Newsletter

SUMMER 2021 | ISSUE 10

The latest news from the Great Victoria Desert...

Welcome to the 2021 edition of the Great Victoria Desert Biodiversity Trust (GVDBT) Newsletter.

2021 has been a big year for the Great Victoria Desert Biodiversity Trust (the Trust) with the major project, the Landscape Conservation Initiative (LCI) really starting to take shape.

This project brings together research and land management to demonstrate the impacts of managed burn activity on biodiversity values in the desert.

On page 2 you can read about the weather stations which have been installed in the Great Victoria Desert (GVD) as part of the LCI, why they were installed and what we plan to do with the information they provide.

Another major project completed as part of the LCI was the Baseline survey for biodiversity.

This project, led by GHD, involved the establishment of pitfall traps and two pitfall trapping trips (in Spring 2020 and Autumn 2021) to determine what species could be detected using both pitfall traps and camera traps.

Full details of the story are on page 3.

The next step for the LCI project is the establishment of semi-permanent camera traps to increase the likelihood of detecting Sandhill Dunnarts and to get an understanding of feral cats in the region.

Read more about feral cats and the camera set up on page 4.

Finally the Trust is excited to announce the formation of a new partnership with the Indigenous Desert Alliance (IDA). This partnership will see the implementation of Indigenous Australian led fire management projects across the GVD; read more on page 5.

We hope you enjoy reading this edition of our newsletter. If you have any comments or questions on the articles or you would like further information about the Great

Victoria Desert Biodiversity Trust, please contact the Operations Manager, Kathryn Sinclair on kathryn.sinclair@gvdbiodiversitytrust.org.au.

IN THIS ISSUE

Weather stations to monitor environmental conditions in the GVD

Through the Landscape Conservation Initiative (LCI), the Trust is investigating the effects of fire management and feral predator control on desert biodiversity.

Chris and Evan (DBCA) and Jaume with newly installed weather station.

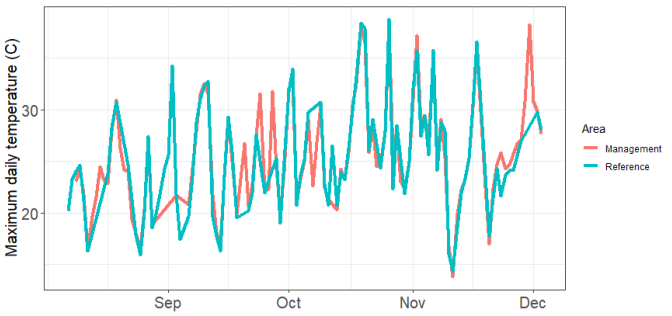

Figure 1. Daily temperature changes in the LCI areas between August 6th and December 3rd 2021.

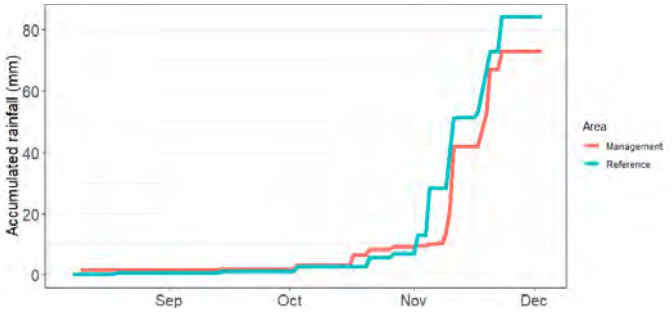

Figure 2. Accumulated rainfall in the LCI areas between August 6th and December 3rd 2021.

The LCI project compares changes in biodiversity over time in two landscapes, a Management area, where fire and feral predator management will take place and a Reference area, in which biodiversity will be monitored, but no management activity will occur.

In many arid and semi-arid ecosystems, ecological processes are affected by changes in temperature and rainfall. The GVD has gone through a particularly dry period in the last 10 years, and all fauna and flora in the GVD are facing increased challenges. Having a good record of rainfall is critical to understand any changes we might detect in terms of animal activity and abundance in the LCI areas. Rainfall is also thought to be highly influenced by local weather conditions with rainfall occurring in localised areas, meaning that rainfall can differ significantly between two reasonably close locations. In the GVD there is limited, accurate meteorological information. For these reasons, in early August 2021, the Trust deployed two automatic, satellite-connected weather stations in the LCI's Management and Reference areas. The stations are logging and transmitting daily rainfall, maximum and minimum temperatures, and maximum and minimum relative humidity.

Several aspects of our work can benefit of this detailed meteorological information. In water-limited, spinifex-dominated desert landscapes, the occurrence of fire is closely linked to vegetation biomass, which is itself closely linked to accumulated rainfall since the last fire event. Prolonged and intense rainfall episodes can also cause a flush of annual grasses that connect otherwise disconnected spinifex clumps. This can increase flammability in landscapes areas that would otherwise be unable to readily carry fire. Detailed information on rainfall can help better understand fire risk, and assist fire management actions, which are at the core of our biodiversity conservation strategy.

Since the weather stations have been installed (August to December 2021), the LCI management and reference areas have recorded similar amounts of accumulated rainfall, and similar trends in maximum daily temperatures (Figure 1). In November the GVD received large amounts of rain (Figure 2).

The Trust would like to thank DBCA staff Evan Donovan and Chris Curtis for their invaluable support in installing these two stations.

Data from the weather stations is accessible through an online portal. If you have an interest in using or accessing this data, please get in touch with the Trust's Technical Biodiversity Officer, at jaume.ruscalledaalvarez@gvdbiodiversitytrust.org.au).

Baseline biodiversity survey

A major part of the Landscape Conservation Initiative (LCI) project is determining whether a managed burn program, implemented over a number of years, will result in a demonstratable increase in biodiversity relative to a similar area where no manged fire program is conducted.

Pogona minor minor, Dwarf bearded dragon.

Sminthopsis hirtipes, Hairy footed dunnart.

To begin to answer this question, the Trust commissioned GHD to undertake pitfall trapping and camera trapping in the Management and Reference areas of the LCI project. Permanent pitfall traps were established in both areas in vegetation classes of different fire ages, as different species of fauna utilise habitat of different fire ages and vegetation types. By placing pitfall traps and cameras traps in these different habitats, it was hoped that we could capture a large proportion of vertebrate fauna biodiversity of the region and we would also be able to track the utilisation of these different areas by different species over time.

The surveys were conducted in October 2020 and March 2021. By conducting pitfall trapping in these different times of year the best breadth of species diversity can be captured. Camera traps were placed in the field for five months, from the first survey to the end of the second survey (see Figure 3 for camera and pitfall trap layout). Pitfall trap design was based on the Sandhill Dunnart Monitoring Guidelines to ensure a high probability of detection if Sandhill Dunnarts were present in the area. The pitfall trap and the camera trap surveys did not detect any Sandhill Dunnarts. However, the pitfall traps detected 8 mammal species and 63 reptile species. The full report including all species detected during the survey can be found on the Trust's website. Additionally, the camera traps detected a significant number of species: seven mammal species, nine reptile species and three bird species in the Management area and 13 mammal species, five reptile species and eight bird species in the Reference area.

GHD also undertook 50 Malleefowl long walks. This included re-visiting mounds that had been surveyed in July 2020 by the National Malleefowl Recovery Group. Through these walks GHD detected 11 additional mounds including one that had been recently dug out. They also detected Malleefowl footprints in several sites across both the Management and Reference areas. This information helps build a picture of Malleefowl in the GVD, their presence, persistence and the areas they are currently inhabiting.

By conducting ongoing pitfall trapping, visiting Malleefowl mounds and incorporating a network of camera traps, the Trust will continue to develop a strong knowledge of biodiversity, threatened species and changes that occur across the Management and Reference areas.

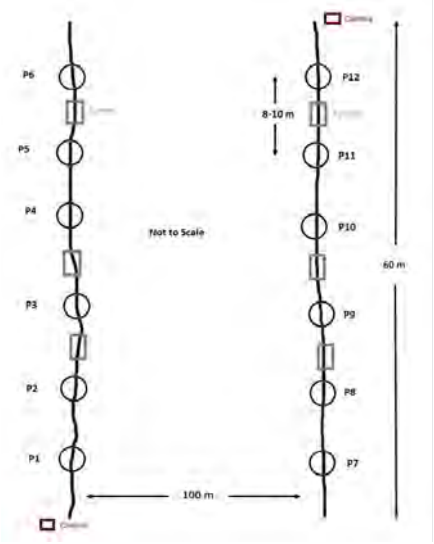

Figure 3. Camera and Pitfall trap design layout.

The cats out of the bag - Camera trapping for feral cats

Feral predators are one of the greatest threats to Australian native fauna. Cats and foxes were first introduced by Europeans during the 18th and 19th century and are now found as feral populations across most of the mainland and on many of the large offshore islands.

Figure 1. Feral cat imaged by an infrared camera trap in the GVD. The white pipe is an olfactory lure used to attract fauna to the camera's field of view.

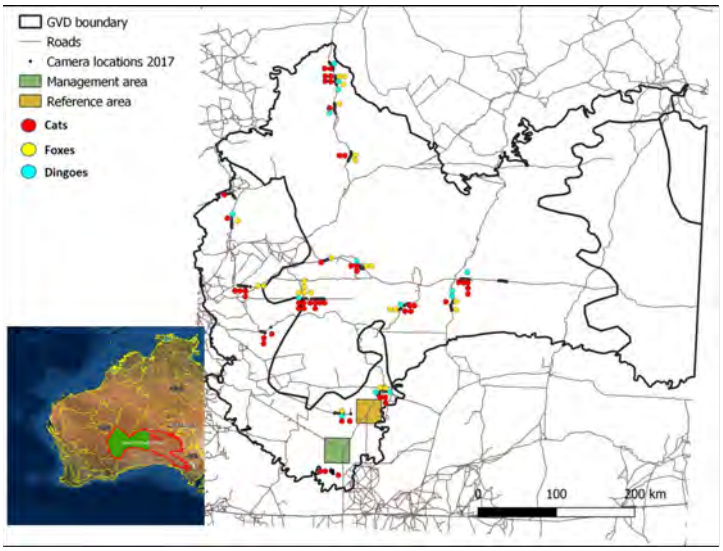

Figure 2. Map of feral predator detections during the 2017 camera trap survey, which covered a large area in the WA extent of the Great Victoria Desert.

Recent estimates are that, in Australia, feral predators kill an astonishing total of 2.2 billion native animals every year (including mammals, reptiles and birds).

Fire mapping was carried out using a methodology d The GVD is not immune to this threat. In 2017 and 2018 the Trust detected the presence of cats and foxes throughout most of the WA extent of the GVD using camera traps (a total of 74 cat detections and 21 fox detections) (figure 2), including areas where species such as the endangered Sandhill Dunnart (Sminthopsis psammophila) and the Malleefowl (Leipoa ocellata) are known to occur. However, the presence of feral predators in the GVD has never been properly quantified, which is key to understand its potential impacts on native fauna, as well as to assess the effects of any potential control measures.

As part of the LCI, the Trust is making its first steps to address this issue by quantifying the presence of feral predators within the Management and Reference areas (two 30 km by 30 km areas within the south-western GVD). Several methods have been developed and proven effective at quantifying feral predator presence within a certain geographical extent. After consultation with our Technical Advisory Panel members, as well as with other experts in this matter, the Trust will be deploying a total of 62 infrared flash camera traps throughout the two LCI areas (31 cameras in each area). By analysing camera trap data, and relating it to its location, we will be able to estimate feral predator occupancy (which is the proportion of the landscape occupied by a group of animals) in each one of our project areas.

This will be a first crucial step to understand the magnitude of the feral predator issue in the GVD, since we will be able to compare feral predator presence in these areas with that of landscapes with similar vegetation and climate. If deemed appropriate, the Trust will engage in control actions (such as baiting) to reduce feral predator presence in the Management area, after which we will be able to repeat the survey and assess if feral predator presence has declined. In parallel with our ongoing fauna monitoring surveys, this will help determine if feral predator control can have a significant positive impact on vertebrate biodiversity in this unique part of the world.

The Trust aims to deploy the camera traps in late March 2022 and collect the data every six months. By the end of 2022 we should have early indications of cat numbers in the GVD!

Indigenous Fire Management - a partnership with the Indigenous Desert Alliance

The Trust is excited to announce the formation of a partnership with the Indigenous Desert Alliance (IDA) to empower Indigenous ranger groups and traditional owners in the Great Victoria Desert (GVD) region to undertake burn management programs.

Yilka and IDA ranger development program on-country trip.

Researchers have estimated that at least 59.5% of threatened species occur on Indigenous peoples' lands and several studies have concluded that genuine cross-cultural partnerships are an essential underpinning for collaborative work and conservation outcomes. Several researchers have linked the decline of many species in recent decades with the end of traditional Indigenous stewardship and concluded that Indigenous fire management will benefit several threatened species[1].

By partnering with the IDA, the Trust hopes to empower ranger and traditional owner groups to protect sites that are both culturally significant and significant for the biodiversity within different parts of the GVD.

Across the GVD there are several different groups who are custodians of the land. These groups vary in their current utilisation of cultural burn management practices; some groups have an advanced burn program that has been operational for a number of years whilst other groups are at the early stages of developing a burn management program.

The IDA (which the 10 Deserts Project has recently integrated with) is an organisation with the chief goals of supporting Indigenous land managers and rangers working on desert country by:

- enabling rangers to speak with one strong voice for the desert
- supporting capacity building for desert ranger teams
- enhancing regional project collaboration
- inspiring other desert groups to create strong ranger teams

Continued on next page

Indigenous Desert Alliance

Keeping the desert connected

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The IDA has had a lot of success engaging with Indigenous ranger groups. They have implemented fire management activities with over 20 groups including the Yilka rangers in the GVD. The IDA recognises that relationships with Indigenous ranger groups requires face-to-face time and on-going capacity building and training.

By employing highly skilled field staff, who spend a significant proportion of their time in the field, on-country, working with ranger teams, the IDA have the opportunity to build the skills and expertise of Indigenous groups.

Cultural fire management recognises the strengths of traditional burning techniques but also examines how these practices can be integrated with modern equipment including aerial burn techniques, helicopters and drip torches. Critical to a successful cultural management program is ensuring that groups set the priorities and undertake burn activities that are culturally acceptable and culturally sensitive.

The Trust is excited about this partnership and hopes that it leads to the protection of cultural and biodiversity assets across the GVD.

[1]Garnett S, Woinarski JCZ (2007) A case for Indigenous threatened species management. In 'Investing in Indigenous natural resource management.' (Eds M Luckert, B Campbell, J Gorman, S Garnett.) pp. 227–259. (Charles Darwin University Press: Darwin)

Contact the Trust

If you have any 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 Kathryn Sinclair on 0407 143893 or kathryn.sinclair@gvdbiodiversitytrust.org.au