



WINTER 2018 | ISSUE 7

# What's been happening in the Great Victoria Desert...

Welcome to the Winter 2018 edition of the Great Victoria Desert Biodiversity Trust (GVDBT) Newsletter.

Since the last newsletter, more projects have been completed and scoping for some new projects has begun and progressed.

**The Traditional and Contemporary Fire Patterns project was completed by Neil Burrows and Jane Chapman from Department of Biodiversity, Conservation and Attractions in May.**

A great deal of work was undertaken in researching the way fire was used traditionally compared to the impact fire has had on the GVD in more recent times.

A summary of their findings can be found on page 2. We plan to organise a workshop following on from this work which will assist with planning on ground fire management. This will include considering a return to more traditional ways of managing fire with assistance of modern technology, due to the vast size of the desert.

**The Sandhill Dunnart Camera Survey was completed by Greening Australia in March with some exciting findings (pages 4 and 5).** Plans for a follow up pit trapping and camera project are now underway. Plans are also underway to hold a 'lunch and learn' on recent findings on the Sandhill Dunnart with presentations from key investigators working on this species in the GVD.

**Gaia Resources identified a corridor for undertaking LiDAR to detect Malleefowl mounds in the GVD (page 3) and a proposal to undertake the LiDAR survey is currently being considered.**

There is also a variety of other projects being undertaken by others 'In the Region', some of which are highlighted in the newsletter. If you would like your project to be included in the next edition of the newsletter (December), please let us know.

We hope you enjoy reading this winter edition of our newsletter. If you have any comments or questions or you would like further information about the Great Victoria Desert Biodiversity Trust, please contact the Operations Managers, Kathryn Sinclair, [kathryn.sinclair@gvdbiodiversitytrust.org.au](mailto:kathryn.sinclair@gvdbiodiversitytrust.org.au) or Kylie Payne, [operations.manager@gvdbiodiversitytrust.org.au](mailto:operations.manager@gvdbiodiversitytrust.org.au).

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# Comparing traditional and contemporary fire patterns in the GVD

The GVD Biodiversity Trust project to investigate traditional and contemporary fire patterns in the Great Victoria Desert has been completed and Neil Burrows and Jane Chapman have submitted their final report. The following is taken from the report's Executive Summary.



*Cool season fire in the GVD*



*Jane Chapman using a drone to photograph fire scars*

**The purpose of the study was to compare and contrast the recent fire patterns in the Great Victoria Desert (GVD) with those likely created by traditional (pre-contact) Aboriginal (Pila Nguru – Anangu tjuta pila nguru) burning. Neil and Jane used a chronosequence of Landsat satellite imagery from 2000-2016 to reconstruct and quantify the contemporary pattern and the earliest black and white aerial photography, taken in 1960/61, to reconstruct and quantify Anangu burning patterns. Depopulation and displacement of Anangu began as early as the late 1940s so by the time of the aerial photography, there were fewer people living a traditional lifestyle in area. Based on best available knowledge, aerial photography was acquired over those areas where people were most likely to be living at the time of the photography.**

Typical of Australia's spinifex deserts, the modern fire pattern in the GVD is characterised by cycles of very large areas burnt by hot fires in spring / summer followed by periods of lower fire activity, a cycle largely driven by rainfall. Over the 17 year study period, the mean and maximum fire sizes were 3,699 ha and 1,033,121 ha respectively. This contrasted strongly with the size of fires, mostly attributed to Anangu burning, visible on the 1960/61 aerial photography. While the photography is literally a 'snapshot' in time and space, the mean and maximum fire sizes were 11.2 ha and 3,953 ha respectively. The fire scars on the photographs were clustered, probably reflecting the locations of small groups of people at the time of photography. Compared with similar studies in the Great Sandy / Gibson Deserts, the extent of recent burning evident on the old aerial photographs was limited, with only about 2.7% of the area showing visible signs of having been recently burnt. This probably reflects the sparse population at the time of photography and relatively large areas of low flammability vegetation in this region of the GVD.

Fire played, and continues to play, an important role in the spiritual and physical well being of Anangu. It is clear from the old aerial photographs that the people who carried out the burning had a sound knowledge of fire behaviour; they were able to keep the fires small because they understood relationships between fire behaviour, vegetation (fuel) and weather, especially wind. There were good reasons why fires were kept small; basically large fires were unnecessary, wasteful and of little benefit to Anangu. Reasons for burning were many and varied, and consistent with other Western Desert people, but mainly for food acquisition. A beneficial consequence of broadscale patch-burning was it mitigated, or buffered, the harmful effects of hot season bushfires and was of benefit to the wildlife.

While there is some level of fire management in the GVD, most of the region experiences unmanaged fire patterns dominated by large, hot bushfires, which are harmful to biodiversity, are environmentally degrading and are contributing to greenhouse gas emissions. Action is needed to increase the capacity of people to better manage fire in the GVD and to re-instate traditional Anangu fire management across larger areas of high cultural and conservation value. Traditional fire management carried out at appropriate scales, as well as other benefits, can reduce greenhouse gas emissions and increase carbon sequestration. The future carbon market could provide opportunities for self-funding fire management, delivering social, cultural, economic, environmental and conservation benefits.

For further information on this project, contact Project Manager, Neil Burrows at [neil.burrows@dbca.gov.au](mailto:neil.burrows@dbca.gov.au).

If you would like a copy of the final report for this project, contact: Kylie Payne, [operations.manager@gvdbiodiversitytrust.org.au](mailto:operations.manager@gvdbiodiversitytrust.org.au).



# LIDAR proposal to detect Malleefowl mounds

LIDAR, along with photogrammetry, is recognised as a cost effective method to detect Malleefowl mounds over large areas.

**Gaia Resources was contracted by the Trust to identify a corridor to undertake LIDAR to detect Malleefowl mounds in the GVD.**

The corridor was identified based on the following criteria

- more than 10 years since fire (green)
- high Malleefowl suitability based on vegetation type (black) or moderate Malleefowl suitability (blue) *(these were derived from the 2017 Trust funded Malleefowl Site Selection Project)*
- within 2km of roads or tracks (to make it easier for ground truthing)

An approximately 1000km corridor split into 2 sections- a north-south and an east-west corridor was identified based on the above criteria.

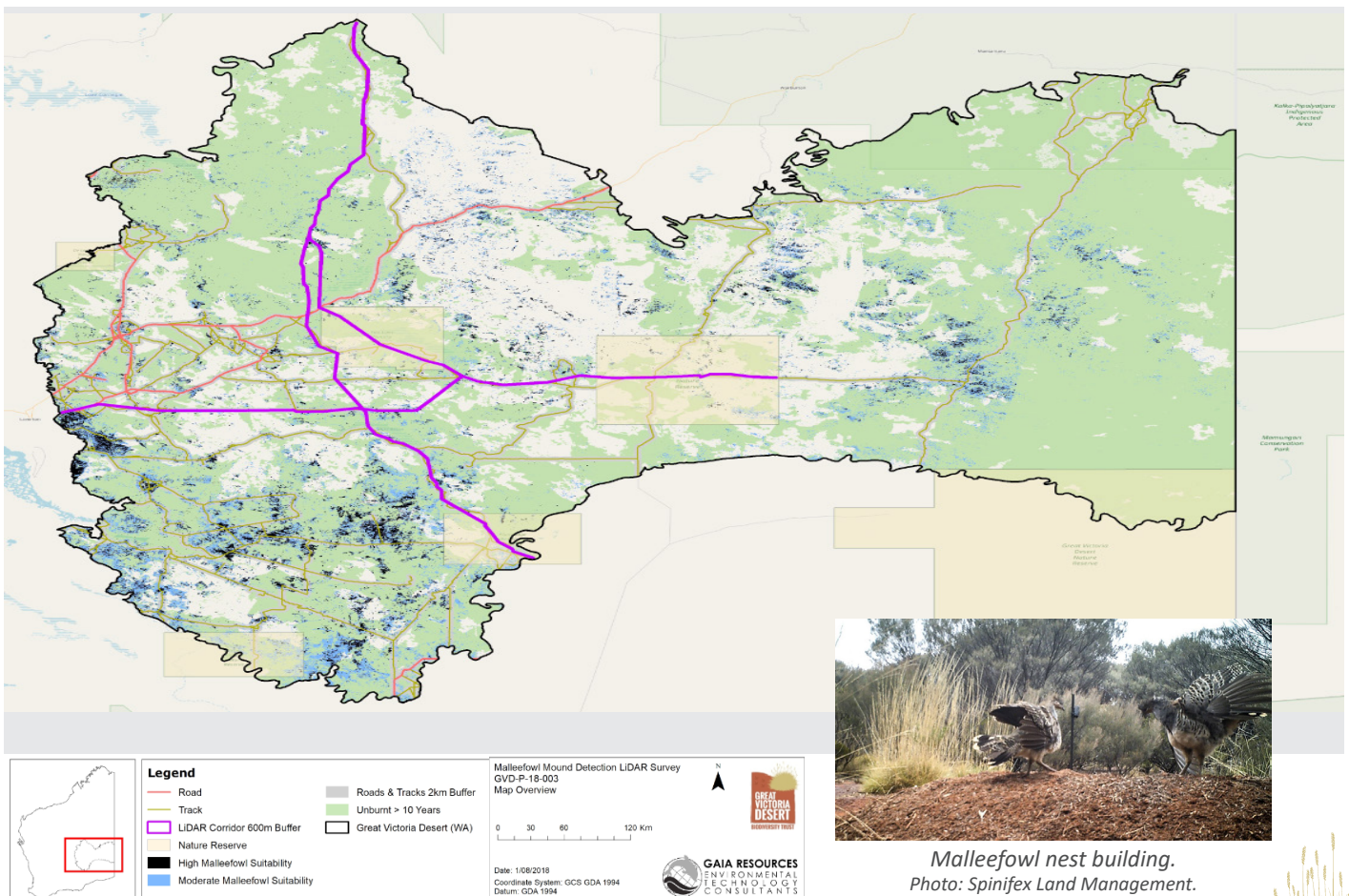
The Trust is now assessing a proposal to conduct the LiDAR survey including the flight, and the data interpretation, to identify the Malleefowl mounds.

The advantages of LiDAR include:

- It can cover a large area in a time and cost efficient manner.
- LiDAR is the method recommended for detecting Malleefowl mounds by the National Malleefowl Adaptive Management Project.
- Umwelt/Anditi have been using LiDAR to detect Malleefowl mounds for many years in WA and Eastern Australia and have refined the algorithms to have a high accuracy rate for detecting mounds.
- The computer analysed data also provides structural information on vegetation and water bodies which will be helpful for the future as climate changes and consequently habitat may change.

The LiDAR analysis process involves ranking potential Malleefowl mound locations from 1 (high) to 4 (low) as to likelihood of being a mound. Selected areas would then be ground-truthed to confirm if they are in fact mounds.

This will greatly increase knowledge on the habitat Malleefowl use for nesting, their potential distribution across the GVD and their density in different habitats.





# Sandhill Dunnart baseline camera survey completed with exciting results

In Spring 2017, the Trust funded Greening Australia to undertake a baseline Sandhill Dunnart camera trapping survey across the vast Great Victoria Desert.

138 cameras were set up at 20 sites and more than 140,000 images were captured during survey.

Nine sites were established in late September/early October with motion sensor cameras remaining in the field until early November and 11 sites were established in early-November, remaining in the field until mid-December.

While the survey aimed to detect the Sandhill Dunnart (*Sminthopsis psammophila*), opportunistic observations and the use of motion sensor cameras over a large area enabled a substantial diversity of fauna species to be recorded. Overall, 137 fauna species were recorded, comprising 25 reptile, 88 bird, 18 native mammal and six introduced mammal species. This included several species rarely encountered in the Great Victoria Desert and has resulted in the extension of range for a number of species. Several species were recorded in the region for the first time, and a number of threatened taxa were located, including the Sandhill Dunnart.



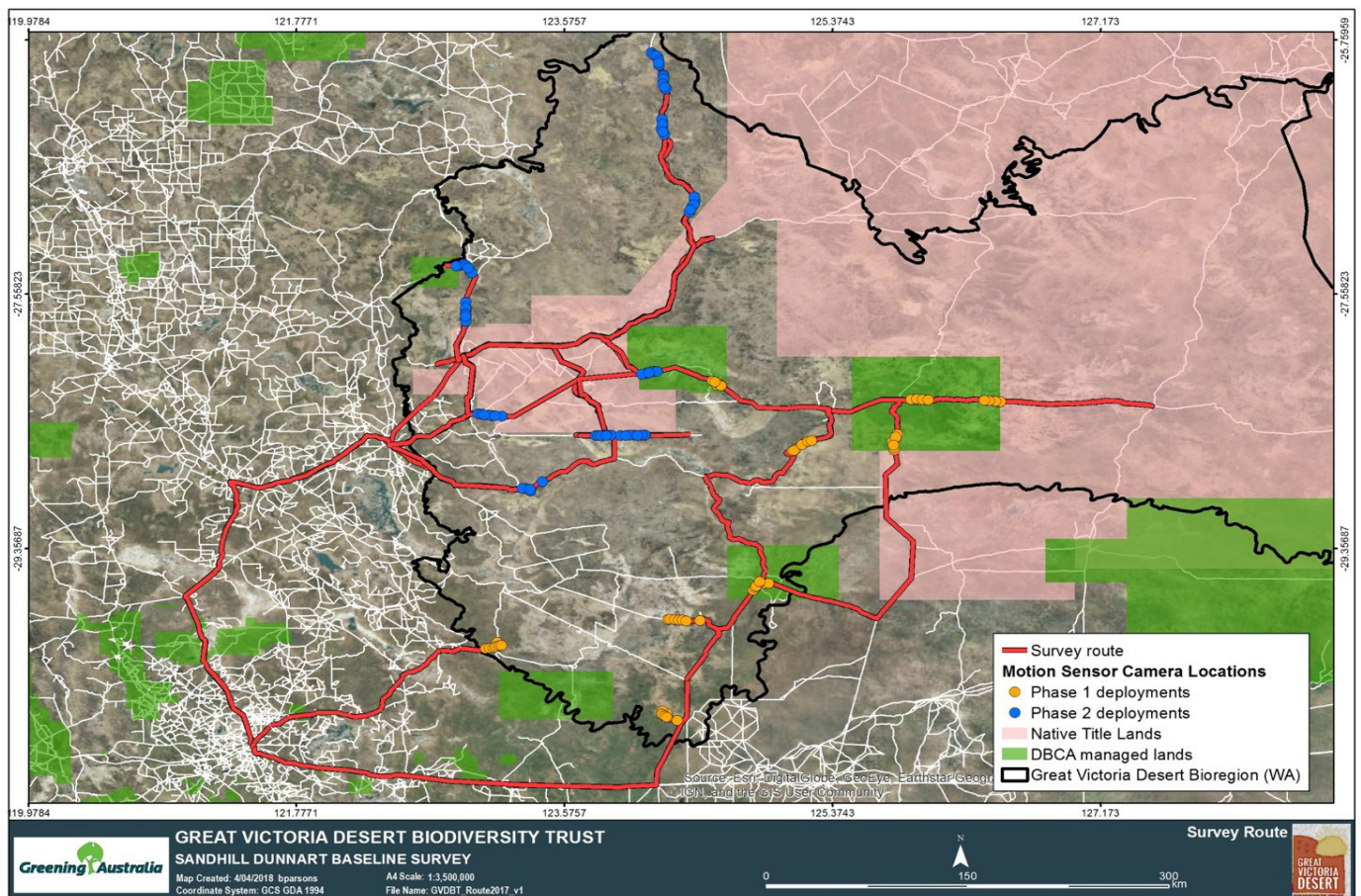
Sandhill Dunnart



Photo: Jeff Turpin

The Sandhill Dunnart was confirmed from one new area, with a second location considered likely to support the species. Confirmation of a new Sandhill Dunnart population extends the known range approximately 100 km to the east.

Habitat data was also collected to inform models and gain knowledge into this under-studied region of Australia.







*Sand Monitor*



*A pack of dingos*



*Camels at night*

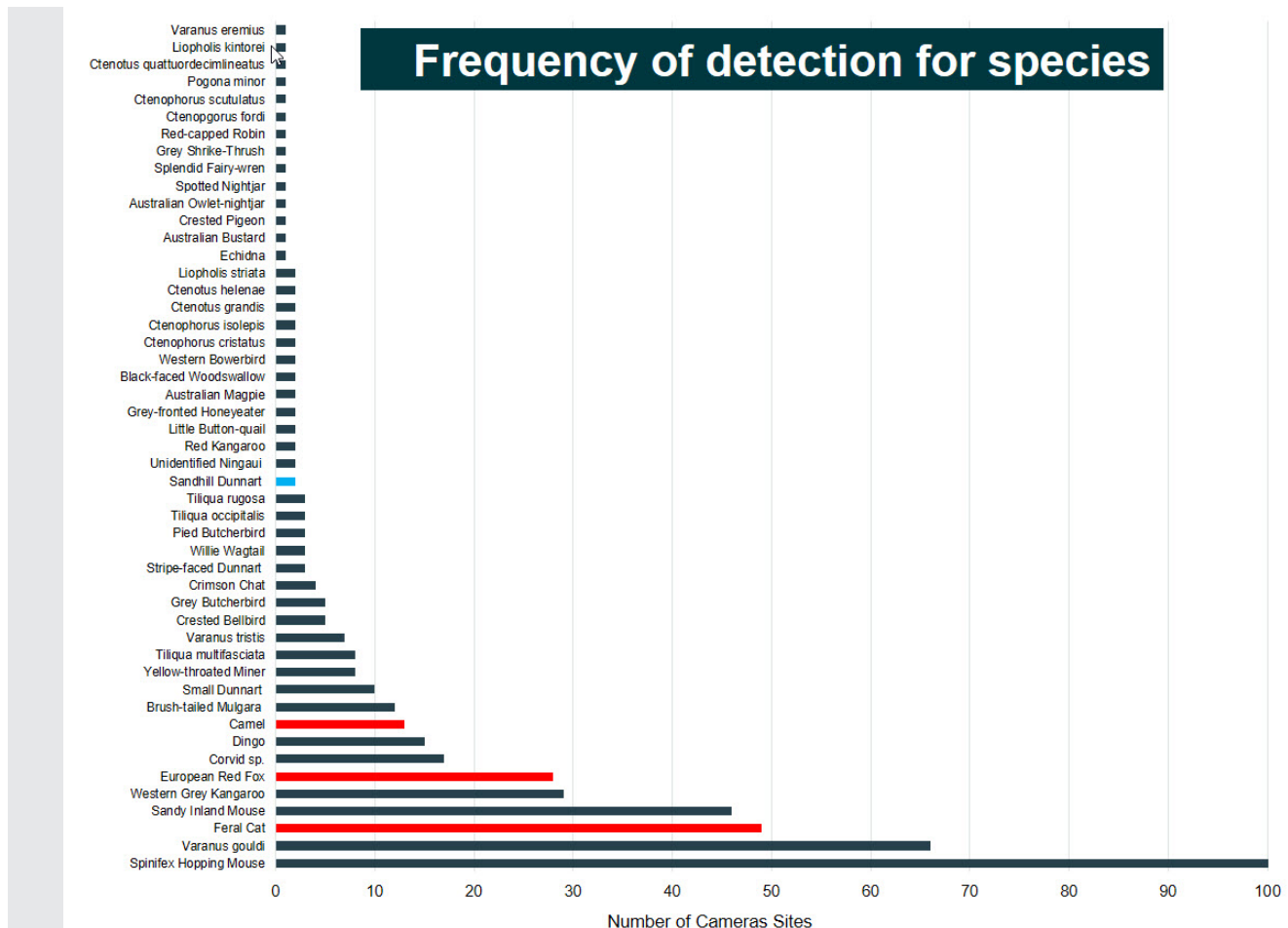


*Feral cat*

The Trust would like to thank Greening Australia and their team of staff and volunteers for their hard work and their efforts to make this survey a success.

A copy of the report is available on the GVDBT website  
<http://gvdbiodiversitytrust.org.au/our-projects/sandhill-dunnart-camera-trapping-surveys-underway/>

The Trust is working with Greening Australia to undertake a follow up survey including pit fall trapping, to gain a better understanding of species abundance and habitat preference for the Sandhill Dunnart.





# Goldfields Environmental Management Group Workshop

Operations Manager, Kylie Payne attended the GEMG Workshop in Kalgoorlie in May.

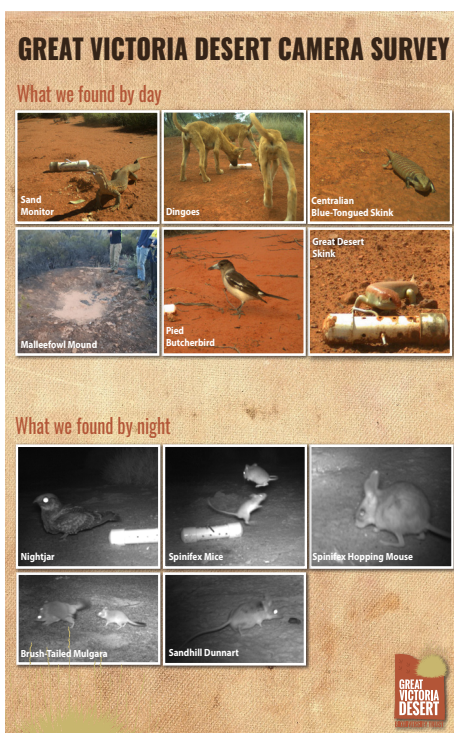
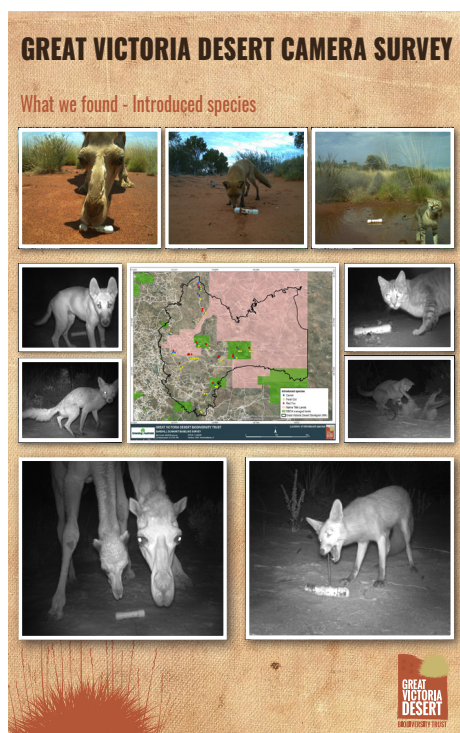
This was a great opportunity for the Trust to see and hear the latest knowledge and research on projects being undertaken in the region and network with others working in the Goldfields.

The Trust took up the opportunity provided by the GEMG to have a booth at the Workshop which was well received. The Posters showing the range of mammals, reptiles and birds detected during the Trust funded Greening Australia Sandhill Dunnart Camera Survey and the taxidermy Malleefowl (provided by DBCA office in Kalgoorlie as part of our display) were the drawcard attractions to the GVDBT booth. A number of the display folders containing a wide range of information about the Trust were taken and contents discussed.

The Kalgoorlie trip also provided the opportunity have a meeting with many of the Great Victoria Desert Adaptive Management partners and others working in desert regions.



Kylie providing information to Eugene Bouwhuis





# Vimy Resources camera trapping surveys at Mulga Rock

by Xavier Moreau

Since 2013, Vimy Resources (Vimy) has been operating motion sensor cameras for fauna survey purposes at and around the Mulga Rock Project, located in the Yellow Sand Plains (YSP) of the Great Victoria Desert (GVD). Permitting of the project started in mid-2013 and conditional ministerial approvals were granted in December 2016 and March 2017.



*A Sandhill Dunnart*

**Conventional surveys carried out in the GVD (in SA and WA) since the early 1980s have steadily increased the known range of the threatened Sandhill Dunnart (SHD). A SHD was first recorded in WA at Mulga Rock in the mid-1980s, with subsequent captures during surveys by the DBCA (including a high capture rate around the northeast corner of the Queen Victoria Spring Nature Reserve), all within the YSP.**

More recent surveys associated with resources projects outside of the YSP have extended the range of the SHD in WA beyond the YSP region.

The rationale behind Vimy's large-scale survey (first of a kind in the GVD, with up to 38 cameras deployed at a time) was the limitations of conventional fauna surveys in a desert environment, associated with a range of variables beyond the control of the survey team (seasonal factors, bushfire history, moon phases, weather patterns).

In developing a camera monitoring program focused on small mammals in the critical weight range suitable for presence/absence survey purposes, Vimy identified the following parameters as being key to a successful trapping program:

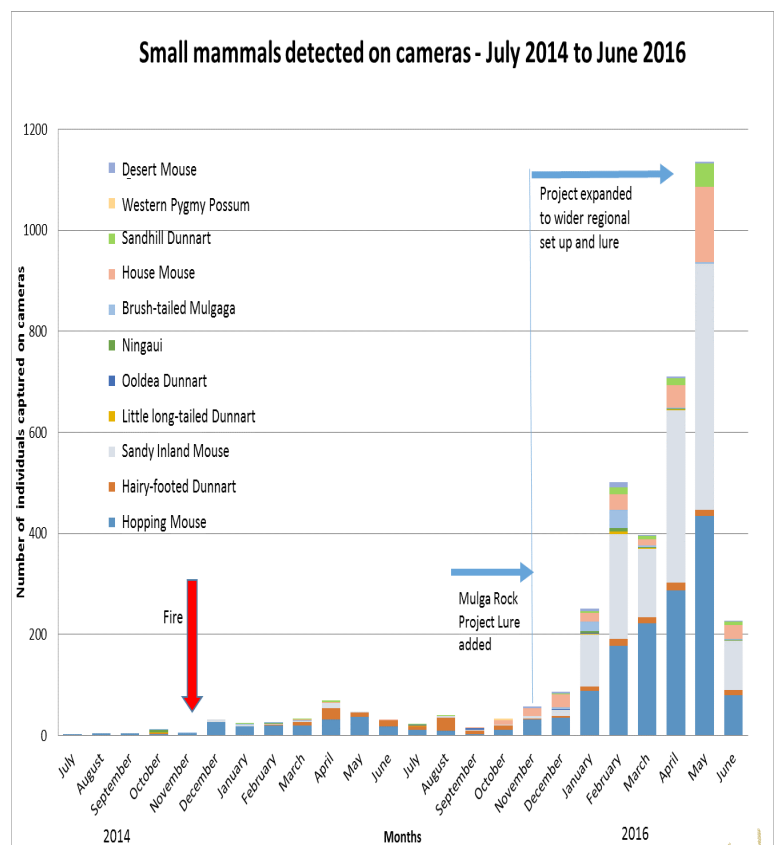
- Camera equipment
- Influence of bushfires
- Camera trap methodology
- Site selection
- Camera trap layout
- Detectability, survey effort and data recording, with a particular focus on capture rates, optimal monitoring
- Taxa identification and similar species in range

Since mid-2014, Vimy's camera trapping has resulted in the detection of 11 species of small mammals in the YSP (and over 30 species in total) over more than 20,000 trap nights. This includes the photo-capture of over 80 SHD over 9 sites spread over 2,000km<sup>2</sup> of the YSP.

With the survey still ongoing, significant findings relating to survey duration and optimum set-ups as well as increased knowledge of the ecology, biology and habitats of various small mammals and the SHD in particular are being analysed and that knowledge will be shared with other stakeholders, including through the GVD Biodiversity Trust.

Vimy would like to acknowledge Glen Gaikhorst from GHD for his involvement in the project.

For further information contact Xavier Moreau at [xmoreau@vimyresources.com.au](mailto:xmoreau@vimyresources.com.au)





# Meet a Management Panel Member

## - Nigel Wessels

### When and why did you join the Management Panel?

I joined the Management Panel in August 2016, replacing Ian Kealley, the previous Goldfields Regional Manager, as one of two representatives for the Department of Biodiversity, Conservation and Attractions (DBCA).

### What's your background/qualifications/employment history?

I was born in Zambia and raised in Zimbabwe, but completed my Degree in Forestry and Master's Degree in Nature Conservation in South Africa, where I began my career in nature conservation 30 years ago. This has included stints in forestry, ecological research, conservation management, parks and visitor services management, and environmental consultation. I began as a research technician with the South African Department of Forestry's Research Centre in the Western Cape, where I was involved in ecological research projects including the study of fire regimes in the Fynbos Biome, the role of large native herbivores in Succulent Thicket and patterns and processes of biodiversity in indigenous forests.

I subsequently joined CapeNature, a provincial government conservation agency in South Africa, where I worked for 17 years, as a conservation manager for protected areas. I have extensive experience in joint management with indigenous Africans (primarily Khoisan and Xhosa people), including establishing a traditional medicinal plant nursery and engaging private contracting teams from historically-disadvantaged indigenous communities for the delivery of various land management services.

I worked for several years as an environmental specialist for an internationally-based environmental consultancy firm. I have also been a part-time lecturer at the Nelson Mandela University in the School of Natural Resource Management.

I have worked for DBCA since 2011, as the Goldfields Regional Leader Parks and Visitor Services, the Pilbara Regional Leader Nature Conservation, and since August 2016, as the Goldfields Regional Manager.



*In my early conservation days, when a day at the office meant a horse ride up into the Cederberg Mountains!*

### Any quirky interest or interesting facts about yourself?

I have run over 50 marathons, including six Comrades (90km), and nine Two Oceans (56km) ultra-marathons. Currently, I confine my exercise to swimming laps at the local gym, but with my son taking up marathon running, I will probably be coaxed into topping up my Comrades finishes and getting my permanent number (10 runs) for Two Oceans!

### What's your interest in the GVD?

I am particularly interested in Aboriginal Joint Management and see this as the ideal model for conservation management in the Great Victoria Desert Nature Reserve. I am keen to assist in the development of a meaningful and enduring fire management program, coupled with appropriate introduced animal control, to the benefit of threatened species.

### What's your contribution/role to the GVDBT Management Panel?

I aim to provide guidance regarding the identification and implementation of pragmatic conservation management measures, including the efficient allocation of resources.

### Highlight of being part of the GVDBT?

The June 2017 field trip to the Tropicana Mine and environs.

## Contact the Trust

If you have some GVD research, updates or stories, please forward them to the Trust to share with key stakeholders via the Trust's website and newsletters. Thank you to everyone who has contributed so far. If you would like to donate to, or partner with the Trust, please contact the Trust's Operations Managers: Kathryn Sinclair at [kathryn.sinclair@gvdbiodiversitytrust.org.au](mailto:kathryn.sinclair@gvdbiodiversitytrust.org.au) or on 0407 657 850 or Kylie Payne at [operations.manager@gvdbiodiversitytrust.org.au](mailto:operations.manager@gvdbiodiversitytrust.org.au) or on 0435 657 850.