Department for Environment and Heritage Rainfall Response Biological Survey

Summary Report



South Australia



Rainfall Response Biological Survey Report

Yudnapinna Lakes & Woomera Prohibited Area

March – April 2007



H.Owens

Biological Survey and Monitoring Section Science and Conservation Directorate Department for Environment and Heritage, South Australia

2007

Cover Photo. Lake Koolymilka, Photo A.C. Robinson

Introduction

BACKGROUND AND AIMS

This survey was carried out as a joint project between the Biological Survey and Monitoring Section and the SA Herbarium, Department for Environment and Heritage (DEH) and the South Australian Museum with funding from the Department of Defence and the Department of Environment and Water Resources (DEWR), Canberra.

The aims of the survey were to:

-sample plant, bird and invertebrate life after a significant rainfall event -provide information relating to EPBC Act species in the Woomera Prohibited Area

-collect vegetation and invertebrate data for areas not well represented in the DEWR national biodiversity database.

-collect vegetation data for the Biological Survey of South Australia in areas not previously visited.

-record incidental records of mammals and herpetofauna as time permitted.

Methodology

SITE SELECTION

Due to constraints on budget and time brought about by the need to survey before conditions became too dry, no reconnaissance trip was carried out prior to the field surveys. A selection of sites and a proposed route were chosen using a combination of satellite Imagery, MODIS Rapid Response System – Near-real-time Subsets, pastoral track coverage and mapping of gaps in existing Biological Survey Sites. The survey route was

VEGETATION

The three DEH vegetation teams collected vegetation data along the proposed routes according to the standards described in Heard. L. and Channon, B. (1997). At each site a 100m x 100m representative patch of vegetation was chosen for sampling. All vascular plants present within the patch were recorded and representative voucher specimens were collected and labelled for later verification at the State Herbarium. All data on the plant species, including life stage, cover/abundance and vegetation association description recorded standard were on Biological Survey data sheets. Details on the overstorey height, canopy depth and diameter, and canopy cover were also recorded, chosen to reflect a range of habitats across the wettest areas within the region of interest.

The survey region was divided into two areas for logistical purposes, Yudnapinna & Lakes Region to the south and Woomera Prohibited Area to the North (Figure 1). Teams were sent out for approximately one week each during March and April 2007 (Table 1).

as well as a description of the location and physical environment of each patch and quadrat. At each site a representative photopoint photo was taken.

In addition to standard survey sites each group recorded interesting opportunistic flora records as encountered.

The State Herbarium team focused solely on opportunistic collections along the route. All their records were vouchered and specimens later lodged with the State Herbarium. All details including habitat, habit and abundance were recorded in the State Herbariums standard collectors books.

Table 1. Details of field teams for Rainfall Response Survey, March andApril 2007

YUDNAPINNA AND LAKES SURVEY					
26th March - 1st April	DEH-Biosurvey YUD1	Peter Lang	botany		
		Sue Kenny	botany		
		Tim Croft	botany		
		Justin Jay	botany		
		Tony Robinson	invertebrates/mammals		
		Jane Cooper	birds		
WOOMERA PROHIBITED AREA SURVEY					
16th April - 22nd April	DEH-BioSurvey WPA2	Justin Jay	botany		
		Brian Blaylock	botany		
		Andrew Graham	birds/invertebrates		
		Nerissa Haby	invertebrates/mammals/		
			herpetofauna		
16th April – 23rd ^d April	SAM WPA1	David Stemmer	mammals		
		Janine-Marie Ellis	mammals		
	SAM WPA2	Andy Young	invertebrates		
		Exo	invertebrates		
		Wayne Rumble	invertebrates		
		Mick Burch	invertebrates		
18th April - 26th April	DEH-BioSurvey WPA1	Kate Graham	botany		
		Tony Robinson	botany/invertbrates		
		Gavin Kluske	invertebrates/		
			herpetofauna/mammals		
		Jane Cooper	birds		
	DEH-Herbarium	Helen Vonow	botany		
		Andrea Ramsay	botany		
		Dean Cunningham	botany		
18th April – 21st April	SAM-WPA3	Alex Gaut	molluscs		
		Bob Hamilton Bruce	molluscs		
22nd April - 26th April	DEH-BioSurvey/DEWR	Ellen Roberts	general		
		Scott Laidlaw	general		

FAUNA

Each DEH Fauna team included an Ornithologist and а general biologist responsible for invertebrate sampling and opportunistic mammal and herpetofauna records. Resources did not allow for more thorough or systematic vertebrate sampling. between Methods varied the groups depending on their conditions expertise and encountered along the route.

In general birds were recorded throughout the survey period using the following methods:

- daily observations from a vehicle, travelling between sites,
- one hour, 5 hectare area searches,
- 20 minute, 2 hectare area searches.

Sites were selected opportunistically using the following criteria:

- good representative vegetation association.
- obvious signs of bird activity from within the patch
- water present lake, drainage-• line, dam, flood-out, bore-drain, swamp, lagoon,
- heavily vegetated dunes and swales and
- break-aways, gibber flats, creek lines and stony ridges.

Information recorded birds on included number present, observation method, habitat usage and notes on behaviour, breeding, and dietary preferences.

Invertebrates were sampled opportunistically throughout the trip using a variety of methods. Overnight camps provided the best opportunity for some methods like wet pitfall traps and light traps.

The methods used included:

- plastic wet iar pitfall • traps(100mm x 100mm) with tin fence.
- general collecting by hand
- sweep net,
- foraging in tree litter
- Mercury vapour light
- general collecting around camp • lights at night.

All invertebrates were preserved in alcohol or glycerol. Specimens sorted the BSM were bv Entomologist and identified to Family. Ants, Spiders and Molluscs forwarded were to relevant specialists at the South Australian Museum for identification. The remaining taxa were identified to genus and or species where possible. These specimens will be lodged with the South Australian Museum in due course.

Whenever time allowed effort was put into searching for mammals and herpetofauna. On some occasions Elliott traps. bat detectors (Anabat) and Harp traps were used (Table 2). Α representative sample of species encountered was collected for the South Australian Museum.

An additional team was sent from the South Australian Museum to focus primarily on bats. They used a combination of Harp traps, mist nest and bat detectors throughout the western side of the Woomera Prohibited Area Survey Region and one location on the Eastern edge near Lake Mary (Table 2). This team also put out Elliott traps when permitted recorded time and opportunistic sightings along the way.

	Elliott Nights	Harp Trap Nights	Anabat Nights	Mist Net Nights
DEH-Biosurvey YUD1	90	-	-	-
DEH-BioSurvey WPA2	180	4	-	-
SAM-WPA1	221	34	-	4
DEH-BioSurvey WPA1	525	2	6	-
TOTAL	1016	40	6	4

Table 2. Mammal trap effort during the Rapid Response Survey.



Figure 1. Map showing data collection sites from the Yudnapinna & Lakes region in the south and the Woomera Prohibited Area in the north during the Rainfall Response Biological Survey.

Rainfall Response Biological Survey

Results

VEGETATION

Tim Croft, DEH

This survey was carried out following a combination of good summer rains a few months earlier and in the preceding weeks. This resulted considerable had in ephemeral plant growth, and new growth vegetative on existing perennial vegetation. Thirty quadrats were surveyed in each of the two survey areas, with additional opportunistic collections made at various locations, where further or unusual plants were observed.

A total of 444 different taxa (including subspecies and varieties) were recorded during the two surveys. An additional 54 specimens collected were not identified to species, subspecies or variety level, and may be additional or existing identified taxa.

Of the 444 identified taxa, 418 are native and 26 introduced.

National and State Rare and Threatened Species

National Significance

The species Austrostipa nullanulla (Club Spear-grass) has a national Vulnerable status under the Environment Protection and Biodiversity Conservation Act 1999. The species was collected once during the April Woomera Survey. Austrostipa nullanulla is a tufted grass typically found in localised gypseous areas, often adjacent salt lakes on gypseous mounds.

Within South Australia, the species has been most frequently collected from such widespread localities in Gairdner-Torrens **Botanical** the Region. It has also been collected to a lesser extent from northern parts of the Eyre Peninsula and Murray Mallee Botanical Regions. The species is also known from a limited area of the South Far Western Plains New South Wales Botanical Region near the River Murray, and adjacent areas of north west Victoria.

The species is also listed as Vulnerable under Schedule 8 of the State *National Parks and Wildlife Act 1972.*

State Significance

A further nine taxa have a Rare or Vulnerable status under Schedules 8 and 9 of the State *National Parks and Wildlife Act 1972*. These are considered below.

Abutilon oxycarpum var. incanum (Desert Chineselantern) is a herb or small shrub of the Malvaceae Family listed as Rare under Schedule 9 of the State National Parks and Wildlife Act 1972. The variety was collected once in the Woomera Survey. Abutilon oxycarpum var. incanum is poorly known in South Australia with few specimens held at the State Herbarium. The collection the Woomera durina survev represents a range extension for the variety, as it has not been previously collected in the Gairdner-Torrens Botanical Region. Until now the variety was listed as occurring in the North-West. Eyre Peninsula Nullarbor and Botanical Regions. Interstate, the variety also occurs in Western Australia, Northern Territory, and Queensland.

Aristida arida (Wire-grass) is a perennial tussock grass listed as Rare under Schedule 9 of the State National Parks and Wildlife Act 1972. The species was collected once during the Woomera Survey.

Most collections of Aristida arida held at the State Herbarium are from the adjacent Flinders Ranges Botanical Region, with fewer collections from the Lake Eyre, and Eastern Botanical Regions. The collection of this species during the Woomera Survey represents a range extension, as the species has not been previously recorded for the Gairdner-Torrens region. Typically, the species is frequently associated with floodplains and drainage lines, although it is also known from disturbed sites such as roadsides, and rocky areas. The species is occurs in Western Australia and Northern Territory.

Citrus glauca (Desert Lime) is a spiny shrub or small tree, listed as Vulnerable under Schedule 8 of the State *National Parks and Wildlife Act 1972.* It can sucker to form dense thickets. Within South Australia, the species primarily occurs in the Flinders Ranges and the Yudnapinna and Lakes area of the Gairdner-Torrens, and adjacent Eyre Peninsula Botanical Region. Elsewhere in Australia, it occurs in the western districts of New South Wales into Queensland. *Citrus glauca* was recorded twice during the Yudnapinna and Lakes Survey.

Gilesia biniflora (Western Tarvine) is a small, flat-growing perennial undershrub listed Rare under Schedule 9 of the State National Parks and Wildlife Act 1972. lt is recorded from widespread localities in a number more north-eastern of State Botanical Regions, usually in areas between dunes and flood plains. One record describes the plant as abundant after summer floods (Bates AD99914239 1997). The species was recorded once from the Yudnapinna and Lakes, and once from the Woomera Surveys.

Gratwickia monochaeta is a small annual daisy listed Rare under Schedule 9 of the State National Parks and Wildlife Act 1972. It is apparently a South Australian endemic plant. Most State herbarium records from are Gairdner-Torrens. or nearbv in adjacent Botanical Regions. particularly the Nullarbor. Records are typically from the edges of the regions salt lakes or channels. It was collected once the in Yudnapinna and Lakes Survey. The species would likely have responded to the good 2007 summer rains.

Maireana suedifolia (Lax Bluebush) is a small, open and spreading, perennial chenopod shrub, listed Rare under Schedule 9 of the State *National Parks and*

Wildlife Act 1972, Most State Herbarium records are from Eyre northern Peninsula. with sparse records elsewhere. It is recorded for Western also Australia. It is typically found in drier mallee plant communities as growing an undershrub, often amongst other shrubs. The species was collected twice in mallee in the Yudnapinna and Lakes Survey.

Malacocera gracilis (Slender Soft-horns) is a small annual or perennial herb or shrub. It is listed as Vulnerable under Schedule 8 of the State National Parks and Wildlife Act 1972. The species is a South Australian endemic, with most State Herbarium collections limited to the area at the head of Spencers Gulf. There has been one previous collection of the species in the Gairdner-Torrens Botanical Region, in addition to the one record during the Yudnapinna and Lakes Survey. The species is typically found on saline clay soils and gypseous areas, such as around salt lakes of the region. The good summer rains of early 2007 are likely to have benefited and increased the population of the plant where it was recorded during the survey.

Santalum

spicatum

(Sandalwood) is a tall shrub or small tree listed as Vulnerable under Schedule 8 of the State National Parks and Wildlife Act 1972 Most State Herbarium collections are from the Gairdner-Torrens and adjacent areas of the surrounding Botanical Regions. The species was recorded at three sites of Yudnapinna and Lakes, and twice from the Woomera Surveys. Santalum spicatum is considered to have a undergone a

decline in its population size due to historical harvesting of it aromatic timber. The species is also recorded for Western Australia.

Swainsona oligophylla is a small, flat growing herb listed as Rare under Schedule 9 of the State National Parks and Wildlife Act From State Herbarium 1972. records, its distribution is largely confined to the northern parts of the State. Interstate. Swainsona oligophylla is found in adjacent of southern Northern areas Territory, far western New South Wales, and the south-western corner of Queensland.

Although the species is considered possibly perennial, based on collection information, it is most likely short-lived and at times annual. It seems to be most prevalent following good inland rainfall in ephemeral herblands, or in areas associated with drainage and swamps. Four collections were made during the Woomera Survey.

Range Extension

During the survey 28 species, including two outlined above, were recorded for the first time in the Gairdner-Torrens Botanical Region. This is indicative of a range extension for the species, at times significant.

Four of the species previously not recorded for the Botanical Region are introduced species (Galenia pubescens var. pubescens Galenia): Euphorbia (Coastal (False Caper); terracina Centaurium erythraea (Common Abutilon theophrati Centaury): (Swamp Lantern-bush)).

Of the native species, these are briefly considered below.

Alternanthera angustifolia (Narrowleaf Joyweed) is mostly recorded from northern areas to that surveyed.

Boerhavia repleta has been previously restricted to the northwest corner of the State with Western Australia and Northern Territory. species The was recorded three times in the Woomera survey, representing a major extension in the known range of the species in the State.

Calandrinia pumila (Tiny Purslane) is primarily recorded from areas further north within South Australia. The 3 specimens found in the Woomera Survey are the most southerly records in South Australia.

Calotis cuneifolia (Purple Burrdaisy) has been mostly recorded from the more southerly agricultural districts, particularly the River Murray valley.

Chenopium desertorum ssp. *microphyllum* (Small-leaf Goosefoot) is a subspecies more typical of the southerly agricultural regions.

Convolvulus recurvatus ssp. *nullarborensis* has been recorded for the surrounding Botanical Regions, but not apparently, the Gairdner-Torrens Botanical Region.

Cyperus pygmaeus (Pygmy Flatsedge) is primarily recorded from the northern Botanical Regions, and along the Murray River valley. *Eucalyptus brachycalyx* (Gilja) is typical of the agricultural mallee belt, and represents a minor extension of its range into drier semi-arid areas.

Lomandra effusa (Scented Matrush) has been previously mostly recorded from the agricultural, southern Flinders Ranges, and the Nullarbor regions.

Petalostylis labicheoides (Butterfly Bush) has been previously mostly recorded for the Flinders ranges Botanical Region.

Plantago sp. B (R. Bates 44765) (Little Plantain) is primarily recorded in the northern area of the North-West Botanical Region and Eyre Peninsula. The 2 records found in the Woomera Survey represent a significant extension in the known range of the species.

Ruppia polycarpa (Widgeon Grass) is usually recorded in the southern agricultural districts of South Australia. The 1 specimen collected during the Woomera Survey represents a major extension north for the species in the State.

Scaevola humilis (Inland Fanflower) is mostly recorded from the agricultural regions and the Flinders Ranges Botanical Regions.

Sclerolaena tricuspis (Three-spine Bindyi) has been recorded previously from the more northern Botanical regions, and the River Murray valley.

Senna artemisioides ssp. zygophylla (Twinleaf Desert Senna) Stemodia glabella (Smooth Bluerod) has been previously recorded in the north east of the State. The 1 record of the species in the Yudnapinna and Lakes Survey represents an significant extention of the species range in South Australia.

Tetragonia implexicoma (Bower Spinach) is typically recorded from coastal areas in the agricultural districts.

Teucrium corymbosum (Rock Germander) is typically recorded from range country, such as Eyre Peninsula Gawler Ranges, Flinders Ranges, and the North-West ranges.

Triglochim hexagonum (Six-point Arrowgrass) is primarily recorded from the northern Botanical Regions, and along the Murray River valley.

Yakirra australiensis var. australiensis (Bunch Panic) has been previously recorded in the Far North areas of the State. It was recorded once during the Woomera Survey. This record represents a major extention of its known range further south within South Australia.

Endemic Species

No species recorded are endemic to the survey areas or Gairdner-Torrens Botanical Region. However. three species are endemic to South Australia, namely Sclerolaena tatei (Tate's Bindvi). Frankenia sessilis (Small-leaf Seaheath), Zygophyllum marliesiae (Square-fruit Twinleaf).

Frankenia sessilis (Small-leaf Seaheath) was collected once from the Woomera Survey. It has been previously recorded largely from agricultural districts and the Nullarbor Botanical Region. The collection of the species during the Woomera Survey is on the northern margins of its previously known range.

Sclerolaena tatei (Tate's Bindyi) was collected once from the Yudnapinna and Lakes Survey. It has been previously recorded primarily from the Lake Eyre and Flinders Ranges Botanical Regions, a little to the north of the survey areas.

Zygophyllum marliesiae (Squarefruit Twinleaf) was collected once during the Woomera Survey. This annual species population is largely confined to the Lake Eyre Botanical Region, north of the Woomera Survey area. The collection of the species during the survey is on the southern margins of its known range.

Summary

The summer 2007 rains within the survev areas encouraged ephemeral, and new growth on existing perennial vegetation. About 30% of the different taxa identified during the two surveys are annual or biennial and shortlived taxa which have taken the opportunity of these summer rains. Further species of grasses such as Triraphis mollis (Purple Plume Enneapogon cylindricus Grass). (Jointed Bottle-washers), E. nigricans (Black-head Grass) are described as perennial with annual Prominent tendencies. in the

annual species were Compositae (Daisy) and Gramineae (Grass) Plant Families. All the introduced species were also annual.

Seedlings of perennial taxa were also noted to have occurred, and at times ephemeral annual ground cover was prolific, particularly where water had collected.

The surveys recorded 10 taxa of high conservation significance, one of national significance under the Federal *Environment Protection and Biodiversity Conservation Act,* 1999 recorded during the Woomera Survey in gypseous areas. A further 4 taxa of high State conservation significance under Schedules 8 and 9 of the State National Parks and Wildlife Act 1972, were recorded in various locations during the Woomera Survey. Five taxa of high State conservation significance were recorded during the Yudnapinna and Lakes Survey. These are described more fully above.

The surveys also extended the range of a number of plant taxa.



Figure 2. *Swainsona oligophylla* is listed as Rare in South Australia and is most prevelant after good inland rains. Photographed here on Parakylia Station. Photo A.C. Robinson

BIRDS

Jane Cooper, Consultant – DEH

Presence/absence bird data was gathered opportunistically within the Gawler Bioregion in response to summer and autumn rainfall during March and April 2007. A broad sweep of vegetation associations and physical habitats was sampled.

104 species were recorded during the survey period from a total of 939 observations; 79 species in the Yudnapinna & Lakes Region and 89 species in the Woomera Prohibited Area.

Birds were allocated residency status based on the work of Read, Ebdon and Donohoe (2000).

Resident species

Of the 40 resident species, 24 were among the most frequently observed taxa.

Transient species

50 transient taxa recorded within the autumn survey period include:

- <u>Seasonal visitors</u> Read (2000) like the Mistletoe Bird *Dicaeum hirundinaceum*, Pallid Cuckoo *Cuculus pallidus* and Redcapped Robin *Petroica goodenovii*.
- <u>Opport</u>unists Read (2000)including Little Button Quail Turnix velox, Crimson Chat Epthianura tricolor. Orange Chat Epthianura aurifrons. Peaceful Dove Geopelia striata, Dove Geopelia Diamond cuneata, Budgerigar

Melopsitticacus undulatus and 23 species of nomadic and migratory waterbirds taking advantage of temporary wetlands including the Musk Duck *Biziura lobata* (Rare SA) (NPWSA 1972).

Evidence of breeding

A total of 9 terrestrial taxa and 8 waterbird taxa were recorded breeding in the survey area during March and April 2007.

Rare and /or unusual records

Observations deserving particular attention are 3 species recorded at Moondiepitchnie Water, 30 kms west of Parakylia homestead; the Elegant Parrot *Neophema elegans*, Grey Fantail *Rhipidura albiscapa* and the migratory White-winged Black Tern *Chlidonias leucopterus*.

Species of conservation significance

Among the 15 locally uncommon species were four species of conservation significance; Major Mitchell's Cockatoo Cacatua leadbeateri (Vulnerable SA). Peregrine Falcon Falco peregrinus (Rare SA), Blue-winged Parrot chrysostoma Neophema (Vulnerable SA) and Chestnut Quail-thrush Cinclosoma castanotus (Rare SA)(NPWSA 1972).

Migratory waterbirds, EPBC (Migratory)1999, observed using the inland lakes on the East Asian-

Australasian Flyway within the survey area, include Sharp-tailed Sandpiper *Calidris acuminata*, Rednecked Stint *Callidris ruficollis*, Wood Sandpiper *Tringa glareola,* Common Greenshank *Tringa nebularia* and White-winged Black Tern *Chlidonias leucopterus.*



Figure 3. The recent rains filled the lakes bringing an abundance of waterbirds. Red-necked Avocets on Lake Richard. Photo A.C. Robinson



Figure 4. Little Button Quails were recorded at three location in the north-west of the study area taking advantage of the lush conditions. Photo S. Doyle

MAMMALS

Helen Owens, DEH David Stemmer, SA Museum

Fifteen species of mammal were recorded during the survey period, including four introduced species. One specimen could not be identified to species level and therefore has not been included in this total.

Environmental conditions throughout the survey were considered good for small mammal trapping and increased bat activity with an obvious abundance of insects at several locations and water present in most dams. Despite the good conditions and generally very promising harp trap and mist net sites trap success was considered poor.

The predominant bat species caught with 11 individuals was the Lesser Long-eared bat (Nvctophilus geoffroyi). Two individuals the of genus Scotorepens were also caught during this trip. One could be identified as Scotorepens balstoni, but the other specimen could not be identified to species level and has to remain Scotorepens sp. as this area is a potential overlap zone for both Scotorepens species that within SA. These occur two specimens are valuable additions to the collection as there are very few records from this area. Anabat recordings are yet to be identified.

The Museum group were unable to commit much time to Elliott trapping and only had one capture of a House Mouse (*Mus musculus*) on the last trap night near Lake Mary. The DEH teams also had little success with Elliotts throughout the survey region apart from when the traps were able to be left out for more than one night on the Defence Force Exercise township Area near the of Woomera. During these three days of trapping the following species of small mammal were recorded; Sminthopsis crassicaudata (x2). Sminthopsis macroura (x1), Planigale gilesi (x1), Pseudomys australis (x1) and Mus musculus (x2).

Despite the overall low trap success for small mammals a few valuable collections were made for the area, in particular *S. macroura, P. gilesi* and *P. australis*.

National and State Rare and Threatened Species

One species of National and State Conservation significance was recorded during the survey in the Woomera Prohibited Area.

Pseudomys australis (Plains Rat) is rated as Vulnerable on a state and national level. One specimen was captured on the recent survey at a site between Koolymilka Lake and (north-west Ashton Hill of Woomera). A few other individuals have turned up in recent years within approximately 10km of this location (pers. comm. Mark Donaghey, Department of Defence). The habitat at the site, "broad drainage line on а

grassy/chenopod gibber plain" is fairly typical of the species in this southern area of its range.

Fluctuation in population numbers and the frequent use of underground cracks for foraging can make the Plains Rat hard to detect. When resources are depleted it is thought that numbers decline and hang on in refuge areas. Identification and correct management of these refuge areas is important for the species conservation, particularly for this WPA population that represents the south-western edge of the species known range.



Figure 5. *Pseudomys australis*, Plains Rat, is listed as Vulnerable at both a National and State level. Photo. Peter Canty



Figure 6. Habitat on Arcoona Station were the Plains Rat was captured. Photo A.C. Robinson

HERPETOFAUNA

Helen Owens, DEH

Although there was little time available for surveying herpetofauna a total of 43 individuals were recorded representing a total of nineteen species. These species were made up of 6 Skinks, 6 Geckos, 5 Agamids, 1 Elapid and 1 Goanna.

Although none of these species are listed as threatened at a national or

state level their were several valuable specimens on the edge of their range or filing gaps in our knowledge of species distribution.

Warmer temperatures, the use of pitfall traps and increased search effort would certainly add to the species diversity of herpetofauna throughout the study region.



Figure 7. The record of Ctenotus strauchi represented the most southwest specimen for the state. Photo Mark Hutchinson

INVERTEBRATES (DEH COLLECTIONS ONLY)

L. Queale, DEH

This section summarises the results of preliminary identifications made by the BSM entomologist prior to lodging specimens at the South Australian Museum. Insects are listed by Order under each survey.

Collecting in the Woomera Prohibited Area yielded more specimens than the Yudnapinna and Lakes Survey mainly because a Mercury vapour light was used on two nights and there were more people involved in the collecting effort at camp sites.

The low yield from invertebrate pitfall traps during the survey is probably largely a result of the fact it was only possible to leave them in the ground for a single night at each site. More long term trapping throughout this region would produce larger more а representative sample of grounddwelling invertebrate groups such Carabid beetles as and cockroaches.

Yudnapinna and Lakes

Blattodea: Two species, including Polyzosteria magna, a very large (to 70 mm long) cockroach that has been collected previously on biological surveys on Eyre Peninsula Great and the in Victorian Desert.

Coleoptera: The three main beetle families most commonly collected on surveys were poorly represented on this trip: Carabidae: 2 species, Scarabaeidae: none and Tenebrionidae: 2 species. This is probably due to the lack of larger vertebrate pitfall traps that are usually employed for four consecutive nights. The suite of weevils collected was similar to that collected on surveys in the Great Victoria Desert.

Diptera: Two specimens collected, representing families Phoridae and Sciaridae.

Embioptera: One specimen of family Oligomatidae.

Hemiptera: Six sites yielded bugs of family Cicadellidae (Lassinae), and there was one Lygaeid (*Nysius vinitor*); one Pentatomid and one Reduviid (assassin bug).

Hymenoptera: Two wasps: a Pompilid, *Cryptocheilus* sp., and a Scolid;one native bee of family Anthophoridae (*Amegilla* sp.) and two ants, *Rhytidoponeura purpureus* and *Camponotus* sp. Others are yet to be identified.

Isoptera: Termites were collected at seven sites but have not been identified.

Lepidoptera: One Geometrid moth, *Chlorocoma assails,* and two Noctuid moths, *Agrotis* sp.

Mantodea: One large preying mantis, *Archimantis quinquelobata*.

Orthoptera: Nine species of shorthorned grasshoppers, one Gryllacridid species, and one longhorned grasshopper, *Polichne* sp. Short-horned grasshoppers usually constitute a large proportion of the insects collected on survey trips, and this was no exception. One grasshopper has been provisionally identified as *Euomapalon superbum, a spectactular species with* "flaps" on its knees that has not previously recorded within the Biological Survey of South Australia.

Thysanoptera: one thrip, unidentified.

Thysanura: one silverfish, probably *Acrotelsella splendens*.



Figure 8. Grasshoppers made up a large proportion of the insects collected during the survey. Photo A.C. Robinson

Woomera Prohibited Area

Blattodea: Two cockroach species: *Platyzosteria similis,* and a Blaberid, *Calolampra aspersa*.

Coleoptera: Three major families most commonly collected on biological surveys were better represented here than on the previous survey; Carabidae: 7 species; Scarabaeidae: 7 species, including a dung beetle; and Tenebrionidae: 6 species. More families and species were collected on this trip, because light trapping was used here. The suite of weevils collected was similar to that on the Yudnapinna trip.

Diptera: Represented by 17 families. The mosquitoes (Culicidae) were all identified as *Anopheles annulipes* which is known to carry arboviruses.

Embioptera: None

Hemiptera: Represented by 11 families.

Hymenoptera: Eight families consisting of at least 16 species.

Isoptera: Termites were collected at only two sites and were not identified. Lepidoptera: Sixteen species were identified from 11 families, including 5 butterflies. Many more moths were unidentified.

Mantodea: Three mantis species.

Neuroptera: One species of Chrysopid, *Chrysopa ramburi*, was collected at four sites. Seven adult ant lion species of family Myrmeleontidae were identified.

Odonata: Three species.

Orthoptera: Twenty-one species of short-horned grasshoppers, two species of Gryllacrididae two longhorned grasshoppers and one cricket (Gryllidae). Again, as is usual on DEH Biological Surveys standard biological surveys the short-horned grasshoppers constituted a large proportion of the insects collected. This group had the most consistent suite of species for the two trips.

Phasmatidae: *Hyrtarcus* sp., juvenile.

Thysanoptera & and Thysanura: None.

Trichoptera: Two sites were each represented by a single specimen.

Rainfall Response Biological Survey

References

- Heard L. and Channon B. (1997) 'Guide to a Native Vegetation Survey Using the Biological Survey of South Australia.' (Geographic Analysis and Research Unit)
- Read J.L., Ebdon R. and Donohoe P.(2000) The terrestrial birds of the Roxby Downs area : a ten year history. *South Australian Ornithologist* Vol. 33:5 June 2000.