

1 Title

A pilot biodiversity study aimed at enhancing Land for Wildlife member knowledge in property self assessment methods.

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1 Abstract

The Land for Wildlife scheme in Alice Springs raises awareness about threatening processes effecting biodiversity of the local environment and conservation methods on private lands. This pilot study aimed to improve self assessment techniques that Land for Wildlife property owners could use to measure the beneficial impact of their conservation activities.

Biodiversity surveys compared species richness of native fauna and flora within properties with and without buffel grass. Buffel grass *Cenchrus ciliaris* is one of the significant threatening processes that Land for Wildlife members work towards controlling to protect native habitats within their properties and the municipality.

The project also aimed to determine whether the biodiversity surveys undertaken on individual Land for Wildlife properties influenced member plans for continuing biodiversity conservation within their properties.

Property members involved in the survey have continued to monitor their property biodiversity changes using the techniques demonstrated during the survey period. A questionnaire, which was supplied to each of the site members, has encouraged the self-assessment of habitat changes occurring over time within properties since the members joined the Land for Wildlife scheme.

2 Introduction

Land for Wildlife is a voluntary extension program which began in Alice Springs in 2002. It encourages and assists private landholders and groups (such as local Landcare groups) to maintain and improve native habitat on their properties through education via workshops, newsletters and environmental assessments of private properties. Through these techniques Land for Wildlife in Alice Springs aims to help private landholders maintain and improve native habitats and manage key biodiversity threatening processes on their properties, thus contributing to regional biodiversity conservation.

Land for Wildlife was established in Victoria in 1981, and has been adopted by Queensland, Western Australia, Tasmania, New South Wales, and the Northern Territory with over 10,000 properties registered. Many rural blocks in Alice Springs include areas of native bushland, which provide excellent opportunities for private landholders to learn about and contribute to nature conservation by managing the remnant vegetation within their own property. This provides wildlife corridors between nature reserves and adjoining properties, which are critical for species conservation in urban environments. Wildlife corridors allow wildlife movement and genetic interchange which lower's extinction rates in the sense of the equilibrium theory and lessens demographic stochasticity (Simberloff *et al* 1992). The program encourages private landholders to preserve or rehabilitate areas of native vegetation and educates members on how this contributes to the survival of local plant and animal species that comprise, or are dependant on, remnant native vegetation. Landholders contribute to sustainable land management by protecting remnant vegetation that can assist in erosion and salinity control, as well as providing natural wildlife habitats.

There are currently 56 properties registered with Land for Wildlife in the Alice Springs municipality, covering a total land area of 1891.55 hectares. This area contains 1696.15 hectares of remnant vegetation from 17 different vegetation types as described in Albrecht and Pitts (2004). Eighty percent of Land for Wildlife property owners in Alice Springs stated in their original environmental assessment that one reason for joining Land for Wildlife was to learn methods of controlling the introduced buffel grass *Cenchrus ciliaris* within their properties and to protect local biodiversity. Property owners

expressed interest in understanding conservation measures needed to retain remnant native vegetation on their properties. Buffel grass is aggressive in growth and in semi-arid environments around Alice Springs; there are concerns about the impact it may have on the unique environmental values of the region (Humpheries *et al* 1991; Latz 1991; Griffin 1993).

Buffel grass is a perennial grass native to Africa, Southern Asia and the Middle East (Dixon *et al* 2002) and was initially introduced to Australia by pastoralists primarily for use as fodder for cattle (Grice 2004) and was planted extensively by the Land Conservation Unit in the Todd River floodplains to improve soil stability (Keetch, 1981). It has brought economic benefits to pastoral communities, particularly in Queensland savannas where tree clearing to enhance pasture production has been widespread. Buffel grass has, however, spread beyond the areas where it was initially planted and in many places is now considered to be a naturalised species. Buffel grass is now common throughout the arid landscapes in the lower lying richer flood plains, not only on pastoral land but also across reserve systems, crown land and on private properties, and modelling suggests that it has the capacity to further expand its range to cover a large proportion of northern Australia (Friedel 2006). Over the last decade there has been growing concern regarding the threats that exotic plants may pose to the biodiversity and the functioning of natural ecosystems. The absence of natural enemies enables these weeds to become strong competitors in foreign areas, where they can intercept and utilise resources, including water, nutrients, light, and space, which would otherwise be available to the native species (Grice 2004).

The effects of weed species out-competing native plant species, is likely to impact more widely upon biodiversity (Binks *et al* 2005). There is increasing concern that species substitution within natural vegetative assemblages may cause a reduction in the abundances of native taxa from communities, with the possible risk of local extinctions (Tallamy 2004). Clarke *et al* (2005) showed that the presence of buffel grass reduces the abundance of most native plant growth forms and reduces species richness of native grasses and forbs. It has been shown that buffel grass in semi-arid environments changes the floristic composition of the vegetation (Clarke, *et al* 2005).

Alice Springs is located in the MacDonnell Ranges Bioregion and is known for its diverse assemblage of relictual and many endemic plant species (Latz 1975, Morton *et al* 1995). Twenty two fauna species in the bioregion are listed as threatened under current national or Territory legislation (*Environmental Protection and Biodiversity Conservation Act* (EPBC) (1999) and *Territory Parks and Wildlife Conservation Act* (TPWC) (2000) respectively). The bioregion is home to a variety of endemic invertebrates, including the dragonfly *Hemicordulia flava* (Watson *et al* 1991), an “extraordinary radiation” of camaenid land-snails (Morton *et al* 1995), and a number of threatened vertebrates, such as the; Black-footed Rock-wallaby *Petrogale lateralis* (near threatened, TPWC Act (2000) and Vulnerable, EPBC Act (1999)) the endangered centralian Rock Rat *Zyzomys pedunculatus*, (TPWC Act (2000), EPBC Act (1999)) the vulnerable Princess Parrot *Polytelis alexandrae*, (TPWC Act (2000), EPBC Act (1999)) and the endangered Slater’s Skink *Egernia slateri slateri*, (TPWC Act (2000), EPBC (1999)). Eleven highly localised plant species and a number of threatened plant species are also listed under the current national and Territory threatened species legislation (NT Parks and Conservation Draft Masterplan 2005).

Land for Wildlife members energetically contribute to natural resource management of private land by controlling threatening processes like invasive weeds, feral animals, erosion and altered fire regimes. Individual Land for Wildlife members have undertaken considerable natural resource management of the ecosystems within their properties as well as outside their property boundary. Methods by how property owners can assess the effectiveness of their efforts in land management are not currently available to property owners. A self assessment procedure for reviewing the positive changes (decrease in threatening processes, increase in native species richness and abundance) over time within Land for Wildlife properties has the potential to increase the already active participation of members in biodiversity conservation of remnant vegetation communities and their dependant wildlife. Self assessment methods will assist members in identifying the habitat changes that have occurred since they began active management of threatening processes.

The Land for Wildlife scheme, on a national scale, is currently facing the challenge of developing an appropriate self assessment method but does not yet have a formal procedure that can be distributed to members. By demonstrating different flora and

fauna survey techniques, members can increase their knowledge in self assessment methods which would potentially increase the on-ground work being conducted across Land for Wildlife properties. This can occur both locally and nationally and will raise awareness and understanding about the positive outcomes to biodiversity conservation. It is an assumption of the program that if Land for Wildlife members have an increased understanding of the positive changes occurring on their land, they will continue in their endeavours to conserve local habitats.

This research project aims to survey fauna and flora on Land for Wildlife properties with and without buffel grass in the Alice Springs area in two main land types, the outwash slopes of the Ilparpa area and the drainage floors of the Heenan Road area. The aim of the survey is to engage member interest in biodiversity within their property and to assist members in self assessing future changes on their property. The survey results will be analysed and reported to members to highlight any differences within properties with and without buffel grass.

The principle aims of this project were to:

1. Increase Land for Wildlife member knowledge in self assessment methods so that they can use the techniques learnt to measure the beneficial impact of their conservation activities.
2. Survey species richness of native fauna and flora within Land for Wildlife properties that have no buffel grass as a result of active management compared to properties that have buffel grass present or are in the early stages of managing buffel grass.
3. Determine whether the biodiversity surveys undertaken on individual Land for Wildlife properties influenced member plans for continuing biodiversity conservation within their property.

I predicted that Land for Wildlife members would demonstrate an increased interest in continuing conservation activities, as a result of the surveys being conducted on their properties and that they would continue to assess the outcomes of their management activities after the study had been completed. Members would use some of the survey

techniques learnt during the study which would lead to self assessment of their properties.

3 Material and Methods

In order to establish levels of species richness within different sites with and without buffel grass, fauna and flora surveys were conducted using standardised procedures at appropriately selected sites to allow meaningful statistical analysis of data.

3.1 Study area History

3.1.1 General biodiversity

The two areas are located within the MacDonnell Ranges Bioregion, which is one of the most important refuge areas in arid Australia, with many endemic taxa and isolated occurrences of species typically associated with higher rainfall (NT Parks and Conservation Draft Masterplan 2005). The “refuge quality” of the MacDonnell Ranges Bioregion is known to be extremely significant with a relatively high diversity of plant species and many threatened species occurring in the area. Flora and fauna occurring in the region have access to significantly increased water points due to the run off from the present topographic features compared to the surrounding landscape. Permanent water supplies are also located throughout the region and many areas are protected from threatening fires.

3.1.2 Threatening processes

The bioregion is generally in good condition, but is being threatened by continuing increases in the extent, incidence or abundance of weeds, exotic animals (especially foxes, rabbits, cats, house mice), livestock and broad-scale changes to fire regimes. The MacDonnell Ranges are listed as a conservation hotspot and management actions are in place to implement weed and feral animal management (NT Parks and Conservation Draft Masterplan 2005).

3.1.2.1 Fire

Changed fire regimes are considered by Morton *et al* (1995) to be a key threat to relict species and refugia. The NT Parks and Conservation Draft Masterplan (2005) states that buffel grass, which is associated with increased frequency and intensity of fire, is one of the main management issues facing the region and management strategies that pro-actively address this issue are required.

Big rains in the mid 1970's stimulated considerable growth, and increase in the range of buffel grass within the municipality (Albrecht and Pitts 2004) and at the eight survey sites. There have been further significant summer rainfall events since the 1970's which have encouraged the recruitment, growth and further spread of buffel grass. The invasion of extensive areas previously dominated by short-lived native grasses has resulted in a major shift in the dominant fuel type in the municipality (Albrecht and Pitts 2004).

3.1.2.2 Grazing

Before the Ilparpa Valley was subdivided for rural housing in the mid 1980's, it was used to graze cattle since the time of the Heavitree Gap Police Station's Police Paddock (now known as the Ilparpa Commonage) in the 1870's (Ilparpa Swamp Rehabilitation Plan 2003). In 1963 livestock grazing was banned from the Ilparpa Commonage to enable soil conservation works to be undertaken (Arid Lands Environment Centre 2000). The reduction in grazing has meant the buffel grass fuel loads have largely accumulated unchecked and there is now a serious fire threat throughout the Ilparpa Commonage and the rural municipality, including the Ilparpa Valley and Ross Highway area where the eight Land for Wildlife survey sites are located.

The Ross Highway area was previously part of Undoolya Station where cattle were held before transportation to the markets (Low pers.comm.). In the early 1950s it was subdivided as Emily Hills Pastoral Lease and in the 1960's the Alice Springs municipality boundary was extended. Heenan Road subdivision for small rural blocks occurred in the mid 1980s (Low pers.comm.). The area was used to ageist horses and cattle until it was subdivided in the 1980's.

3.1.2.3 Rabbits

Rabbits in Central Australia have had a significant impact on vegetation. They generally prefer forbs to grasses; however, some provenance grasses such as oat grass *Enneapogon avenaceus* are favoured. Rabbits selectively bite off a variety of seedlings and ringbark mature shrubs, particularly during dry times when herbage is scarce (Dobbie 1997). The regeneration of young trees and shrubs such as Mulga *Acacia aneura* and Witchetty Bush *Acacia kempeana* may be suppressed by rabbit grazing (Albrecht and Pitts 2004). Rabbits have been recorded within all eight Land for Wildlife survey sites.

3.2 Site Selection

Eight Land for Wildlife property sites were identified, four sites from the Ilparpa Valley area and four from the Ross Highway area within the Alice Springs municipality. Within each of the two areas, two properties had removed all buffel grass and the other two properties were in early stages of clearing or managing the spread of buffel grass but still had buffel grass present within the site. The survey included two non buffel grass sites and two buffel grass sites within each area, as shown in **Table 1** below.

Table 1 Location and presence/absence of buffel grass at the 8 study sites.

Treatment	Non buffel grass				buffel grass			
Area	Ilparpa Valley		Ross H/Way		Ilparpa Valley		Ross H/Way	
Replicate	1	2	1	2	1	2	1	2
Site	INB1	INB2	RNB1	RNB2	IB1	IB2	RB1	RB2

Sites were selected due to their similarities in vegetation type and landforms, with a focus on selecting sites with *Acacia estrophiolata* and *Hakea divaricata* on alluvial flats (vegetation type 17). This is the most widely distributed vegetation type within the municipality of Alice Springs covering approximately eighteen percent of the area (Paltridge and Latz 2003) and displays considerable floristic and structural variation. This variation appears to be related to factors such as disturbance history, proximity to other vegetation types and proximity to watercourses and gaps in ranges (Albrecht and

Pitts 2004). Vegetation type 17 has two or three floristic strata (ground, shrub/small tree, \pm tree) and occasionally intergrades or occurs in a mosaic with several other vegetation types. Despite this variability, ensuring that all the sites chosen for the study were classified as vegetation type 17 meant that the results would be more comparable across sites.

Other criteria used to select sites included a history of invasive weed management and equal numbers of sites were selected that had buffel grass presence and absence. All eight sites were located within Land for Wildlife properties and length of membership had not been included in the site selection process. The Land for Wildlife members from the chosen sites had been actively involved in feral animal control at an even distribution across properties. Hence the presence or absence of buffel grass was the key factor used to choose properties in the two areas. As the management of buffel grass had been identified by Land for Wildlife property owners as a key concern, it was intended that the outcome of the surveys would inform members about how their current management practices might be effecting plant and animal communities on their land.

3.3 Site locations

By placing replicate sites within the same vegetation type and landform, the possibility of unknown environmental variables influencing the outcome of the analysis was minimised. **Figure 1** shows the locations of the two sample areas and eight properties where the survey sites were located.

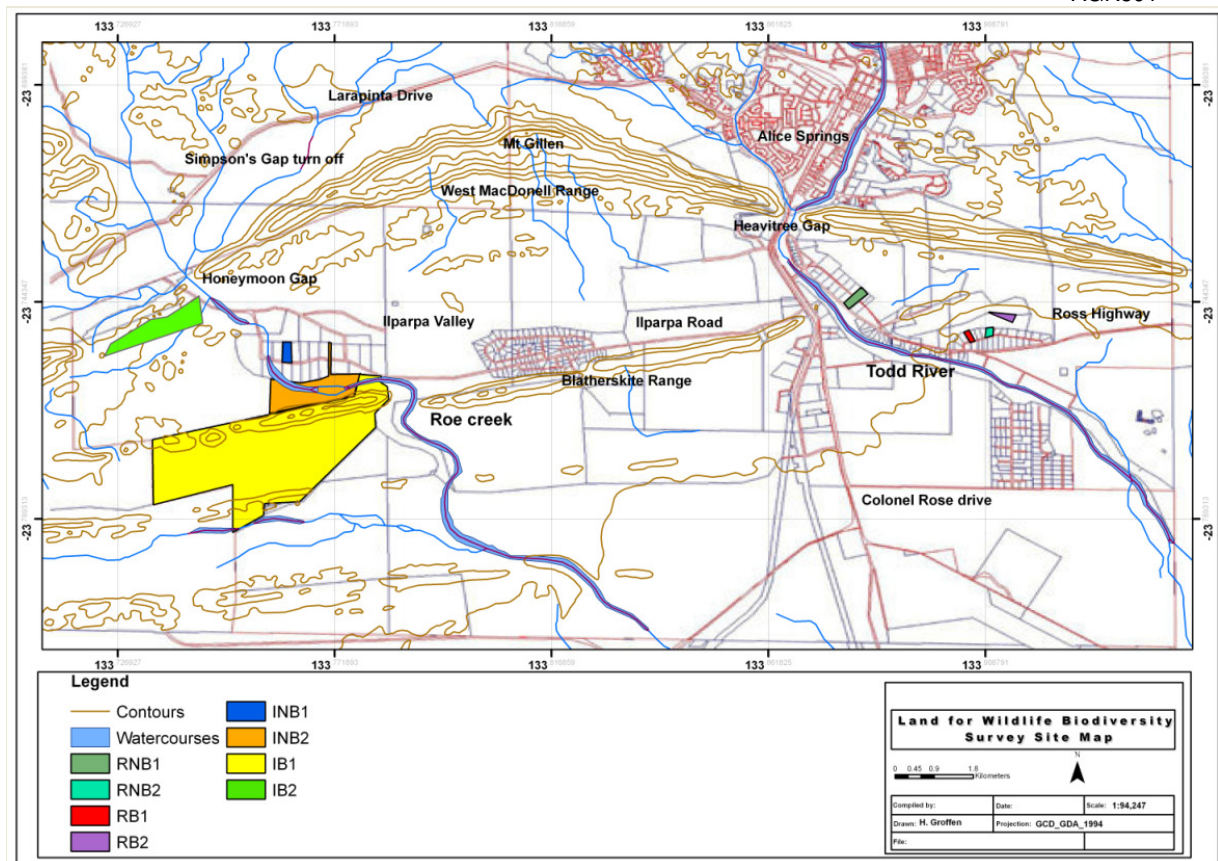


Figure 1 Map of the Alice Springs area, showing the eight survey properties. The regions two main watercourses occur within the municipality – the Todd River (Ross Highway) and Roe Creek (Ilparpa).

3.4 Sampling Techniques

Fauna and flora sampling was conducted at each site. **Figure 2** shows the general layout of the Elliott trap line, bird call and observation line, reptile active search location and vegetation survey quadrat.

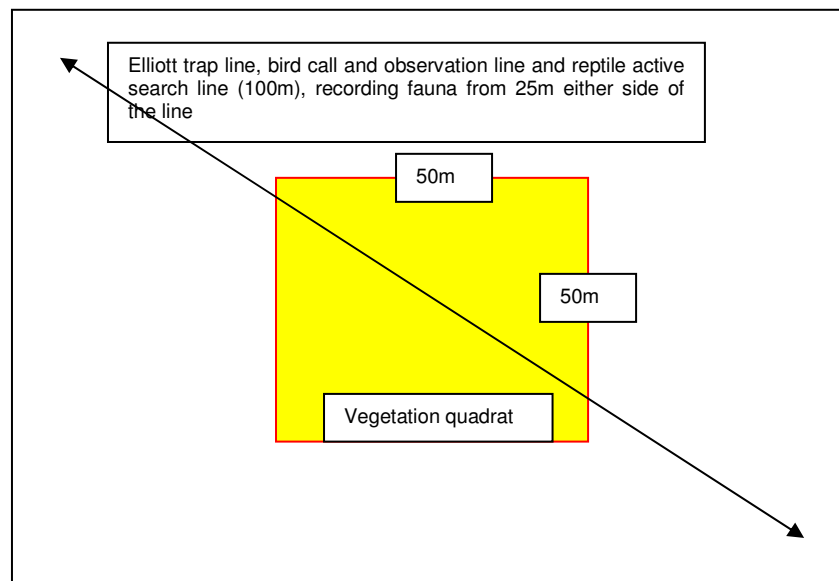


Figure 2 Generalised layout of sampling quadrat for flora/fauna/bird/reptile monitoring sites. Not to scale.

Site surveys were carried out over three and a half days per site. Refer to **Table 2** for the daily survey timetable.

Table 2 Daily survey timetable.

Site Survey Days	Measure 100m transect (4:30pm)	Conduct bird survey & active reptile search (5-5:30pm)	Place & open Elliott traps (5:30pm)	Check Elliott traps & close (7:00am)	Measure 50m ² quadrat & conduct vegetation survey (7:30am)	Pack up site (7:30am)
Day 1	■	■	■			
Day 2		■	■	■	■	
Day 3		■	■	■		
Day 4				■		■

Vegetation surveys were conducted within a 50m² quadrat along the transect line (see **Figure 2**). All vegetation species within the quadrat were identified and recorded. Species that could not be identified on site were sampled and vouchers sent to local botanist Des Nelson for identification. Dominant vegetation species were stratified into five height categories, i.e. emergent tree layer, upper shrub layer, lower shrub layer, ground cover, mistletoe and host species. Percentage projective foliage cover was estimated for each strata and for dominant species in accordance with the techniques developed by Specht *et al.* (1974). Percentage cover for each stratum was tallied together to provide an accumulative native vegetation density for each site. Bare ground, ground litter and aerial litter (dead standing vegetation) percentage cover were recorded. Refer to **Appendix 1** for vegetation description data sheets.

Diurnal bird call and observations were conducted at the same time each afternoon along the 100m transect line (see **Figure 2**). Bird presence was recorded by vocalisation and observations. All calls and observations beyond 25m from the transect line were recorded as incidental observations. Refer to **Appendix 2** for diurnal bird recording sheets. Two experienced volunteer ornithologists from the Alice Springs Desert Park were chosen for the bird surveys, which ensured that observations were accurate and consistent.

Active reptile searches were conducted each afternoon along the 100m transect. Reptile presence and abundance were recorded from 25m either side of the transect line. Reptiles were identified on site and released immediately if handled. Three experienced herpetologists from the Alice Springs Desert Park were chosen for the active reptile searches, which ensured that searches were accurate and consistent. The three volunteers assisted with two of the site surveys each and a backup herpetologist was used for the remaining two site surveys due to unforeseen cancellations.

Fauna surveying using Elliott trapping (25 traps) and release were conducted along the 100m transect over three nights. Traps were placed 10 metres apart, with the trap opening facing downwards to prevent the trap from filling with water in the event of rain. Traps were baited with peanut butter and rolled oat mix. All traps were closed during the day to prevent long term capture and heat stress of animals. Mammals were identified on site and released immediately. Refer to **Appendix 3** for the mammal and reptile data sheet.

Incidental observations of all fauna observed during the survey period were recorded.

3.5 Statistical Analysis

Data was analysed using SPSS Version 12.0 for Windows. For all analyses univariate analyses of variance (ANOVA) were used. Data was considered significant when $P < 0.05$.

3.6 Land for Wildlife member involvement

During the survey period, Land for Wildlife members from each site were given a questionnaire which gave them the opportunity to report on current activities occurring on the property and other relevant history. The questionnaire was designed to assess the conservation activities which had occurred on the property since the time of the initial environmental assessment that was conducted when new members joined the scheme. The survey was also intended to encourage members to continue working towards protecting remnant vegetation and its dependant wildlife by promoting them to think about these issues. Due to the timing of surveys and member work commitments, in most cases this questionnaire was only completed at the end of each survey period.

After the first property survey, the questionnaire was modified to include questions related to how members may work towards increasing their conservation activities in the future. Refer to **Appendix 4** for an example of the Land for Wildlife Questionnaire.

A second questionnaire was developed for completion at the end of the biodiversity survey for each property member. However due to the fact that the initial questionnaire was not always completed before the end of the survey period, this second questionnaire was therefore not used.

Property owners and other Land for Wildlife members whose properties were not involved in the surveys were encouraged to attend and assist with the biodiversity surveys, along with the property owners themselves.

A timetable was drawn up, and an email was forwarded to all Land for Wildlife members explaining the time frame and details of the biodiversity survey. Each survey volunteer was also provided with the timetable, which assisted with the organisation of logistics during the survey period.

4 Results

4.1 Questionnaires

Questionnaires were completed by the majority of Land for Wildlife property members. The property members, who were able to complete the questionnaire satisfactorily, indicated that they had met their Land for Wildlife goals as outlined in their original environmental assessment report. Property owners did confirm that feral animal control had continued to be of a high priority along with weed management and erosion control.

The members from sites IB1, IB2, RB1 did not attend surveys due to work commitments. The questionnaire was therefore completed from the surveyor's perspective and any unanswered sections were later completed via phone conversations and email correspondence with the property owners.

Table 3 presents the results from the questionnaire related to weed management methods used since Land for Wildlife membership. All eight sites had used the technique of digging/chipping out buffel grass.

Table 3 Weed Management Activities conducted within the survey properties

Weed Management Activities	Sites							
	RNB1	RNB2	RB1	RB2	INB1	INB2	IB1	IB2
Herbicide	■	■	■	■	■	■	■	
Fire	■				■	■	■	
Slashing			■		■	■	■	
Digging/chipping out	■	■	■	■	■	■	■	■
Grazing							■	■

Property owners were asked how often they took time to observe the fauna and flora present within their property (see **Table 4**). Only one property observed fauna and flora daily and three properties observed fauna and flora once a quarter.

Table 4 Property owner fauna and flora observation times.

Fauna and flora observation times	Sites							
	RNB1	RNB2	RB1	RB2	INB1	INB2	IB1	IB2
Daily	■							
Weekly						■		
Fortnightly			■					
Monthly		■			■			
Quarterly				■			■	■
6 Monthly								
Yearly								
Not at all								

The questionnaire provided an opportunity to ask members about the changes that had been observed on their property since joining Land for Wildlife. Members from the four non buffel grass sites stated that certain areas within the property had shown regeneration of native plant species, where as such changes were not reported on the four buffel grass sites.

The questionnaire encouraged members to think about the environmental changes that were occurring on their property and assessed the conservation activities that had been undertaken over the years since joining Land for Wildlife.

Individual members assisted with the survey by preparing the site for mammal trapping, attending bird and reptile surveys and helping with the vegetation survey.

Property owners from INB2 have since compiled a property progress DVD and submitted it to Land for Wildlife. The questionnaire and biodiversity survey enabled the property owners from INB2 to reassess the changes that had occurred within the survey site. The DVD contains ten years of changes and conservation progress and has sparked further enthusiasm to continue biodiversity conservation within the property.

The children from property INB1 assisted with the surveys both morning and night, which provided them with opportunities to view Tree Dtella *Gehyra variegata*, Bynoes Gecko *Heteronotia binoei* and Burton's Legless Lizard *Lialis burtonis* up close and to hear descriptions of the species behaviour from the reptile expert. The children also attended the survey seminar and took pride in seeing their photos displayed for all the Land for Wildlife members and guests to view.

The results of the surveys were presented at a seminar on the 16th November which was attended by four out of the eight survey property owners (INB1, INB2, IB1, RNB2). Property owners from RNB1 sent their apologies as they were interstate but have since requested further assistance, with bird identification as they have increased their interest in understanding the bird species that visit their property since the biodiversity survey.

4.2 Biodiversity surveys

4.2.1 Climatic conditions

Figure 3 shows the daily maximum and minimum temperatures recorded by the Bureau of Meteorology at the Alice Springs Airport, approximately 15-20km from the study sites, during the two month survey period. There was no rainfall during the survey period.

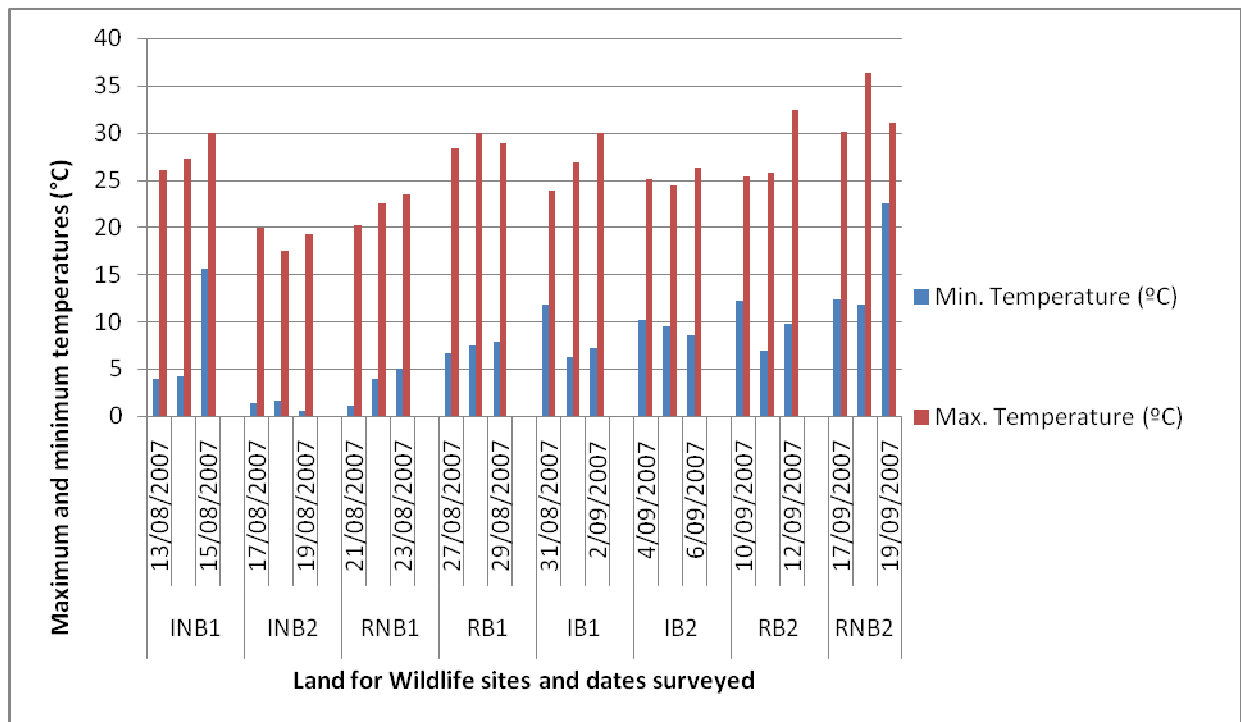


Figure 3 Daily maximum and minimum temperatures (°C) recorded at Alice Springs Airport during the Land for Wildlife survey period (Bureau of Meteorology 2007).

4.2.2 Member self assessment

As indicated by member correspondence, individual property owners have since taken the time to conduct their own mini fauna and flora surveys along transect lines and have requested further identification of fauna and flora species so that they can continue monitoring the biodiversity within their property. The mini flora and fauna surveys have occurred as members casually walk around their properties, taking in any observable changes in plant growth and observations in fauna presence.

4.2.3 Survey site results

The number of plant species recorded at the Ilparpa sites were significantly lower ($F_{1,7}=21.353; P=0.004$) than compared to the Ross Highway sites (**Figure 4**).

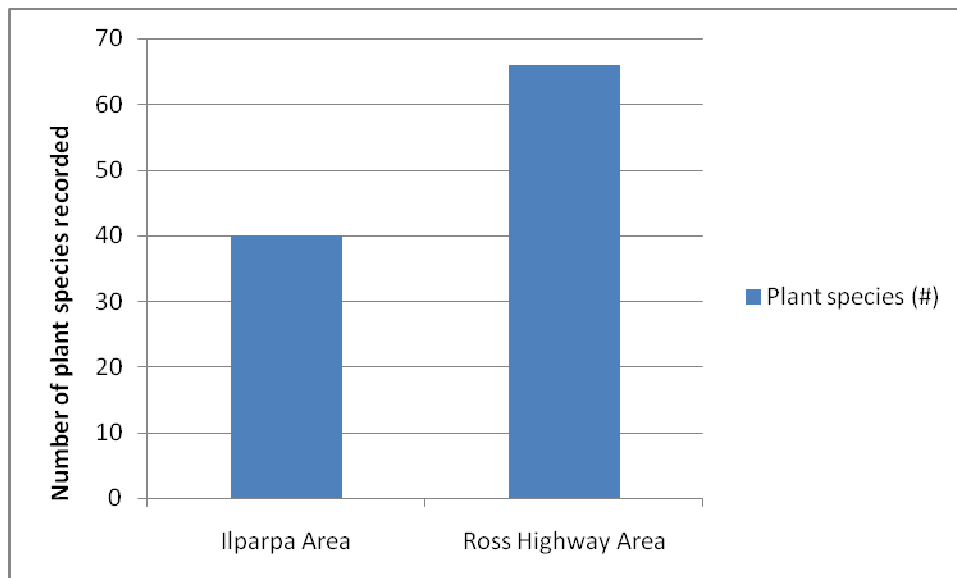


Figure 4 Plant species records from the two survey areas.

There was a significant ($F_{1,3}=22.154; P=0.042$) difference (**Figure 5**) in the percentage cover of the upper shrub layer when comparing strata from the Ross Highway sites (RNB1 and RNB2). The lower shrub layer for the Ross Highway non buffel grass sites (RNB1 and RNB2) was analysed, however there was no significance in the vegetation cover percentage when compared to the buffel grass sites despite one non-buffel site having higher cover.

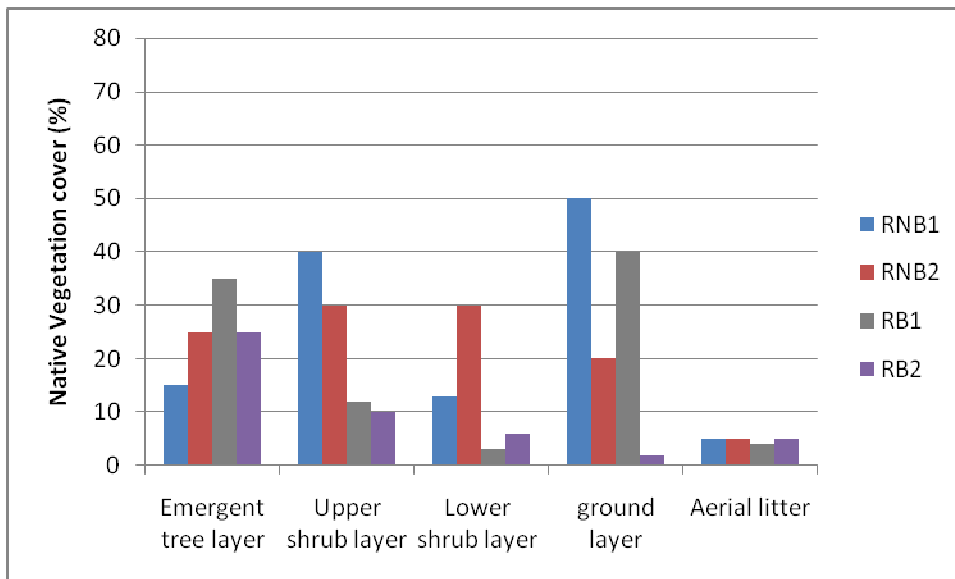


Figure 5 Native Vegetation stratum cover (%) for the Ross Highway Area.

The vegetation percentage cover of the ground layer at Ilparpa sites IB1 and IB2 (**Figure 6**) indicated that the sites had minimal to no native ground layer vegetation, where as INB1 and INB2 sites had greater native vegetation presence at the ground layer strata. There was no significance when analysed.

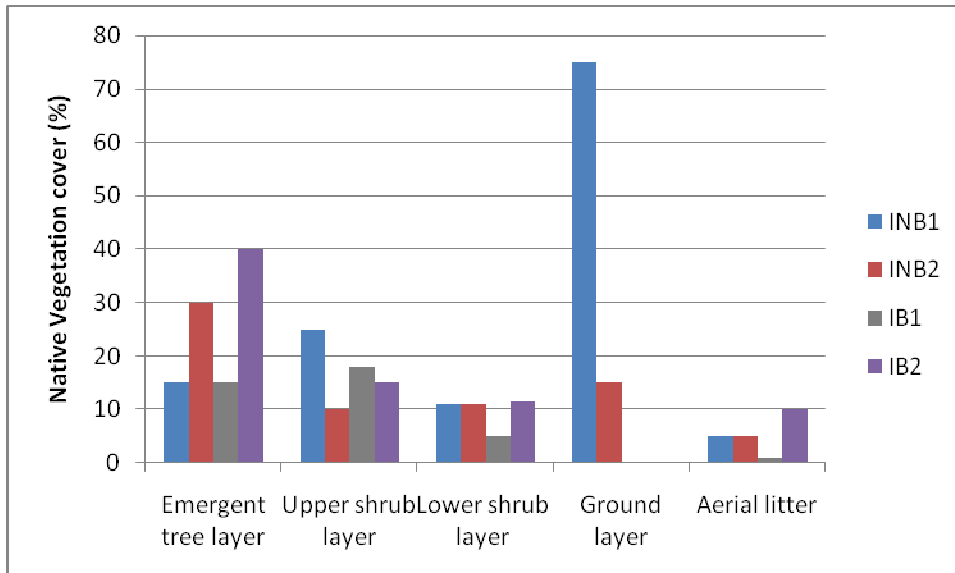


Figure 6 Native Vegetation stratum cover (%) for the Ilparpa Area

Figure 7 shows the bare ground, ground litter and buffel grass cover percentage and the accumulative native vegetation density. There was no significance between the cover percentages and the native vegetation density for the Ross Highway sites.

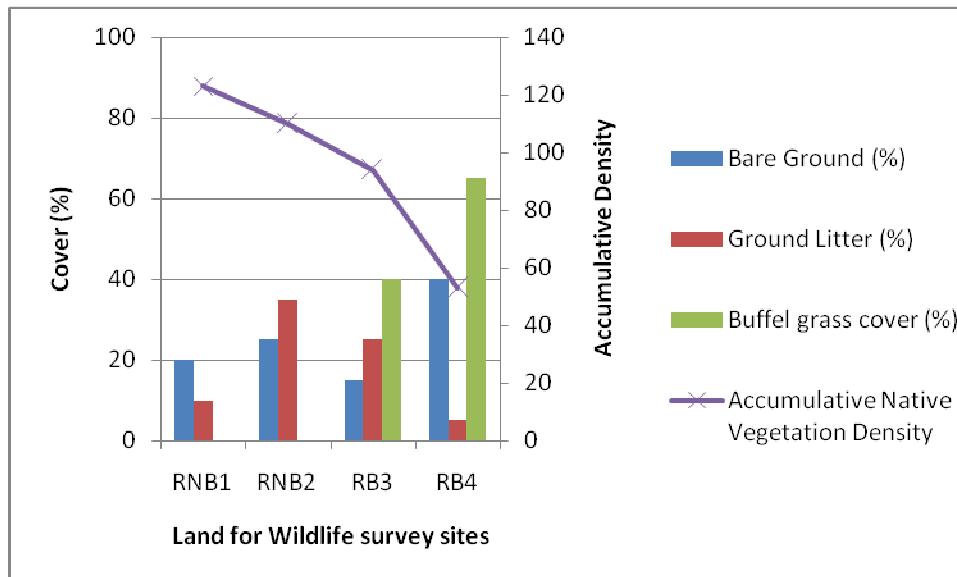


Figure 7 Cover (%) and accumulative native vegetation density for the Ross Highway area

The Ilparpa bare ground cover percentage (**Figure 8**) is lower within the non buffel grass sites when compared to the buffel grass sites. The ground litter percentages within this area indicate a greater coverage within sites IB1 and IB2 than INB1 and INB2. There was no significant difference when analysed.

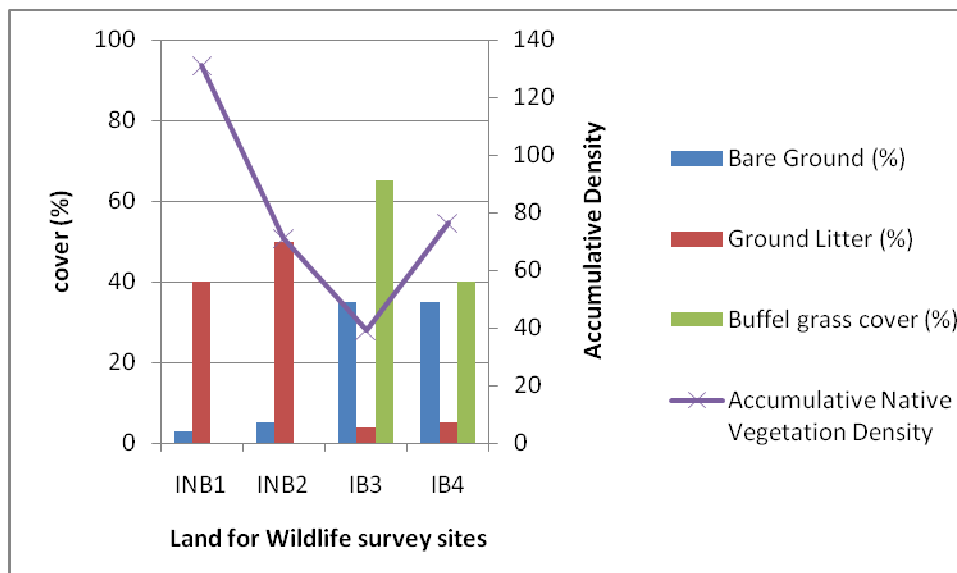


Figure 8 Cover (%) and accumulative native vegetation density for the Ilparpa area.

Diurnal bird surveys at the eight sites recorded 327 individual birds from twenty one families with a total of forty seven different bird species. **Table 5** shows the overall bird species records for each site.

Table 5 Bird species recorded within the eight Land for Wildlife survey sites.

Species	Sites							
	RNB1	RNB2	RB1	RB2	INB1	INB2	IB1	IB2
Australian Magpie <i>Gymnorhina tibicen</i>			■	■				
Australian Ringneck <i>Barnardius zonarius</i>	■	■	■	■	■	■		■
Black-breasted Buzzard <i>Hamirostra melanosternon</i>				■	■			
Black Kite <i>Milvus migrans</i>	■							■
Black-faced Cuckoo-shrike <i>Coracina novaehollandiae</i>	■	■		■			■	
Black-faced Woodswallow <i>Artamus cinereus</i>	■	■		■				■
Brown Falcon <i>Falco subniger</i>	■							
Brown Goshawk <i>Accipiter fasciatus</i>								■
Brown Honeyeater <i>Lichmera indistincta</i>	■							■
Chestnut-rumped Thornbill <i>Acanthiza uropygialis</i>								■
Crested Pigeon <i>Ocyphaps lophotes</i>	■	■	■	■	■	■		■
Diamond Dove <i>Geopelia cuneata</i>	■			■				
Fairy Martin <i>Hirundo ariel</i>		■			■			
Galah <i>Cacatua roseicapilla</i>	■	■	■	■	■	■	■	
Grey Honeyeater <i>Conopophila whitei</i>				■				
Grey-crowned Babbler <i>Pomatostomus temporalis</i>	■		■			■		
Grey-headed Honeyeater <i>Lichenostomus keartlandi</i>				■			■	
Grey-shrike Thrush <i>Colluricincla harmonica</i>		■		■				
Little Corella <i>Cacatua sanguinea</i>				■				
Magpie Lark <i>Grallina cyanoleuca</i>		■	■	■				
Major Mitchell Cockatoo <i>Cacatua leadbeateri</i>					■	■	■	
Mistletoebird <i>Dicaeum hirundinaceum</i>	■	■	■	■	■	■	■	■
Mulga Parrot <i>Psephotus varius</i>		■	■					
Peaceful Doves <i>Geopelia striata</i>	■	■	■					
Pied Butcherbird <i>Cracticus nigrogularis</i>			■	■	■	■	■	■
Rainbow Bee-eater <i>Merops ornatus</i>	■	■						■

Red-backed Kingfisher <i>Todiramphus pyrrhopygia</i>	■			■				■
Red-browed Pardalote <i>Pardalotus rubricatus</i>		■	■	■				
Rufous Whistler <i>Pachycephala rufiventris</i>	■	■	■		■			
Singing Honeyeater <i>Lichenostomus virescens</i>	■	■		■	■	■	■	■
Spiney-cheeked Honeyeater <i>Acanthagenys rufogularis</i>	■	■		■			■	■
Spinifex Pigeon <i>Geophaps plumifera</i>		■						
Splendid Fairy-wren <i>Malurus splendens musgravei</i>	■							
Striated Pardalote <i>Pardalotus striatus</i>				■		■		■
Torresian Crow <i>Corvus orru</i>	■		■			■		
Variegated Fairy-wren <i>Malurus lamberti assimilis</i>				■				
Wedge-tailed Eagle <i>Aquila audax</i>					■		■	
Weebill <i>Smicrornis brevirostris</i>	■				■		■	■
Western Bowerbird <i>Chlamydera guttata</i>	■	■						
Western Gerygone <i>Gerygone fusca</i>				■	■			■
Whistling Kite <i>Haliastur sphenurus</i>		■						
White-backed Swallow <i>Cheramoeca leucosternus</i>					■			
White-plumed Honeyeater <i>Lichenostomus penicillatus</i>	■	■		■				■
Willie Wagtail <i>Rhipidura leucophrys</i>	■	■		■	■		■	■
Yellow-rumped Thornbill <i>Acanthiza chrysorrhoa</i>		■		■			■	
Yellow-throated Minor <i>Manorina flavigula</i>		■	■		■	■		
Zebra Finch <i>Taeniopygia guttata</i>	■	■		■	■			

A single Grey Honeyeater *Conopophila whitei* was recorded at site RB2. This species is rarely observed (Morocombe 2000), little is known about them and they are thought to be nomadic. However, they are observed more frequently within the Mulga belt of Alice Springs (Pizzey & Knight 2003). Fork-leaved Corkwood *Hakea divaricata* had recently come into flower within site RB2, with five honeyeater species being recorded. Refer to **Appendix 5** for species abundance details for each Land for Wildlife site.

Rainbow Bee-eaters *Merops ornatus* were recorded within three of the eight sites. Rainbow Bee-eaters are regular summer migrants from the north to central Australia where they remain for the breeding season. Mistletoebirds *Dicaeum hirundinaceum* were the only bird species recorded within all eight survey sites.

Eight reptile species were recorded during the survey period (see **Table 6**). Tree Dtella *Gehyra variagata* were recorded at seven of the eight sites. Refer to **Appendix 5** for species abundance details for each Land for Wildlife site.

Table 6 Reptile species recorded within the eight Land for Wildlife survey sites.

Species	Sites							
	RNB1	RNB2	RB1	RB2	INB1	INB2	IB1	IB2
Arboreal Snake-eyed Skink <i>Cryptoblepharus plagiocephalus</i>			■					■
Burton's Legless Lizard <i>Lialis burtonis</i>		■			■			
Bynoe's Gecko <i>Heteronotia binoei</i>	■				■	■	■	
Central Netted Dragon <i>Ctenophorus nuchalis</i>				■				
Fat-tailed Diplodactylus <i>Diplodactylus conspicillatus</i>			■					
Frost's Lerista <i>Lerista frosti</i>		■						■
Grey's Menetia <i>Menetia greyii</i>			■					
Tree Dtella <i>Gehyra variagata</i>	■	■	■	■	■		■	■

Six House Mouse *Mus musculus* were captured at INB1. No native species were captured at any of the sites. Euro *Macropus robustus* were recorded at three sites and Rabbit *Oryctolagus cuniculus* at two sites. Again refer to **Appendix 5** for species abundance details for each Land for Wildlife site.

Figure 9 looks at the total number of plant species and bird species recorded within each site. The Ross Highway sites show a slightly greater number of plant species and bird species richness than the Ilparpa sites, however there was no significant correlation when analysed.

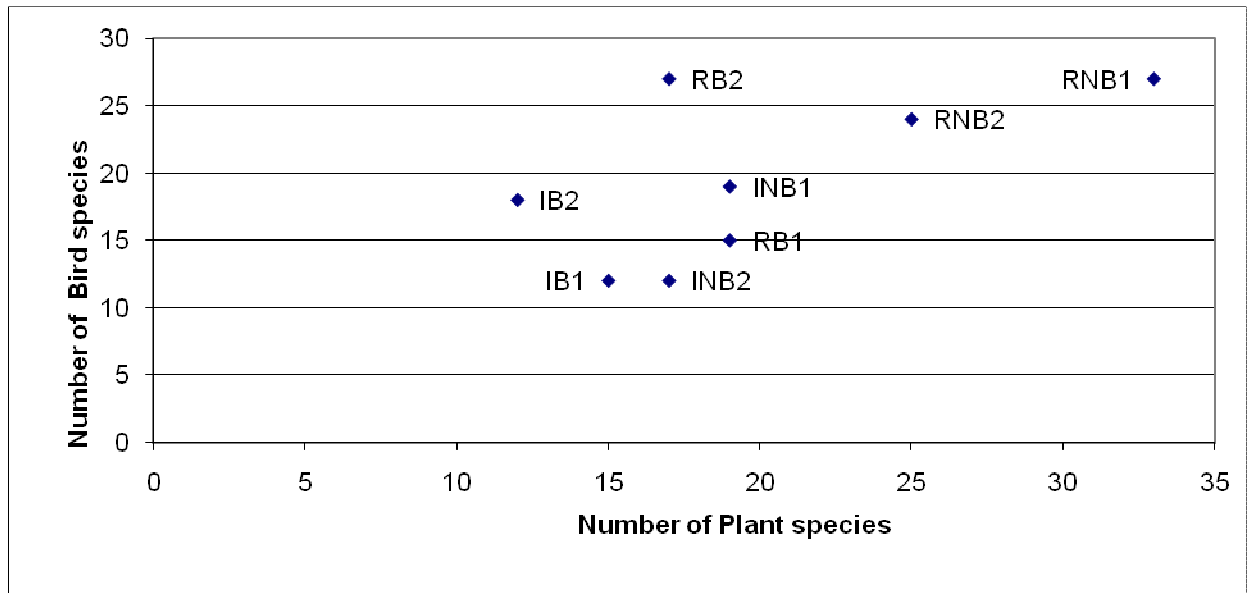


Figure 9 Comparison of the relationship between plant species and bird species for each site.

5 Discussion

5.1 Questionnaires

The questionnaire engaged the Land for Wildlife members in the biodiversity survey process by encouraging them to think about the conservation activities that they had worked on within their property since joining the scheme. Members showed increased enthusiasm in discussing the observed changes with the surveyors and continued to ask questions about specific species and their behaviours and/or growth patterns.

Property owners from INB2 have since compiled a DVD with ten years of video footage on the environmental changes that have occurred since moving to the property.

Property owners from RNB1 have since requested further assistance with bird identification techniques so that they can continue to monitor the changes in bird diversity within their property.

This study and included questionnaire has shown that the biodiversity surveys have encouraged members to self assess their properties and compare changes over time.

Members from the four non buffel grass sites stated in their questionnaire that certain areas within the property had shown significant regeneration of native plant species since the removal of weed species. The questionnaire provided a valuable opportunity for members to think about what had changed over the years since actively controlling weeds within certain areas of their property. The property owners from sites with buffel grass presence also mentioned that they plan to continue working towards removing the buffel grass from the survey site as they would like to be involved and see the results of another biodiversity survey in the future once weed management has occurred and the native seed bank has regenerated. The questionnaire also provided the property owners with an opportunity to ask questions about other land management issues related to their property. The questionnaires provided a time for the surveyor to explain

in detail the study aims before commencing the questionnaire, which increased the member's involvement in the survey process.

Overall, the questionnaire proved to be an important process in increasing knowledge about self assessment methods that can be undertaken by property owners themselves. The questionnaire encouraged members to think about the changes which had occurred since managing particular areas and enabled them to self assess the property and come to the realisation that the on-ground work conducted had been successful. Similar questionnaires will be used for future surveys and property re-assessments.

5.2 Member involvement

The property owner from RB2 assisted with the final morning of surveys and during this period asked questions about the bird and plant results. This site had sixty five percent buffel grass cover and had fourteen individual Fork-leaved Corkwood *Hakea divaricata* within the ground layer stratum. It was recommended that the buffel grass be removed from around the surrounding corkwoods to provide space for continued growth and protection from fire. The rapid build-up of buffel grass fuel has increased the fire frequency in many areas and long-lived woody species, such as river red gums (*Eucalyptus camaldulensis*), corkwoods (*Hakea species*) and beefwoods (*Grevillea striata*), have suffered from frequent fires (Friedel *et al* 2006). It was also suggested that the property owner place guards around the trees to assist with monitoring the growth as well as to further protect the plants from rabbit grazing and disturbance.

Property owners from RNB2 assisted with the vegetation survey and placed the Elliott traps along the transect line. They were very interested in the techniques used and their knowledge of particular plant species made a valuable contribution to the survey. We learnt some new rabbit control techniques from the property owners, which will prove valuable for property profile stories in the Land for Wildlife newsletters. Providing examples of techniques used to manage threatening process from Land for Wildlife member's themselves rather than the coordinators experiences is preferable as it indicates the techniques are useable at the ground-roots level. Members are interested in viewing and hearing stories about threats and control techniques that have proven successful.

The property owners from INB1 and their children gained further knowledge and experience from attending the survey sessions. The children were involved with the survey daily and have increased their understanding of the local biodiversity, which has contributed to their increased interest in the Junior Rangers program.

Feedback from individual property owners has indicated that they have been conducting fauna and flora surveys along the transect lines and some have requested further identification of fauna and flora species so that they can continue monitoring the biodiversity within their property.

The biodiversity surveys and questionnaires enabled Land for Wildlife members to re-assess the environmental changes within their property since joining the Land for Wildlife scheme. This has been a valuable process and has enabled the scheme to produce a detailed timetable of milestones to be achieved in the coming years related to re-assessment of properties and training of volunteer extension officers. Similar self assessment/biodiversity surveys have been planned for the next three years and National Heritage Trust funding has been granted to conduct surveys and self assessment activities due to this pilot study. The future self assessment surveys will include properties that have and have not been involved in the current survey. Properties that have been recently surveyed will be re-surveyed in the future to detect changes over time and between seasons. Five percent of Land for Wildlife properties are to be surveyed in 2008 and ten percent in both 2009 and 2010. Land for Wildlife coordinators will assist members in surveying property biodiversity to increase member skills in recording change over time. This process hopes to continue increasing enthusiasm in biodiversity conservation and will allow the Land for Wildlife coordinators to audit properties to ensure they meet the schemes registration guidelines. The main registration guideline states that property members should:

“Make a reasonable effort to pursue the maintenance and enhancement of native flora and fauna and/or to integrate nature conservation with other land management objectives on the land specified.”

5.3 Biodiversity Surveys

The Land for Wildlife biodiversity survey was developed as a pilot study to teach members skills for self assessing the biodiversity changes over time within their properties. Surveys were conducted within eight Land for Wildlife properties and future surveys may be increased to 16 properties which will increase the pool of data for analysis and may provide sufficient data to show significant differences between properties with and without buffel grass.

The number of plant species recorded within the Ilparpa sites were significantly lower ($F_{1,7}=21.353$; $P=0.004$) than compared to the Ross Highway sites. This is most likely due to the differences in drainage feature land units. Land unit 5.09 Relic Drainage Depressions as described by Lennartz (2000) was present within the Ross Highway area. Land unit 5.09 provides appropriate conditions for healthy vegetation growth (Paltridge and Latz 2003) due to better soil type based on the limestone, clayey soils mixed with heavitree quartzite sands and better soil moisture retention properties (Low pers. comm.). This land unit has depressions which form part of the floodout system of drainage channels that flow only during infrequent large flooding episodes and allow water to be retained in the system for longer periods. They also retain a healthy vegetation cover due to the underlying palaeodrainage system.

However, the Ilparpa sites lie within the plains land units and all sites contain land unit 4.04 Floodout and 4.05 Remnant Flood Deposit Flats, which are sourced from the heavitree quartzite, sandstones and are inherently less able to retain water. Land unit 4.04 has lower nutrient content and land unit 4.05 has a higher salt content (Low, pers.comm). These differences are the most likely explanation for the lower plant species richness found within the Ilparpa survey sites compared to the Ross Highway sites.

There was a significant ($F_{1,3}=22.154$; $P=0.042$) difference in the percentage cover of the upper shrub layer when comparing strata from the Ross Highway sites. Sites RNB1 and RNB2 also supported a greater number of bird species when compared to INB1 and INB2. This could be due to the vegetation maturity and good health status, providing an increased amount of available food source and habitat for bird species, especially in the upper shrub layer. The Ross Highway sites have retained healthy vegetation cover due

to the present land units and better soils types. The control of buffel grass within the sites may have influenced the growth of native plant species and this may have increased food resource and habitat for bird species. This is an interesting result which is worth forwarding onto Land for Wildlife members, as it may encourage continued on-ground work to remove weeds from the properties.

The sites INB1 and INB2 had a greater number of native vegetation species at the ground layer (**Figure 6**) but this trend was not significant due to high variation and small sample size.

Forty seven bird species were identified across the eight Land for Wildlife survey sites. The large number of bird species highlights the diversity of birds in the region and has been a positive result that has enabled members to increase their understanding of the local fauna. Members now have increased knowledge of the bird species present within their property and an increased knowledge of the regions bird diversity.

5.4 Buffel Grass *Cenchrus ciliaris*

Research has shown that buffel grass adversely effects available soil nitrogen (Humphreys 1967) by rapidly using and exhausting the mineral pool (Cavaye 1991). It is important for Land for Wildlife members to understand the consequences of buffel grass invasion within their property and the soil damage that will occur over time. Soil damage will effect the successful regeneration of the native seed bank especially if buffel grass has been present for many years and has resulted in decreased soil nutrient. A decline in growth of buffel grass has been reported on central Australian red soils where both nitrogen and phosphorus are limiting (Bohning 1997). In the absence of disturbance or nutrient input, Latz (1997) surmised that some buffel grass stands appeared to exhaust available soil nutrients and died back as individual plants reached their maximum age (approximately 15-20 years) at Simpson's Gap National Park, Alice Springs. This is relevant to property owners (especially properties with buffel grass presence) as it describes the impact that buffel grass has on the health of the soil and the detrimental effects buffel grass can have on regeneration of the native seed bank due to lack of soil nutrients.

Sites INB1 and INB2 had less bare ground than the other sites; this may be a result of increased native vegetation growth due to buffel grass removal. Light and space availability are normally plentiful in the sparse vegetation of central Australia (Best 1998), and the concurrent germination of native species may not significantly limit buffel grass establishment following substantial rainfall. Conversely, subsequent establishment of dense buffel grass swards may inhibit the future establishment capacity of other plants (Miller 2003). When buffel grass is dense it can dominate light and space, reducing opportunities for native vegetation establishment (Miller 2003). Invasive grasses can significantly alter both ecosystem structure (including composition and relative abundance, physical structures of both vegetation assemblages and animal trophic interactions) and function (including the processes of ecosystem maintenance and disturbance such as mineral cycling, decomposition, hydrological cycling and fire regime) (Humpheries 1993).

Buffel grass cover from sites (RB1, RB2, IB1 and IB2) was observably reduced beneath the native plants especially Fork-leaved Corkwood *Hakea divaricata* trees and Ironwood *Acacia estrophiolata*. Previous studies by Butler and Fairfax (in press) in Queensland gidgee and brigalow woodland and Franks (2002) in popular box (*Eucalyptus populnea*) woodland showed a significant reduction in buffel grass growth beneath tree and shrub canopies. Shading and competition for water and nutrients from dense sub-canopy species may be important determinants of buffel grass's invasive ability (Franks 2002). However, canopy cover of desert trees can be less dense, which may result in buffel grass growth up to the trunk of tree species. This could lead to thicker buffel grass cover that can create high intensity fires leading to the death of many native trees.

No differences in native vegetation density between sites with and without buffel grass were detected in this study. However, pronounced reductions in floral species richness and changes in the structure of vegetation assemblage have been demonstrated in other areas (Latz 1997). The fact that differences were not significant in this study may be because of the small number of sites selected but also due to the short time since Buffel control began. For future Land for Wildlife biodiversity surveys, the number of sites surveyed will be increased.

6 Conclusion

The Land for Wildlife pilot biodiversity survey aimed to increase Land for Wildlife member knowledge in self assessment methods so that they could use the techniques learnt to measure the beneficial impact of their conservation activities. Individual property owners have since taken the time to conduct their own fauna and flora surveys along transect lines and have requested further identification of fauna and flora species so that they can continue monitoring the biodiversity within their property.

The study aimed to survey species richness of native fauna and flora within Land for Wildlife properties that have no buffel grass as a result of active management compared to properties that have buffel grass present or are in the early stages of managing buffel grass. The biodiversity survey did not find any significant differences between species richness of native fauna or flora on Land for Wildlife properties with and without buffel grass. This may be because it was a small pilot study and the small number of replicate properties made it difficult to detect any differences. It could also be due to relatively short time for the country to recover after buffel grass removal. Future biodiversity surveys are planned for 2008 through to 2010 and will include up to sixteen properties. This pilot study has enabled the Land for Wildlife scheme to initiate monitoring plans to assess conservation success of the program and has been an important step in securing and meeting funding requirements which will enable Land for Wildlife to increase the number of sites for future surveys.

The study also aimed to determine whether the biodiversity surveys undertaken on individual Land for Wildlife properties influenced member plans for continuing biodiversity conservation within their property. The process of engaging the members in the survey has been a valuable experience, enabling them to increase their understanding of the importance for protecting and enhancing their properties habitats. This has encouraged property owners to continue their on-ground activities for conservation of their local environment.

Land for Wildlife members whose properties were not included in the pilot study have inquired about future biodiversity surveys and have offered their land for inclusion. Members who were involved in the surveys provided feedback at the seminar and via emails and phone conversations since the completion of the study. The feedback has indicated that they have increased their enthusiasm toward biodiversity conservation and they are using the techniques learnt during the survey to conduct their own monitoring surveys.

Buffel grass has been associated with decreased native grass and forbs species richness in Australia (McIvor 1998; Fairfax and Fensham 2000; Franks 2002) and overseas (Daehler and Carino 1998). Central Australian studies also show that buffel grass does have a long term impact on plant species richness (Clarke et al 2005). The Land for Wildlife scheme in Alice Springs is continually working towards raising awareness about the impacts of threatening processes to the environment and ways of controlling these threats. This study has reminded members of why they joined Land for Wildlife and that their aim was to be part of a voluntary conservation group which makes a reasonable effort to pursue the maintenance and enhancement of native flora and fauna and/or to integrate nature conservation with other land management objectives within their property. This survey has encouraged members to continue controlling threatening processes like buffel grass and it is hoped that in the future, Land for Wildlife properties will be buffel grass free, providing habitats for local flora and its dependant wildlife.

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9 Appendices

Appendix 1 Vegetation Description Data Sheet

LFW	Observers:	Quad. size: 50x50m	
	Site:	Date:	
<u>Species List</u>			
Strata	Dominant species (record in order of dominance)	Average ht. (m) of strata	Cover (%) of strata (% cover classes) <10 10-30 30-70 >70
Emergent tree layer:			
Upper shrub layer:			
Lower shrub layer:			
Ground layer:			
Mistletoes	Species	Host Species	Cover (%)

% Bare Ground_____

% Ground litter_____

% Aerial Litter (dead standing veg.)_____

Appendix 2 Alice Springs Land for Wildlife Avian Survey Data Sheet
100m Line Transect

Day
Date
Start Time
Finish Time
Observers
Site
Weather Conditions:
Sunlight
Wind
Rain
Temperature

Species	No. Seen	No. Heard (not seen)	Notes
Babblers			
White-browed Babbler			
Grey-crowned Babbler			
Bee-eater			
Rainbow Bee eater			
Bellbird			
Crested Bellbird			
Bowerbird			
Western Bowerbird			
Butcherbird			
Grey Butcherbird			
Pied Butcherbird			
Button-quail			
Little Button Quail			
Chats			
Crimson Chat			

Orange Chat			
Crow			
Little Crow			
Torresian Crow			
Cuckoos			
Pallid Cuckoo			
Black-eared Cuckoo			
Horsfields Bronze Cuckoo			
Cuckoo-shrike			
B. F. Cuckoo-shrike			
Ground Cuckoo-shrike			
Emu-wren			
Rufous-crowned Emu-Wren			
Fairy-wrens			
Splendid Fairy-wren			
Variegated Fairy-wren			
White-winged Fairy-wren			
Finch			
Painted Firetail			
Zebra Finch			
Gerygone			
Western Gerygone			
Grasswren			
Dusky Grasswren			
Honeyeaters			
Spiny-cheeked Honeyeater			
Singing Honeyeater			
Grey-headed Honeyeater			
Grey-fronted Honeyeater			

White-plumed Honeyeater			
Black-chinned Honeyeater			
Brown Honeyeater			
White-fronted Honeyeater			
Grey Honeyeater			
Black Honeyeater			
Pied Honeyeater			
Yellow-throated Miner			
Kingfishers			
Red Backed Kingfisher			
Sacred Kingfisher			
Magpie			
Australian Magpie			
Magpielark			
Magpielark			
Mistletoebird			
Mistletoebird			
Nightjars			
Tawny Frogmouth			
Owlet Nightjar			
Spotted Nightjar			
Owls			
Boobook Owl			
Barn Owl			
Pardalote			
Red-browed Pardalote			
Striated Pardalote			
Parrots			

Red Tailed Black Cockatoo			
Galah			
Little Corella			
Major Mitchel Cockatoo			
Cockatiel			
Budgerigar			
Ringneck Parrot			
Mulga Parrot			
Bourke Parrot			
Pigeons			
Peaceful Dove			
Diamond Dove			
Common Bronzewing			
Crested Pigeon			
Spinifex Pigeon			
Spotted Turtle-dove			
Quail			
Stubble Quail			
Brown Quail			
Raptors			
Black Shouldered Kite			
Black Kite			
Whistling Kite			
Brown Goshawk			
Collared Sparrowhawk			
Black Falcon			
Brown Falcon			
Peregrine Falcon			
Australian Kestrel			
Black Breasted Buzzard			

Wedge Tail Eagle			
Australian Hobby			
Redthroat			
Redthroat			
Reed-warbler			
Clamorous Reed-warbler			
Robins			
Hooded Robin			
Red Capped Robin			
Jacky Winter			
Shrike-thrush			
Grey Shrike-thrush			
Sitella			
Varied Sittella			
Songlark			
Brown Songlark			
Rufous Songlark			
Stone-curlew			
Bush Stone-Curlew			
Swallow/Martin			
White-backed Swallow			
Welcome Swallow			
Tree Martin			
Fairy Martin			
Thornbill			
Yellow-rumped Thornbill			
Inland Thornbill			
Chestnut-rumped Thornbill			
Slaty-backed Thornbill			
Triller			
White-winged Triller			
Wagtail/Fantail			
Grey Fantail			

Willie Wagtail			
Weebill			
Weebill			
Whistler			
Rufous Whistler			
Whiteface			
Southern Whiteface			
Banded Whiteface			
Woodswallow			
Little Woodswallow			
Masked Woodswallow			
White-breasted Woodswallow			
White-browed Woodswallow			
Black-faced Woodswallow			

Names

Survey

LfW biodiversity survey

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REPTILES/AMPHIBIANS

[illegible]

Appendix 4 Land for Wildlife Member Questionnaire

Alice Springs Land for Wildlife

Property Biodiversity Assessment
Questionnaire August 2007

Site:

Contact details (if different from previous report)?



Do Landholders consent to the use of photographs being taken during the survey period being used for talks and promotion of the program? Yes or No

LAND USE

Commercial / Industrial	Conservation
Tourism	Education
Grazing	Hobby Farm
Horticulture	Rural Living
Other / Description	

Area under conservation priority (hectares)

- a. Total area under conservation priority:
- b. Area already restored & actively managed:
- c. Area under restoration / works in progress:
- d. Area with no management:
- e. Area with fuel reduction activities:

MANAGEMENT OBJECTIVES (refer to the original report)

Did you meet or are you on your way to meeting the objectives described in the original report? If NO please describe goals still to be reached.

Yes or No

Landholders' Goals for the Property

Landholders' Goals Regarding Land for Wildlife

Property Plans

Neighbouring Impacts/Connecting Properties

Do any of the following issues impact upon your property from the neighbouring properties?

Problematic pets	Yes or No
Development	Yes or No
Drainage/erosion issues	Yes or No
Weeds	Yes or No
Fire risks	Yes or No
Feral animals	Yes or No
Noise	Yes or No
Other -	Yes or No
Describe –	

NATIVE VEGETATION

New species observed	Yes or No	
Improved Habitat Quality -	Fallen timber	Yes or No
	mulch/leaf litter	Yes or No
Comments -		

Do you take photographs at regular times of the year to compare vegetation changes?

Yes or No

If YES, can I collect copies of the photographs for our records? Yes or No

Weed Management Activities (within your property)

Herbicide Yes or No

Fire Yes or No

Slashing Yes or No

Digging/chipping out Yes or No

Grazing Yes or No

Describe –

Have the numbers of weeds present changed over time?

Yes or No

Describe -

Weed Management Activities (along the survey line if different from above)

Herbicide Yes or No

Fire Yes or No

Slashing Yes or No

Digging/chipping out Yes or No

Grazing Yes or No

Describe –

How long ago did you treat the transect/survey line for weeds? (please circle)

3 months 6 months 9 months 12 months 2 years or more

Other -

REVEGETATION OR REHABILITATION ACTIVITIES

What have you done to either revegetate or rehabilitate areas within your property that no longer represent native remnant vegetation?

Has there been any revegetation or rehabilitation along the survey line?

Yes or No

Describe –

Do you require assistance with developing a revegetation or rehabilitation plan? Yes or No

Describe the changes you have observed since revegetating or rehabilitating certain areas?

Increase in particular species (Spiney-cheeked Honeyeaters or Button Grass)

Yes or No

Increase in different types of species Yes or No

Increase in Growth of Native vegetation Yes or No

Soil stabilisation (erosion) Decrease or Increase

Is there erosion problems?

Along vehicle/pathway tracks Yes or No

Drainage lines Yes or No

Water gullies Yes or No

Other

NATIVE FAUNA AND FLORA OBSERVATIONS

On average, how often do you take time to observe fauna and flora on your property? (birds, mammals, reptiles, invertebrates, vegetation) Please circle.

Daily Weekly Fortnightly Monthly Quarterly 6 monthly

Yearly Not at all

Do you do this by - (you can circle more than one answer)

Foot Bike Car

Other -

Do you document observations on a data sheet Yes or No

If Yes can I obtain a copy? Yes or No

Do you carry out your own surveys at regular times of the year?

Bird walks Yes or No

Reptile searches Yes or No

Vegetation recordings Yes or No

Other –

If Yes, please describe -

Do you feel that your fauna/flora identification skills have improved over the years?

Yes or No

Would you like to increase your skills in - (you can circle more than one answer)

Bird identification Reptile identification Vegetation identification

Mammal identification Invertebrate Identification

Revegetation or rehabilitation techniques

Other -

Are you aware of any native fauna or flora that was once on the property but doesn't seem to be anymore?

Yes or No

Describe -

Have you observed rich habitats within your property that support more wildlife?

Yes or No

Describe -

Feral Animals / Domestic Animals & Control Activities

Has the number of feral and pest animals on your property changed over time?

Yes or No

Describe -

Do you have any of the below variables close to the survey line or other variables that might alter the biodiversity levels around the survey line?

Dam or permanent water source	Yes or No	Approx. Distance.....
Road	Yes or No	Approx. Distance.....
Driveway or walkway	Yes or No	Approx. Distance.....
Fire break	Yes or No	Approx. Distance.....
High numbers of Euro Kangaroos	Yes or No	
Grazing stock	Yes or No	Numbers.....
Rabbit proof fencing	Yes or No	
Buildings (yours or neighbouring)	Yes or No	Approx. Distance.....
Pets	Yes or No	Other -

Do you require **further assistance** and information to help you continue to reach your property Land for Wildlife goals?

Thankyou for completing this survey questionnaire and for allowing me to conduct the biodiversity surveys within your property. I look forward to discussing the final results with you at the end of the research period.

Appendix 5 Land for Wildlife Biodiversity Survey - Species List Results

INB1 NT Portion 1963 Ilparpa Road table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	2	Button Grass	<i>Dactyloctenium radulans</i>	
Australian Ringneck	<i>Barnardius zonarius</i>	6	Climbing Saltbush	<i>Einadia nutans</i>	
Black-faced Woodswallow	<i>Artamus cinereus</i>	4	Fork-leaved Corkwood	<i>Hakea divaricata</i>	3
Crested Pigeon	<i>Ocyphaps lophotes</i>	1	Ironwood	<i>Acacia estrophiolata</i>	11
Galah	<i>Cacatua roseicapilla</i>	3	Ironwood Mistletoe	<i>Amyema hilliania</i>	
Major Mitchell Cockatoo	<i>Cacatua leadbeateri</i>	12	Leafy Nine-awn/ Oat Grass	<i>Enneapogon polyphyllus</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	4	Native Oat-grass	<i>Enneapogon avenaceus</i>	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	9	Prickly Acacia	<i>Acacia victoriae</i>	43
Rufous Whistler	<i>Pachycephala rufiventris</i>	5	Purple plumegrass	<i>Triraphis mollis</i>	
Singing Honeyeater	<i>Lichenostomus virescens</i>	21	Rolly Polly	<i>Salsola tragus</i>	
Spiney-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	2	Ruby Saltbush	<i>Enchylaena tomentosa</i>	
Fairy martin	<i>Hirundo ariel</i>	1	saltbush spp	<i>Maireana scleroptera</i>	
Wedge-tailed Eagle	<i>Aquila audax</i>	2	saltbush spp	<i>Atriplex elachophylla</i>	
Weebill	<i>Smicrornis brevirostris</i>	1	Spiney Saltbush	<i>Rhagodia spinescens</i>	
Western Gerygone	<i>Gerygone fusca</i>	2	Tall Copper-burr	<i>Sclerolaena convexula</i>	
White-backed Swallow	<i>Cheramoeca leucosternus</i>	2	Whitewood	<i>Atalaya hemiglauca</i>	1
Willie Wagtail	<i>Rhipidura leucophrys</i>	5	Wire-leaf Mistletoe	<i>Amyema preissii</i>	
Yellow-throated Minor	<i>Manorina flavigula</i>	5		<i>Urochloa piligera</i>	
Zebra Finch	<i>Taeniopygia guttata</i>	1		<i>Sida cunninghamii</i>	
Reptile species recorded		No.	Mammal species recorded		No.
Bynoe's Gecko	<i>Heteronotia binoei</i>	6	House Mouse	<i>Mus musculus</i>	6
Burton's Legless Lizard	<i>Lialis burtonis</i>	5			
Tree Dtella	<i>Gehyra variegata</i>	2			

INB2 NT Portion 3733 Ilparpa Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Australian Ringneck	<i>Barnardius zonarius</i>	2	Beefwood	<i>Grevillea striata</i>	3
Crested Pigeon	<i>Ocyphaps lophotes</i>	8	Desert Cassia	<i>Senna art. ssp. filifolia</i>	
Galah	<i>Cacatua roseicapilla</i>	14	Desert Lantern-bush	<i>Abutilon leucopetalum</i>	
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	24	Fire Sida	<i>Sida filiformis</i>	
Major Mitchell Cockatoo	<i>Cacatua leadbeateri</i>	1	Fork-leaved Corkwood	<i>Hakea divaricata</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	3	Ghost Gum	<i>Corymbia aparreringe</i>	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	17	Ironwood	<i>Acacia estrophiolata</i>	18
Singing Honeyeater	<i>Lichenostomus virescens</i>	2	Ironwood Mistletoe	<i>Amyema hilliana</i>	
Striated Pardalote	<i>Pardalotus striatus</i>	2	Long-leafed Corkwood	<i>Hakea lorea ssp. lorea</i>	1
Torresian Crow	<i>Corvus orru</i>	13	River Red Gum	<i>Eucalyptus camaldulensis</i>	2
Yellow-throated Minor	<i>Manorina flavigula</i>	19	Rolly Polly	<i>Salsola tragus</i>	
			Ruby Saltbush	<i>Enchylaena tomentosa</i>	
			Silky Glycine	<i>Glycine canescens</i>	
			Spiked Malvastrum (weed)	<i>Malvastrum americanum</i>	
			Wild Tomato	<i>Solanum quadriloculatum</i>	
			Witchetty Bush	<i>Acacia kempeana</i>	
				<i>Sida</i>	
Reptile species recorded		No.	Mammal species recorded		No.
Tree Dtella	<i>Gehyra variegata</i>	3	Euro	<i>Macropus robustus</i>	8

RNB1 LOT 8204 Ragonesi Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Australian Ringneck	<i>Barnardius zonarius</i>	7	Annual Saltbush	<i>Atriplex humifusa</i>	
Black faced Woodswallow	<i>Artamus cinereus</i>	6	Annual Saltbush	<i>Atriplex elachophylla</i>	
Black Kite	<i>Milvus migrans</i>	2	Buffel Grass*	<i>Cenchrus ciliaris</i>	
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	2	Cartwheel Burr	<i>Sclerolaena cornishiana</i>	
Brown Falcon	<i>Falco subniger</i>	1	Climbing Saltbush	<i>Einadia nutans</i>	
Brown Honeyeater	<i>Lichmera indistincta</i>	3	Cotton bush	<i>Maireana aphylla</i>	
Crested Pigeon	<i>Ocyphaps lophotes</i>	22	Couch Grass*	<i>Cynodon dactylon</i>	
Diamond Dove	<i>Geopelia cuneata</i>	6	Crimson Foxtail	<i>Ptilotus sessilifolius</i>	
Galah	<i>Cacatua roseicapilla</i>	7	Dogwood	<i>Acacia coriacea</i>	
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	16	Flannel Weed	<i>Corchorus sidoides</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	3	Fork-leaved Corkwood	<i>Hakea divaricata</i>	7
Peaceful Doves	<i>Geopelia striata</i>	8	Fruit Salad/Apple Bush	<i>Pterocaulon sphacelatum</i>	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	1	Golden Everlasting	<i>Xerochrysum bracteatum</i>	
Rainbow Bee-eater	<i>merops ornatus</i>	2	Grey Wrinklewort	<i>Rutidosis helichrysoides</i>	
Red-backed Kingfisher	<i>Todiramphus pyrrhopygia</i>	1	Harlequin Mistletoe	<i>Lysiana exocarpi</i>	
Rufous Whistler	<i>Pachycephala rufiventris</i>	2	Ironwood	<i>Acacia estrophiolata</i>	13
Singing Honeyeater	<i>Lichenostomus virescens</i>	5	Mueller's Peppercress	<i>Lepidium muelleri-ferdinandi</i>	
Spiney-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	20	Munyeroo, Pigweed	<i>Portulaca oleracea</i>	
Splendid Fairy-wren	<i>Malurus splendens musgravei</i>	17	Prickly Acacia	<i>acacia victoriae</i>	28
Torresian Crow	<i>Corvus orru</i>	1	Queensland Blue Grass	<i>Dichanthium sericeum</i>	
Weebill	<i>Smicrornis brevirostris</i>	10	Ruby Dock*	<i>Acetosa vesicaria</i>	
Western Bowerbird	<i>Chlamydera guttata</i>	1	Ruby Saltbush	<i>Enchylaena tomentosa</i>	
Western Gerygone	<i>Gerygone fusca</i>	6	Saltbush spp	<i>Maireana scleroptera</i>	
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	7	Satiny Blubush	<i>maireana georgia</i>	
Willie Wagtail	<i>Rhipidura leucophrys</i>	3	Shiny-leaved Mallee	<i>Eucalyptus lucens</i>	

Zebra Finch	<i>Taeniopygia guttata</i>	3	Silver Cassia	<i>Senna artemisioides subsp. artemisioides</i>	
Reptile species recorded		No.	Tall Yellow Top	<i>Senecio magnificus</i>	
Tree Dtella	<i>Gehyra variegata</i>	6	Variable Daisy	<i>Brachycome ciliaris</i>	
Bynoes Gecko	<i>Heteronotia binoei</i>	1	Western Australian Flowering gum	<i>Eucalyptus spathulata</i>	
Mammal species recorded		No.	Wire-leaf Mistletoe	<i>Amyema preissii</i>	
Rabbit	<i>Oryctolagus cuniculus</i>	1	Woolly Copper Burr	<i>Sclerolaena lanicuspis</i>	
			Yellow Twin Stem	<i>Flaveria australasica</i>	
				<i>Pluchea dunlopia</i>	

RB1 LOT 4995 Heenan Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Australian Magpie	<i>Gymnorhina tibicen</i>	2	Annual Saltbush spp	<i>Atriplex humifusa</i>	
Australian Rignneck	<i>Barnardius zonarius</i>	8	Bloodwood	<i>Corymbia opaca</i>	6
Crested Pigeon	<i>Ocyphaps lophotes</i>	14	Buffel Grass*	<i>Cenchrus ciliaris</i>	
Galah	<i>Cacatua roseicapilla</i>	32	Climbing Saltbush	<i>Einadia nutans</i>	
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>	4	Colony Wattle	<i>Acacia murrayana</i>	
Magpie Lark	<i>Grallina cyanoleuca</i>	3	Creek Windmill Grass	<i>Enteropogon ramosus</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	4	Dead Finish	<i>Acacia tetragonophylla</i>	
Mulga Parrot	<i>Psephotus varius</i>	3	Fire Sida	<i>Sida filiformis</i>	
Peaceful Dove	<i>Geopelia striata</i>	1	Fork-leaved Corkwood	<i>Hakea divaricata</i>	
Pied Butcher Bird	<i>Cracticus nigrogularis</i>	3	Hill Umbrella Bush	<i>Acacia bivenosa</i>	
Red-browed Pardalote	<i>Pardalotus rubricatus</i>	2	Himalayan Raintree*	<i>Dalbergia sisso</i>	
Rufous Whistler	<i>Pachycephala rufiventris</i>	1	Ironwood	<i>Acacia estrophiolata</i>	80
Torresian Crow	<i>Corvus orru</i>	1	saltbush spp	<i>Maireana scleroptera</i>	
Yellow-throated Miner	<i>Manorina flavigula</i>	17	saltbush spp	<i>Sclerolaena costata</i>	
Reptile species recorded		No.	Spiked Malvastrum	<i>Spiked Malvastrum</i>	
Arboreal Snake-eyed Skink	<i>Cryptoblepharus plagioccephalus</i>	1	Tall Copper-burr	<i>Sclerolaena convexula</i>	
Fat-tailed Diplodactylus	<i>Diplodactylus conspicillatus</i>	1	Variable Daisy	<i>Brachycome ciliaris</i>	

Grey's Menetia	<i>Menetia greyii</i>	1	Yellow Buttons	<i>Chrysocephalum apiculatum</i>	
Tree Dtella	<i>Gehyra variagata</i>	4		<i>Senna art. ssp. sturtii</i>	
Mammal species recorded		No.	NONE		
none		0			

IB1 LOT 4451 Ilparpa Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	1	Bloodwood	<i>Corymbia opaca</i>	
Galah	<i>Cacatua roseicapilla</i>	3	Buffel Grass	<i>Cenchrus ciliaris</i>	
Grey-headed Honeyeater	<i>Lichenostomus keartlandi</i>	1	Cattle bush	<i>Senecio magnificus</i>	
Major Mitchell Cockatoo	<i>Cacatua leadbeateri</i>	1	Dead Finish	<i>Acacia tetragonophylla</i>	5
Mistletoebird	<i>Dicaeum hirundinaceum</i>	7	Fork-leaved Corkwood	<i>Hakea divaricata</i>	21
Pied Butcher Bird	<i>Cracticus nigrogularis</i>	2	Ironwood	<i>Acacia estrophiolata</i>	
Singing Honeyeater	<i>Lichenostomus virescens</i>	10	Long-leaved Corkwood	<i>Hakea Lorea</i>	
Spiney-checked Honeyeater	<i>Acanthagenys rufogularis</i>	2	Mimosa Bush	<i>Acacia farnesiana</i>	
Wedge-tailed Eagle	<i>Aquila audax</i>	2	Native Passionfruit	<i>Cappairs spinosa</i>	
Weebill	<i>Smicrornis brevirostris</i>	8	Old Man Saltbush	<i>Atriplex nummularia</i>	
Willie Wagtail	<i>Rhipidura leucophrys</i>	1	Prickle Acacia	<i>Acacia victoria</i>	6
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	2	Ruby Saltbush	<i>Enchylaena tomentosa</i>	
Reptile species recorded		No.	saltbush spp	<i>Maireana scleroptera</i>	
Tree Dtella	<i>Gehyra variagata</i>	1	Spiked Malvastrum	<i>Malvastrum americanum</i>	
Bynoes	<i>Heteronotia binoei</i>	3	Tall Saltbush	<i>Rhagodia eremaea</i>	
Mammal species recorded		No.	Whitewood	<i>'Atalaya hemiglauca</i>	9
Euro	<i>Macropus robustus</i>	2			

IB2 LOT 4463 Bullen Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Australian Ringneck	<i>Barnardius zonarius</i>	5	Beefwood	<i>Grevillea striata</i>	5
Black Kite	<i>Milvus migrans</i>	2	Buffel Grass	<i>Cenchrus ciliaris</i>	
Black-faced Woodswallow	<i>Artamus cinereus</i>	1	Climbing Saltbush	<i>Einadia nutans</i>	
Brown Goshawk	<i>Accipiter fasciatus</i>	1	Dead Finish	<i>Acacia tetragonophylla</i>	
Brown Honeyeater	<i>Lichmera indistincta</i>	12	Fork-leaved Corkwood	<i>Hakea divaricata</i>	23
Chestnut-rumped Thornbill	<i>Acanthiza uropygialis</i>	5	Ironwood	<i>Acacia Estrophiolata</i>	8
Crested Pigeon	<i>Ocyphaps lophotes</i>	2	Ironwood Mistletoe	<i>Amyama Hilliana</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	8	Passionfruit Vine	<i>Cappairs spinosa</i>	
Pied Butcher Bird	<i>Cracticus nigrogularis</i>	2	Prickle acacia	<i>Acacia Victorae</i>	13
Rainbow Bee-eater	<i>merops ornatus</i>	4	Ruby Slatbush	<i>Enchylaena tomentosa</i>	
Red-backed Kingfisher	<i>Todiramphus pyrrhopygia</i>	2	Saltbush sp?	<i>Maireana scleroptera</i>	
Singing Honeyeater	<i>Lichenostomus virescens</i>	6	Weeping Emu Bush	<i>Eremophila longifolia</i>	
Spiney-checked Honeyeater	<i>Acanthagenys rufogularis</i>	4	Reptile species recorded		No.
Striated Pardalote	<i>Pardalotus striatus</i>	1	Arboreal Snake-eyed Skink	<i>Cryptoblepharus plagioccephalus</i>	1
Weebill	<i>Smicrornis brevirostris</i>	7	Frost's Lerista	<i>Lerista frosti</i>	1
Western Gerygone	<i>Gerygone fusca</i>	4	Tree Dtella	<i>Gehyra variagata</i>	17
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	1	Mammal species recorded		No.
Willie Wagtail	<i>Rhipidura leucophrys</i>	2	Euro	<i>Macropus robustus</i>	1

RB2 LOT 9274 Baldissera Road Table of biodiversity survey results					
Bird species recorded		No	Vegetation species recorded		No
Australian Magpie	<i>Gymnorhina tibicen</i>	3	Buffel grass	<i>Cenchrus ciliaris</i>	
Australian Ringneck	<i>Barnardius zonarius</i>	2	Fork-leaved Corkwood	<i>Hakea divaricata</i>	29
Black Breasted Buzzard	<i>Hamirostra melanosternon</i>	1	Dead Finish	<i>Acacia tetragonophylla</i>	7
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	1	Witchetty	<i>acacia kempeana</i>	
Black-faced Woodswallow	<i>Artamus cinereus</i>	3	Goatshead Burr	<i>Sclerolaena bicornis</i>	
Crested Pigeon	<i>Ocyphaps lophotes</i>	14	Mulga	<i>Acacia aneura</i>	5
Diamond Dove	<i>Geopelia cuneata</i>	4	Tall Copper Burr	<i>Sclerolaena convexula</i>	
Galah	<i>Cacatua roseicapilla</i>	36	Ironwood	<i>Acacia estrophiolata</i>	2
Grey Honeyeater	<i>Conopophila whitei</i>	1	Button Grass	<i>Dactyloctenium radulans</i>	
Grey-headed honeyeater	<i>Lichenostomus keartlandi</i>	1	Ruby Saltbush	<i>Enchylaena tomentosa</i>	
Grey-shrike Thrush	<i>Colluricincla harmonica</i>	1	Climbing Saltbush	<i>Einadia nutans</i>	
Little Corella	<i>Cacatua sanguinea</i>	15	Coolabah	<i>Corymbia opaca</i>	
Magpie Lark	<i>Grallina cyanoleuca</i>	3	Caltrop	<i>Tribulus spp</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	3	Annual Saltbush	<i>Atriplex elachophylla</i>	
Pied Butcherbird	<i>Cracticus nigrogularis</i>	1	Munyeroo	<i>Portulaca oleracea</i>	
Red-backed Kingfisher	<i>Todiramphus pyrrhopygia</i>	1	Tar Vine	<i>Boerhavia coccinea</i>	
Red-browed Pardalote	<i>Pardalotus rubricatus</i>	1	Pale Leaf Mistletoe	<i>Amyema maidenii</i>	
Singing Honeyeater	<i>Lichenostomus virescens</i>	8	Reptile species recorded		No
Spiny-checked Honeyeater	<i>Acanthagenys rufogularis</i>	4	Central Netted dragon	<i>Ctenophorus nuchalis</i>	1
Striated Pardalote	<i>Pardalotus striatus</i>	1	Tree Dtella	<i>Gehyra variagata</i>	1
Variegated Fairy-wren	<i>Malurus lamberti assimilis</i>	3	Mammal species recorded		No
Western Gerygone	<i>Gerygone fusca</i>	3	Rabbit	<i>Oryctolagus cuniculus</i>	1
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	8			
Willie Wagtail	<i>Rhipidura leucophrys</i>	4			
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	6			
Zebra Finch	<i>Taeniopygia guttata</i>	34			

RNB2 LOT 4999 Heenan Road Table of biodiversity survey results					
Bird species recorded		No.	Vegetation species recorded		No.
Australian Ringneck	<i>Barnardius zonarius</i>	3	Ironwood	<i>Acacia estrophiolata</i>	55
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	1	Tall Copper Burr	<i>Sclerolaena convexula</i>	
Black-faced Woodswallow	<i>Artamus cinereus</i>	5	Coolabah	<i>Eucalyptus coolabah</i>	5
Crested Pigeon	<i>Ocyphaps lophotes</i>	5	Buckbush		
Fairy Martin	<i>Hirundo ariel</i>	1	Satin Bluebush	<i>Marieana georgei</i>	
Galah	<i>Cacatua roseicapilla</i>	6	Paperbark Melaluca	<i>Melaluca spp</i>	
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	2	Ruby Saltbush	<i>Enchylaena tomentosa</i>	
Magpie Lark	<i>Grallina cyanoleuca</i>	6	Fork-leaved Corkwood	<i>Hakea divaricata</i>	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	2	Terpentine Bush	<i>Eremophila sturtii</i>	
Mulga Parrot	<i>Psephotus varius</i>	3	Climbing Saltbush	<i>Einadia nutans</i>	
Peaceful Dove	<i>Geopelia striata</i>	1	Silver Cassia	<i>Senna artemisioides artemisioides</i>	6
Rainbow Bee-eater	<i>Merops ornatus</i>	2	Desert Cassia	<i>Senna artemisioides filifolia</i>	
Red-browed Pardalote	<i>Pardalotus rubricatus</i>	2	Goathead Burr	<i>Sclerolaena bicornis</i>	
Rufous Whistler	<i>Pachycephala rufiventris</i>	2	Annual Saltbush	<i>Atriplex elachophylla</i>	
Singing Honeyeater	<i>Lichenostomus virescens</i>	3	Mulga	<i>Acacia aneura</i>	6
Spiney-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>	2	Kerosene Grass	<i>Aristida contorta</i>	
Spinifex Pigeon	<i>Geophaps plumifera</i>	1	Dead Finish	<i>Acacia tetragonophylla</i>	
Western Bowerbird	<i>Chlamydera guttata</i>	1	Leafy Nine-awn	<i>Enneapogon polyphyllus</i>	
Whistling Kite	<i>Haliastur sphenurus</i>	2	Silver Witchetty	<i>Acacia cuthbertsonii</i>	
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>	14	Queensland Bluegrass	<i>Dichanthium sericeum</i>	
Willie Wagtail	<i>Rhipidura leucophrys</i>	4	Eight Day Grass	<i>Fimbristylis dichotoma</i>	
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	2		<i>Iseilema vaginiflorum</i>	
Yellow-throated miner	<i>Manorina flavigula</i>	1	Ironwood Mistletoe	<i>Amyema hilliana</i>	
Zebra Finch	<i>Taeniopygia guttata</i>	42	Five Minute Grass	<i>Tripogon loliiformis</i>	
Reptile species recorded		No.	Mammal species recorded		

Burton's legless Lizard	<i>Lialis burtonis</i>	1	none		
Frost's Lerista	<i>Lerista frosti</i>	4			
unk skink	<i>unk</i>	1			
Tree Dtella	<i>Gehyra variagata</i>	15			