

Ground parrot

Pezoporus wallicus wallicus

Vulnerable (*Nature Conservation Act 1992*) |
Queensland Herbarium & Biodiversity Science

Identification

The ground parrot is 30-33 cm in body length; and tail 18 cm. Males and females appear alike with distinctive grass green plumage, black streaking on the head and hindneck, prominent pale-yellow wing bars, and black and yellow barring on the abdomen, thighs, and under-tail coverts (Higgins 1999). They have a distinguishing bright red band above the cere (at the base of the upper bill mandible). Iris is pale yellow; the bill is dark grey (Higgins 1999).

Juveniles lack a red band above the cere, have duller yellow-olive plumage, and thicker, bolder black markings on the head and breast. When newly fledged, iris is dark grey-brown in colour (Higgins 1999).

Calls are distinct and consist of whistling notes arranged in a variety of compositions of ascending scales (McFarland 1989), some with monotones, within the 2-6 kHz range (Chan and Mudie 2004).

Distribution

The ground parrot occurs in fragmented populations in coastal areas of south-east Queensland, New South Wales, and Victoria, as far south as Portland. Within Queensland it is restricted to the southeast coastal region from K'gari (Fraser Island) near Maryborough in the north to Mooloolah River National Park in the south (Higgins 1999), although recent evidence suggests it has not occurred in Mooloolah River National Park for at least a decade (K. Aland pers. comm.). The southern limit is likely to be near Mt Coolum where the population is likely to be down to near local extirpation levels (K. Aland pers. comm.). The largest Queensland population occurs in Great Sandy National Park (Cooloola section) (McFarland 1991a).

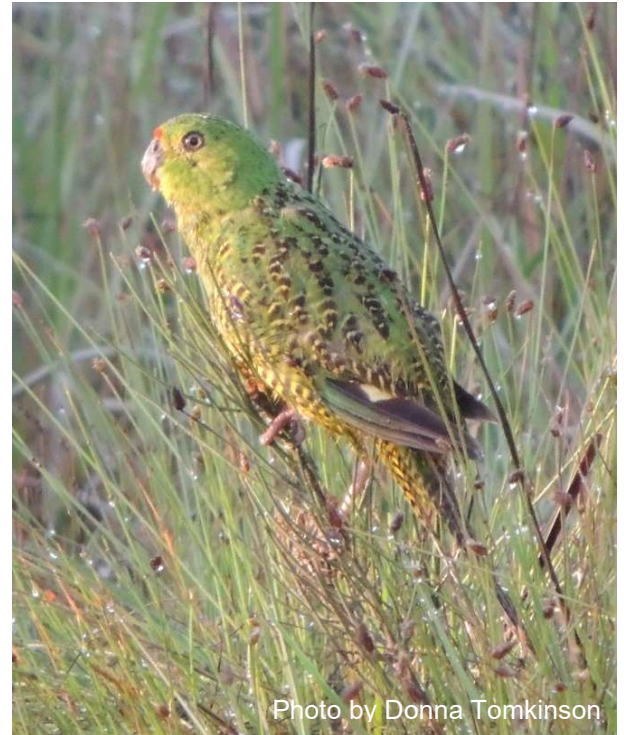
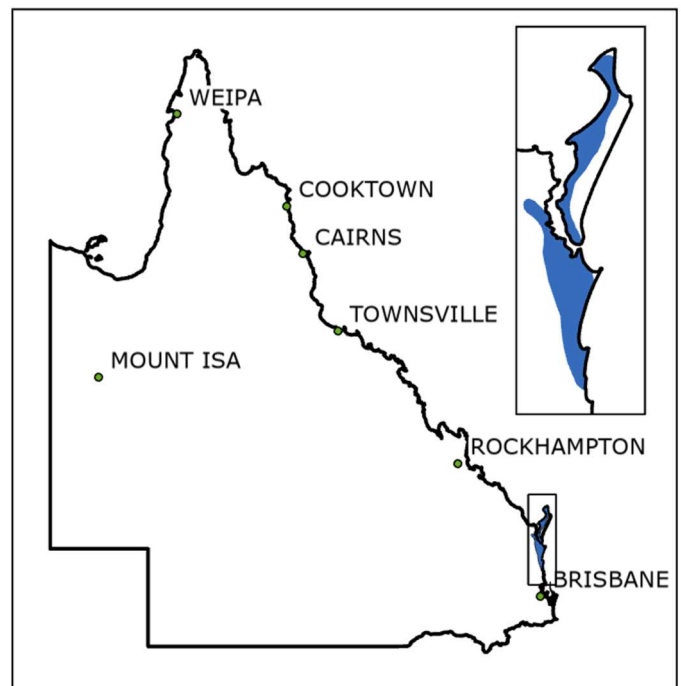


Photo by Donna Tomkinson



Habitat

This species prefers dry or moist graminoid heathlands and sedgelands, with a dense foliage cover and a high density of favoured food plants. In Great Sandy National Park (Cooloola section) they prefer *Caustis-Empodisma* heathlands, *Ptilothrix* heathlands and *Baumea* sedgelands (McFarland 1991a). Suitable habitat includes Regional Ecosystems 12.2.12, 12.2.15 and 12.3.13 (Spearritt and Krieger 2007; Queensland Herbarium 2023). These ecosystems are particularly fire prone and changes in ground parrot densities are strongly influenced by time since last fire. This species can re-colonise burnt habitat after 1-2 years and densities peak 5-8 years postfire (McFarland 1989); but will also re-occupy burnt habitat within six months of fire, after spring/early summer with good rain (K. Aland pers. comm.). Birds are also known to occur in long-unburnt habitat, sometimes at high densities (Baker et al. 2010).

The ground parrot is mainly sedentary and present year-round, with seasonal changes in local population densities due to, for example, the dispersal of young birds in April and May (McFarland 1989). Pairs range over 8-20 ha, depending on the amount of time elapsed since the habitat was last burnt (Meredith et al. 1984). In Great Sandy National Park (Cooloola section), the average home range of individual birds was 9.2 ha (adults 5.6 ha, subadults 13.9 ha). However, daily foraging areas are much smaller, usually 10-20% of their home range, and birds move foraging locations within home ranges every few days (McFarland 1991b). Birds may use the same home range for several years provided the habitat remains suitable (McFarland 1991a, b, c).

Ground parrots forage on the ground mainly amongst dense vegetation, but occasionally in clearings or disturbed areas such as mown airstrips or recently burnt sites (DCCEEW 2024; Smith et al. 2026), and feeds on seeds from at least 40 species of plants (McFarland 1991b). Important food species that produce seed throughout the year include curly sedge *Caustis recurvata*, devil's rice *Conospermum taxifolium*, wallum grevillea *Grevillea leiophylla*, *Pseudanthus orientalis* and *Sprengelia sprengelioides*, and seasonal but frequently eaten seeds include flat cord-rush *Eurychora complanata*, *Anthelepis paludosa*, chaffy scale-rush *Lepyrodia scariosa* and *Epacris* spp. Seeds taken range in size from 0.6 – 7.0 mm (McFarland 1991b).

In Great Sandy National Park (Cooloola section) this species roosts and nests in dry heathland, in habitat that has not been burnt for at least 3-4 years. Nests are situated on the ground, well concealed beneath low, dense vegetation such as sedges, rushes, ferns, and shrubs including *Xanthorrhoea*, *Banksia*, rope rush *Empodisma* and *Leptospermum* (DCCEEW 2024). Nesting pairs do not maintain territories but may defend the nest site (McFarland 1991c). Nesting females do not always flush when disturbed. Breeding occurs between July and November with most records for egg laying in SEQ occurring August to September (McFarland 1991b, c).

The ground parrot is cryptic, diurnal, and favours walking/running (cursorial), flying only at dawn and dusk. It's proclivity for walking through dense ground vegetation means it is difficult to observe and makes its calling important for detection. The species calls predominantly during nautical and civil twilight in the morning and evening, although they can be heard calling at any time of the day, particularly when overcast (McFarland 1989; Hines et al. 2017). While McFarland (1991b, c) found little change in rates of calling by this species throughout the year in south-east Queensland, Prior et al. (2023) found variability in calling rates at different times of the year, peaking in winter, within Noosa National Park.

Seasonal and timing considerations

Present throughout the year where they occur so surveys for this species can be carried out at any time of the year. However, surveys should encompass civil and nautical twilight periods in the morning and evening when peak calling times occur. Detectability may be greater during the winter breeding period.

Recommended survey approach

Survey approaches should focus on the species' calls to maximise the likelihood of detecting ground parrots in the project area. Ground parrots will respond to play-back calls, and while this technique can be used as a method to lure birds into mist nets (Chan and Mudie 2004, DEWHA 2010), call responses to playback are unknown (DEWHA 2010). The survey approaches given below involve minimal environmental impact, are reliable, and well established as methods used to detect the species. One or more of these survey techniques is recommended:

Automated acoustic recording

Ground parrots can be reliably detected when present using automated acoustic recording. While calls are clear and distinctive, call detection distance decreases during periods of strong winds, rain, or strong surf noise (Meredith & Isles 1984; Baker et al. 2010; Hines et al. 2017), and analysis of recordings collected during such conditions should be avoided where possible. Conversely, mild upwind and line of sight calling might also improve detectability (Thomas et al. 2020). Sampling will also be affected by the type of acoustic recorder (make and model), gain settings and sampling rate, so these should be reported. For example, interference by calling white-cheeked honeyeater *Phylidonyris niger* and wallum froglet *Crinia tinnula* can reduce data quality when factory settings for microphone gain are used (K. Aland pers. comm.).

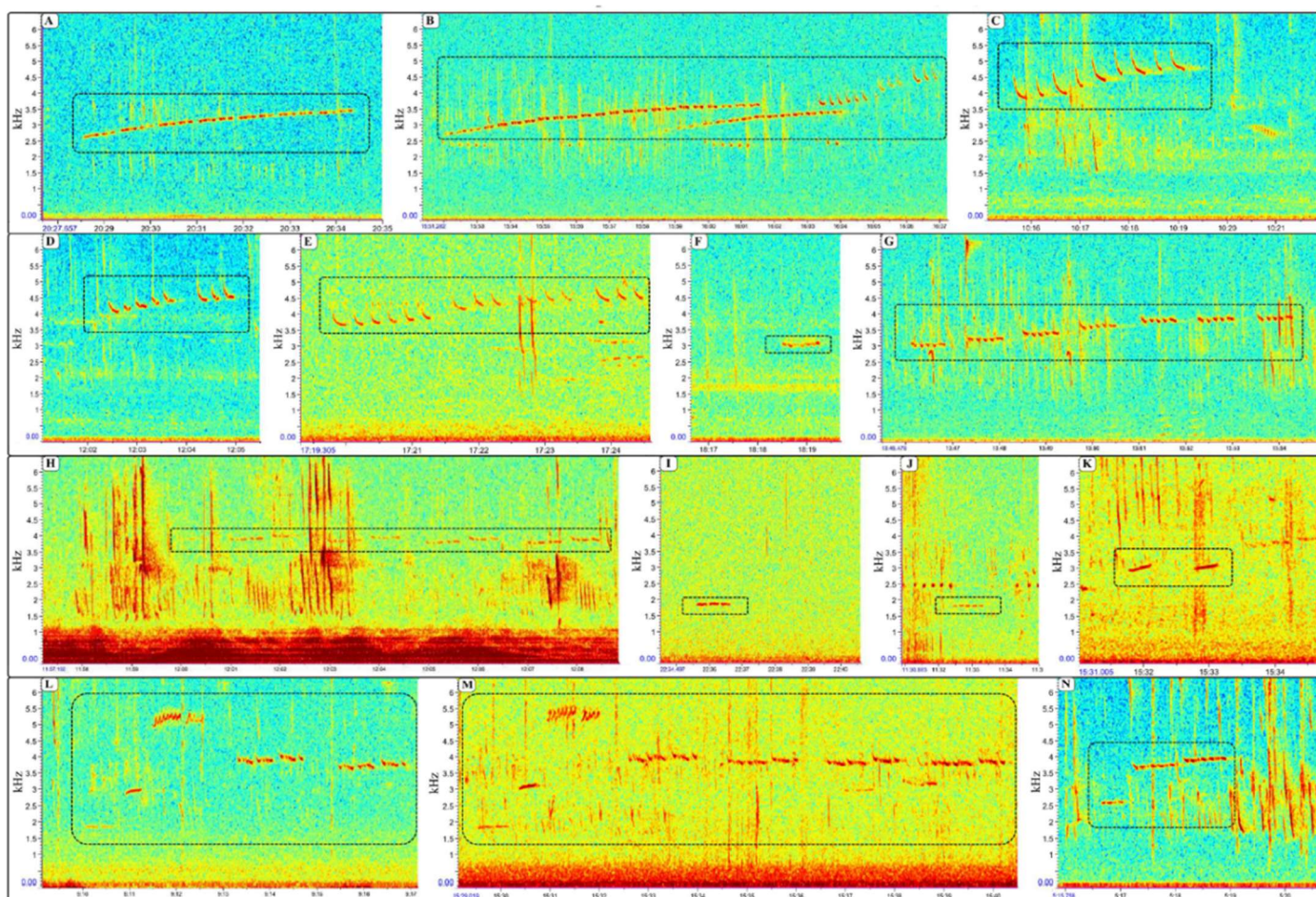


Figure 1. Examples of sonogram images of calls made by ground parrot *Pezoporos wallicus* (within black boxes) in the context of background noise, from Smith et al (2026). Call types include: 'rising' calls (shown in A, B, K), 'double rising' calls (in C, D, E), 'stutter rising' calls (in G, N), ascending and monotone syllables include 'step repetitive' calls (in H, L, M) and monotone notes only of 'level' calls (in F, I, J).

Calling peaks around civil dawn and dusk, specifically 20 minutes prior, to 10 minutes post-civil dawn and from 10 minutes prior, to 20 minutes post-civil dusk. Calling is generally higher and more detectable in the evening than morning but can be highly variable between days (Smith et al. 2026). Therefore, automated acoustic recording schedules are best focussed on either a combination of morning and evening recording OR only evening recording, and survey over longer time spans than a single day (see table below).

Detection probability of ground parrot under conditions of low ambient noise from wind, rain, surf and/or insects, using one-hour automated acoustic recording sessions at occupied sites was estimated to be 0.47 overall within Great Sandy National Park (Cooloola section) during the breeding season, with variation by time of sampling (morning = 0.38; evening = 0.55, Smith et al. 2026). Based on these estimates, achieving 95% confidence that a heath site within the coastal lowlands of south-east Queensland is unoccupied by the species requires: a minimum of five one-hour acoustic recordings over three days when automated acoustic recording schedules encompass both mornings and evenings; a minimum of six one-hour acoustic recordings over six days for exclusively morning sessions; or a minimum of four one-hour acoustic recordings over four days for exclusively evening sessions (Smith et al. 2026).

Selection of an appropriate survey schedule involves a trade-off between the time required to analyse recordings (hours) and the number of survey days available. Site occupancy may vary seasonally, potentially influencing detectability (McFarland 1989), so incorporating a seasonal sampling component may be warranted.

Aural surveys

Ground parrots feed singly, in pairs or small groups on the ground and are rarely seen in the dense heath before they flush (DCCEEW 2024). It is also very difficult for an observer to hear calls while moving through the heath (DEWHA 2010). Therefore observer-based aural surveys from a fixed point at each site within the project area are recommended, rather than walking transects. Baker et al. (2010) suggest under optimum conditions (no or low ambient noise), ground parrot calls can be heard up to 400 m away, giving a listening area of 50 ha. Sampling periods should encompass twilight periods (civil and nautical), and surveys must be conducted over longer time spans than a single day (see table below). Sessions should be conducted for a minimum of 30 minutes incorporating civil dawn (20 minutes prior to and 10 minutes post-civil dawn) and civil dusk (10 minutes prior to and 20 minutes post-civil dusk).

Survey effort guide

This is the minimum effort required to detect the species' presence for each survey technique within south-east Queensland during **optimal survey conditions in suitable habitat** (low wind, low rain and low ambient noise). It is based on published data on detection probabilities for ground parrot by Smith et al. (2026). Survey periods outside the winter breeding period may require additional effort but could be beneficial to detect seasonal movements, particularly by juveniles. For example, breeding can be detected in a heath patch by sampling every second or third day from June to November (inclusive) and identifying begging calls of chicks (similar to female begging calls in courtship) which appear as multiple individuals calling at the same time on spectrograms (K. Aland pers. comm.).

Other survey objectives (e.g. monitoring population trends, documenting fledging or recruitment, importance of the project area for the species, acoustic localisation using arrays) should be specifically stated and would require further survey effort. These might also involve the emerging use of eDNA assays and drone surveys of habitat (L. Prior, pers. comm.).

Per 50 ha of suitable habitat within the project area, during reasonable survey conditions

Survey technique	Minimum Effort	Minimum number of days
Automated acoustic recording:		
Morning and evening	5 hours	3
OR Evening only (reasonable survey conditions)	4 hours	4
Aural survey (morning and evening)	5 hours	3

e.g. one-hour acoustic recording in the evening per day for 4 days of reasonable weather (no, or light rain and wind). A longer deployment period (e.g., 2 weeks) should ensure that at least 4 days of suitable weather conditions are achieved.

Deploy acoustic recorder on a post just above heath (not up in wind or down in vegetation).

Ethical and handling considerations

- This species is generally quite approachable; however, avoid extremely close-range inspection of birds during breeding and feeding.
- Every effort should be made to minimise disturbance of nesting sites.
- These survey methods do not involve handling, trapping, or flushing of birds and therefore have a minimal direct impact on the species.
- Minimise movements and survey team size in heath. Repeated or regular access through heath via the same route creates a potential access route for fox and/or cat. This may increase predation risk.

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Citation

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