



# The conservation and management of the greater bilby (*Macrotis lagotis*) on the Dampier Peninsula, Western Australia.

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In partnership with:



Annual Report 2016 - 17

April 2017



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Parks and Wildlife



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April 2017

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The recommended reference for this publication is:  
Department of Parks and Wildlife, 2017, Dampier Peninsula greater bilby (*Macrotis lagotis*)  
research project: Progress report 2016 - 17, Department of Parks and Wildlife, Perth.

This document is available in alternative formats on request.

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## Summary

The greater bilby (*Macrotis lagotis*) is a burrowing marsupial that was once wide spread across most of mainland Australia. Since European colonisation, the introduction of the cat and fox, changed fire regimes, the degradation of bilby habitat through pastoralism, introduced herbivores, and clearing, the range and abundance of greater bilbies have contracted severely and bilbies have disappeared from at least 80% of their former range across Australia with an ongoing northward decline. The bilby is now listed as Vulnerable both in Western Australia and under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Despite declines and extinctions elsewhere, populations of bilbies still persist on the Dampier Peninsula in the northwest of the Kimberley. This project aims to survey, monitor focal populations and commence management of threats to bilby populations across the Peninsula. This will improve understanding of the distribution and habitat preferences of bilbies on the Peninsula, and responses to management actions to ensure local persistence and possible re-expansion of this species.

Coordinated by the Department of Parks and Wildlife, the project involves extensive collaboration with Nyul Nyul, Bardi Jawi and Nyikina Mangala Rangers and Yawuru Country Managers. This project will help fulfil a primary objective of the current interim bilby recovery plan (Bradley *et al.* 2015) and identified management priorities (Cramer *et al.* 2016). This is to retain/maintain the naturally-occurring distribution and genetic diversity of the bilby through understanding populations at the margin of the species' range on the Dampier Peninsula, gaining information on threats to populations and cost-effective strategies that can be implemented to manage threats.

After initial project establishment and liaison with stakeholders, areas for survey and monitoring for the first year were developed, along with agreements outlining financial, intellectual property and publications terms with the Kimberley Land Council and Nyamba Buru Yawuru. A data set of bilby records on the Peninsula was collated from existing sources and field surveys. Posters incorporating local language were produced and disseminated to increase awareness. Training material for both conducting surveys and digitally collecting data in the field was developed and delivered to ranger groups. Software for field data capture and the data form were optimised and improved. A workshop in Fitzroy Crossing was held for Rangers, to provide training in survey and data capture. Surveys have been commenced by four Indigenous Ranger Groups on the Dampier Peninsula: Nyul Nyul (north west and central), Yawuru (southwest), Bardi Jawi (north) and Nyikina Mangala (east and south east) with liaison and planning of surveys in the western and southwestern central sectors initiated. Design and planning of population monitoring is currently underway.

# 1 Introduction

The greater bilby (*Macrotis lagotis*) is a burrowing marsupial that was once wide spread across most of mainland Australia (Marlow 1958; Southgate 1990; Friend 1990; Gordon *et al.* 1990; Johnson and Southgate 1990; Abbott 2001; Abbott 2008; Bradley *et al.* 2015; Figure 1). The greater bilby is now listed as Vulnerable under the Commonwealth *EPBC Act 1999* (EPBC 1999); Schedule 3 - Fauna that is rare or is likely to become extinct as vulnerable fauna, under the *Western Australian Wildlife Conservation Act 1950* (Government of Western Australia 2015); and internationally listed as Vulnerable on the IUCN Red List of Threatened Species (IUCN 2014).

Since European colonisation of Australia, the range and abundance of greater bilbies have contracted severely (Southgate 1990; Bradley *et al.* 2015; Figure 1). Since the late 1800s, greater bilbies have disappeared from at least 80% of their former range (Southgate 1990; Figure 1), and the lesser bilby (*Macrotis leucura*), a closely related species, has become extinct (IUCN 2008).

The decline in bilbies has been attributed to a number of threats working directly or in combination. These threats include predation by introduced cats and foxes (Paltridge 2002; Bradley *et al.* 2015), changed and inappropriate fire regimes (Southgate and Carthew 2006; Southgate and Carthew 2007; Southgate *et al.* 2007; Bradley *et al.* 2015), and the degradation of bilby habitat through pastoralism, introduced herbivores, and clearing (Southgate 1990; Pavey 2006; Bradley *et al.* 2015; Department of Environment 2016).

The current distribution is now restricted to the Tanami Desert, Northern Territory (Johnson and Southgate 1990), the Great Sandy and Gibson Deserts, parts of the Pilbara and Kimberley in Western Australia (Friend 1990), and an outlying population between Boulia and Birdsville in south-west Queensland (Gordon *et al.* 1990). There is thought to be ongoing decline in populations with gradual contraction to the northwest of its range in the Kimberley and Pilbara Regions in Western Australia. In the Kimberley, bilbies occur in Dampierland, Ord Victoria Plain, Great Sandy Desert and Tanami IBRA regions, in a line following the coast from Port Headland to the Dampier Peninsula across to Fitzroy Crossing and Halls Creek (

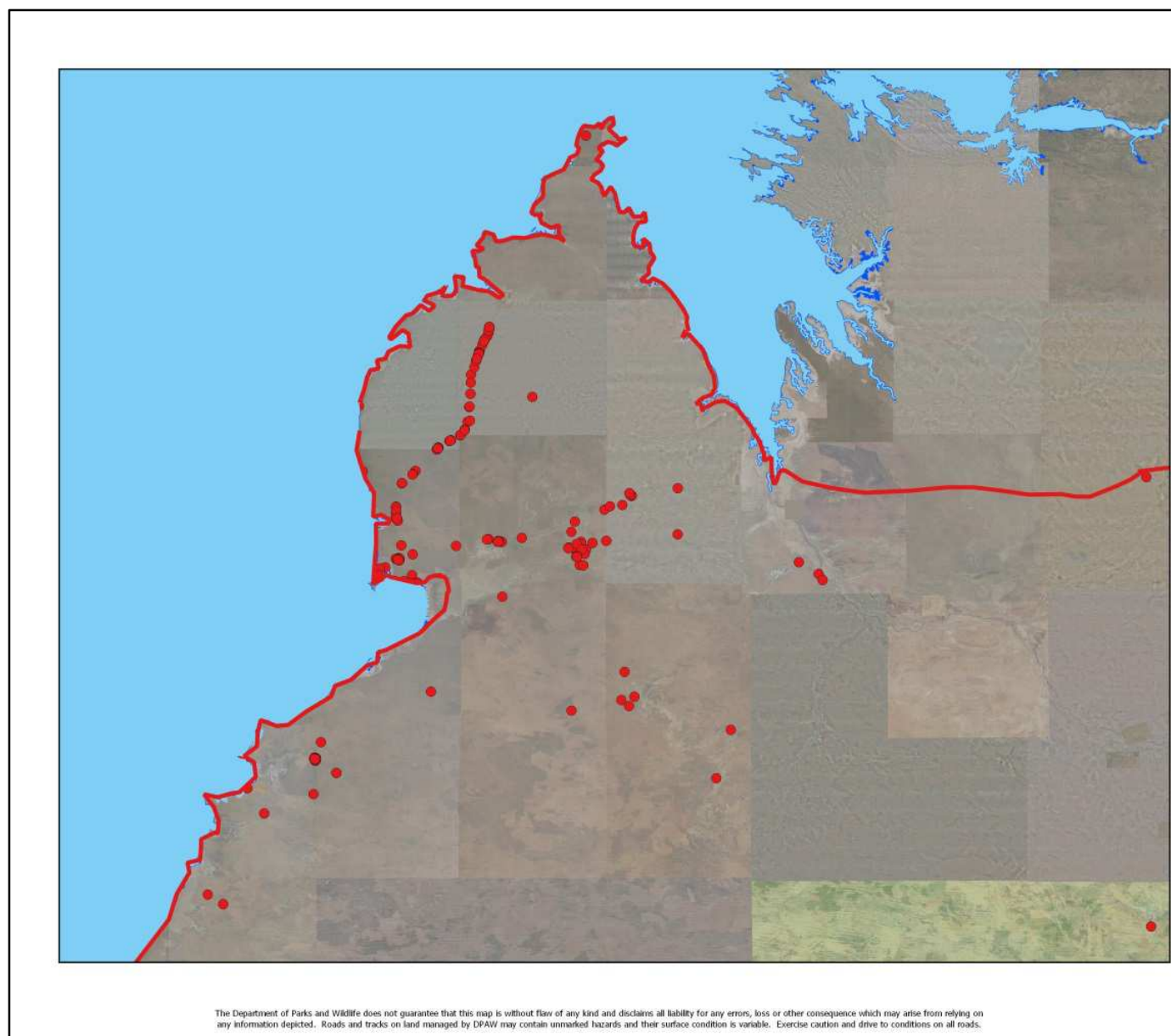


Figure 1).

Suitable habitat for bilbies can be defined as level or undulating plains including watercourses and dune systems, composed of cracking clay, soil or sand that allows burrowing, with vegetation consisting of open-tussock Mitchell grass (in SW Queensland) or hummock grassland (spinifex), with low shrubland, usually *Acacia* dominated. Habitat which is steep and/or rocky which does not allow burrowing may be used for foraging if it is adjacent to suitable burrowing habitat. The critical characteristic of suitable habitat for bilbies is the availability of a soil or sand substrate that enables the construction of burrows.

The Dampier Peninsula in the far northwest Kimberley comprises important bilby populations, due to widespread suitable sandy substrate, suspected abundance of populations, assumed lower past and present threat levels. These are the most northerly populations known in Australia. Tenure and responsibilities for management of lands on the Peninsula are complex. The majority of the Peninsula

and the bilby populations therein occur on lands owned or managed by Traditional Owner groups. Most lands are either subject to a determined or registered Native Title Claim, including Bindunbur, Rubibi and Goolarabooloo. Indigenous Protected Areas have been declared across part of Bardi Jawi and Yawuru country. Several large pastoral stations operate in these areas, including Country Downs, Kildo, Roebuck Plains and Yeeda. Parts of the western and northern coastal edges of the Peninsula are popular with tourism and recreation, however, to date main access via the Cape Leveque Road is hampered by poor road conditions, with the road subject to inundation and generally only passable by four wheel drive.

As part of the Cape Leveque Road upgrade project (EPBC 2013/6984), in 2016 Main Roads WA provided funding to offset impacts on local bilby populations, to undertake a three year project coordinated by the Department of Parks and Wildlife. Key project activities are to survey, monitor and commence adaptive management of bilby populations to mitigate threats across the Peninsula.

The project aims to improve our understanding of the distribution, habitat preferences and threats to bilbies on the Peninsula, and to enable appropriate management to ensure the persistence of local populations.

The purpose of the project is to monitor the occupancy and abundance of bilbies as well as key threatening processes on the Dampier Peninsula, while initiating on-ground actions to reduce the impacts from key threatening processes.

The components of the project are:

1. *Defining the area of occupancy* – through an array of a minimum of 180 sign plot surveys and testing supplementary Remotely Piloted Aircraft (RPA) surveys across 12 sectors on the Peninsula;
2. *Population monitoring* – of core populations monitored annually, involving genotyping individuals from scats collected quantitatively along transects to measure abundance, occupancy from sign plots, predator occupancy from remote cameras, data on food resources, stock grazing pressure, introduced predators and fire regimes; and,
3. *Management of threats* – implementing management activities including managing fire and stock grazing.

Outcomes will help fulfil a primary objective of the current interim bilby recovery plan (Bradley *et al.* 2015) and identified management priorities (Cramer *et al.* 2016). This is to retain/maintain the naturally-occurring distribution and genetic diversity of the bilby through understanding populations at the margin of the species' range on the Dampier Peninsula, gaining information on threats to populations and cost-effective strategies that can be implemented to manage threats.

The aim and objectives of this project also align with the research priorities for the greater bilby in the north of Western Australia, identified by a workshop hosted the Western Australian Department of Parks and Wildlife where the following five research priorities were identified through a facilitated process (Cramer *et al.* 2016):

1. Refine survey methods appropriate for all habitat types



2. Improve understanding of habitat use in relation to substrate type and food resources
3. Improve understanding of the genetic structure of (meta)populations
4. Improve understanding of the threat posed by introduced predators and herbivores
5. Improve understanding of how fire regimes affect bilby conservation

As the majority of the Peninsula lands are currently owned or managed by Traditional Owner groups, most project activities will be undertaken with or by Traditional Owners and Indigenous Ranger groups. Therefore effective liaison and engagement with these groups is integral to the project achieving milestones and delivering on agreed milestones.

The project employs Traditional Owners and Ranger Groups including Nyul Nyul, Bardi Jawi, Goolarabooloo, Jabirr Jabirr and Nyikina Mangala Rangers and Yawuru Country Managers on a fee-for-service basis. The project collaborates with WWF, Environs Kimberley and Rangelands NRM to contribute to the broader Kimberley Bilby program. Survey and monitoring in the first year has occurred on traditional land of four Native Title groups on the Dampier Peninsula: Bardi Jawi (N), Bindunbur (central), Yawuru (SW) and Nyikina Mangala (SE).

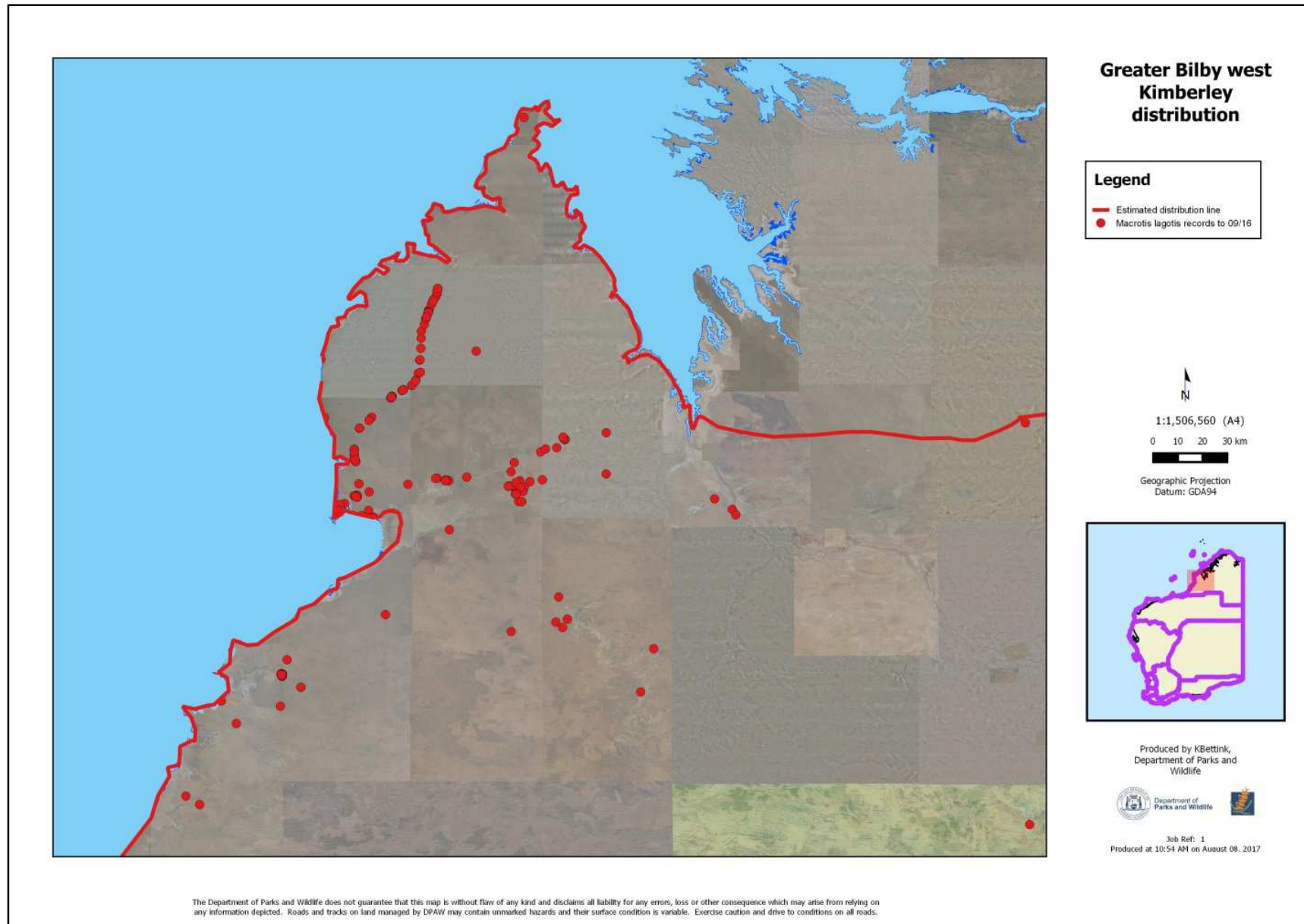


Figure 1: Distribution of bilbies in the West Kimberley based on historical records.

## 2 Setup and Coordination with Stakeholders

The first meeting with potential stakeholders was held on 10 June 2016. A follow up meeting was undertaken in Broome on 16 September 2016 with the following participants: Parks and Wildlife Science and Conservation Division and Kimberley Region, Traditional Owners and Ranger Groups, Kimberley Land Council (KLC), WWF, Environs Kimberley and Rangelands NRM. During this meeting, there was discussion of project background, survey techniques, funding milestones, funding agreements, data agreements and compilation of project contacts. The Technical Officer position based in Broome was appointed with commencement on the 22 August 2016. Following this appointment and second stakeholder meetings, liaison with individual groups and the KLC has been ongoing.

### 2.1 Defining sectors

After consultation, the division of the peninsula into sectors to be surveyed and minimum numbers of plots within sectors was finalised (Figure 2). These sectors were divided into manageable survey zones with boundaries based on registered and determined Native Title claims.

### 2.2 Allocation of fee for service funding

Upon finalising survey sectors, a budget of fee for service funding was devised based on area (ha) and the Traditional Owner group responsible for that area (

Table 1). This process ensured fair and transparent allocation of survey effort and the funding allocation in collaboration with the KLC and appropriate Prescribed Body Corporates.

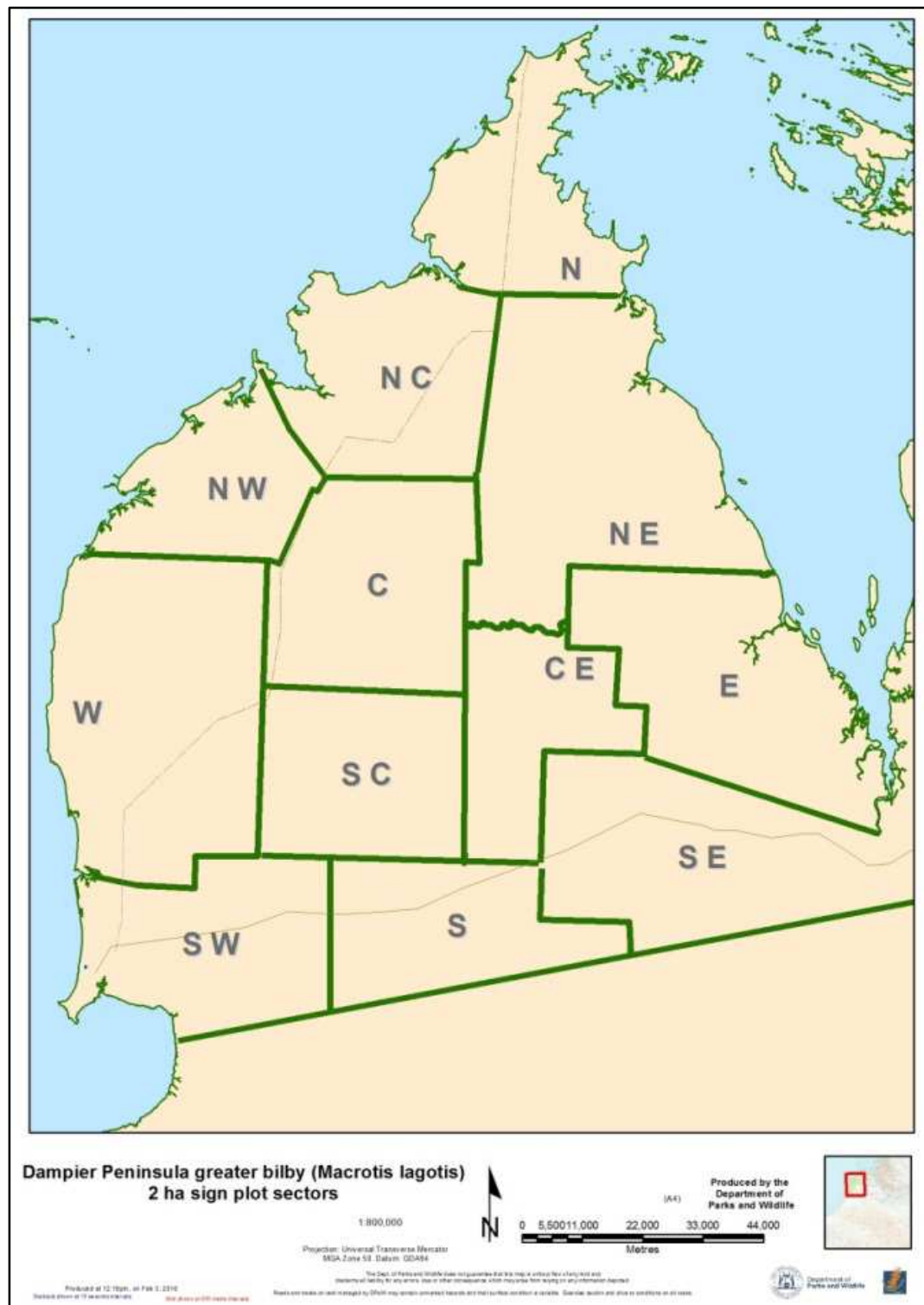


Figure 2: Finalised sectors for bilby surveys on the Dampier Peninsula.

Table 1: Sign plots allocated to each survey sector.

<b>Sector code</b>	<b>Traditional Owner Ranger group and/or Representatives</b>	<b>Approx survey area (ha)</b>	<b>% of total survey area</b>	<b>No. of 2 ha plots</b>
C	Bindunbur Traditional Owners	134,380	8.2	15
N	Bardi Jawi	99,215	6.1	11
NE	Nyul Nyul	196,660	12.0	22
CE	TBC - Jowlaenga	113,700	7.0	13
SE	Nyikina Mangala	164,450	10.1	18
S	Yawuru	103,860	6.4	12
E	Nyikina Mangala	160,630	9.8	18
NC	Nyul Nyul	123,150	7.5	13
NW	Nyul Nyul	86,370	5.3	9
W	Jabirr Jabirr/Goolarabooloo (excluding southeast and eastern sections)	209,460	12.8	23
SW	Yawuru	128,000	7.8	14
SC	Bindunbur Traditional Owners	113,400	6.9	12
<b>TOTAL</b>		<b>1,633,275</b>	<b>100.0</b>	<b>180</b>

## 2.3 Agreements

Agreements outlining terms relating to intellectual property, publications and funding were drafted and finalised with the Kimberley Land Council (KLC) representing Nyul Nyul, Bardi Jawi and Nyikina Mangala. A similar but separate agreement was developed with Nyamba Buru Yawuru Prescribed Body Corporate (Yawuru).

### 3 Collation of current and historic distributional data

Current and historic records of bilbies on the Dampier Peninsula have been collated from the following sources:

- Published literature
- “Grey” literature (including consultant and CALM/DEC/DPaW reports)
- DPaW, Western Australian Museum and other national databases
- Liaison with ecologists, consultants, Traditional Owner Rangers, environmental NGOs and land holders/users, and
- Local field trips.

To date there are 150 records of bilbies collated from the Dampier Peninsula (Figure 3). Most of these records are clustered around specific development locations as a result of environmental impact assessments and a PhD study. The former includes a linear 80km section of the Cape Leveque Road and the proposed Thunderbird mineral sands development at Mount Jowlaenga. These distribution points reflect survey effort rather than exclusion of occurrence at other areas throughout the Peninsula. Despite knowledge of active and past bilby sites, very few records have been submitted by Traditional Owner groups.

While this data gives an indication of where bilbies are present on the Peninsula for environmental impact assessment processes, it is insufficient to enable accurate occupancy modelling of the distribution of bilbies on the Peninsula.

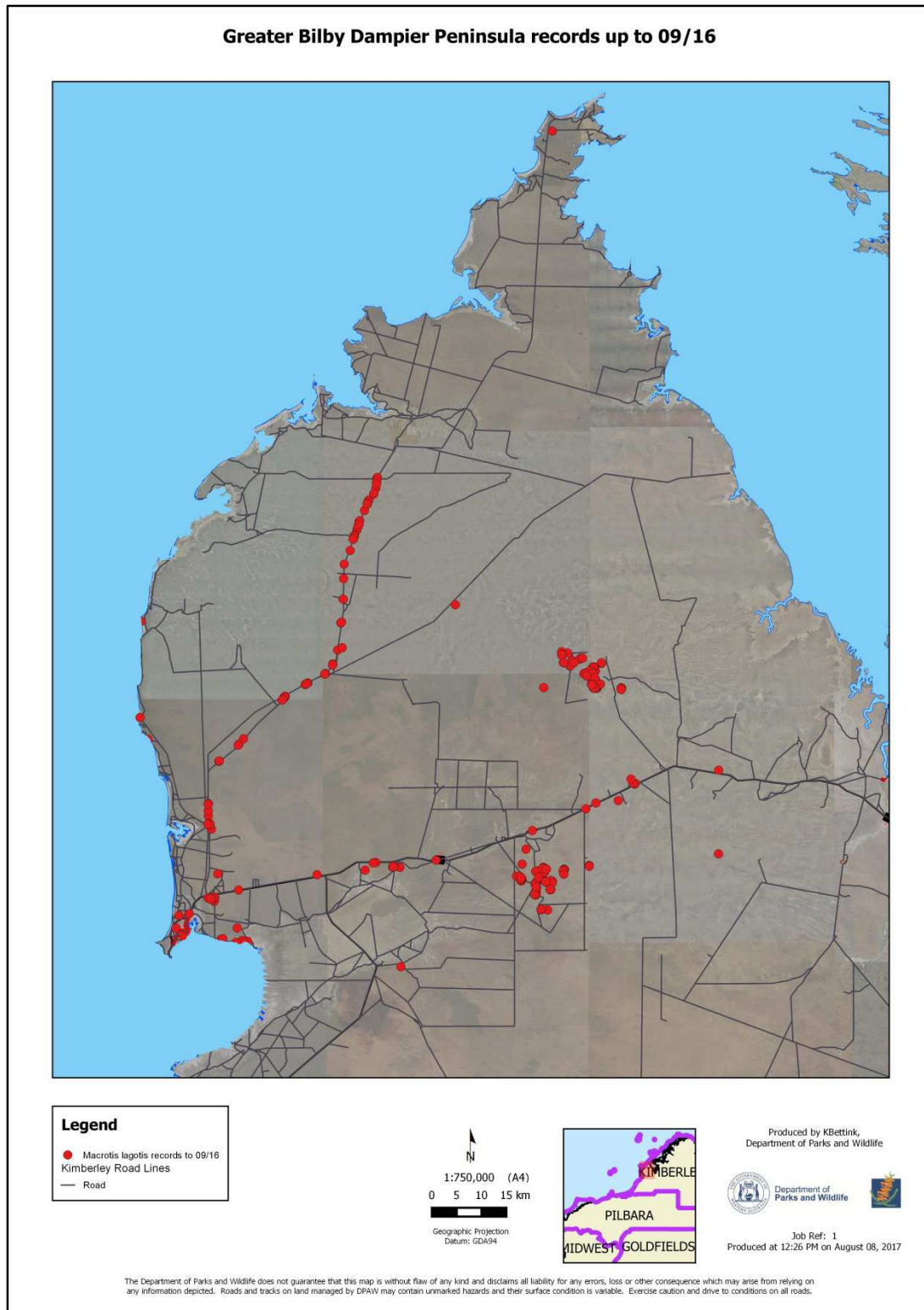


Figure 3: Records of the bilby from the Dampier Peninsula.

## 4 Information products, training and software

### 4.1 Information sheet and products

An information sheet outlining the project background, aims, major activities and partners was produced for distribution (Appendix 1). This has been approved by publications units within Main Roads Western Australia, KLC and Parks and Wildlife. Additionally, to promote awareness of bilby research and survey by the Dampier Peninsula and other Kimberley Ranger groups, as well as a means for community members to report sightings of bilbies, posters tailored to each ranger group have been produced (Appendix 2).

### 4.2 Training

Training in plot survey techniques and use of software for portable devices was provided to Yawuru Country Managers and Nyul Nyul Rangers in September and October 2016. An app for data collection was developed using Mobile Data Studio (Creativity Corp 2017) and then optimised by Parks and Wildlife staff and Traditional Owner Rangers during training sessions. A workshop was held in Fitzroy Crossing in March 2017 (see workshop flyer in Appendix 3) to provide all ranger groups working on bilbies in the Kimberley, including other Dampier Peninsular groups, training in survey and monitoring methods, as well as preliminary information on fire guidelines, feral species management and current research on bilby ecology.



## 5 Occupancy surveys

### 5.1 Methodology

The 2 hectare plot method described in Moseby *et al.* (2011) and developed by Southgate *et al.* (2005) and Southgate and Moseby (2008) is recommended to survey for the presence/absence of bilbies. This method is an established technique for the determining presence/absence, and has been implemented throughout the central and western deserts, and Pilbara. The method allows detectability conditions, habitat characteristics, fire history and grazing pressure to also be assessed. An array of 2 ha plots across the Dampier Peninsula will be surveyed for signs of bilbies (tracks, diggings, burrows, scats) and other species, including introduced predators and herbivores.

Only three types of sign provide definitive evidence of the presence of bilbies: Tracks, scats and multiple diggings into the bases of *Acacia* shrubs where grubs are accessed. Burrows can easily be confused with varanid lizard or rabbit burrows by all but the most experienced observers, however, if there are occupied burrows then presence is confirmed from at least one of the three signs described above.

### 5.2 Software and refinement of 2 ha sign plot data collection

While the 2 ha sign plot method is an established technique for on-ground survey for bilbies across Australia, a standardised data template for collecting sign plot data had not yet been developed or adopted universally. An app was developed using Mobile Data Studio (MDS; Creativity Corp 2017), along with an equivalent paper version. Advice from experts conducting bilby surveys across Australia was incorporated during development. The app and datasheet was optimised by Parks and Wildlife staff and Traditional owner Rangers during training sessions (Figure 4). Local Traditional Owner names were included in the app in drop down lists for flora, fauna and vegetation communities, tailored for ranger groups. The paper data sheet is attached in Appendix 4. Other ranger groups in the Kimberley also developed this data template into a Fulcrum (2017) sequence. This standardised data collection template will be used for the Dampier Peninsula surveys, throughout the Kimberley region, and by Parks and Wildlife and other partners throughout Western Australia.

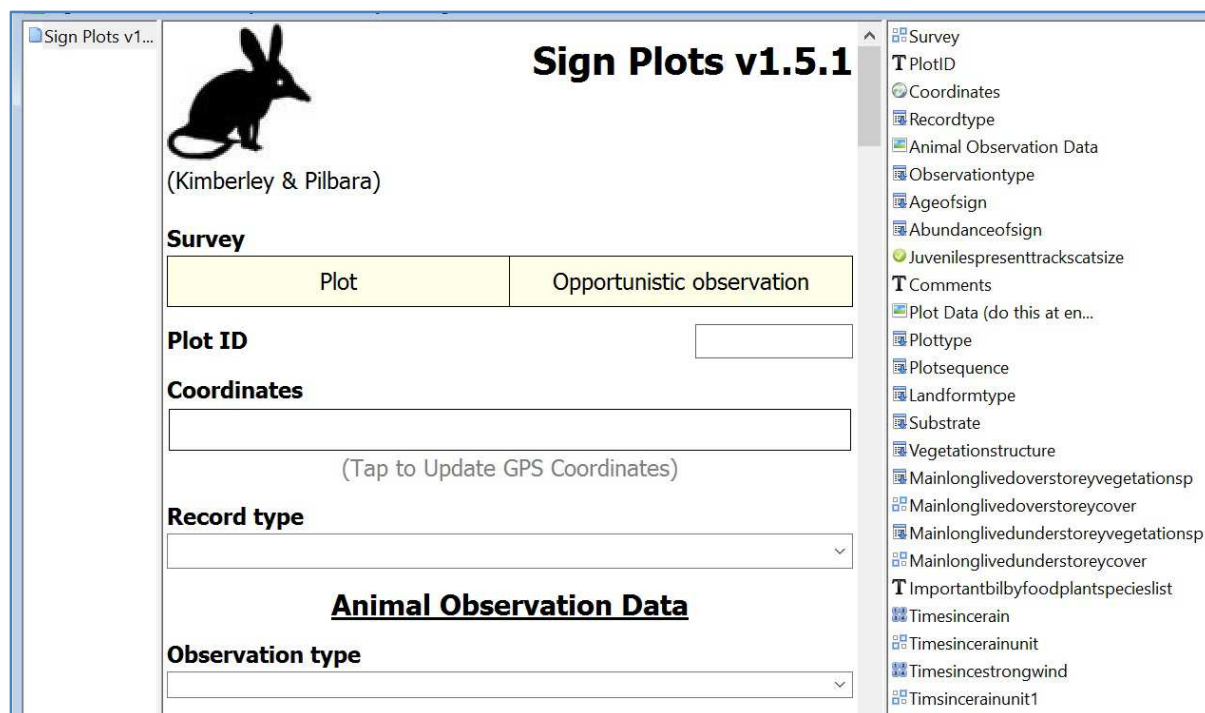


Figure 4. Screenshot from the development of the mobile data collection app.

### 5.3 Occupancy Surveys

Collaborative planning sessions for sign plot locations has been completed with Nyul Nyul Rangers for the Bindunbur claim area (NW, N,C, NE sectors), Yawuru Country Managers (SW and S sectors), Bardi Jawi Rangers (N sector) and Nyikina Mangala Rangers (SE and E sectors). Planned locations of sign plots were stratified by three location types:

1. Location where bilbies were known to exist previously
2. Suitable bilby habitat but unknown bilby occurrence
3. Arbitrary placement

Stratified planned plot locations are shown in Figure 5. Plot locations for remaining sectors (SC, CE and W) have not yet been facilitated due to complex ongoing native title, mining and management issues.

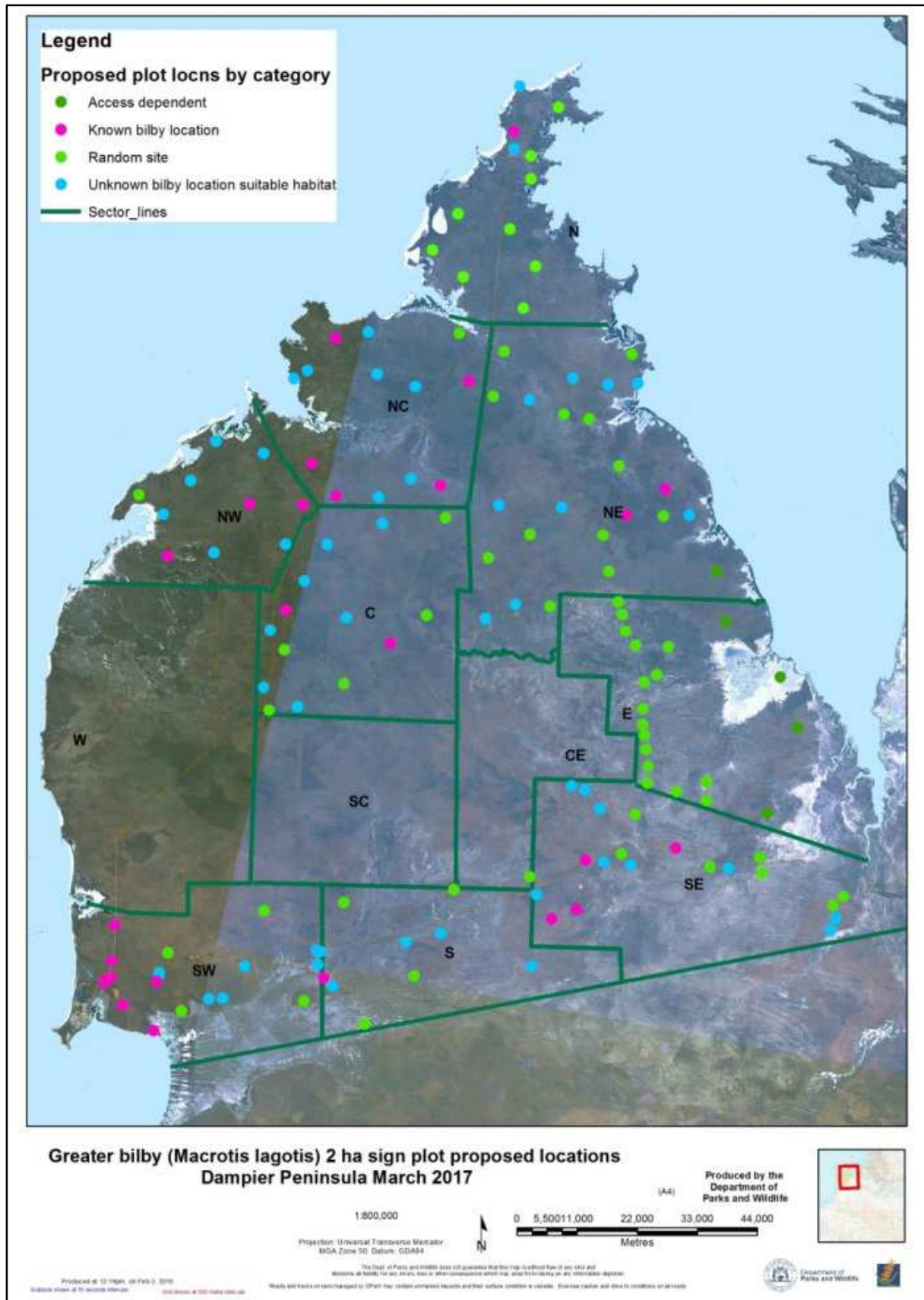


Figure 5: Planned locations of 2 ha sign plots.

So far 44 plots have been surveyed across the Peninsula. In 10 of these plots (23 %), confirmed evidence of bilby presence was recorded. Four additional plots have been completed by the Broome Technical Officer with no evidence of bilby activity. These data will become available through the Department's NatureMap portal (DPaW 2017). Progress has been delayed due to later project commencement date, staggered delivery of training and facilitation of site selection, Traditional Owner Ranger groups taking leave over the Christmas/holiday period and wet season, and difficulties with access and poor tracking conditions due to especially high rainfall during the wet season.

Active bilby sites have been found in the following major vegetation types in the late dry season (August-December):

- In southern areas of the Peninsula: wongai (*Acacia eripoda*) woodland with occasional Jigal (*Lysiphyllum cunninghamii*), turpentine tree (*Gardenia pyriformis*) and *Corymbia* sp. (bloodwood) on inland red pindan soils, with sparse to dominant blade grass (*Chrysopogon pallidus*) and *Jacquemontia* sp. understory (Figure 6).
- Northwest peninsula inland of Beagle Bay: Open Bloodwood woodland with clusters of dense *A. tumida*, (pindan wattle) with *G. pyriformis*, and *Ptilotus corymbosus*, (Figure 7).
- Southern central and southeast peninsula: Mixed *Acacia* woodland dominated by a shrub understory of cockroach bush (*Senna notabilis*) (Figure 8).
- Southwestern peninsula: Partly deciduous shrubland of mixed species (*A. coleii*, *Bauhinia* sp., *Gyrocarpus* sp. and , *Bridelia* sp.) on pinkish red sandy soils.



Figure 6: Examples of wongai (*Acacia eripoda*) woodland vegetation types with bilbies active during the late dry season.



Figure 7: Open *Corymbia* woodland with an understory of *Acacia tumida*, tussock grasses and annual herbs such as *Ptilotus corymbosus*.



Figure 8: Example of *Acacia* woodland dominated by a shrub understory of cockroach bush (*Senna notabilis*).

It is yet unclear which habitats are favored during the wet season (January to April) when many of the active sites observed in previous months are transformed by dense layers of perennial and annual grasses and herbs.

Preliminary data have revealed that as well as always being found in areas where the substrate of sand, soil, sandy clay, or sandy gravel is suitable for burrowing, there is an association with particular *Acacia* spp. and *Senna* spp. that bilbies use for food resources. At sites where bilbies are found, these *Acacia* spp. typically form monospecific stands that provide resources in the form of cossid moth larvae (grubs)

which is a major food resource for bilbies on the Peninsula. Bilbies have also been observed digging for termites in the late dry season.

### 5.3.1 Nyul Nyul

Nyul Nyul Rangers were contracted to complete a first phase of 24 sign plots within northwest and northcentral (NW, NC) sectors of a total minimum of 180 plots. It is likely that pending approval from Traditional Owners from areas within NE and C sectors, Nyul Nyul Rangers will complete plot surveys within the remainder of the Bindunbur Native Title claim.

Joint planning sessions and field work by Parks and Wildlife staff and Nyul Nyul Rangers were undertaken in September 2016. Presentations were delivered and meetings undertaken with Traditional Owners to approve the project. Collaborative planning was undertaken to allocate and select sign plot locations within NW, NC and NE sectors. Training in survey techniques and data capture software was delivered to rangers. On the job training in bilby survey techniques and software was also undertaken by the newly appointed project technical officer. Sign plot surveys commenced in the NW Sector in which SLK 90-102.6 is located. To date, rangers have completed a total of five phase one plots in the NW and NC sectors (Figure 9).

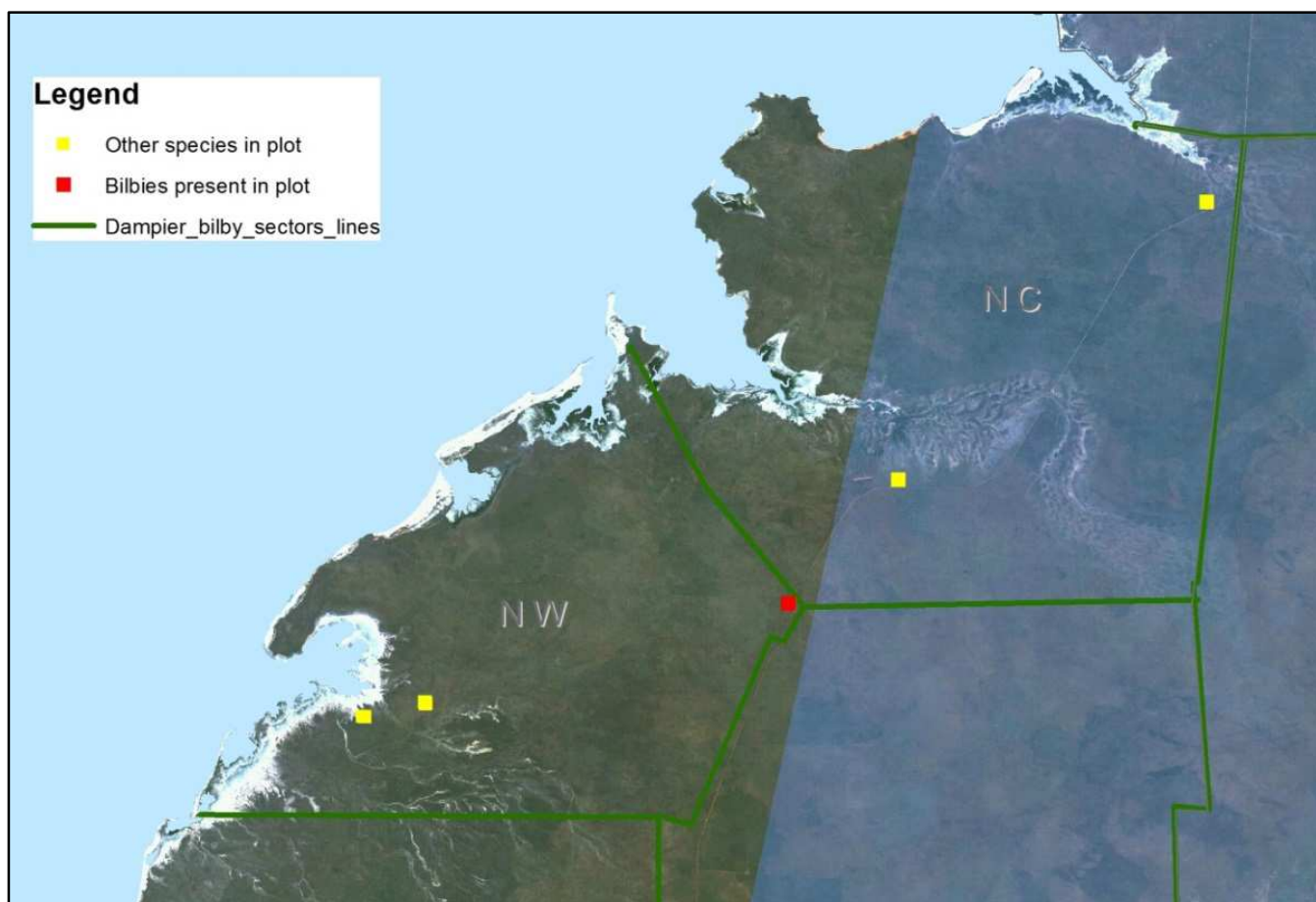


Figure 9: Sign plots completed by Nyul Nyul Rangers in NC and NW sectors.

Progress has been significantly delayed due to wet season leave for rangers and months of wet conditions hindering access and tracking conditions. Further discussion is required with the groups' coordinator and Senior Ranger with respect to the capacity to undertake the remaining phase one and phase two plots both in these sectors and the Bindunbur Native Title Claim area, including the SC, C and NE sectors.

### 5.3.2 Yawuru (Nyamba Buru Yawuru)

A project briefing and collaborative selection of sign plot locations within Yawuru sectors SW and S was undertaken in September 2016 with Yawuru Country Managers. Software for and training in signplot survey techniques was provided. Yawuru were contracted to undertake 14 plots in the SW and 12 plots in the S sectors, with resurvey of 12 and 10 plots in each respective sector. Sixteen plot surveys have been completed (

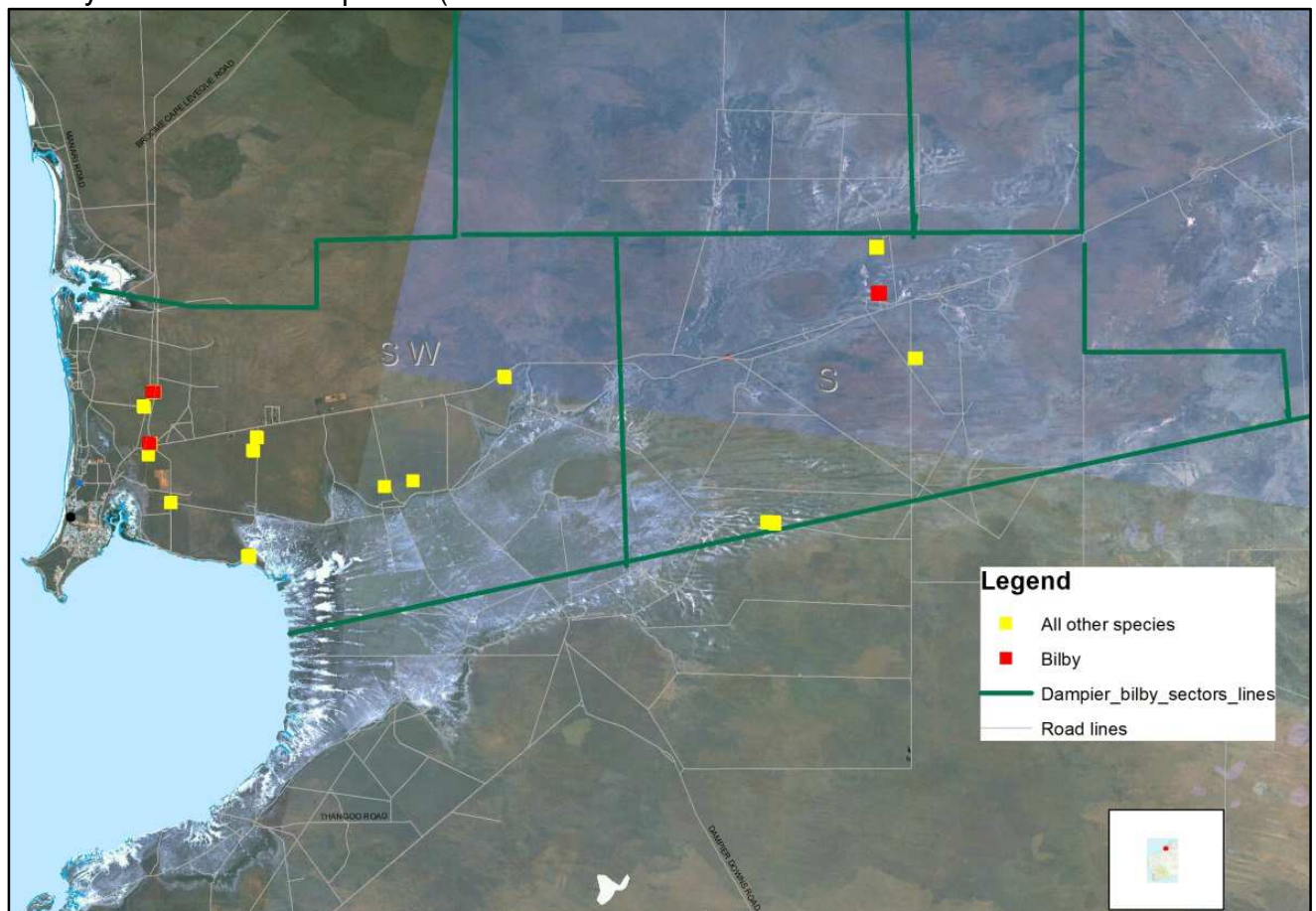


Figure 10), with phase one and two surveys ongoing.

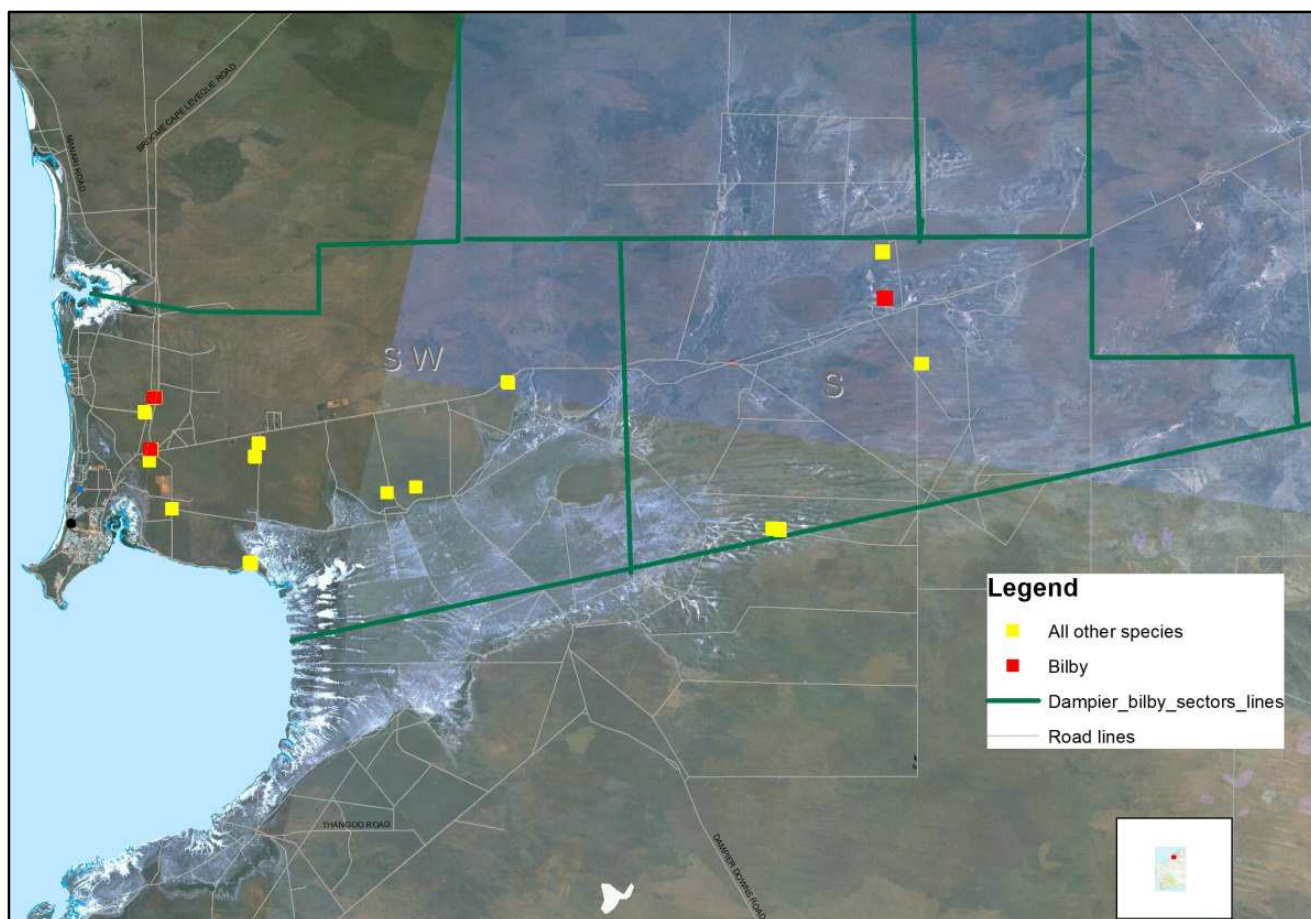


Figure 10: Sign plots completed by Yawuru Country Managers.

### 5.3.3 Bardi Jawi

A presentation outlining the project was delivered to the Bardi Jawi Prescribed Body Corporate (PBC) and Elders in March 2017. This presentation provided background on the proposed works and to sort the cultural authority to undertake the survey. Sign plot locations and the program of works was also discussed with the men's Ranger coordinator in March 2017. Further training and guidance will likely be required, and will include the female ranger team. Commencement of field work may be delayed due to dense understory growth resulting from an above average wet season inhibiting detection of bilby activity.

### 5.3.4 Nyikina Mangala

A project briefing, collaborative selection of sign plot locations and training in software and sign plot surveys was undertaken with Nyikina Mangala Rangers and the Indigenous Protected Area (IPA) coordinator in April 2017. There were considerable delays in commencement due to change of IPA coordinator and the existing works program of the Rangers.

There are currently no records of bilbies in the northern extent of the Nyikina Mangala native title determination within the E sector. While suitable bilby habitat



appears to occur throughout the sector, the majority of the area is highly remote and inaccessible, particularly in the east.

Records of bilbies exist for the SE sector; however there has been limited survey of the north and eastern areas within this sector. Access has been difficult in many parts of these areas due to the wet season and tidal inundation.

Eighteen phase one plots were completed in the SE sector in April 2017, with E sector plots to be completed thereafter. Plot locations and data receipt are pending.

### **5.3.5 Other areas**

Organising surveys in the remaining areas are complicated by currently unresolved and undetermined native title claims. Representatives of these claims often do not have a formalised ranger group, but instead comprise Traditional Owners and/or individuals who are employed by neighbouring Ranger Groups. Liaison is underway with Goolarabooloo representatives who have a registered claim over the majority of the W sector. Jabirr Jabirr have a competing but not entirely overlapping registration over the entire W survey sector, however have limited capacity to undertake surveys, thus other groups or Parks and Wildlife may undertake surveys within these locations after consultation and negotiation.

Similarly, with the registered Native Title claim over part of the CE sector containing Mt Jowlaenga, but with limited on ground capacity, other groups may be able to undertake surveys in this area. The proposed Thunderbird mineral sands proposal is located in this sector and presents ongoing complications for access, liaison and survey. Further complications have been created by Country Downs Station refusing access to Traditional Owner Rangers and Parks and Wildlife staff to undertake surveys for bilbies. Further liaison and negotiation is required. Bilbies are known to occur on Country Downs Station from historical records, but current occupancy needs to be surveyed.

## 6 Data management

To date, sign plot data has been transferred through use of Dropbox or by USB with master copies stored on the Parks and Wildlife Broome local server. Individual Ranger Groups are able to export their project data as either Excel or KML files for display on Google Earth, or conversion into GIS Shapefiles.

Data will be stored centrally in a Biological Data Recording System (BDRS) then transferred into the Department's new BioSys database once this becomes available (Figure 11).

The screenshot shows the homepage of the Biological Data Recording System (BDRS). At the top, there are logos for the Government of Western Australia and Parks and Wildlife, alongside the 'NatureMap' logo with the tagline 'Mapping Western Australia's biodiversity'. A navigation bar includes links for Home, Sign In, Field Guide, About, and Help. The main content area features a welcome message, a brief description of the system, and a 'Latest Statistics' section. The statistics include: Number of users (26), Total number of records (4671), and Number of species recorded (4). A note mentions the last sighting was a Bilby, *Macrotis lagotis*. At the bottom, it states the system is supported by Gaia Resources Environmental Technology Consultants, accompanied by their logo.

**Welcome to the Biological Data Recording System**

This is an implementation of the Biological Data Recording System, software developed by Gaia Resources for the Atlas of Living Australia. It has been configured to integrate with the Naturemap system, providing a portal for entering sightings of Threatened Fauna for the Pilbara region.

For more information please [contact us](#) at DPaW.

**Latest Statistics**

- Number of users **26**
- Total number of records **4671**
- Number of species recorded **4**

The last sighting was a Bilby, *Macrotis lagotis* in the group Threatened Fauna.

**Supported By**

**GAIA RESOURCES**  
ENVIRONMENTAL  
TECHNOLOGY  
CONSULTANTS

Figure 11. Biological Data Recording System

## 7 Ongoing work

The following ongoing work is planned to continue in 2017 and beyond:

- Continue collation of bilby records from internal and external sources.
- Continue sign plot surveys with Ranger Groups, including 1<sup>st</sup> year final phase one and all phase two plots.
- Finalise selection of bilby populations with Ranger Groups (and pastoral stations where appropriate) for focal population monitoring and commence fieldwork.
- Meet with Nyul Nyul regarding progress and capacity to complete NE, C and SC sector surveys.
- Commence and continue liaison with relevant groups (Goolarabooloo, Jabirr Jabirr and Jowlaenga) for either undertaking or granting permission to undertake remaining plot surveys.
- Resolve access issue with Country Downs Station
- Consolidation and storage of all sign plot data on the online BDRS.
- Delivery of a presentation with Yawuru and Nyul Nyul at the International Mammal Congress to be held in Perth in July 2017 (Appendix 5).
- Initiate design and costing of potential management activities to secure populations of bilby on the Peninsula..

## Acknowledgments

Kimberley Land Council

Rangelands NRM

WWF

Environs Kimberley

## Offset Funding

Main Roads Western Australia

## References

- Abbott, I. (2008). Historical perspectives of the ecology of some conspicuous vertebrate species in south-west Western Australia. *Conservation Science Western Australia Journal* **6**, 1–214.
- Abbott, I. (2001). The bilby, *Macrotis lagotis* (Marsupialia: Peramelidae) in south-western Australia: original range limits, subsequent decline and presumed regional extinction. *Records of the Western Australian Museum* **20**, 271–305.
- Bradley, K., Lees, C., Lundie-Jenkins, G., Copley, P., Paltridge, R., Dziminski, M., Southgate, R., Nally, S., and Kemp, L. (2015). 2015 Greater Bilby Conservation Summit and Interim Conservation Plan: an Initiative of the Save the Bilby Fund. IUCN SSC Conservation Breeding Specialist Group, Apple Valley, MN.
- Cramer, V. A., Dziminski, M. A., Southgate, R., Carpenter, F., Ellis, R. J., and van Leeuwen, S. (2016). A conceptual framework for habitat use and research priorities for the greater bilby (*Macrotis lagotis*) in the north of Western Australia. *Australian Mammalogy* <http://dx.doi.org/10.1071/AM16009>.
- Creativity Corp (2017). Mobile Data Studio. Available at: <https://www.creativitycorp.com/mds/>
- Department of Environment (2016). *Macrotis lagotis* — Greater Bilby in Species Profile and Threats Database. Available at: <http://www.environment.gov.au/sprat> [accessed 9 February 2016]
- DPaW (2016). NatureMap: Mapping Western Australia's Biodiversity. *Department of Environment and Conservation, Western Australia*. Available at: <http://naturemap.dpaw.wa.gov.au/>
- EPBC (1999). Environment Protection and Biodiversity Conservation Act 1999. <http://www.environment.gov.au/epbc/>. Available at: <http://www.environment.gov.au/epbc/> [accessed 27 November 2012]
- Friend, J. A. (1990). Status of bandicoots in Western Australia. In 'Bandicoots and bilbies'. (Eds J. H. Seeback, P. R. Brown, R. L. Wallis, and Kemper C M.) pp. 73–84. (Surrey Beatty & Sons: Sydney.)
- Fulcrum (2017). Available at: <http://www.fulcrumapp.com/> [accessed 14 May 2017]
- Gordon, G., Hall, L. S., and Atherton, R. G. (1990). Status of bandicoots in Queensland. In 'Bandicoots and bilbies'. (Eds J. H. Seeback, P. R. Brown, R. L. Wallis, and Kemper C M.) pp. 37–42. (Surrey Beatty & Sons: Sydney.)
- Government of Western Australia (2015). Wildlife Conservation Act 1950. Available at: [https://www.slp.wa.gov.au/legislation/statutes.nsf/main\\_mrtitle\\_11738\\_homepage.html](https://www.slp.wa.gov.au/legislation/statutes.nsf/main_mrtitle_11738_homepage.html)

- IUCN (2014). International Union for the Conservation of Nature and Natural Resources Webpage: <http://www.iucn.org/>. Available at: <http://www.iucn.org/> [accessed 17 February 2014]
- IUCN (2008). *Macrotis leucura*: Burbidge, A., Johnson, K. & Dickman, C.: The IUCN Red List of Threatened Species 2008: e.T12651A3369111. Available at: <http://www.iucnredlist.org/details/12651/0> [accessed 14 September 2015]
- Johnson, K. A., and Southgate, R. I. (1990). Present and former status of bandicoots in the Northern Territory. In 'Bandicoots and bilbies'. (Eds J. H. Seeback, P. R. Brown, R. L. Wallis, and Kemper C M.) pp. 85–92. (Surrey Beatty & Sons: Sydney.)
- Marlow, B. J. (1958). A survey of the marsupials of New South Wales. *CSIRO Wildlife Research* **3**, 71–114. doi:10.1071/CWR9580071
- Moseby, K., Nano, T., and Southgate, R. (2009). 'Tales in the sand. A guide to identifying Australian arid zone fauna using spoor and other signs'. (Ecological Horizons: South Australia.)
- Paltridge, R. (2002). The diets of cats, foxes and dingoes in relation to prey availability in the Tanami Desert, Northern Territory. *Wildlife Research* **29**, 389–403. doi:10.1071/WR00010
- Pavey, C. (2006). National Recovery Plan for the Greater Bilby *Macrotis lagotis*. Northern Territory Department of Natural Resources, Environment and the Arts.
- Southgate, R. (1990). Distribution and abundance of the greater bilby *Macrotis lagotis* Reid (Marsupialia: Peramelidae). In 'Bandicoots and bilbies'. (Eds J. H. Seeback, P. R. Brown, R. L. Wallis, and Kemper C M.) pp. 303–309. (Surrey Beatty & Sons: Sydney.)
- Southgate, R., and Carthew, S. (2007). Post-fire ephemerals and spinifex-fuelled fires: a decision model for bilby habitat management in the Tanami Desert, Australia. *International Journal of Wildland Fire* **16**, 741–754. doi:10.1071/WF06046
- Southgate, R., and Carthew, S. M. (2006). Diet of the bilby (*Macrotis lagotis*) in relation to substrate, fire and rainfall characteristics in the Tanami Desert. *Wildlife Research* **33**, 507–519. doi:10.1071/WR05079
- Southgate, R., and Moseby, K. (2008). Track-based monitoring for the deserts and rangelands of Australia. Unpublished Report for the Threatened Species Network at WWF-Australia. Envisage Environmental Services Ecological Horizons, South Australia. Available at: [http://awsassets.wwf.org.au/downloads/sp050\\_track\\_based\\_monitoring\\_for\\_the\\_deserts\\_and\\_rangelands\\_1jun08.pdf](http://awsassets.wwf.org.au/downloads/sp050_track_based_monitoring_for_the_deserts_and_rangelands_1jun08.pdf)
- Southgate, R., Paltridge, R., Masters, P., and Carthew, S. (2007). Bilby distribution and fire: a test of alternative models of habitat suitability in the Tanami Desert, Australia. *Ecography* **30**, 759–776. doi:10.1111/j.2007.0906-7590.04956.x

Southgate, R., Paltridge, R., Masters, P., and Nano, T. (2005). An evaluation of transect, plot and aerial survey techniques to monitor the spatial pattern and status of the bilby (*Macrotis lagotis*) in the Tanami Desert. *Wildlife Research* **32**, 43–52. doi:10.1071/WR03087

# Appendices

## Appendix 1 Project information sheet



**The Dampier Peninsula in northwest Western Australia is a stronghold of the greater bilby (*Macrotis lagotis*). This is despite the lesser bilby becoming extinct, and the greater bilby disappearing from at least 80 percent of its former range across Australia with an ongoing northward decline. The greater bilby is now listed as Vulnerable both in WA and under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*. As part of the Cape Leveque Road upgrade, in 2016 Main Roads WA provided offset funding to undertake a three year project to survey, monitor and commence adaptive management of threats to bilby populations across the Peninsula.**

Coordinated by the Department of Parks and Wildlife, this project will help fulfil a primary objective of the current interim bilby recovery plan (Bradley *et al.* 2015) and identified management priorities (Cramer *et al.* 2016). This is to retain/maintain the naturally-occurring distribution and genetic diversity of the bilby through understanding populations at the margin of the species' range on the Dampier Peninsula, gaining information on threats to populations and cost-effective strategies that can be implemented to manage threats.

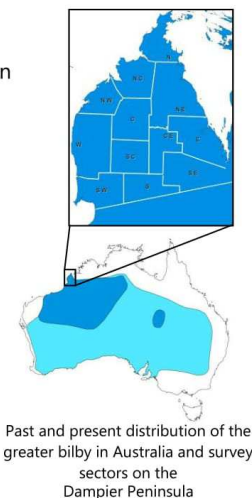
### Project objective

**To monitor the occupancy and abundance of bilbies as well as key threatening processes on the Dampier Peninsula, while initiating on-ground actions to reduce the impacts from key threatening processes.**

### Aims and methods

- *Define the area of occupancy* through an array of a minimum of 180 sign plot surveys and supplementary Remotely Piloted Aircraft (RPA) surveys across 12 sectors on the Peninsula;
- *Population monitoring* – four core populations monitored annually, involving genotyping individuals from scats collected along transects to measure abundance, occupancy from sign plots, predator occupancy from remote cameras, data on food resources, stock grazing pressure, introduced predators and fire regimes and
- *Management of threats* – priority management activities including managing fire and stock grazing implemented.

The project will employ Traditional Owners and Ranger Groups including Nyul Nyul, Yawuru, Bardi Jawi, Goolarabooloo, Jabirr Jabirr and Nyikina Mangala on a fee-for-service basis. Best practice bilby survey and data collection methods will be used with Indigenous Biocultural Knowledge. The project will collaborate with WWF, Environs Kimberley and Rangelands NRM to contribute to the broader Kimberley Bilby Project.



### Contacts

Parks and Wildlife: Martin Dziminski, (08) 9405 5120, [martin.dziminski@dpaw.wa.gov.au](mailto:martin.dziminski@dpaw.wa.gov.au), Karen Bettink, 111 Herbert St Broome, (08) 9195 5527, [karen.bettink@dpaw.wa.gov.au](mailto:karen.bettink@dpaw.wa.gov.au)



Department of Parks and Wildlife



Bradley, K., Lees, C., Lundie-Jenkins, G., Copley, P., Paltridge, R., Dziminski, M., Southgate, R., Nally, S., Kemp, L. (2015) *2015 Greater Bilby Conservation Summit and Interim Conservation Plan: an Initiative of the Save the Bilby Fund*. IUCN SSC Conservation Breeding Specialist Group, Apple Valley, MN.  
Cramer, V. A., Dziminski, M. A., Southgate, R., Carpenter, F., Ellis, R. J., van Leeuwen, S. (2016) A conceptual framework for habitat use and research priorities for the greater bilby (*Macrotis lagotis*) in the north of Western Australia. *Aust. Mammal.*



## Appendix 2: Bilby awareness and sightings posters for Ranger Groups.

Have you seen any *Ngarlgumirdi* (Bilby), their tracks or burrows?

The Yawuru Country Managers are part of the Kimberley Bilby Project, working to document and protect our local bilbies and we need your help. Please report any sightings and/or signs, new or old, to: Nyamba Buru Yawuru, ph: 9192 9600, 55 Reid Road, Broome, [yawurulas@yawuru.org.au](mailto:yawurulas@yawuru.org.au)



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natural resource management program



Images: Damian Kelly and Environs Kimberley



Have you seen any *Mangaban* (Bilby), their tracks or burrows?



The Nyul Nyul Rangers are part of the Kimberley Bilby Project, working to document and protect our local bilbies and we need your help. Please report any sightings and/or signs, new or old, to: Nyul Nyul Rangers ph: 9192 4051, Beagle Bay [nyulnyulrangers@klc.org.au](mailto:nyulnyulrangers@klc.org.au).



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Images: Damian Kelly and Environs Kimberley



Have you seen any *Jidardu* (Bilby),  
their tracks or burrows?



The Nyikina Mangala Rangers are part of the Kimberley Bilby Project, working to document and protect our local bilbies and we need your help. Please report any sightings and/or signs, new or old, to: Nyikina Mangala Rangers [nyikinamangalarangers@kic.org.au](mailto:nyikinamangalarangers@kic.org.au) Jarlmadangah.



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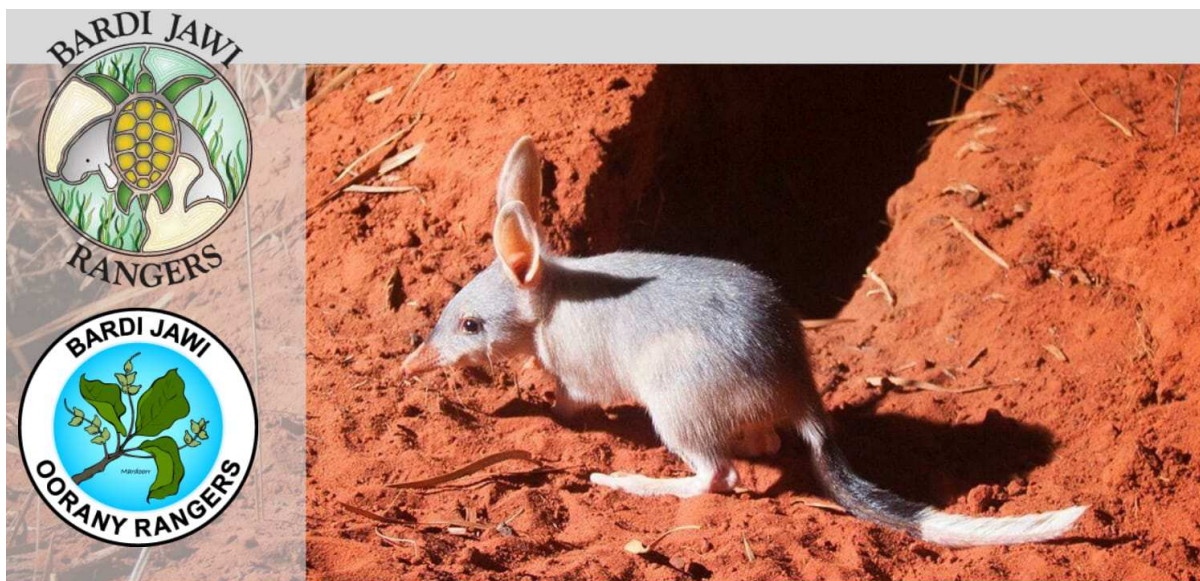
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Images: Damian Kelly and Environs Kimberley



Have you seen any Bilby, their tracks or burrows?



The Bardi Jawi Rangers are part of the Kimberley Bilby Project, working to document and protect our local bilbies and we need your help. Please report any sightings and/or signs, new or old, to: Bardi Jawi Rangers ph: 9192 4047, One Arm Point, bardijawirangers@klc.org.au.



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Images: Damian Kelly and Environs Kimberley

## Appendix 3: Kimberley workshop providing training in survey, monitoring techniques.



### The Kimberley Bilby Workshop aims to:

- Maintain the momentum of the 2016 Kiwirrkurra Ninu Festival through the establishment of a Kimberley bilby network;
- Promote cooperation and collaboration between all parties working on or with an interest in Kimberley bilbies;
- Develop coordinated and standardised approaches to monitor, manage and raise awareness of bilbies across the Kimberley;
- Be a forum for increasing bilby cultural and scientific knowledge-sharing;
- Facilitate adaptive on-ground management across the region to protect and halt bilby decline.

**Where** – Karrayili, 8 Flynn Dr, Fitzroy Crossing.

**What to bring** – PDAs, tablets, laptops and/or smartphones with/out Mobile Data Studio installed. Lunches, morning and afternoon tea provided. Suitable clothing for field components.

**Agenda** – TBA, will include a combination of presentations, open discussion and field activities.

**For more information** – contact Malcolm Lindsay 0405 667 103 [malcolm@envirokimberley.org.au](mailto:malcolm@envirokimberley.org.au) or Karen Bettink 9195 5527 [Karen.Bettink@dpaw.wa.gov.au](mailto:Karen.Bettink@dpaw.wa.gov.au)



## Appendix 4: Sign plot paper data sheet

### 2HA SIGN PLOT DATASHEET v1.2



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#### 1. RECORD LOCATION AT THE START

Site Name/Location/Plot ID \_\_\_\_\_

GPS: Lat/Easting \_\_\_\_\_ Long/Northing \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Ranger group \_\_\_\_\_ Time started \_\_\_\_\_ Time finished \_\_\_\_\_

Team members \_\_\_\_\_

#### 2. TEAM SPLIT UP EVENLY AND WALK A 2HA AREA (Approximately 200m x 100m)

#### 3. RECORD ANIMAL DATA (tick boxes in table below ✓)

#### 4. RECORD ABUNDANCE AND AGE OF SIGNS AT END OF WALKING 2 HA PLOT (1,2 or 3 in last two columns below)

- Abundance of Sign:**
1. Sign in all 4 quarters of plot ●
  2. Sign in half to ¾ of plot ●●
  3. One individual or only 1/4 of plot ●
- Age of Sign:**
1. Fresh 1-2 days old
  2. Older, 3 days to 1 week
  3. In hard mud/substrate or >1week

Species (add if not listed)	Tracks	Scats	Burrow	Digging	Digging into roots of plants	Other (eg sighting, remains, nest, resting place etc – add)	Juveniles present?	Abundance of all sign (1,2,3)	Age of most recent sign (1,2,3)	Tick only if this observation is on road/track next to plot
Bandicoot										
Bettong										
Bilby										
Dingo										
Echidna										
Euro										
Hopping mouse										
Kangaroo Red										
Large Rat										
Marsupial mole										
Mulgara/Ampurta										
Possum										
Quoll										
Small rodent/Dunnart										
Wallaby Agile										
Wallaby Hare										
Wallaby Northern Nailtail										
Wallaby unknown										
Lizard - Goanna small										
Lizard - Goanna large										
Lizard - Medium										
Lizard - Small										
Lizard - Great Desert Skink										
Sand slider (Lerista)										
Snake										
Bird - Turkey (Bustard)										
Bird - Curlew										
Bird - Emu										
Bird - Hopping										
Bird - Walking										
Bird - Quail										
Insect										
Other...										

**2HA SIGN PLOT DATASHEET v1.2**



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Species (add if not listed)	Tracks	Scats	Burrow	Digging	Digging into roots of plants	Other (eg sighting, remains, nest, resting place etc – add)	Juveniles present?	Abundance of all sign (1,2,3)	Age of most recent sign (1,2,3)	Tick only if this observation is on road/track next to plot
Cat										
Camel										
Cow										
Donkey										
Fox										
Goat										
Horse										
Pig										
Rabbit										

**5. WHEN FINISHED WALKING RECORD THE FOLLOWING**

**Plot type** (circle one)      Random      Targeted at habitat      Known location of target species  
**Plot sequence** (circle one)      First time      Repeat sample      Unknown

**Landform type**

Drainage line       Isolated dune       Breakaway       Other (type in below)  
 Salt lake system       Dune field       Hill  
 Plain       Laterite/stony rise       Range

**Soil type (substrate)**

Sand       Sandy soil       Clay       Other (type in below)  
 Gravelly sand       Soil       Gravel

**Vegetation structure**

Shrubland       Open woodland       Dense woodland       Open grassland

**Main long-lived overstory vegetation species** (eg. Eucalypt; Acacia, bloodwood, mixed shrubland; Mulga; other)

**Overstory % cover** (circle) <1%    1-5%    5-25%    >25%

**Main long-lived understory vegetation species** (eg. Spinifex; Buffel grass; Acacia; Other)

**Understory % cover** (circle) <5%    5-10%    10-30%    >30%

**If there are bilby diggings into roots what species are they?** \_\_\_\_\_

**What percentage of the plot is suitable for tracking** (eg sand or dirt)? 0-25%    25-50%    50-75%    75-100%

**How big are the majority of the sand patches?**

less than 1m in width       1-3 m in width       more than 3 m in width       No sand patches

**What size animal tracks would you be able to see and what proportion of the route you walked was like this?** (tick and circle)

<input type="checkbox"/> No tracks (eg leaf litter, rock etc)	<25%	25-50%	50-75%	>75%
<input type="checkbox"/> Big animals only ( eg camel, dingo, kangaroo tracks only)	<25%	25-50%	50-75%	>75%
<input type="checkbox"/> Big and medium animals, (eg agile wallaby, cat, bilby, echidna, goannas)	<25%	25-50%	50-75%	>75%
<input type="checkbox"/> Big to small animals (eg hopping mice, small birds, insects etc)	<25%	25-50%	50-75%	>75%

**2HA SIGN PLOT DATASHEET v1.2**



Department of Parks and Wildlife



**Shadow** (look at own shadow and circle one):    Distinct shadow            Slight shadow            No shadow

**Time since rain** (enter number)             Days             Weeks             Months

**Time since strong wind** (enter number)             Days             Weeks             Months

**Time since burnt** (if known)             <1 month             <1 year             >1 year

Photos of habitat taken? Y / N (if yes –list photo file names) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[OPTIONAL] If bilby burrows are found GPS the location of each one:**

GPS Location (lat, long)	Any notes - location (e.g under log or tree), sensor camera number if placed

**Any other comment/ notes:**

**Please submit datasheets to:**  
 Parks and Wildlife - [threatenedfauna@dpaw.wa.gov.au](mailto:threatenedfauna@dpaw.wa.gov.au), Woodvale Wildlife Research Centre, Bilby Research,  
 Locked Bag 104 Bentley Delivery Centre WA 6983. (08) 9405 5105



## Appendix 5: Abstract submitted for the 12<sup>th</sup> International Mammalogical Congress to be held in Perth, July 2017.



### **Partnering indigenous biocultural knowledge and science: research and management of the threatened greater bilby on the Dampier Peninsula in the north-west of Australia**

Jacob Smith, Johani Mamid, Albert Wiggan, Zynal Cox, Karen Bettink, Martin Dziminski and Stephen van Leeuwen

The greater bilby (*Macrotis lagotis*) is an ecologically and culturally important marsupial that has disappeared from at least 80 percent of its former range. In the extreme northwest of this range, the Dampier Peninsula (approximately 1.6 million ha) represents a stronghold for bilby populations, where like many remaining wild bilby populations elsewhere, largely occur on Aboriginal owned and managed lands and on pastoral leases. The pindan woodland habitat on the Dampier Peninsula is very different to other localities where wild bilby populations are still found. The Western Australian Department of Parks and Wildlife together with Indigenous Ranger organisations have initiated research to determine the status of bilbies and their threats on the peninsula, and to implement and determine the effects of management on bilby populations. The occupancy survey of bilbies commenced in late 2016 using a standardised sign plot tracking technique that also provides data on the occupancy of predators and herbivores, such as domestic and unmanaged stock, as well as habitat variables. Significant populations and threats will be identified during the occupancy survey, monitoring of key populations will be undertaken, and threat management will be initiated. The activities will be undertaken in partnership with Indigenous Rangers. Study outcomes will guide future management strategies to ensure the persistence of wild populations and in so doing reinforces the benefits and importance of engaging Indigenous Rangers and capturing Indigenous Biocultural Knowledge in research programs and management activities for threatened mammal species. Preliminary results from the occupancy survey will be presented.