

Project Plan SP 2017-036

Conservation of the night parrot

Animal Science

Project Core Team

Supervising Scientist	Allan Burbidge
Data Custodian	Allan Burbidge
Site Custodian	

Project status as of Jan. 29, 2019, 1:25 p.m.

Approved and active

Document endorsements and approvals as of Jan. 29, 2019, 1:25 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted
Biometrician	granted
Herbarium Curator	granted
Animal Ethics Committee	granted

Conservation of the night parrot

Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 6: Conserving Habitats, Species and Communities

Project Staff

Role	Person	Time allocation (FTE)
Supervising Scientist	Allan Burbidge	0.1
Technical Officer	Neil Hamilton	0.05

Related Science Projects

Proposed period of the project

July 26, 2017 – July 26, 2020

Relevance and Outcomes

Background

There has been continuing significant environmental and ecological change in the Australian arid zone since European colonisation commenced during the 19th century. The introduction of highly efficient predators and hard-hooved herbivores has resulted in massive on-going damage to ecosystems and loss of species that depend on them. One species that has been impacted is the night parrot (*Pezoporus occidentalis*), classified as critically endangered under WA legislation, endangered under the Commonwealth EPBC Act, and listed as one of the Commonwealth government's 20 bird species by 2020. The species has been very difficult to detect because of its highly cryptic and nocturnal nature. Until the recent research in Queensland (e.g. Murphy *et al.* 2017), there was an almost complete lack of biological or ecological knowledge of the species. Surveys for the species are still restricted to roosting habitat, because foraging habitat is barely known, and is completely unknown in WA. Until this year, the only reliable records from WA in the last two decades were from the Fortescue Marsh and Matuwa but lack of knowledge of foraging and roosting habits of the species has hampered progress. Then, in March of this year a single bird was photographed, and others heard, at a different site in the Shire of Wiluna. Brief repeat surveys have indicated that night parrots have remained in the area up until at least late August 2017 (e.g. Hamilton *et al.* 2017b).

Night parrots are much less common and less widespread than previously known and, where investigated, appear to occur at extremely low population densities. They are presumably declining slowly. However, this decline is likely to escalate as development proposals in and near inland salt lakes become more common, as is currently happening. These sites appear to support the major occurrences of roosting habitat in WA, and presumably reflect the presence of nearby foraging habitat. It is therefore critical that we determine the extent of the species in WA, and its local roosting and habitat preferences, to inform environmental impact assessment (EIA) and subsequent management for this highly susceptible species. Recent media interest has also highlighted the profile of night parrots, and the importance of being able to demonstrate that we can manage the increasing threats to its existence. This proposal is consistent with DBCA's Strategic Directions 2018–21 (Undertake world-recognised science to build and share biodiversity knowledge to support evidence-based decision making and management), objectives set out in the department's framework for fauna conservation (2016) (threatened species recovery), and priorities addressed in the Science and Conservation Division Strategic Plan 2014-17 (knowledge gaps; threatened species recovery). The Night Parrot Recovery Team has a draft research plan, and has commenced drafting a national recovery

plan. The DBCA Night Parrot Technical Advisory Panel (including relevant departmental science and regional staff, plus relevant independent experts) has drafted research priorities for WA. This concept plan is consistent with these documents and processes.

Aims

Long-term aims

This proposal has four related, long-term aims:

1. Understand the basic ecology of the night parrot in WA, in order to create a detailed habitat suitability model for predicting night parrot distribution;
2. Determine the true status of the night parrot in WA through improvement in understanding of the population demography (size, distribution and structure);
3. Understand the bird's patterns of decline, and assess past, current and future threats acting on night parrot populations;
4. Engage with Traditional Owners (especially Martu people) to encourage survey for night parrots and sensitive management for the species.

Work over the last two decades

The department has responded to high veracity opportunistic reports and has supported searching effort in and near Matuwa. Support has come mostly from Goldfields Region (up to about \$10,000 p.a. over several years), supplemented by a considerable amount of volunteer time and in-kind support from a range of observers (some of whom are also DBCA staff members volunteering their time). Approximately 1 TB of sound recording files have been accumulated for analysis. Capture work last year was funded by Goldfields Region and the University of Queensland (Nick Leseberg PhD project). This opportunistic work has revealed that (1) habitat usage in WA differs from that in SA and Queensland, and (2) likely sites of occupancy are also sites that are often highly prospective for some forms of resource extraction, particularly for potash. Unfortunately, it is proving difficult to provide sound advice with respect to EIA, because we only have scant knowledge concerning distribution and feeding habitat preferences. Further resources are needed to enable the gathering of relevant information, especially concerning habitat preferences.

Work proposed under this concept plan

- Assess the spatial extent of the population in the area in and surrounding Matuwa/Lorna Glen. This will then be extended to the entire Lake Carnegie catchment (in which suitable habitat persists, and in which various mining and exploration tenements also occur). This would then be followed by survey (or re-survey) of other known/prospective areas such as Fortescue Marsh, Lake Maitland, Lake Nabberu catchment.
- (Undertaken concurrently with 1.) Determine where the birds are foraging, through the use of GPS tags. Specifically, we will identify vegetation types they are using and the spatial relationship between roosting and foraging habitat, and identify use and importance of water points.
- Build on the above data to determine differences in the vegetation at occupied versus non-occupied roost sites and foraging sites. We will also determine the fire history and grazing history of the sites and identify and rank a suite of habitat variables at different scales to inform predictive models to aid in future searches. This information is needed to underpin successful management and guide survey efforts for EIA.

Expected outcome

Assessment of the spatial extent of the population in the area in and surrounding Matuwa/Lorna Glen, and subsequently the entire Lake Carnegie catchment. This would be followed by survey (or re-survey) of other known/prospective areas such as Fortescue Marsh, Lake Maitland, Lake Nabberu catchment.

Characterisation of foraging habitat through the use of GPS tags. This will result in identification of vegetation types used by night parrots and the spatial relationship between roosting and foraging habitat, and assessment of the use and importance of water points.

Assessment of differences in the vegetation at occupied versus non-occupied roost sites and foraging sites, together with insights into preferred fire age of vegetation and impacts of grazing history. Habitat variables will be ranked at different scales to inform predictive models to aid in future searches.

Improved guidelines to underpin successful management and guide survey efforts for EIA.

Knowledge transfer

Users: Land managers right across the Australian arid zone, including state agencies, traditional owners, NGOs involved in nature conservation, pastoralists and other private and state-based landowners/managers. Individuals and organisations concerned with nature conservation and sound management in the arid zone.

Strategy: Personal interaction with relevant individuals and organisations involved in, or interested in, nature conservation in the arid zone. Contributions to conferences, workshops, etc, including field meetings with traditional owners. Publication in popular venues such as Landscape. Publication in scientific journals.

Tasks and Milestones

1. AEC approval already obtained (DBCA AEC 2016-09).
2. Obtain funding for fieldwork.
3. Carry out fieldwork and analysis (timing and duration dependent on step 2 above).

References

DBCA (2017). Night Parrot. Available at: <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/night-parrot>

Hamilton, N. A., Onus, M., Withnell, B., and Withnell, K. (2017a). Recent sightings of the Night Parrot (*Pezoporus occidentalis*) from Matuwa (Lorna Glen) and Millrose Station in Western Australia. *Australian Field Ornithology* **34**, 71–75. doi:10.20938/afo34071075

Hamilton, N., Burbidge, A. H., Douglas, T. K., and Gilbert, L. (2017b). Piecing the puzzle together: the fate of the Night Parrot nest found in Western Australia by Jakkett *et al.* (2017). *Australian Field Ornithology* **34**, 151–154.

Leseberg, N. P., Murphy, S., Burbidge, A. H., and Watson, J. (2017). Understanding and detecting the Night Parrot. In 'AOC Conference 2017: List of Abstracts'. Australasian Ornithological Conference. pp. 21. (Geelong, Vic.)

Murphy, S. A., Austin, J., Murphy, R. K., Silcock, J., Joseph, L., Garnett, S. T., Leseberg, N. P., Watson, J. E. M., and Burbidge, A. H. (2017a). Observations on breeding Night Parrots *Pezoporus occidentalis* in western Queensland. *Emu* **117**, 107–113. doi:10.1080/01584197.2017.1292404

Murphy, S. A., Silcock, J., Murphy, R., Reid, J., and Austin, J. (2017b). Movements and habitat use of the Night Parrot *Pezoporus occidentalis* in south-western Queensland. *Austral Ecology* **42**, 858–868. doi:10.1111/aec.12508/full

Study design

Methodology

Night parrot survey using acoustic methods (autonomous recording units (ARUs)) following guidelines in Leseberg *et al.* (2017) and DBCA (2017). Field recordings will be scanned initially in Kaleidoscope software (Wildlife Acoustics, MA, USA) and/or Raven software (Cornell University, NY, USA). When robust software identifiers for the common night parrot calls become available (Conservation Metrics International, CA, USA - expected late 2018) these will be used to scan all existing field recordings from Western Australia.

Birds will be captured using mist nets, fitted with radio-tracking/GPS tags, and data analysed following the methods described in detail in Murphy *et al.* (2017b) and in DBCA AEC 2016-09. Vegetation composition and structure will be assessed using nested quadrats as developed by Jen Silcock (UQ) specifically for this purpose, and described in Murphy *et al.* (2017b).

Variation in vegetation at sample sites will be examined initially using nMDS (multidimensional scaling) and PCA (principal components analysis) before deciding on further modelling approaches.

Characterisation of the structure of Triodia stands will use methods currently being developed by N. Leseberg (UQ) for work on night parrot roosting habitat in Queensland.

Biometrician's Endorsement

granted

Data management

No. specimens

Small numbers (<100) to voucher key habitat species or food plants.

Herbarium Curator's Endorsement

granted

Animal Ethics Committee's Endorsement

granted

Data management

Storage in relational database (Access). Some components will be suitable for inclusion in the DBCA Threatened Fauna Database and in NatureMap.

Budget

Consolidated Funds

Source	Year 1	Year 2	Year 3
FTE Scientist	0.1		
FTE Technical			
Equipment			
Vehicle			
Travel			
Other			
Total			

External Funds

Source	Year 1	Year 2	Year 3
Salaries, Wages, Overtime			
Overheads			
Equipment			
Vehicle			
Travel			
Other			
Total			