2014 Tjirrkarli Project

Once again we are indebted to the Ngaanyatjarra People for the invitation to conduct a project within their Lands. This was the third project in a row with our Ngaanyatjarra friends with Tjirrkarli preceded by Sykes Bluff in 2010 and the Rawlinson Range in 2012.

Without a suitable venue we don't have a project, so thanks are due to Alex Knight of the Ngaanyatjarra Council (Aboriginal Affairs), Manager Land and Culture, for suggesting Tjirrkarli and to the Land Council for approving the project.

There were 65 participants in the Desert Discovery project, contributing through groups allocated to Administration, Logistics, Pioneers, Birds, Botanists and Fauna.

Projects begin several years prior to the start date, with the Administration, Logistic and Pioneer groups negotiating with traditional owners, conducting recce visits before the project to confirm suitable areas and further interactions with traditional owners, then the establishment of a base camp site.

During set up of the base camp, Daniel Johanson and the Ngaanyatjarra Rangers marked five internal tracks for our use. This made life very simple for our field teams and was greatly appreciated by all concerned.

Logistics

The Project preparations started later than usual with the reorganising and reloading of the DD Equipment onto the trailer performed in July. Unfortunately, it poured with rain and the strong winds put a definite dampener on the activity. The trailer was delivered to NATS Transport the next week, and they trucked it to Warburton to be ready the week before it was required. We thank Ted Box, Manager of Warburton Roadhouse for looking after the trailer until it was picked up. it was taken to and from the Tjirrkarli base camp by DD participants.

We proposed a cautious approach with respect to water plans so only erected one shower. The planned system of pumping water from the existing 500L storage tank on Ambulance Bore using the DD Centrifugal Pump failed, so Plan B was implemented and a small back up Submersible Pump was used. This proved very effective and performed well for the rest of the Project. Solar pumping performance was maximised by servicing the Solar Pump Filters, after which the existing Solar System on the bore cooperated very well and had water available for tank top ups as required. This system resulted in substantially less fuel used by the generator than in previous projects.

DD extends many thanks to the group of early arrivals who enthusiastically assisted in the preparation and setting up of the camp facilities. Also, thanks to everyone who

assisted with the smooth running of the Project equipment, and to all who assisted with the dismantling of the facilities.

Bird Survey report

Between 25th August and 14th September, volunteer Desert Discovery members and invited participants undertook bird surveys in the Desert Discovery Tjirrkarli Project region. Eighty three bird species were recorded and there were more than 700 individual records of birds. Thirteen observers undertook surveys and four contributed incidental records. The bird surveys have contributed significant data to the Ngaanyatjarra people, hopefully also providing a contribution to Indigenous Protected Area plans, and also to BirdLife Australia's national Bird Atlas database, the single largest citizen science project in Australia. The surveys also built a legacy of survey sites that might be repeatedly surveyed in the future.

Male Rufous Whistler was the most commonly recorded insectivore. Photo: Graham Goods

The project region in the Ngaanyatjarra lands accessed for bird surveys was very large, and track access only possible in some areas. Due to limited time and small numbers of observers, there could be no attempt to systematically survey the entire region. Rather, an attempt was made to thoroughly survey as many areas as possible. Surveys were either opportunistic or conducted at set distances along tracks. In addition, an attempt was also made to sample as many habitat types as possible. Most surveys were conducted during planned excursions or expeditions from the base camp at Ambulance Bore. These included a ten day expedition by six members of the team that focussed intensive survey effort on the project region, generally at two kilometre intervals on tracks, but also included less intensive surveys of the adjacent non-project areas outside Ngaanyatjarra lands along the Gunbarrel Highway, the Gibson Desert Nature Reserve, and the Hunt Oil Road. Bird survey data from outside the project region are not considered in this report. Most surveys were contributed by the bird survey team; other Desert Discovery members contributed small numbers of surveys or incidental records.

Botany report

The work of the Botany team was done in partnership with the Ngaanyatjarra Council (Aboriginal Corporation) Land & Culture and the Western Australian Herbarium. The Herbarium provided us with presses, data sheets and guidelines for collecting. The criteria for the survey were to collect, for each species, at least three specimens which had reproductive structures (flowers, buds and/or fruit), place the specimens into plant presses, record the date, name the species (if possible), record the GPS waypoint using Map Datum WGS 84, give the general location, complete a field data sheet for each

record and photograph the specimens. At the completion of the project all pressed specimens were forwarded to the Western Australian Herbarium (WAH) for formal identification.

Areas that had been previously burnt within the last two years yielded the greatest variety of specimens. Regions which have not previously been burnt in the last few years are very limited but do offer a different range of vegetation.

Macgregoria racemigera photo: Keith Boschen

Grevillea eristachya photo: Russell Wait

Mammal and Reptile report

Fauna surveys were conducted between 25 August and 13 September 2014. A range of survey methods were employed across the three weeks including a variation in methodology between the two teams. Team 1 used the method of trapping for 3 nights at a single vegetation type and Team 2 trapped for 5-6 nights in a general area covering multiple vegetation types. Each of the two teams operated independently over the survey period, but was in collaboration prior to the commencement of each week to ensure as many of the different vegetation types occurring within the area were sampled and there were minimal overlaps. The use of pitfall traps was the main method employed by both teams across most of the various vegetation types, unless the ground was impenetrable. Elliott/Box traps, harp traps and cameras were also used in conjunction with active searches.

Desert Banded Snake *Simoselaps anomalous*

Ooldea Dunnart *Sminthopsis ooldea*

Two teams combined to survey a range of vegetation types that were accessible using the existing network of tracks extending approximately 25km north-west and 16km south-west of the Tjirrkarli Aboriginal Community. With two teams operating, this was the biggest and most successful survey effort for any Desert Discovery Project to date. In summary, the two teams surveyed for 2328 trap nights capturing 503 animals from 68 species.

Bilby surveys

Three survey methods: Indigenous Ecological Knowledge (IEK) searches, plot searches, and a line search. Opportunistic observations were recorded by Desert Discovery participants working on other surveys. There was no attempt to encounter live animals (other than setting up infrared cameras at 6 bilby burrows) as we did not work at night when bilbies are active. Great Desert Skinks were still hibernating, with night temperatures still well below 20°C.

An active bilby burrow

The IEK searches took place over two weeks under the guidance of Ngaanyatjarra Traditional Owner and Elder Dulcie Watson and Council Chairperson Joyce Nelson. They assembled a team of 14 ladies who were gracious and tireless in showing us their country and teaching us and other Desert Discovery participants about Ninu and much more. We thank them for their companionship and the key role they played in this part of the Desert Discovery project.

Plot searches were conducted using the 2ha track-plot method and datasheet found in *Tales in the Sand.* This method targets a range of species including bilbies, and we

Bilby caught on a camera trap

recorded all sign that we found (tracks, scats, burrows and diggings) of the species listed on the data sheet. Thankfully the datasheet does not include lizards (other than GDS) so we were able to ignore the abundant signs of goannas, skinks and dragons. Most of the plots were on ‘rira’ – sandy country with a capping of ‘buck shot’ gravel - so only the tracks of larger animals were visible (particularly camel). For bilbies, burrows and feeding diggings were the major recordable signs.

While recording fewer burrows than the IEK method, the plot surveys were an effective, repeatable method of surveying for bilby. While the searches were focused on areas where bilbies had previously been recorded, the methodology provides a consistently comparable survey method over time, important if monitoring for changes in the population.

Great Desert Skink surveys

Great Desert Skinks were still hibernating, with night temperatures still well below 20°C.

The recommended national standard for GDS site recording is a 4ha plot search of one person for one hour with a standardised datasheet, as developed by the Great Desert Skink National Recovery Team. In order to maximise our survey effort, GDS survey plots overlaid the Bilby survey plots (2 x 2ha adjacent plots). Due to time constraints and an initial lack of local information, less effort was specifically focused on the GDS survey. Twenty-three plots were surveyed for the presence of Great Desert Skink.

Two sites were confirmed as being GDS burrow systems, with one having had breeding success last summer, and the other having adult GDS present last summer.

In conclusion, it appears that GDS are still present in the Tjirrkarli area. Future survey/searches for GDS should focus specifically on the species and not be an adjunct to another species survey. It is recommended that initial work commence in the areas that GDS have been confirmed during the current survey.

Marsupial mole survey

As with projects since 2006, some trenching was done on behalf of Dr Joe Benshemesh. The work was done to the north of the project base camp in a narrow strip of sand dunes to the south of the Gunbarrel Highway. The dunes are of a reasonable height (according to Natmap they average 14 metres) but are not continuous and are separated by broad swales. They are lightly vegetated with grasses and scattered shrubs.

The aim for our mole work at Tjirrkarli was simply to see if marsupial moles were present.

further north

A trench ready for reading
photo: Keith Johnson

Evidence of marsupial mole activity
photo: Keith Johnson

They are! A total of 17 burrows of varying ages were observed in four trenches. Two trenches were dug on the southern most dune and another two on a tall dune four kilometres further north.

Fungi at Tjirrkarli

This survey took place over only nine days from 1st September 2014. It is understood that there had been no significant rain since the previous April. Accordingly any of the more fragile fungal species that may have fruited after those rains would have matured and deteriorated long ago. Indeed, one of the Traditional Owners commented that there would be "no mushrooms as they only come up after rain".

Horse dung fungus
photo: Mal McKinty

The ephemeral nature of the fruit-bodies of most species of fungus means that finding them is largely serendipitous and depends on a search coinciding with their location, their emergence and before they deteriorated or were consumed.

Although the environmental conditions at the time of the survey were not conducive to finding a large variety of fungi, 15 different species, described below, were recorded from 38 sites in the Tjirrkarli lands. All were species expected to be found in arid and semi-arid environments and all belong to the Basidiomycota.

Butterflies at Tjirrkarli

Butterflies are primarily a tropical group of insects and are not well adapted to arid environments. Of the nearly 400 species identified on mainland Australia, 92 (23%) have been recorded from inland Australia, which receives an annual rainfall of less than 500 mm per annum.

It is, therefore, not surprising that the range of only six butterfly species overlap the Tjirrkarli project area. A further eight species are sporadically distributed across arid Australia and may occur in the Tjirrkarli area. These 14 species represent five of the six butterfly families found in Australia. The project area was reasonably dry with little or no standing water present, other than in Boyd Lagoon, a saline lake, and a few rock holes.

Danaus Chrysippus Lesser Wanderer
photo: Ian Miles

Despite the dry conditions, butterflies were reasonably common in most areas visited across the project area, including the dune

country north of the camp, the Rock Holes, Camel Get In Bore, Boyd Lagoon, the track to the Caves, and the extended area around the main camp (approximately 1.5 kilometre radius). The main camp area was also a good location for observing various species. In particular, *Ogyris amaryllis* (Satin Azure) was common around the camp wherever there were mature mulga trees with mistletoe.

The Tempe Downs project

Immediately after the Tjirrkarli project a group of seven of us joined a Central Land Council (CLC) project, funded as part of the National Biodiversity Project, to undertake benchmark surveys on an ex-cattle station known as Tempe Downs. This had been purchased by the CLC on behalf of the local Luritja people in 1993. Since then some outstations have been established but the property has not been managed as a working cattle station.

With the full approval of the traditional owners (TO's), a group comprising specialists from the Northern Territory Government, three senior CLC people and the Desert Discovery contingent met with some 15 TO's to begin assembling the first scientific data for the property.

This was a two-week project with the first week being centred around the old homestead of Tempe Downs. DD was asked to join the team in the second week of the project and so we all met up in a sandy creek bed near the remains of the McRae cattle yards. We had a helicopter at our disposal as so much of the property was inaccessible by tracks. The helicopter ferried us to remote places for half a day, then returned to camp.

The impact of feral animals is profound with all of the accessible flatter land bared to the ground with extensive sheet and gully erosion devastating the property. Every waterhole able to be reached had been fouled and rotting carcases polluted most. One observer said 'in all my wanderings in the inland, I have not seen feral damage like this'.

So what is the future for Tempe Downs? The plant life had been chewed to oblivion and there seemed nothing left of the annuals and short-lived perennials but on close examination there are living 125 remnants of species that may have a chance to recolonise given some good seasons. The good news is that many of the rock holes in the gorges are inaccessible to the ferals and remain a life source for birds, water plants, ferns and dampness-loving plants as well as native fish. But recovery depends on a sequence of kind seasons and a continuing effort to exterminate the ferals.

We believe the future of Tempe Downs is not as a cattle station, as annual rainfall is increasingly variable. The TO's are very receptive to the idea of tourism and there are wonderful opportunities here with permanent water holes and outstandingly grand landscapes that visitors from throughout the world can only currently experience by helicopter flights from outside the station.

Visits by school groups

During the Week September 1st – 5th, 27 students from Warburton, Wanarn, Warakurna and Blackstone/Jamieson attended Desert Discovery Tjirrkarli Project.

The goals set for the students during their visit were to:

1. Study, and increase their knowledge of, fauna and flora in the local region;
2. Gain and understanding of the work that scientists do in furthering knowledge; and

3. Work cooperatively in groups or teams when completing Scientific Investigation.

It was a great pleasure having the students at Desert Discovery (Tjirrkarli). They were enthusiastic, attentive, interested in the work of the scientists, excellently behaved and generally a pleasure to have at camp.

The students attended the project in two groups, the first group arrived on Monday and departed on Wednesday, with the second group arriving on Wednesday and departing on Friday. During their stay the students were involved with studying tracks, setting Elliot and box traps, pit traps along a pit line and studying plants and animals at a nearby lagoon. Students also learnt about scientific measurement and recording information and how to identify specimens collected during the day. They also learnt about the ethical treatment of animals and what steps needed to be taken to ensure their wellbeing whilst in captivity.

end.