risks potentially include (but are not restricted to) injury during attempted repairs, exposure to inclement	Low Risk	<ul style="list-style-type: none"> Plan trip in advance and check vehicle (e.g. tyre wear, jack, wheel brace, recovery gear, petrol, oil and water) before departure. Ensure someone responsible is aware of your trip plans.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
		weather and lack of drinking water and other sustenance.		<ul style="list-style-type: none"> • Always carry a mobile phone with fully charged battery. • Check spare wheel before departure. • Check you have RACQ or similar telephone numbers (or appropriate roadside assistance number) with vehicle. • Do not undertake outdoor activities alone. • Always carry sufficient water and food for remote area surveys.
Driving to survey site.	Getting lost.	Risks potentially include (but are not restricted to) bogging on unfamiliar roads and lack of drinking water and other sustenance.	Low Risk	<ul style="list-style-type: none"> • Always inform a responsible person (e.g., family) of your trip plans including estimated time of return. Provide instructions to take appropriate action if you have not checked in by a designated time. • Do not drive on roads you do not know unless you have one or more of the following: <ul style="list-style-type: none"> ➤ You are with someone who knows the area well ➤ You have detailed maps of the travel route to, and site ➤ You obtain instructions from someone beforehand that knows the site well. • Carry maps and other navigational tools (GPS and apps for mobile phones) with you and ensure that the tools are functioning and fully charged. • Always carry a mobile phone with a fully charged battery (or satellite phone and/or personal emergency locator beacon (EPIRB) in remote areas). • Do not undertake outdoor activities alone.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
				<ul style="list-style-type: none"> • Always carry additional water and food. • Ensure car has a first aid kit and you know how to use it. Call emergency services immediately, if necessary.
Outdoor activities	Spreading a biosecurity risk such as weed seeds or soil borne disease	Damage to the environment from invasive species	High Risk to pristine environments	<ul style="list-style-type: none"> • Everyone is to ensure that their clothes, footwear, vehicles and equipment are clean before travelling to a site, and are cleaned prior to the next outdoor activity. • Stay informed and follow advice given by national, state and local authorities.
Outdoor activities	Tripping/slipping hazards.	Injury (or in worst case, death).	High Risk	<ul style="list-style-type: none"> • Check weather conditions before departing and postpone outdoor activities if severe weather is likely. • Always wear well-fitting, sturdy closed in footwear that provides ankle support • As far as possible, remain on well-formed tracks. • Look for trip hazards and let other team members know if you see them. • Do not walk on steeply sloping or in heavily vegetated areas. • If walking over rough surfaces, check stability underfoot before placing full weight on surface. • Cease walking when writing notes or using binoculars. • Carry a well-equipped and up-to-date first aid kit and know how to use it. Call emergency services (000) if needed. • Always carry a mobile phone with a fully charged battery.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
Outdoor activities	Exposure to snake bite risk.	Sickness (or in worst case, death).	High Risk	<ul style="list-style-type: none"> • Wear appropriate PPE, including long -sleeved shirt, long trousers, sturdy closed in footwear and gaiters. • Always walk in pairs or in a team. • Always carry a mobile phone with a fully charged battery. • Regard all snakes as venomous and do not touch, handle or provoke any snakes. • Know and understand appropriate treatment for snake bites and carry a snake bite first aid kit with you. • Always assess the situation before walking anywhere and look for the path of least risk (avoid long grass). • Walk in a manner that will forewarn snakes of your presence. Generally they will move out of your path if they are present. • If a snake is encountered, stop and calmly back away. If the snake is trying to get away from you, allow it to move in its desired direction to seek shelter. Remain calm and move slowly away. • If snake bite is suspected, apply snake bite bandages as per first aid training/instructions in snake bite kit. Always call emergency services (000) if snakebite is suspected. • Always inform family/friend of your trip plans and estimated time of return. Provide instructions on action to take if you have not checked in by a designated time.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
Outdoor activities	Exposure to dehydration/sunstroke.	Sickness (or in worst case, death)	Moderate Risk	<ul style="list-style-type: none"> • Check weather forecast before planning outdoor activities and postpone if severe weather is likely. • Avoid outdoor activities on days above 35°C and days declared Total Fire Ban days by the QFES. Check the QFES website (https://www.qfes.qld.gov.au/safety-education/using-fire-outdoors/fire-bans-and-restrictions) if unsure of conditions. • Wear appropriate PPE, such as sunscreen, a hat, long-sleeved shirt and long trousers. • Ensure adequate hydration and carry sufficient water (including electrolytes). • Always carry a mobile phone with a fully charged battery. • Always walk in pairs or in a team. Never walk alone at remote sites. • Always inform family/friend of your trip plans and estimated time of return. Provide instructions on action to take if you have not checked in by a designated time. • Be aware of the signs of heat stress and heat stroke. https://www.qld.gov.au/health/staying-healthy/environmental/heatsafe. If heat stress is detected take immediate action to cool the affected participant down. If heat stroke is suspected call 000 and ask for an ambulance.
Outdoor activities	Exposure to hypothermia.	Sickness (or in worst case, death) to participant.	Moderate Risk	<ul style="list-style-type: none"> • Check weather forecast before planning outdoor activities and postpone when severe weather is likely.

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
				<ul style="list-style-type: none"> Plan site visit and wear (or carry) appropriate wet weather/cold weather gear when likely to be needed, such as rainproof jacket and warm hat. Always carry a mobile phone with a fully charged battery. Always walk in pairs or in a team. Never walk alone at remote sites. Always inform family/friend of your trip plans and estimated time of return. Provide instructions on action to take if you have not checked in by a designated time.
Outdoor activities.	Exposure to biting/stinging animals/plants.	Sickness (or in worst case, death).	Moderate Risk	<ul style="list-style-type: none"> If you have a known allergy, ensure you carry all necessary medication with you at all times (for example, an epi pen or antihistamines). Inform your team members of allergies, and the action they may need to take, if required. Plan the site visit in advance and wear appropriate PPE, including a long-sleeved shirt, long trousers, sturdy boots and gaiters. Tuck pants into socks to minimise likelihood of ticks and other small biting animals (e.g., spiders, bull ants) accessing bare skin on legs. Apply insect repellent if appropriate. Always assess the situation before walking anywhere and look for path of least risk. Ensure a well-equipped and up-to-date first aid kit is in the vehicle, and carry this when away from the vehicle. Know how to use your first aid kit. Call

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
				<p>emergency services (000) if needed.</p> <ul style="list-style-type: none"> • Always carry a mobile phone with fully charged battery. • Always walk in pairs or in a team. Never walk alone in a remote area. • Always inform family/friend of your trip plans and estimated time of return. Provide instructions on action to take if you have not checked in by a designated time.
Outdoor activities.	Exposure to drowning hazard.	Drowning.	Moderate Risk	<ul style="list-style-type: none"> • Never enter a pond/river. • Avoid approaching closer than 2 m to water's edge, particularly where there is a slope or dense vegetation. If you can't see the edge do not proceed. • Never walk alone in a remote area.
Outdoor activities.	Exposure to animal attack. Eg wild pigs, cassowary	Injury (or in worst case, death)	Significant Risk	<ul style="list-style-type: none"> • Before commencing the outdoor activity, monitor the news and other networks to identify the likelihood of aggressive animals in the area. If identified, reconsider need for outdoor activities. • In the field, monitor area for signs of dangerous animals such as wild pigs or aggressive cassowaries. • If confronted by an aggressive animal, remain calm and move slowly away, facing the animal, without making eye contact, leaving by the shortest and safest route. Return to the safety of your vehicle. • Always carry a well-equipped and up-to-date first aid kit and know

Activity	Hazards	Risk	Risk rating	Risk mitigation measures
				<p>how to use it. Call emergency services (000) if needed.</p> <ul style="list-style-type: none"> • Always carry a mobile phone with a fully charged battery. • Always inform family/friend of your trip plans and estimated time of return. Provide instructions on action to take if you have not checked in by a designated time. • Never walk alone in a remote area.