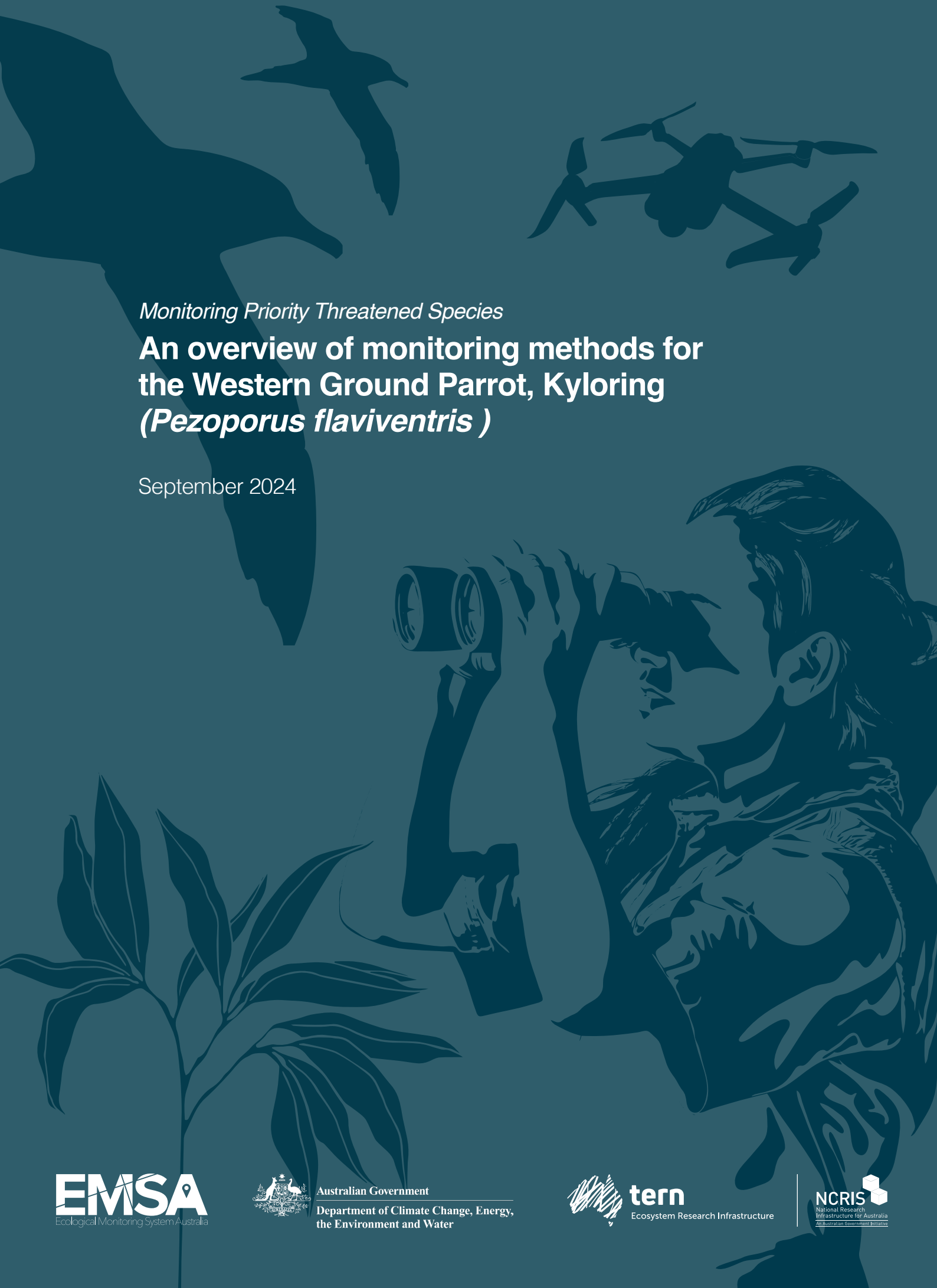

*Monitoring Priority Threatened Species*

# An overview of monitoring methods for the Western Ground Parrot, Kyloring *(Pezoporus flaviventris )*

September 2024

EMSA
Ecological Monitoring System Australia

Australian Government
Department of Climate Change, Energy, the Environment and Water

tern
Ecosystem Research Infrastructure

NCRIS
National Research Infrastructure for Australia
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## Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.

## Copyright



## Disclaimer

# About

This literature overview collates information on one of the 110 priority threatened species identified in the *Threatened Species Action Plan 2022-2032* and has been reviewed by invited practitioners experienced in monitoring the species.

The *Survey Guidelines for Monitoring Threatened Species* project, a collaboration of the Department of Climate Change, Energy, the Environment, and Water (DCCEEW) and the Terrestrial Ecosystem Research Network (TERN), aims to improve our knowledge of threatened species by enhancing accessibility and sharing of quality scientific threatened species data. By developing best practice field survey guidelines and recommendations, practitioners will be better equipped to conduct standardised, repeatable surveys.

By identifying the monitoring methods typically implemented by practitioners, documenting and assessing the techniques known to work, and identifying opportunities to standardise the methods, we can move towards ensuring all monitoring is species-appropriate, comparable between practitioners and populations, and repeatable over time. Further, together with consistent terminology, guidelines, instructions, and data collection, we can refine efforts and resources to measure and share information. Data collected using robust, standardised methods will improve our knowledge of threatened species and underpin threatened species recovery at scale. This project is essential to establishing monitoring protocols and data repositories to enhance the accessibility and sharing of threatened species data.

TERN has prepared the literature overviews for the Department of Climate Change, Energy, the Environment, and Water. For further information, please visit the EMSA Threatened Species Survey Guidelines website. Additional information, particularly monitoring methods and techniques not included that should be considered, can be brought to the author's attention by emailing tern@adelaide.edu.au for consideration for future updates.

# Contents



## Tables

# 1 Background

## 1.1 Conservation status and species trajectory

### 1.1.1 Current EPBC Act status

- Critically Endangered

### 1.1.2 Summary of data held in the Threatened Species Index

The Threatened Species Index (TSX) provides reliable and robust measures of change in the relative abundance of Australia's threatened and near-threatened species at national, state and regional levels. Understanding these changes in species populations is crucial for monitoring Australia's conservation progress and allows users to measure and report on the benefits of conservation investments, and to justify and design targeted management responses. Currently, the index is restricted to birds, plants and mammals, with new groups to be added in the near future.

The table below summarises Western Ground Parrot data held in the TSX. More information on the TSX, including how to contribute threatened species monitoring data to the index, can be found at tsx.org.au

Table 1. Summary of Western Ground Parrot data held in the Threatened Species Index

| TSX information | Western Ground Parrot data held in the TSX |
|---|---|
| Data held in the TSX | Yes |
| Number of data sources | 1 |
| Number of unique sites | 2 |
| Average time series length | 9 |
| Average number of sampling years | 4 |

## 1.2 Distribution

- Western Ground Parrots historical distribution encompassed the south coast from Cape Leeuwin in the extreme south-west of WA, through to the Cape Arid area, about 150 km east of Esperance (DPaW 2016a).
- By 2000, the species was known from only three areas, but the last record from the Waychinicup-Manypeaks area near Albany was in 2003 (Berryman et al. 2010).
- Presently, Western Ground Parrots are only known from within the south-eastern part of Cape Arid National Park and adjacent areas of Nuytsland Nature Reserve (DPaW 2016a).

## 1.3 Habitat

- The typical habitat of the Western Ground Parrot is low, mid-dense heathland to 0.5 m in height, often with scattered stunted mallee (e.g. Gilfillan *et al.* 2006).
- The heathland habitat the species prefers (both historical and current distribution) is characterised by a high floristic diversity, i.e. an average of around 70 plant species per 10 x 10 metre area (Fitzgerald River National Park), and almost as high in Cape Arid National Park (e.g. Gilfillan *et al.* 2006).
    - Fitzgerald River National Park, constitutes one of the most significant elements of the 'south-

west Australian biodiversity hotspot' (Hopper and Gioia 2004)" (DPaW 2016a).

- The Western Ground Parrot prefers areas higher in the landscape, distant from rivers, on gently sloping to level habitat, with an intermediate cover of vegetation (Burbidge *et al.* 1989; Gibson *et al.* 2007; DPaW 2014), and where there is a mosaic of vegetation ages.

## 1.4 Ecology

- The dominant families consumed by the Western Ground Parrot are Cyperaceae, Ericaceae, Fabaceae and Proteaceae (Newbey 2016).
- The Western Ground Parrot is a medium-sized ground-dwelling bird (DCCEEW 2018).
- As a ground-dwelling bird the Western Ground Parrot spends the majority of their time on the ground for feeding, resting, and nesting, flying only when light is low (DPaW 2016b).
- The current total population is now quite small and currently thought to be less than 150 birds (DPaW 2016a).
- The Western Ground Parrot relies on relatively moderate (5–10 years post-fire) to long (10+) intervals between fire events for population persistence (Meredith *et al.* 1984; Burbidge *et al.* 2007).

## 1.5 Threats

- Frequent fire causes the loss of functional and structural attributes that individuals rely on for food resources and protection from predators (Burbidge 2003; von Takach et al. 2022).
- The population is in decline as a consequence of higher fire frequencies, introduced predators and reduced rainfall (DCCEEW 2018).

# 2 Existing monitoring methods

## 2.1 Summary of existing methods used

- Direct observation
- Camera trapping
- Call surveys (autonomous recording units; ARUs)

## 2.2 Existing survey requirements

- Optimal time of year/season/climate conditions (timing with resource availability etc)
  - Dawn and dusk for surveying calling birds (covered using ARUs), with no seasonal variation in calling described in WA (Burbidge et al. 2007).
  - Peak call detection occurs 30–45 minutes after sunset (DEWHA 2010)
- Optimal location of surveys
  - "now known with certainty only from the south-eastern part of Cape Arid National Park and adjacent areas of Nuytsland Nature Reserve" (DPaW 2016a).
  - Fitzgerald River National Park should continue to be monitored, though no detections since 2012.
- Minimum survey effort
  - Months of call recording ecographs required.
- Survey personnel
  - None have been identified to date.
- Other factors:
  - None have been identified to date.

## 2.3 Existing protocols

Existing protocols identified are identified in Table 2.

Table 2. Survey guidelines, protocols, and key resources that identify Western Ground Parrot monitoring methods

| Protocol | Comments | Reference |
|---|---|---|
| The Survey Guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the EPBC Act | Outlines suitable survey methods, as follows: "With multiple observers, point surveys of suitable habitat most useful with observers spaced about 400 m apart in fixed locations before sunrise and after sunset to detect distinctive calls. With lone observer, transect-point surveys during the same period. Note: it is very difficult for an observer to hear calls while moving through the heath. Broadcast (playback) surveys may also be useful, especially before and during the breeding season, and best done under overcast conditions but response to playback unpredictable." | (DEWHA 2010) |

- 

## 2.4 Methods to consider further

The methods listed below have been identified as potential methods and techniques to survey for the species, either to identify presence or absence or to assist in determining population size and status. Further review of the literature and consultation with experts is required, particularly to identify and assess specific techniques for examining population ecology factors.

### 2.4.1 Available methods

- Point surveys (DEWHA 2010)
- Broadcast surveys (DEWHA 2010)
- Autonomous recording units (ARUs) and the software to automate the analysis of the ecograph files.
- Calling activity surveys (Comer *et al.* 2020).
- Observers have used observational and listening approaches (e.g. Bevege 1968; Burbidge *et al.* 1989; Bryant 1991; McFarland 1991) but, at least in Western Australia, listening for calls is the best way to survey for the presence of birds or to estimate their relative abundance (Cale and Burbidge 1993; Burbidge *et al.* 2007).

### 2.4.2 Additional methods

- Camera trapping.

### 2.4.3 Methods to rule out

- All survey methods typical for birds are considered suitable (no specific methods ruled out).

### 2.4.4 Relevant Ecological Monitoring Standards Australia (EMSA) modules

The following Ecological Monitoring System Australia (EMSA) modules developed by TERN for the Australian Government should be considered for surveying the Western Ground Parrot:

- Vertebrate Fauna module
- Targeted Surveys
- Opportune
- Camera Traps

In addition, the Plot description, Floristics, Cover, Soils, Condition and Vegetation mapping modules may be beneficial for assessing the suitability of a location against the species' habitat preferences.

### 2.4.5 Other 110 priority species with potential links

- Similar approach:
  - Night Parrot (Pezoporus occidentalis)
  - Princess Parrot (Polytelis alexandrae).

# 3 Considerations for survey guidelines development

Key considerations should a full literature review and/or survey guidelines be developed for the Western Ground Parrot are highlighted below.

- Special equipment required:
  - Estimating the abundance of ground parrots is challenging because of their cryptic nature (Cale and Burbidge 1993; Burbidge *et al.* 2007).
  - Additional autonomous recording units to those already in the field monitoring the cryptic *P. flaviventris*. With only currently approximately 150 birds left, the change in relative abundance becomes more critical, and a five per cent change requires 40 listening posts (Burbidge *et al.* 2007).

    There is a need for software, such as SoundID, to be improved to automate the screening of the autonomous recording units ecograph files. There also need to be concentrated effort to distinguish Western Ground Parrot calls from those of Tawny-crowned Honeyeaters (Comer *et al.* 2017; Burbidge *et al.* 2018).
- Estimated time and surveyor effort:
  - Months
  - Point surveys – 12 hours (4 days) (DEWHA 2010)
  - Broadcast surveys – 6 hours (3 days) (DEWHA 2010).
- Vegetation communities or landscapes of the species' preferred habitat not suitable for the optimal survey methods
  - None have been identified to date.

## 3.1 Key documents for further review

The documents listed below have been identified as key documents to review should a full literature review and/or survey guidelines be developed for the Western Ground Parrot.

- Protocols:
  - None have been identified to date.
- Scientific papers and reports:
  - Department of Parks and Wildlife (DPAW) (2016). Creating a Future for the Western Ground Parrot: Workshop Report. (Eds. A.H. Burbidge, S. Comer, C. Lees, M. Page, & F. Stanley). Department of Parks and Wildlife, Perth, Australia.

## 3.2 Key agencies and organisations involved in the species research and recovery

- South Coast Threatened Birds Recovery Team (SCTBRT)
- Department of Biodiversity, Conservation and Attractions, Parks and Wildlife Service, South Coast Region
- Friends of the Western Ground Parrot (FWGP)
- South Coast Natural Resource Management Inc. (South Coast NRM).

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