2013 Well12, Canning Stock Route

Over three quarters of Australia is desert or semi-arid scrub and over 80% of people live close to the coast with little or no knowledge of the wildlife that occurs in central Australia. This disconnect between our population and the land in which we live is probably getting worse and surely can't be a good thing. So when, in September 2012, Desert Discovery Inc (DD) was invited by the Central Desert Native Title Services (CDNTS) to organise a biological survey of an area near Well 12 on the Canning Stock Route (CSR), in the Southern Little Sandy Desert, there was an enthusiastic response.

The aims of the project were to:

• Determine if Greater Bilbies or Dalgytes (*Macrotis lagotis*) were present and if so, to describe the floral and faunal characteristics of these Bilby sites.

• Document animals and plants in the Well 12 area.

• Work with the Birriliburu Rangers and other Traditional Owners to better understand the country.

The trip

Bilby (*Macrotis lagotis*)
photo Jiri Lockman

Rendezvous was at the Bindoon Bakery on Saturday 18 May 2013, before heading for Wiluna and a final fuel stop at Granite Peak Station, ready to caterpillar across the arid centre towards Well 12 on the Canning Stock Route (CSR). After eight days of survey work around Well 12, the expedition headed south and into the Carnarvon Range for a few days before returning to Meekatharra on the 3 June 2013 (16 days). The southern part of the CSR passes through the Little Sandy Desert, with a median rainfall of 150-200mm and vegetation that is mainly shrub steppe (open grasslands with emergent shrubs) of Acacia species over spinifex (*Triodia* spp.), although tree steppe and mulga (*Acacia aneura* complex) woodland are also present.

Prior to the expedition, Phil Bianchi and CDNTS experts had been busy with Google Map, locating that combination of features where habitat appears suitable for the Bilby, a Schedule 1 threatened species that once occurred over two thirds of Australia from the dry interior to temperate coastal regions but is now considered rare and likely to become extinct. The details of the survey route were tuned to intercept with as many points in the landscape, where shallow dune sand meets rocky outcrop and mulga scrub, providing the correct mix of moisture, organic matter and soil into which the Bilbies burrow and feed.

Variations in the flora of the project area

'The project area is dominated by sand' reported the expedition geologist Martin Gole. That pretty much sums it up, we thought but by the end of the trip we had learned that this was locally produced sand and that dune orientation mirrors the general Australia-wide anticlockwise pattern of the dominant wind direction. We became familiar with 'desert varnish', identifying old bedrock, polished to a sheen as it protrudes from beneath the younger sands, from a base geology reminding us that 35 million years ago, central Australia was once covered with sub-tropical forest. Our trip was to take us through an old, leached landscape, describing 1.6 billion years of change and there at the end of it all, a tightly woven ecology with its unique plants and animals.

Weather

Early starts and muddy tents are a lasting memory punctuated by moments when the clouds would fall back to reveal a nectarine skyline of ancient red bluffs over yellow grasslands. Sunny days kept people's spirits up but the rain returned towards the end of the trip when weary survey teams were looking forward to some relaxation among the red bluffs and water holes of the Carnarvon Ranges. The rain looked determined and tracks were getting slippery, so a quick camp meeting and the decision was made to head for home a day early, arriving back at Meekatharra on the 3 June.

The teams

Desert Discovery Inc. (DD) is a non-profit voluntary organisation with the principal purpose of ensuring the protection and enhancement of the natural environment in remote regions of Australia. Since the first trip in 1996, ten expeditions have been run, putting together teams of professional scientists and skilled enthusiasts with experience in field survey work. The Well 12 survey teams had representatives from and strong links with organisations including the WA Museum, WA Department of Parks and Wildlife (DPaW), WA Herbarium, South

Australian Museum, BirdLife Australia, University of Western Australia, University of Sydney, Curtin University, University of Adelaide and the South Australian Biological Survey and Research Group within the Department for Environment and Heritage. The project had a number of survey teams: the mammal, reptile and frog team, led by Dr Tony Robinson (Retired SA Department for Environment, Water and Natural Resources), bird team led by Cheryl Gole (BirdLife Australia), botany team led by Maree and Graham Goods, invertebrate team led by Jan Forrest (South Australian Museum) and the project support crew led by Des Bunter and Ben Blomfield (Desert Discovery).

Birriliburu Traditional Owners (TOs)

It was a pleasure to have the Birriliburu Rangers and Central Desert Native Title Services representatives join the expedition to explain Bilby behaviour, and show us the local wildlife and how to read animal signs. We had heard about the platelets made by button-quail as they shuffle their feathers to dust themselves against parasites, scraping out a disk in the sand. But it was Robbie Wongawol, one of the Birriliburu Rangers, who showed us what the platelets looked like and where to find them. Other tell-tale signs of animal activity were also pointed out among the spinifex, such as whether a bird was walking or hopping, where the lizard tracks met with those of a cat, a scuffle and in this case, the lizard got away. Joint exercises with the TOs included BirdLife Australia 20 minute bird surveys and Track Plots, led by Rick Southgate, both similar survey methods providing a rigorous, repeatable method for monitoring change through time.

Flora

Just don't be behind these guys on a one lane track in the middle of the desert because you will be stopping continuously as a new plant is spotted, photographed and samples collected. Although no rare plants were found, many of the targeted flora surveys of Bilby sites and opportunistic collections will be of great interest to the Western Australian Herbarium. A total of 165 plant specimens was processed, that is, at least two specimens of each species collected, ideally with flowers, buds and fruit, named, placed into plant presses and delivered to the WA Herbarium along with the accompanying data sheets and photographs. Led by Maree and Graham Goods, the botany team achieved its primary aim, which was to identify as many plants as possible and produce descriptions of the vegetation communities at sites where Bilbies were recorded.

Cork Tree, also known as Bootlace Oak (*Hakea lorea*)
photo: Cheryl Gole

Birds

A total of 156 bird surveys was carried out at over 150 locations along the CSR, 60 of which were within Bilby sites and areas where fauna trap lines had been set up. Most surveys were over a 20 minute period within a 2 hectare search area (79% of surveys), so they can be repeated during subsequent visits to the region and the records will contribute to a larger,

BirdLife Australia national data set. A total of 533 records was generated for 62 bird species. As expected for an arid region, bird diversity was relatively low (3.4 bird species per survey). Of the ten most commonly recorded birds, four were honeyeaters, the most common being the White-fronted and Singing Honeyeaters. Two mobile seed eaters, the Budgerigar and Zebra Finch, and four shrub layer insectivores, the Rufous Whistler, Crimson Chat, Variegated Fairy-wren and Willie Wagtail, were also among the most frequently recorded species.

Black shouldered Kite (*Elanus axillaris*)
Photo: Dave Mell

The opportunity for mutual exchange between the bird watchers and Birriliburu Rangers, learning from each other as we discussed survey methods, was extremely rewarding. The TOs also showed us the silent hand signal for the Australian Bustard, after two had glided past, disappearing over the dunes like flying boats looking for a place to land.

Mammals, Reptiles and Frogs

Few people envied the mammal team as they rumbled out of a chilly, pre-dawn camp to check their trap lines and pitfall traps, spread five kilometres north and south of Well 12. Elliott traps and pitfall traps were set for four days and four nights, except in the Carnarvon Range where traps were set for two days and nights. This gave a total of 384 trap nights for pitfall traps and 912 trap nights for Elliott traps. Incidental observations were made of any mammals seen, while identifiable signs such as Echidna diggings and scats were also recorded. Six mole trenches were excavated at Well 12 and three in the Carnarvon Range project area.

Fourteen striped skink
(C*tenotus quattuordecimlineatus*) photo: Tony Robinson

Desert Tree Frog (*Litoria rubella*) living under the lid of Well 6
photo: Tony Robinson

The effort was worth it as three mammals of conservation significance were found (Table 1). In addition to the Bilby, listed nationally as vulnerable, these were the Mulgara (*Dasycercus blythi)* which is also regarded as vulnerable and the Southern Marsupial Mole or Itjaritjari

(*Notoryctes typhlops*) or Northern Marsupial Mole or Kakarratul (*Notoryctes caurinus*). Fascinatingly, the team located an old nest, wedged under a rock crevice overlooking a dry river canyon, belonging to the now extinct Lesser Stick-nest Rat (*Leporillus apicalis*). Bilby populations were found in all eight areas investigated, eight of a potential 17 trappable mammal species were recorded and five of seven potential larger mammals were documented. A total of 14 lizard species, one-fifth of the 70 species known to occur in the Little Sandy Desert area, and one snake and two frog species were also recorded.

With assistance from the Birriliburu Rangers, sites occupied by the Greater Bilby were identified, usually in areas with mature woody trees and shrubs two to three metres high. Evidence of Bilby foraging was found up to 100 metres from the nearest burrows and this occurred mostly, but not exclusively, in areas regenerating after fire. Addressing the issue of whether a site with Bilby diggings actually contains a resident population, Chantelle Jackson tested Rick Southgate's survey technique and tentatively suggested that at least 50 digging spoils must be searched and if no fresh scats are found, only then is it reasonable to assume that Bilbies are no longer present at the site. Jiri and Marie Lochman took some magnificent photos of Bilbies and other wildlife.

Invertebrates

What is striking about the invertebrate sampling is the ingenuity of the methods. Malaise traps were erected near flowering plants, collecting native bees, wasps and flies, and ground fauna such as beetles, grasshoppers and cockroaches came from the more productive micro and vertebrate pitfall lines. And here's something for the kids, three trapdoor spiders were dug from burrows and a black light was run over several nights attracting moths, grasshoppers and predacious bugs. The vehicle net, a large (2.5m) wind sock mounted on top of the lead vehicle never ceased to interest, with flying insects channelled down the stocking, into the glass vial and an alcoholic end.

Mygalomorph spider
photo: Marie Lochman

Despite the cool, strong easterly winds on many days and a lack of flowering, the invertebrate team led by Jan Forrest recorded a diverse array of invertebrates, including two specimens of *Iridomyrmex cappoinclinus*, an ant species known from only one location in WA and three locations in Central Australia. At the time of writing these reports, the always lengthy process of identifying invertebrates was still underway at the South Australian Museum.

Conservation Significance

As noted above, three mammals of conservation significance were found during the surveys of the Canning Stock Route and Carnarvon Range survey areas. In addition, evidence was found in the Carnarvon Range of a previous population of the now extinct Lesser Stick-nest

Rat. No birds, reptiles, frogs, plants or invertebrates of conservation significance were recorded during the surveys.

Conclusion

My boots are still orange from the desert sand and I don't mind if it is a while before I need to pack up a wet tent in the dark again. But I do miss the surprise of seeing an animal I have not seen before, or sitting at rock pools where people have gathered for thousands of years – silent now, and the camp fire recount of the day's events followed by milo and a biscuit. A reading of these reports shows that Desert Discovery has once again delivered a scientific survey expedition that will enhance our understanding of the natural environment in remote Australia. The Well 12 Southern Little Sandy Desert survey documented 165 plant species, 62 bird and 18 mammal species, 15 reptile and two amphibian species. An undoubted highlight was confirmation that the Well 12 and Carnarvon Range areas do support rare Bilby populations. Rabbits, foxes and dingos were less abundant than expected but cats were pretty much everywhere, reminding us that these landscapes and their fauna remain vulnerable and are changing, so it is essential that we carry out these baseline surveys so that we know what is there now.

end