



Western Grassland Biodiversity Survey

biodiversity

Summary

Background

Many landholders have long since recognised the role healthy landscape processes play in generating good production benefits, and the value of long-term sustainability over short-term gains. This understanding uses ecological parameters to guide sustainable production and needs good sound knowledge of the landscape to be successful.

Sadly, little was previously known about the Bluegrass (*Dichanthium sericeum*) and Mitchell grass (*Astrelba* spp.) dominated grassland (11.9.3) regional ecosystem in the Maranoa-Balonne region of the Brigalow Belt Bioregion.



While this regional ecosystem has a status of "Not of Concern", with greater than 30% extent remaining, grassland communities often occur on fertile soils suitable for cultivation which make them highly vulnerable to clearing. Remnants that do remain are also highly threatened by long-term overgrazing.

With support from members of the Hodgson Sub-catchment Group, Maranoa Landcare Group, Bungil Shire Council and QPWS, QMDC have undertaken a biodiversity survey of this grassland vegetation community. In the Hodgson planning group area, the remnant vegetation retention rate is approximately 46%, with grazing and cropping being the main industries, making it an ideal region to undertake the biodiversity surveys.

The Hodgson Biodiversity Survey Project

The overall aim of the Hodgson Biodiversity Survey project was to increase understanding and knowledge of the conservation value of native grasslands in the Maranoa-Balonne region. By undertaking a comprehensive biodiversity survey, fauna, flora and vegetation condition baseline data sets for RE 11.9.3 could be established. This information can then be used to determine best practice management for long-term sustainability of this vegetation community and incorporated into the sub-catchment groups Natural Resource Management Plan.

The project was initiated in March 2006 with the selection of five private properties and one stock route across the Hodgson sub-catchment group planning area. Survey sites were established and recorded by GPS and steel picket photo monitoring points. An initial basic flora survey was conducted using a modified GrassCheck template, looking at ground cover and species composition (see photos below – 1. photo record, 2. Quadrat used to estimate the percentage ground cover.)

1.



2.



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Drought prevailed through the next year but it was decided to go ahead with the fauna survey and follow-up flora survey in April 2007. Photos were again taken for monitoring.

2007 Floristic Survey

A more detailed floristic survey was undertaken in April 2007 across the seven sites (see Table 2 for flora list).

Results

Up to 30 plant species were recorded at sites, with Mitchell Grass species dominating at most sites. Forb species such as Cow Vine, Sida, Tar Vine and Pigweed were also prevalent at sites, potentially resulting from recent rainfall. The effects of drought and overgrazing were evident on the private land sites through lack of ground cover (<50% cover), small tussock size of dominant grasses, large inter-tussock spaces, presence of *Sclerolaena* sp. and soil pedestalling.

2007 Fauna Survey



Nine fauna survey sites were selected across the six properties. All sites had a bird census carried out, with at least one other survey technique utilised. A number of sites were surveyed intensively, with either pitfall traps and/or Elliot traps (see Table 1).

Harp traps were placed at non-site locations around the catchment to yield good representative results of movement within the catchment.

Table 1. Grassland Fauna Surveys – Survey Design

Survey Type	Survey techniques used
Intensive	Pitfall trapping: 1 30m fence with 5 buckets x 4 sites
	Line of 25 Elliot traps x 6 sites
	4 x Harp traps (bats)
	Fixed Point Bird census
	Incidental searches (reptiles, frogs, invertebrates)
Detailed	Fixed Point Bird census / transects
	Incidental searches (reptiles, frogs, invertebrates)



Results

Despite the long-term drought affecting the region, the fauna survey recorded 35 species of birds, four species of bats, three species of native marsupial mice and nine reptiles (see Table 3).

Hodgson Biodiversity Information Night

The March survey period was concluded with a community awareness event held at a "Carinya Haven", a participating property. The event outlined the survey methodology, techniques and results, with on-site viewing of the fauna traps, flora monitoring and a 'show and tell' during dinner of some of the animals caught during the survey.



Learnings

- ◆ Grasslands are home to wildlife too, just like treed vegetation. Although the composition may change from season to season and year to year, they need to be managed with this in mind. For example: fencing off a patch of remnant grassland to manage grazing pressure or leaving a corridor of grassland between larger patches of vegetation or linking waterways.
- ◆ Carefully managed grazing pressure, to maintain cover of >70%, will improve tussock and root health and size, improve water infiltration, improve soil structure and nutrient recycling, decrease erosion, decrease the likelihood of weed invasion and provide habitat and food source for wide variety of animals, including domestic stock.

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- ◆ Spelling grasslands and pastures is vital to the long-term viability of the vegetation. Spelling during the growing and seeding period allows the seed bank to be restored and the grasses fibrous roots to develop, allowing them to bind the soil, create niches for soil organisms and use soil water more efficiently. Spelling also maintains species diversity, giving highly palatable species time to recover.
- ◆ Natural regeneration is a low input, cost effective way to improve the condition of remnants and increase the size of remnant patches. Without regeneration, the long-term viability of the vegetation is limited.
- ◆ Ecosystems can provide services to production enterprises such as predation on agricultural pests, pollination, soil health, erosion mitigation, amenity, shade and shelter. A system in balance is more resistance to diseases, plagues and weeds.
- ◆ Logs have life inside. Logs and ground debris are excellent habitat for a range of fauna species. The Woma, a rare python, shelters in hollow logs and thick herbage during the day and forages at night, with a diet including hare and rabbit.
- ◆ Linkages of vegetation (both woodland and grassland) across the landscape are vital to support movement of fauna and genetic flow between plant populations. Grassland dependant species may be less mobile so patches need to be closer together.

Table 2.

<i>Flora Species List for Hodgson Grassland Surveys 23-28 April 2007</i>		
Desirables	Intermediate	Less Desirables
Grasses		
Hoop Mitchell	<i>Digitaria divaricatissima</i>	White Speargrass
Curly Mitchell	<i>Eriochloa pseudoacrotricha</i> - Early Spring Grass	<i>Sporobolus creber</i>
QLD Bluegrass	<i>Digitaria spp.</i>	<i>Burr grass</i>
Kangaroo Grass	<i>Panicum spp.</i> Including Native Millet	Shot grass
Flinders Grass	<i>Paspalidium sp.</i>	<i>Enneapogon sp.</i>
		Buffel grass
Forbs		
<i>Glycine</i>	<i>Ipomoea</i>	Caltrop
<i>Rhynchosia</i>	<i>Crotalaria dissitiflora</i>	<i>Phyllanthus sp.</i>
Common saltbush	<i>Commelina sp.</i>	<i>Sclerolaena muricata</i>
Saltbush (Mueller's)	<i>Portulaca oleracea</i>	<i>Sclerolaena anisacanthoides ?</i>
<i>Medicago polymorpha</i> - Burr medic	<i>Indigofera sp.</i>	<i>Solanum ellipticum</i>
<i>Einadia sp.</i>	Joy weed	Milk thistle
Cow vine	<i>Hibiscus sp.</i>	<i>Salsola kali</i>
<i>Clover</i>	<i>Neptunia gracilis</i>	<i>Malvastrum sp.</i>
<i>Amaranthus</i>	Burr Daisy	<i>Sida cordifolia</i>
Emu Foot		<i>Sida spp.</i>
<i>Convolvulus erubescens</i>		Shrub sida
Tarvine		
Woody plants		
Bottlebrush	<i>Acacia farnesiana</i>	
	<i>Capparis lasiantha</i>	

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Other		
	Nutgrass	Prickly pear
		Bathurst burr

Table 3.

Fauna Species List for Hodgson Grassland Surveys 23-28 April 2007

<i>BIRDS</i>	<i>MAMMALS</i>	<i>REPTILES</i>
Emu	Swamp Wallaby	Bynoe's Gecko
White-necked Heron	Eastern Grey Kangaroo	Bearded Dragon
Black-shouldered Kite	Common Wallaroo	Gilbert's Dragon
Black Kite	Narrow-nosed Planigale	Burn's Dragon
Wedge-tailed Eagle	Fat-tailed Dunnart	<i>Menetia greyii</i>
Whistling Kite	Striped-faced Dunnart	<i>Gehyra variegata</i>
Australian Kestrel	Little Pied Bat	Eastern Bluetongue
Australian Bustard	Lesser Long-eared Bat	Shingleback
Crested Pigeon	Inland Broad-nosed Bat	Yellow-faced Whip-snake
Galah	White-striped Free-tailed Bat	
Cockatiel		
Red-rumped Parrot	fox	
Pale-headed Rosella	feral cat	
Blue-Bonnet	house mouse	
Australian Owlet-nightjar	hare	
Tawny Frogmouth		
Superb Fairy-wren		
Striped Honeyeater		
Ground Cuckoo-shrike		
Willie Wagtail		
Grey Butcherbird		
Pied Butcherbird		
Australian Magpie		
Australian Raven		
Magpie-lark		
Apostlebird		
Australian (Richard's) Pipit		
Tree Martin		
Laughing Kookaburra		
Grey-crowned Babbler		
Welcome Swallow		
Restless Flycatcher		
Rufous Whistler		
Striated Pardalote		
Noisy Miner		

QMDC recognises and greatly appreciates the support of the Hodgson sub-catchment group landholders, QPWS and Bungil Shire Council, with special thanks to John and Alice Aisthorpe at "Carinya Haven" for hosting the Information Night.