

ACT PARKS and CONSERVATION SERVICE



THE REPTILE, AMPHIBIAN AND MAMMAL FAUNA OF THE GIGERLINE NATURE RESERVE, AUSTRALIAN CAPITAL TERRITORY

M. A. RAUHALA

TECHNICAL REPORT 11

1995

TECHNICAL REPORT 11

August 1995

**THE REPTILE, AMPHIBIAN AND MAMMAL FAUNA OF THE GIGERLINE NATURE
RESERVE, AUSTRALIAN CAPITAL TERRITORY**

M. A. RAUHALA

ISSN 1320-1069

ISBN 1 86331 336 2

**ACT Department of Urban Services
ACT Parks and Conservation Service
P. O. Box 1119 Tuggeranong ACT 2901**



ACT GOVERNMENT

Printed on recycled paper

ACKNOWLEDGEMENTS

Sincere thanks to the staff of the Murrumbidgee River Corridor, who through their commitment to the project and support in all aspects of field work made the survey possible. Particular thanks to Julie Crawford, Mark Armstrong, Simon Hemer, Graeme Hirth, Dave Dempster, Jules Bros, Geoff Webb, Dennis Gray, Mac Ivill, Leo Nano, Joe Brown, Neville Ivill, David Swan, Silvano Agostini and Darrell Thompson. Many thanks to Daniel Smillie who expertly carried out the trapping for small terrestrial mammals during the survey and assisted with much of the spotlighting, bat trapping and frog survey work.

The Landcare and Environment Action Program (LEAP) and the Australian Trust for Conservation Volunteers (ATCV) provided invaluable assistance with hand searching and setting up and dismantling pitfall trapping sites. Special thanks to team leaders Phil Moore, Jules Bros and Craig Jones. Others who provided valuable assistance with field work include Darren Roso, Will Osborne, Neil McElhinney, Peter Ormay, Keith Williams and Frank Ingwersen. Greg Richards (CSIRO) kindly provided advice on bats and bat trapping techniques.

The co-operation of the lessees and agistees of the study area was greatly appreciated. Thanks to Dr A.W. Griffin and family, Mr R. J Moore, Mr A. W. and Mrs P. T. Johnson, Mr T. and Mrs E. Michell, and Mr C. Byrne for allowing access to their properties. A special thank you to the Griffins, Johnsons and Michells for completing a questionnaire on animal sightings in the study area.

David Shorthouse and Julie Crawford provided many helpful comments on a draft of the report.

TABLE OF CONTENTS

Subject	Page No
ACKNOWLEDGEMENTS	ii
CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF APPENDICES	vii
ABSTRACT	viii
INTRODUCTION	1
AIMS	2
THE STUDY AREA	2
Landform, geology and soils	2
Climate	5
Vegetation	5
Management and land use	6
METHODS	6
Frogs	6
Call identification	6
Pitfall trapping	6
Spotlighting	8
Reptiles	8
Pitfall trapping	8
Hand searching beneath stones and logs	10
Mammals	11
Bats	11
Small ground dwelling mammals	11
Arboreal mammals	11
Water rats	11
Other mammals	13
ACT Vertebrate Atlas	13

TABLE OF CONTENTS

Subject	Page No
RESULTS	14
Frogs	14
Hylidae (tree frogs)	14
Myobatrachidae (southern ground frogs)	15
Reptiles	17
General	17
Pitfall trapping	17
Hand-searching beneath stones and logs	21
Observation	21
Mammals	22
Bats	22
Small ground dwelling mammals	22
Arboreal mammals	26
Other mammals	26
DISCUSSION	28
Frogs	28
Reptiles	31
General	31
Use of habitats and sites	32
Mammals	34
Bats	34
Small ground dwelling mammals	35
Arboreal mammals	36
Other mammals	36
CONCLUSIONS AND RECOMMENDATIONS	38
REFERENCES	42
APPENDIX 1	46
APPENDIX 2	48
APPENDIX 3	54

LIST OF TABLES

Table No	Contents	Page No
1.	Frogs caught in pitfall traps at ten sites in the Gigerline Nature Reserve from 16 November to 16 December 1993.	16
2.	Reptiles recorded in the Gigerline Nature Reserve including type of record.	18
3.	Distribution of reptiles according to vegetation type.	19
4.	Number of reptiles of each species caught in pitfall traps at ten sites in the Gigerline Nature Reserve from 16 November to 16 December 1993.	20
5.	Reptiles found by hand-searching under rocks and logs at 22 sites in the Gigerline Nature Reserve.	21
6.	Systematic list of mammals recorded in the Gigerline Nature Reserve.	23
7.	Number of bats of each species recorded at sites in the Gigerline Nature Reserve.	24
8.	Small terrestrial mammals caught at sites in the Gigerline Nature Reserve in pitfall and Elliott traps.	25

LIST OF FIGURES

Figure	Contents	Page No
1.	Location of Gigerline Nature Reserve in the Australian Capital Territory.	3
2.	Gigerline Nature Reserve.	4
3.	Location of frog survey sites using call identification and spotlighting in the Gigerline Nature Reserve.	7
4.	Location of pitfall trapping and hand-searching sites in the Gigerline Nature Reserve	9
5.	Location of sites surveyed using bat traps and Elliott traps in the Gigerline Nature Reserve	12

LIST OF APPENDICES

Appendix	Contents	Page No
1.	Pitfall trapping site descriptions.	46
2.	Notes on the occurrence of each species of reptile recorded in the Gigerline Nature Reserve.	48
3.	Source of scientific and common names used in the report.	54

ABSTRACT

The Gigerline Nature Reserve was surveyed during 1993 and 1994 for the presence and distribution of frogs, reptiles and mammals. A variety of techniques was used in a number of different vegetation/habitat types, which resulted in records of eight species of frog, 23 reptiles and 26 mammals (including 7 introduced species). Several species of special significance were recorded during the survey. These included the regionally rare Bibron's toadlet *Pseudophryne bibronii*, which until recently was considered to have become extinct in the ACT and region, and is currently known from only three other sites in the ACT. Other regionally uncommon species recorded include the Rosenberg's monitor *Varanus rosenbergi*, Grey's skink *Menetia greyii*, the black headed snake *Suta spectabilis*, the eastern falsistrelle *Falsistrellus tasmaniensis*, and the common dunnart *Sminthopsis murina*.

This report presents information on the distribution and abundance of species occurring in the reserve, identifies areas that support uncommon species and areas of particular conservation significance because of their species richness. Management recommendations for some of these areas are outlined.

INTRODUCTION

The Gigerline Nature Reserve is the southern-most nature reserve unit of the Murrumbidgee River Corridor. It was gazetted in 1991 as a nature reserve under the *Nature Conservation Act 1980* (NCA), along with the Bullen Range, Stony Creek and Woodstock Nature Reserves. These reserves are considered to be areas of relatively undisturbed land and water which contain ecologically significant elements. The primary aim of declaring these areas as nature reserves under the NCA is for the conservation of natural and cultural heritage and public appreciation of native flora and fauna within their natural environment. Management of Nature Reserves means protection of these areas from further disturbance and (as far as practicable) enhancement of their natural values (Murrumbidgee River Corridor Draft Management Plan 1994).

In order to conserve the ecological values of an area, it is essential that managers recognise the extent of those values, how they are distributed and what pressures exist that threaten their viability and long term existence. Baseline monitoring is an essential first step in this process.

Until recently, the most comprehensive information available on the ecological values of the Murrumbidgee River Corridor was that documented by NCDC in 1981 in a study where species occurrence was largely predicted through extrapolation from other areas of the ACT with similar vegetation and conditions. The 1992–93 survey of the Stony Creek Nature Reserve (Rauhala 1993a) examined a section of the Murrumbidgee River for the occurrence of reptiles, amphibians and mammals. The extent to which this survey brought to light the distribution of uncommon or poorly known species, highlights the importance of obtaining baseline information against which subsequent changes can be evaluated. This will enable managers to make decisions based on knowledge of the organisms likely to be affected by management actions.

Other sources of information on the biological values of the Murrumbidgee River Corridor include vegetation maps (Hicks and Nethery 1974, Ingwersen and Johnson 1992); bird surveys (COG 1986, Lamm and Calaby 1950), and information on fish (Greenham 1981, NCDC 1981, NCDC 1984, and ACT Parks and Conservation Service unpublished data). The Mt Tennent – Blue Gum Creek area of Namadgi National Park has been surveyed (Gilmour, Helman and Osborne 1987) and a survey of the fauna of the Rob Roy Range Nature Reserve has been undertaken (ACT Parks and Conservation Service unpubl. data.). Both these areas are close to, or adjoin the Gigerline Nature Reserve.

AIMS

The survey reported here is the second stage of a program to document the reptile, amphibian and mammal fauna of the Murrumbidgee River Corridor.

The specific aims of this survey were to:

1. Document the terrestrial vertebrate fauna of the Gigerline Nature Reserve, with the exception of birds.
2. Comment on habitat use by faunal groups and some species; and
3. Incorporate information on species occurrence into recommendations for the management of the reserve for nature conservation purposes.

THE STUDY AREA

Gigerline Nature Reserve covers approximately 1500 hectares. It extends about nine kilometres along the Murrumbidgee River, from the Gudgenby River confluence (including the De Salis cemetery), south to the eastern ACT-NSW border near Angle Crossing (Figures 1 and 2).

Land form, Geology and Soils

The terrain through this section of the Murrumbidgee River in the ACT consists mainly of steep slopes adjacent to the river, with consistently hilly terrain occurring away from the river escarpment. Altitude ranges from about 570 metres near the Gudgenby River Confluence to 834 metres at Gigerline Trig. Several creeks flow into the Murrumbidgee River in the study area including Guises Creek, Reedy Creek and several unnamed, yet substantial creek lines. Numerous other smaller creeks flow only after rain, and throughout much of the year they exist only as dry gullies with occasional pools.

The geology of the area is comprised mainly of volcanics (dacite, rhyodacite, welded tuffs). Sedimentary shale and sandstone, as well as tuffs occur west of the fault which runs parallel to the west bank and intersects the river at Angle Crossing. Shallow duplex soils containing abundant rock fragments are common throughout the area, however, sandy alluvial soils exist on some river terraces (NCDC 1981), mainly at the northern end of the study area.

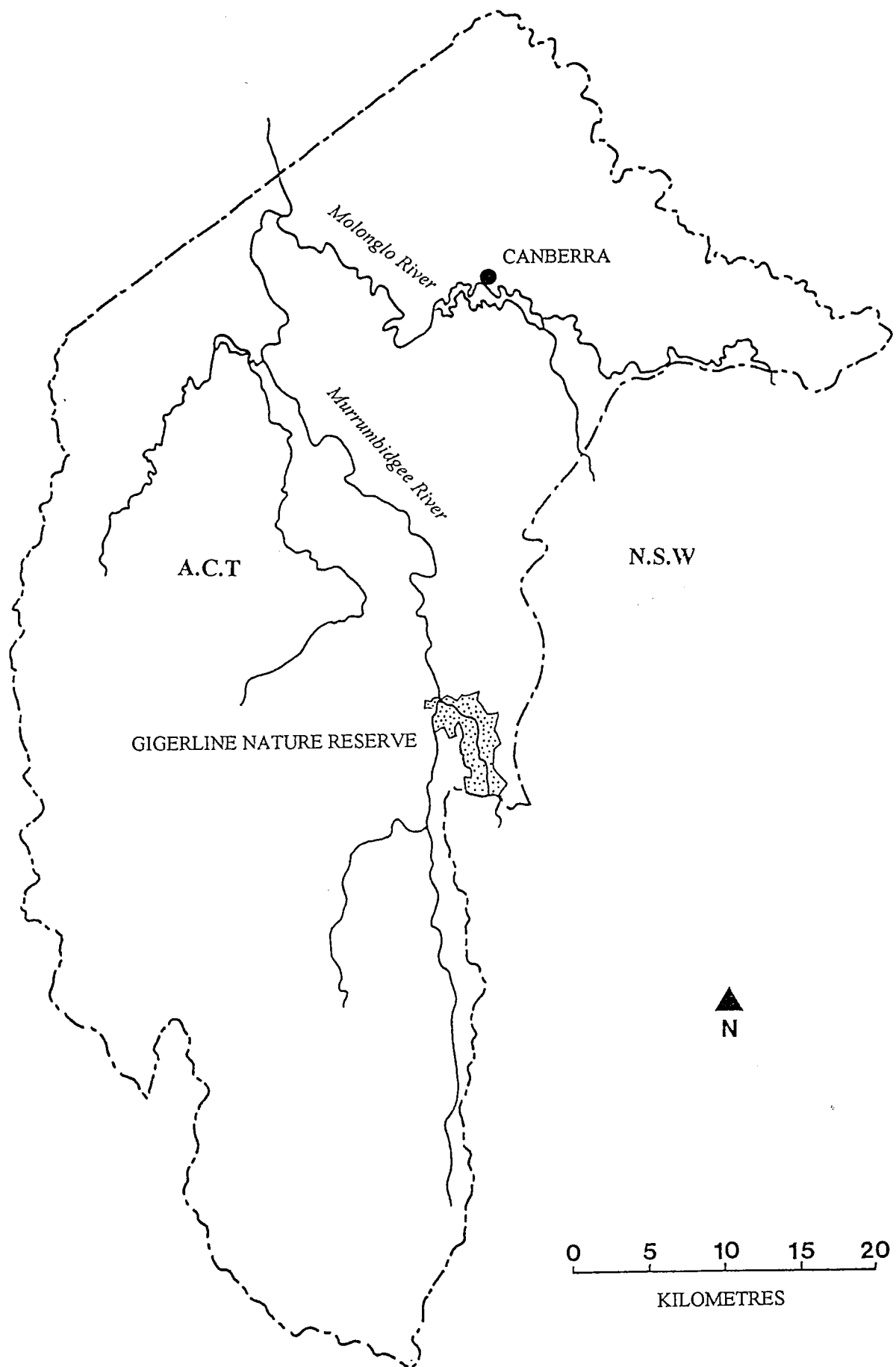


Figure 1. Location of Gigerline Nature Reserve in the Australian Capital Territory.

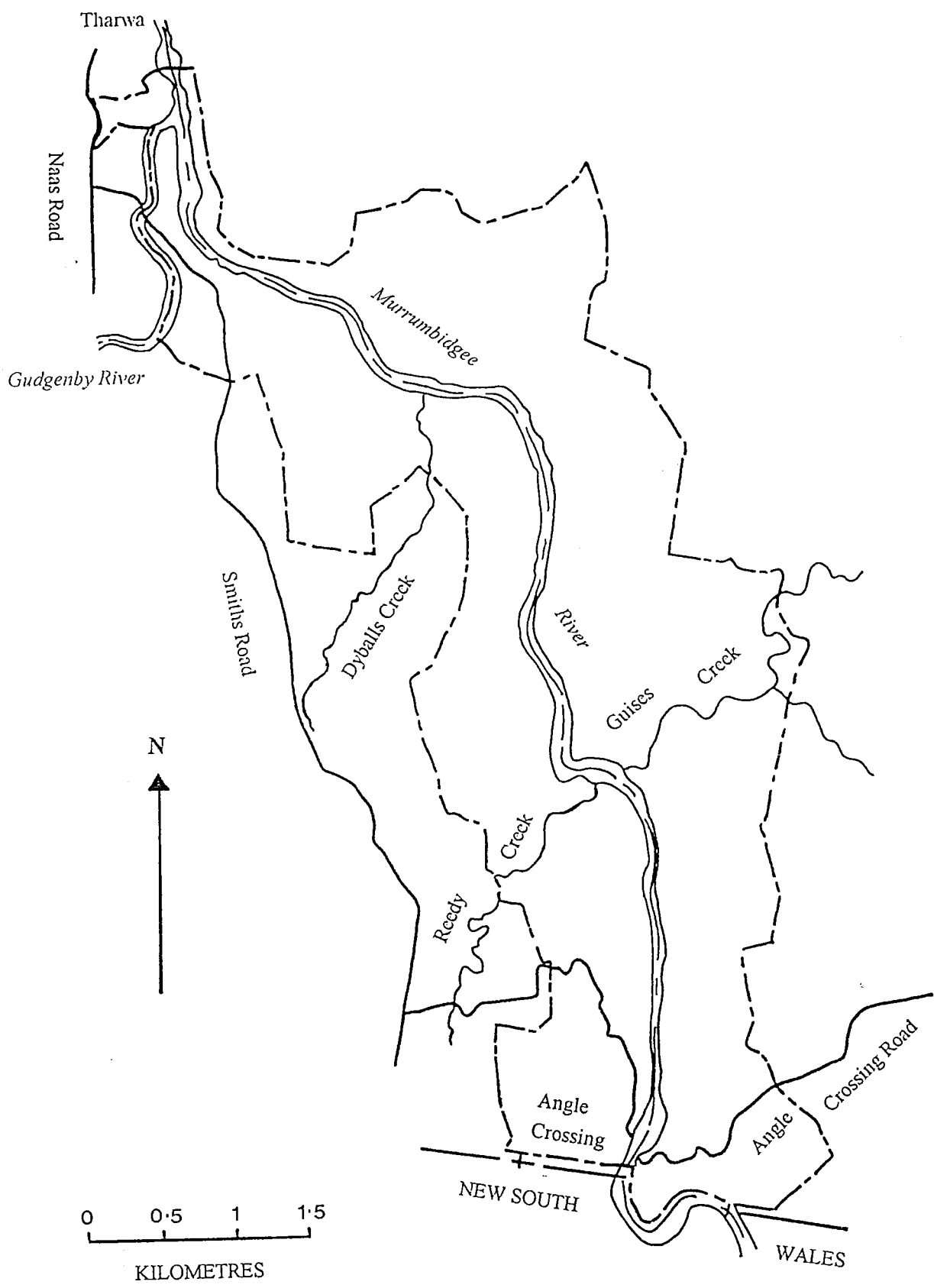


Figure 2. Gigerline Nature Reserve. Boundary shown thus — — — —

Climate

No temperature data is available specifically for the study area, however, the general pattern for the Murrumbidgee River is similar to that of Canberra (NCDC 1981). Highest mean daily temperatures are generally experienced in January with a mean daily maximum of around 27.7 °C. Lowest temperatures are experienced in July, with a mean daily maximum of 11.1 °C, with temperatures regularly falling below zero during this month (Bureau of Meteorology data).

The average annual rainfall for the MRC ranges from 625 mm to 750 mm (NCDC 1981). Records from Tharwa indicate that rainfall in the study area may be at the lower end of this range, with a long term average of 617 mm reported (Bureau of Meteorology data). In the MRC rainfall is distributed fairly evenly throughout the year, with a slight spring peak (NCDC 1981).

Vegetation

In the northern and southern parts of the study area, the original dry sclerophyll forests and woodlands have been largely modified by tree clearing and subsequent pastoral activities. Only scattered timber remains with a few patches of original vegetation in what is now basically a pastoral landscape dominated by secondary grasslands. These secondary grasslands comprise of native grasses and introduced pasture species, but where pasture improvement has been minimal, native grasses still form a substantial component of the ground cover. The central parts of the reserve, particularly those adjacent to the river, have been cleared to a lesser extent, with a reasonably large area of essentially undisturbed forest still remaining around the Guises Creek area, where deep gullies and steep terrain have proved difficult for stock grazing practices.

In some areas, shrub communities are thought to have replaced formerly cleared land, usually where grazing has been discontinued. These areas are now usually dominated by Burgan (*Kunzea ericoides*) and while scattered eucalypts also occur, *Callitris endlicheri* (black cypress pine) is the tree species most commonly associated with tea-tree scrubs.

The riverine vegetation is dominated by shrub species, particularly tea-trees and wattles which grow on the rocky and sandy river terraces and extend up the slopes (NCDC 1981). Manna gums (*Eucalyptus viminalis*) were the original tree of the river banks in areas devoid of river oaks (*Casuarina cunninghamiana*). Manna gums now occur in a few small groups on the eastern bank of the river in the Gigerline Nature Reserve upstream and downstream of the gorge. Willows (*Salix* spp) also occur along the riverbanks in the less rocky sections and are particularly abundant near the Gudgenby River confluence. Other conspicuous exotic plants such as blackberry and briar rose occur throughout the

study area with briars scattered throughout the pastures and blackberries being particularly common along the many creek lines entering the river.

Management and land-use

The reserve is managed by the ACT Parks and Conservation Service, however, the eastern side of the river is rural lease-hold land and as such, lease conditions apply. Land uses within the reserve consist of grazing (both lease-hold and agistment), nature conservation and informal recreational pursuits such as fishing, swimming, picnicking, canoeing and walking.

Several areas within the Gigerline Nature Reserve are identified in the NCDC (1988) sites of significance register for their geological, geomorphological, cultural (prehistoric), botanical and zoological significance.

METHODS

Frogs

Call identification.

A sample of potential frog breeding habitats was selected for survey. Most farm dams within or just outside the Gigerline Nature Reserve boundary were identified, as well as three creeks and three sites along the Murrumbidgee River (Figure 3). Surveys of most of these areas were carried out on four occasions to take into consideration the seasonality of breeding for different frog species. Surveys were carried out in August, November, January and March, and involved listening for frog calls at these sites and noting the species present. An estimate of the number of calling males and evidence of successful breeding (eggs or tadpoles) were recorded.

Pitfall trapping

Pitfall trapping (described below under Reptiles) provided information on frogs away from their breeding habitats. For all frogs captured in pitfall traps, species was recorded and frogs were released nearby in an appropriate damp or sheltered location.

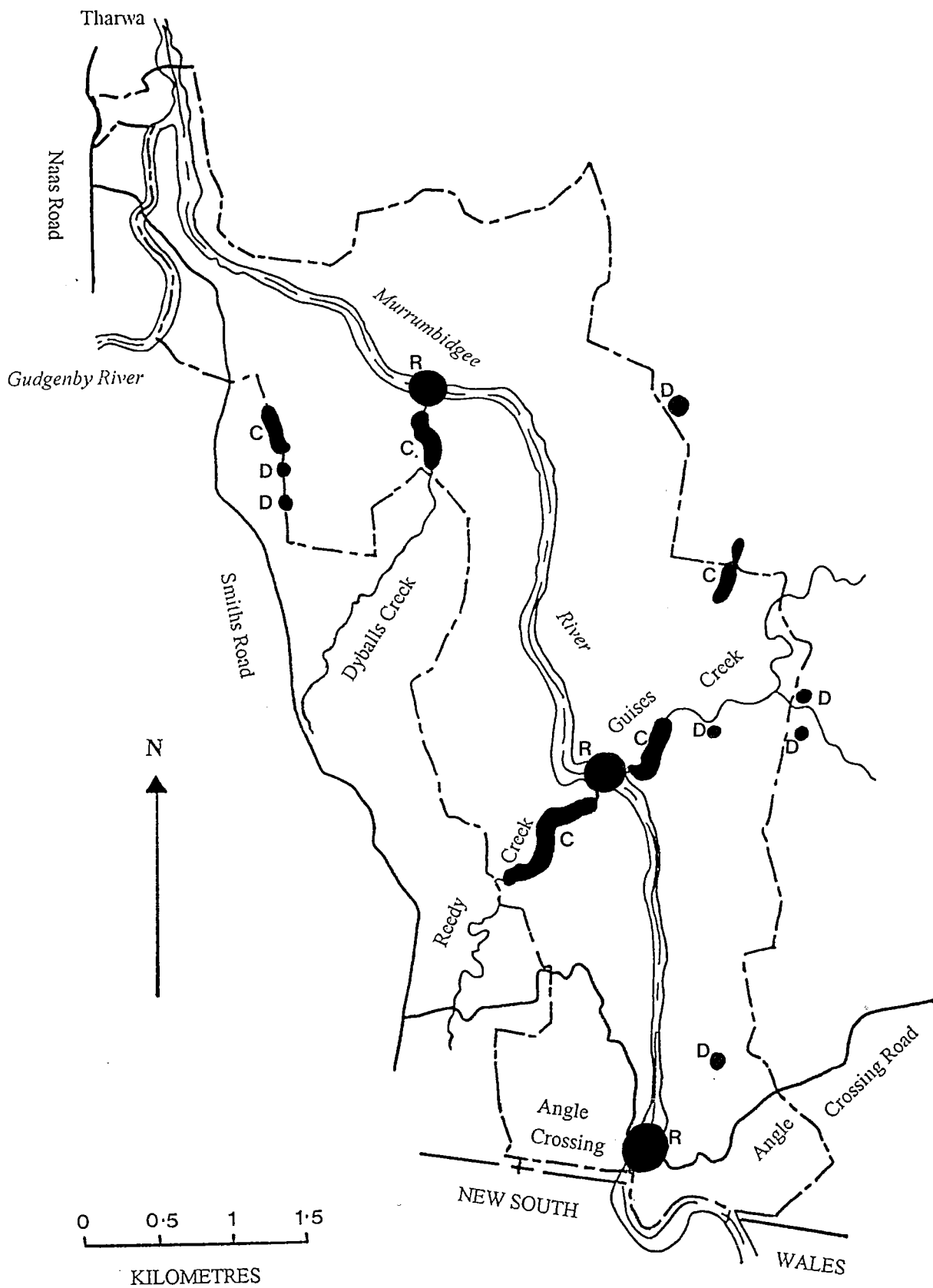


Figure 3. Location of frog survey sites using call identification and spotlighting in the Gigerline Nature Reserve. D = Dam, C = Creek, R = River.

Spotlighting

At two locations along the Murrumbidgee River (Guises Creek confluence and Angle Crossing), spotlighting was used as an additional method for detecting frogs. This technique was primarily aimed at locating *Litoria lesueurii*, which have a soft, barely audible call and which are relatively easy to find along cobbly stretches of the river's edge.

Reptiles

Pitfall trapping

It was considered important to select pit-fall trapping sites which were representative of most of the major vegetation or habitat types in the study area. Another consideration was to locate trapping sites so that they were in reasonably easy access to roads and trails, but where they were also away from areas frequented by the public thus reducing the likelihood of interference. Ten sites were selected (Figure 4) after several days of reconnaissance and familiarisation with the study area. Sites were named according to a prominent feature of the site that would enable various field workers to recognise the sites by name easily. A description of each pitfall trapping site is provided in Appendix 1. Trapping was conducted from 16 November to 16 December 1993. Pitfall trapping was conducted primarily to obtain information on reptiles. Therefore, at each site, the position of trap lines were determined subjectively, and where rocky outcrops were present, these were targeted providing it was possible to dig pits into the ground nearby.

At each site, 20 metal buckets were sunk into the ground. Buckets (pits), were usually arranged in two lines of ten, with a distance of approximately two to three metres between pits. Lines were approximately 25 metres in length, usually one in an upper and the other in a lower position on a slope. A drift fence was installed along each trap line to increase capture success. The drift fence passed uninterrupted from end to end of the trap line through the centre of each pit. It consisted of a strip of shade cloth approximately 30 cm high, buried in the ground to a depth of about three centimetres and was held up along its length with bent wire spikes. Only two trap sites were not set up in this way. The "Rivers edge" site had two lines of traps but no drift fence due to the nature of the substrate, and at "Reedy Creek", due to the very rocky substrate, fourteen pits with drift fence were set up along with six scattered traps without a drift fence.

Each bucket had an eleven litre capacity with a depth of 27 cm and a diameter of 22.5 cm. Small holes were punched with a screwdriver into the sides of the bucket approximately one centimetre from the bottom to enable most accumulated water to drain out. Small rocks were placed into the buckets to provide animals with some cover and a means of climbing above accumulated water if necessary.

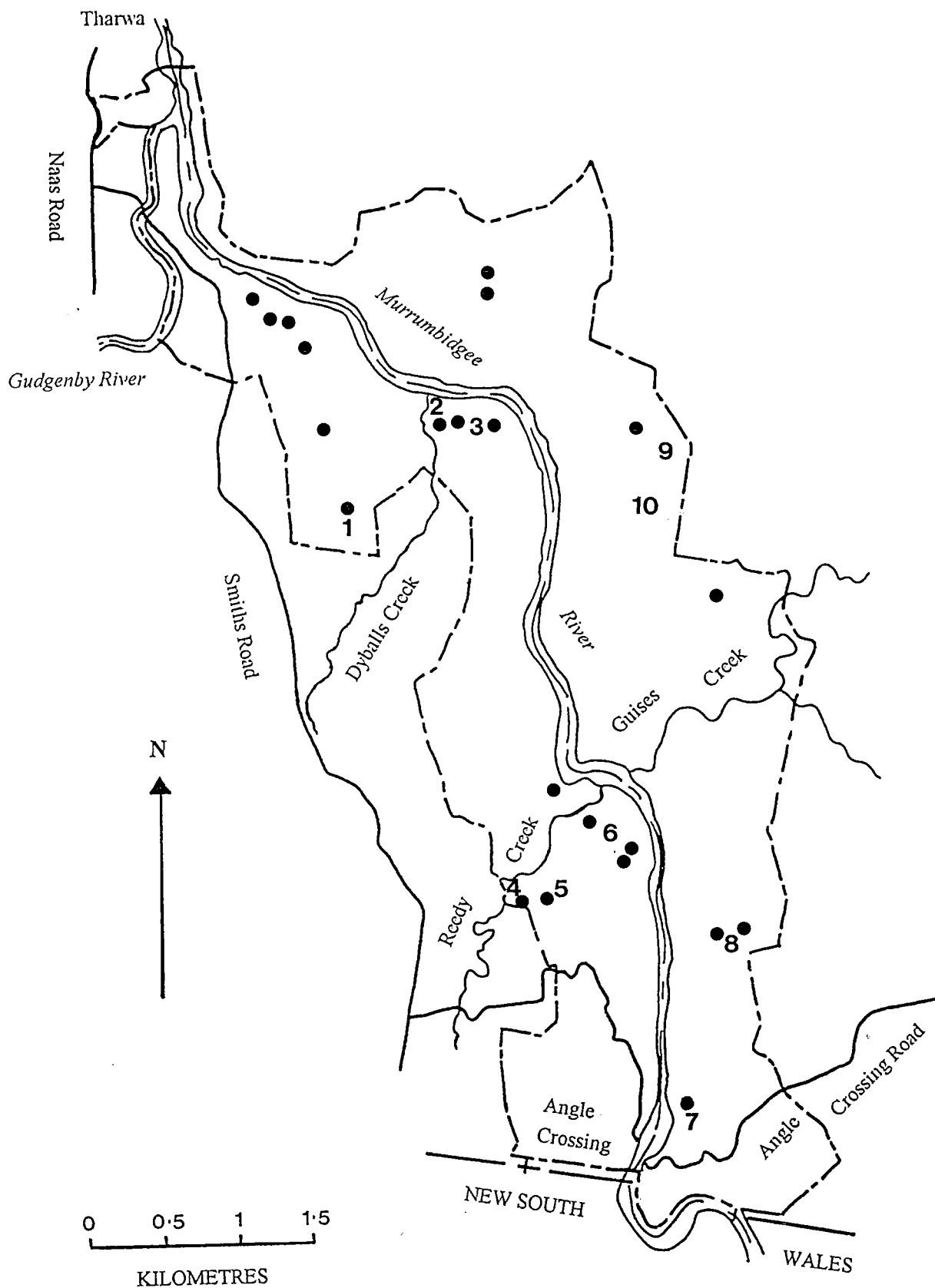


Figure 4. Location of pitfall trapping and hand-searching sites in the Gigerline Nature Reserve. Numbers refer to location of pitfall traps; 1 – Ridge Top, 2 – Rivers Edge, 3 – Dyballs Creek, 4 – Reedy Creek, 5 – Reedy Creek Slopes, 6 – Reedy Creek tea-tree, 7 – Angle Crossing, 8 – Burraburroo, 9 – Griffin's 1, 10 – Griffin's 2. Dots refer to location of hand-searching sites.

Pitfall traps were checked daily, and when it was found that surprisingly large numbers of frogs were being captured in pitfall traps, water was put into the traps in an attempt to reduce frog losses due to desiccation.

The following information was recorded for all reptiles captured in pitfall traps;

- Site name and pit number;
- Species;
- Age – whether juvenile, sub-adult or adult. This was subjectively estimated on the basis of size or the presence of breeding colouration;
- Sex – only readily determined for a few species on the basis of colouration or obvious gravid condition;
- Tail regeneration – whether the tail was entire and original or had a regenerating portion; and comments on other features of interest.

All reptiles were marked with a permanent "Artline" marker on the chest, and released within four metres of the pit in which they were captured.

Hand searching beneath stones

Searching was conducted at 22 sites throughout the study area (Figure 4). Most sites for hand-searching were selected on the basis of rock cover, that is, sites having a cover of predominantly shallowly embedded and surficial rock of medium size. Previous experience has shown that hand-searching is best confined to spring and early summer and that during warm sunny days, searching is most productive in the mornings, before rocks have warmed sufficiently for the reptiles to become active and leave the nocturnal shelter site. Accordingly where possible, during this survey most hand-searching was conducted in spring and confined to mornings.

Hand searching involved turning over all rocks and logs where possible, within a loosely defined search area, and capturing reptiles or frogs sheltering beneath them. Species were identified and details such as age, sex and tail regeneration were noted. After inspection, all animals were released and rocks and logs were replaced as closely as possible to their original position. The number of rocks and logs turned was counted for each site and field assistants were careful not to turn any rock or log more than once.

Mammals

Bats

Bat trapping was conducted between November 1993 and April 1994. Six areas were sampled (Figure 5) using collapsible, portable harp traps (Tidemann and Woodside 1978). Trap placement at each site was subjective, being set across potential flight paths such as narrow clearings in the vegetation, tracks and other situations where vegetation formed a corridor likely to facilitate movement. Six traps were set for no more than three consecutive nights during each trapping session, and were checked before 9 am each morning to minimise stress on the captured bats. Bats captured were identified, sexed and marked by clipping a small piece of fur off the back to enable previously caught individuals to be identified. All bats were released into suitable tree hollows near the capture site.

Small ground dwelling mammals

Small ground dwelling mammals were surveyed during April 1994, using Elliott live-capture traps at 8 sites (Figure 5). Traps were baited with a mixture of rolled oats, peanut butter and honey and set one to four metres apart within defined vegetation or habitat types. Specific placement of traps was subjective and where rocky outcrops and logs were present, some traps were placed in around them. Traps were set for three consecutive nights and checked before 9 am each morning. Animals caught were identified, marked by cutting a small piece of fur off the rump, and released nearby. Although pitfall traps were specifically set up to catch reptiles and frogs, they provided an additional source of information for small mammals.

Arboreal Mammals

Spotlighting for arboreal mammals was carried out between September 1993 and May 1994 in nine areas. A total of 13 spotlight hours was spent searching for arboreal mammals in various dispersed locations throughout the study area. Spotlight effort at each site was not equivalent, nor were factors such as moon phase and weather conditions the same for each spotlighting session.

Water rats

Trapping for water rats was conducted in February 1994 at two sites along the Murrumbidgee River. One was located near a large pool approximately 500 metres upstream of the Guises Creek confluence, and the other approximately 500 metres upstream of the Gudgenby confluence. Both sites were trapped

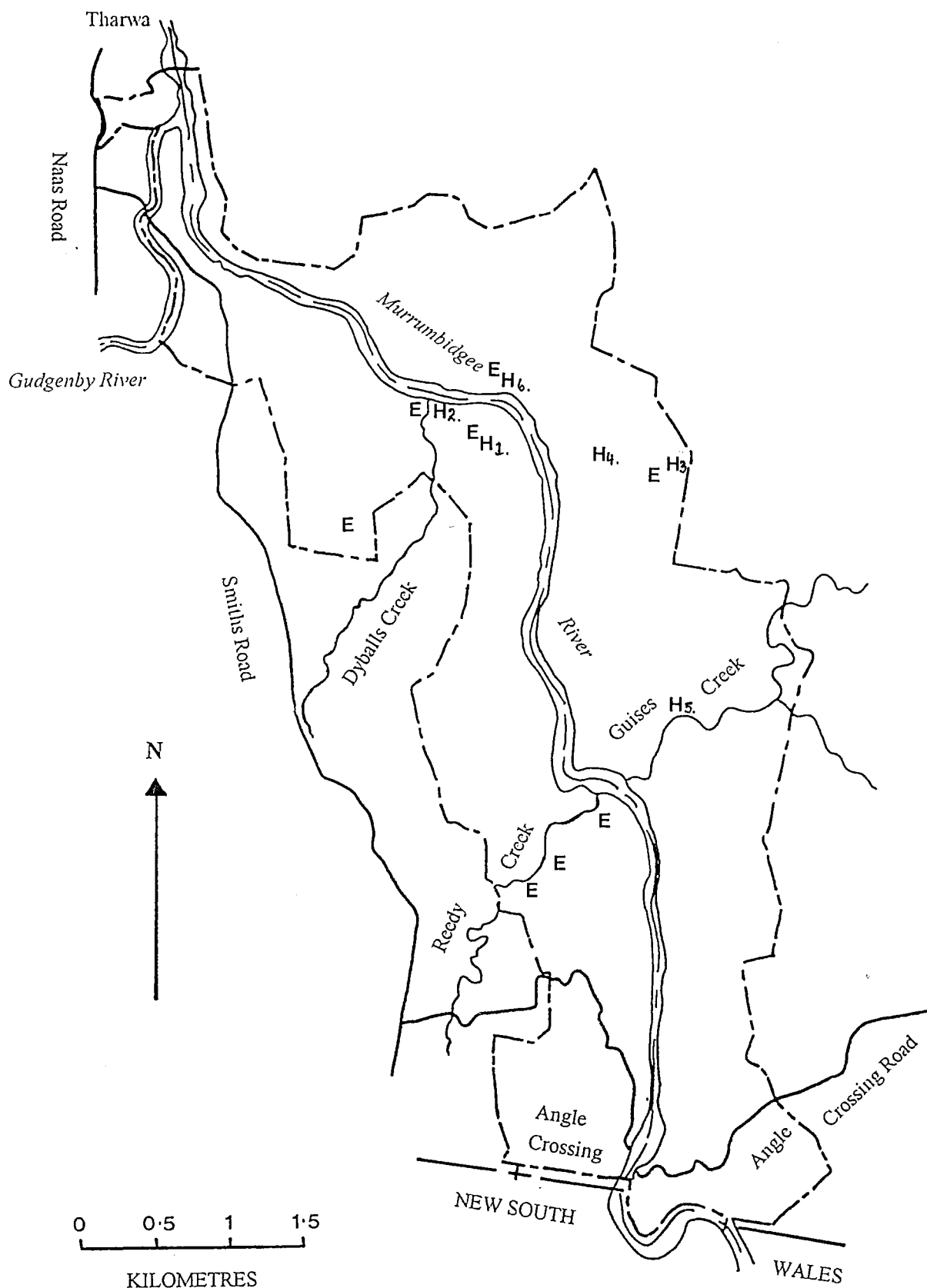


Figure 5. Location of sites surveyed using harp traps **H** (for bats) and Elliott traps **E** (for small ground-dwelling mammals) in the Gigerline Nature Reserve.

for one night, using eleven large Elliott live-capture traps baited with pieces of golden perch. Traps were set at the river's edge, no more than 50 centimetres from the water and approximately two to five metres apart in a variety of situations amongst rocks, tree roots and under shrubs. Traps were set on dusk and checked before 7 am the following morning.

Other mammals

No other specific survey techniques were used for other animals during the survey. However, opportunistic sightings in the course of other survey activities, as well as indirect evidence of occurrence, such as burrows, diggings, scats and bones provided information on many groups of animals. Additionally, a questionnaire was sent to the lessees of the study area, to obtain information on sightings of animals for which this survey provided little or no information. A small number of records for the study area was also extracted from ACT Vertebrate Atlas data base.

ACT Vertebrate Atlas

All records of amphibians, reptiles and mammals obtained during the survey, were entered into the ACT Vertebrate Atlas database. This distributional database is controlled by the Wildlife Research Unit of the ACT Parks and Conservation Service.

RESULTS

Frogs

Eight species of frogs were recorded in the Gigerline Nature Reserve. Five species (*Limnodynastes tasmaniensis*, *L. dumerilii*, *Uperoleia laevis*, *Crinia signifera* and *C. parinsignifera*) were caught in pitfall traps (Table 1). All of these were also detected by call identification at breeding locations. Three species (*Litoria lesueurii*, *L. peronii* and *Pseudophryne bibroni*) were recorded through spotlighting and call identification only.

Hylidae (tree frogs)

Litoria lesueurii (Lesueur's stream frog)

Litoria lesueurii was recorded at six locations in the study area. In January, at the cobbly stretch of river immediately downstream of the Angle Crossing, 15 to 20 adults of the species were observed sitting on rocks near the waters edge as well as on rocks in the shallow running water. Ten to 15 juveniles were also seen, however, these were generally found two to four metres from the waters edge closer to nearby vegetative cover.

On the same evening, 12 individuals, including two juveniles were located by spotlight on a boulder terrace along the Murrumbidgee River near the Guises Creek confluence. Most of these frogs were located sitting on rounded cobbles in shallow water at the rivers edge and some a short distance from the water. Three individuals were heard calling at this site. In February, several tadpoles of this species were observed in pools along the lower reaches of Guises Creek which adjoins this boulder terrace. In late March, 8 to 10 small individuals of this species were spotlighted on the vehicle track which runs along the top of the Guises Creek escarpment to the river.

Two other records of the species include one individual that was seen on a rock at the edge of Reedy Creek downstream of the Reedy Creek Gorge and another in the callitris woodland/forest on the eastern bank of the river near the stream gauging station in the Gigerline Gorge.

Litoria peronii (Peron's tree frog)

This species was recorded calling at three dams within or just outside the study area during November. One is located on the Burraburroo property (on the eastern side of the river), adjacent to the vehicle track that follows Guises Creek to the Murrumbidgee River. Approximately 10 male frogs were heard calling at this site during the visit to this dam. The second dam is on the Guises Flat property directly north of

the "Griffin's 1" pitfall trapping site where five individuals were heard. The third dam where the species was heard (5 frogs calling), is in a creekline on the western side of the river, between Smith's Road and the "Ridge Top" pitfall trapping site. A single calling male was heard, also in November, at a backwater pool off the Murrumbidgee River near Dyballs Creek. One metamorph was observed in January at another dam (where males were not recorded calling), and one other individual was observed in dry sclerophyll forest at the top of the Guises Creek escarpment in February.

Myobatrachidae (southern ground frogs)

Crinia signifera (common eastern froglet)

Crinia signifera was caught at all ten pitfall trapping sites. At all but one site it was caught in relatively low numbers (Table 1). This species was recorded calling in the study area from July to the end of April (when survey activity ceased). It was heard calling in all types of habitat, from seepages and soaks in grassland to small and large creeks, farm dams and the river and its backwater pools. It was often the most abundant frog calling at a site.

Crinia parinsignifera (plains froglet)

This species was by far the least abundant frog caught during pitfall trapping during which it was found in very low numbers at five pitfall trapping sites (Table 1). At breeding sites however, it was recorded in relatively large numbers, commonly with choruses of up to 30 frogs heard calling at a site. Calling was from July to the end of March (when survey activity ceased) with the strongest chorusing heard around November. Calling sites included most farm dams and two sites along the river. The species was not recorded calling at creeklines.

Limnodynastes dumerilii (eastern banjo frog)

The eastern banjo frog was caught at nine pitfall trapping sites during this survey, ranging from one to 29 frogs caught across these nine sites. The species was heard calling from September to January, usually in low numbers (less than 5 individuals) at the larger creeks in the study area and at two locations along the river (Angle Crossing and the Guises Creek confluence).

Limnodynastes tasmaniensis (spotted grass frog)

This species was found at eight of the ten pitfall trapping sites in the study area. It was found in greatest numbers at the "Angle Crossing" site, where a total of 44 frogs was captured during the trapping session. At most other sites the species was caught in low numbers (Table 1). The species was heard calling at most farm dams and the more substantial creeks in the study area. Choruses were heard from September to late March and this species was often one of the most abundant frogs calling at a site, with choruses of over 20 frogs being common, and on one occasion a chorus was estimated to number 80 to 100 calling frogs.

Uperoleia laevis (orange-groined toadlet)

This species was caught at nine pitfall trapping sites during the survey. It was by far the most abundant frog caught in pitfall traps, with a total of 429 frogs being captured. At most sites it out-numbered all other frog species (Table 1). Calling was recorded from November to late March, exclusively in farm dams where choruses ranged from a single frogs calling to approximately 30 calling frogs.

Pseudophryne bibronii (Bibron's toadlet)

Pseudophryne bibronii was located at one site only in the study area. The site is located on the Guises Flat property (grid references 917640 and 916637, 1:25 000 topographic map, Williamsdale 8726-IV-N) and consisted of a small, spring fed, grassy, creek line, with occasional pools. Tea-tree (*Kunzea ericoides*) was present in and around the creek as well as *Eucalyptus rossii* as scattered individuals. In late April, 10 to 15 individuals were heard calling at this site as well as a further one to five frogs calling approximately 350 metres up stream at a more open and rocky site.

Table 1. Frogs caught in pitfall traps at ten sites in the Gigerline Nature Reserve from 16 November to 16 December 1993.

Site Name	<i>Limnodynastes tasmaniensis</i>	<i>Limnodynastes dumerillii</i>	<i>Uperoleia laevis</i>	<i>Crinia signifera</i>	<i>Crinia parinsignifera</i>	Total no.
Ridge Top	1	1	0	1	0	3
Dyballs Creek	0	0	15	3	0	18
River's Edge	0	6	10	1	0	17
Reedy Creek	3	4	2	2	2	13
Reedy Ck Slopes	12	2	12	2	0	28
Reedy Ck T-tree	7	22	50	13	2	94
AngleCrossing	44	20	168	12	2	246
Burraburroo	27	29	131	15	0	202
Griffin's 1	1	15	33	52	1	102
Griffin's 2	1	7	8	13	1	30
Total no. per sp.	96	106	429	114	8	753
Percentage of all frogs caught	12.7	14.1	57.0	15.1	1.1	100

No of sites where present	8	9	9	10	5
---------------------------	---	---	---	----	---

Reptiles

General

Twenty-three species of reptile were recorded in the Gigerline Nature Reserve. Eighteen of these were recorded in pitfall traps, with only two species (*Delma inornata* and *Egernia cunninghami*) being exclusively detected by this technique. Eleven species were recorded by hand searching beneath stones and logs, all these also being recorded in pitfall traps. Five species were recorded through observation only, however, one of these (*Pseudonaja textilis*) was not recorded during the survey, and its occurrence in the study area was confirmed through an Atlas Record and photograph (Table 2). One report of a tiger snake *Notechis scutatus* was received through the land-holder survey, however this record remains unconfirmed.

"Mixed grassland" and "woodland" habitats revealed the greatest reptile species richness, closely followed by the "riparian" habitat. The least number of reptile species were recorded in the "dry sclerophyll forest" and the "Mixed grassland and Tea-tree scrubs" (Table 3).

The most widespread and abundant reptile during the survey was *Lampropholis delicata* which was located in all habitat types, pitfall trapping sites and the majority (68 per cent) of hand-searching sites surveyed. It comprised 48 per cent of all individuals of all species caught during pitfall trapping and 42 per cent of all reptiles caught by hand-searching. *Menetia greyi* was one of the most restricted reptiles, being recorded at only one pitfall trapping site during the survey. Its occurrence at the site was determined by the capture of six individuals. Several other reptiles were recorded in the study area on the basis of one or two individuals only. However, it is not possible to establish whether these observations indicate restricted distributions or merely low numbers, or detectability bias.

Pitfall trapping

Reptiles were caught at all ten pitfall trapping sites. The number of species caught per site ranged from 4 species at "Griffin's 1" to twelve species at "Dyballs Creek". The highest number of reptiles overall was also caught at "Dyballs Creek", followed by "Burraburroo", "Reedy Creek Tea tree" and "Angle Crossing". The "Ridge Top" and "Griffin's 1" sites recorded the lowest number of reptiles caught during trapping (Table 4).

Some species were caught in substantially higher numbers at particular sites. For example; *Amphibolurus nobbi* was caught in comparatively high numbers at the "River's Edge" site; *Carlia tetradactyla* at "Angle Crossing"; *Ctenotus robustus* at "Reedy Creek" and *Morethia boulengeri* at "Dyballs Creek".

Species which were caught at a large number of sites included *Lampropholis delicata*, which was caught at all ten sites sampled; *Morethia boulengeri* at nine sites and *Ramphotyphlops nigrescens* at seven sites. Several other species were caught at one and two sites only, often with only one or two individuals captured (Table 4).

Table 2. Reptiles recorded in the Gigerline Nature Reserve, including type of record.
O = Observation, PT = Pitfall Trap, HS = Hand Searching, * = Atlas Record.

Family and Species	Common name	Type of record		
Chelidae				
<i>Chelodina longicollis</i>	eastern snake-necked tortoise	O	PT	
Gekkonidae				
<i>Diplodactylus vittatus</i>	stone gecko		PT	HS
Pygopodidae				
<i>Aprasia parapulchella</i>	pink-tailed legless lizard		PT	HS
<i>Delma inornata</i>	inornate legless lizard		PT	
<i>Lialis burtonis</i>	Burton's legless lizard		PT	HS
Agamidae				
<i>Amphibolurus muricatus</i>	jacky lizard	O	PT	
<i>Amphibolurus nobbi</i>	nobbi dragon	O	PT	HS
<i>Physignathus lesueurii</i>	eastern water dragon	O		
Varanidae				
<i>Varanus rosenbergi</i>	Rosenberg's monitor	O		
Scincidae				
<i>Carlia tetradactyla</i>	four-fingered skink		PT	HS
<i>Ctenotus robustus</i>	striped skink	O	PT	HS
<i>Ctenotus taeniolatus</i>	copper-tailed skink	O	PT	HS
<i>Egernia cunninghami</i>	Cunningham's skink		PT	
<i>Eulamprus heatwolei</i>	warm-temperate water skink	O	PT	
<i>Lampropholis delicata</i>	delicate skink	O	PT	HS
<i>Lampropholis guichenoti</i>	spotted grass skink		PT	HS
<i>Menetia greyii</i>	Grey's skink		PT	
<i>Morethia boulengeri</i>	Boulenger's skink	O	PT	HS
<i>Tiliqua scincoides</i>	common blue tongue	O		
Typhlopidae				
<i>Ramphotyphlops nigrescens</i>	blackish blind snake		PT	HS
Elapidae				
<i>Pseudechis porphyriacus</i>	red-bellied black snake	O		
<i>Pseudonaja textilis</i>	eastern brown snake	O*		
<i>Suta spectabilis</i>	black-headed snake		PT	HS

Table 3. Distribution of reptiles according to vegetation type. X indicates that the species was recorded in the vegetation type.
Vegetation Types: DSF – Dry Sclerophyll Forest, W – Woodland, MGTT – Mixed Grassland and Tea-tree, MG – Mixed Grassland,
R – Riparian.

Scientific Name	Common name	Vegetation Type				
		DSF	W	MGTT	MG	R
<i>Chelodina longicollis</i>	eastern snake-necked tortoise		X	X	X	X
<i>Diplodactylus vittatus</i>	stone gecko		X	X	X	
<i>Aprasia parapulchella</i>	pink-tailed legless lizard		X	X	X	
<i>Delma inornata</i>	inornate legless lizard		X	X	X	
<i>Lialis burtonis</i>	Burton's legless lizard			X	X	
<i>Amphibolurus muricatus</i>	jacky lizard	X	X	X	X	
<i>Amphibolurus nobbi</i>	nobbi dragon	X	X			X
<i>Physignathus lesueurii</i>	eastern water dragon			X		X
<i>Varanus rosenbergi</i>	Rosenberg's monitor					X
<i>Carlia tetradactyla</i>	four-fingered skink		X	X	X	X
<i>Ctenotus robustus</i>	striped skink		X	X	X	X
<i>Ctenotus taeniolatus</i>	copper-tailed skink	X	X	X	X	X
<i>Egernia cunninghami</i>	Cunningham's skink		X			X
<i>Eulamprus heatwolei</i>	warm-temperate water skink				X	X
<i>Lampropholis delicata</i>	delicate skink	X	X		X	X
<i>Lampropholis guichenoti</i>	spotted grass skink	X				
<i>Menetia greyii</i>	Grey's skink		X			
<i>Morethia boulengeri</i>	Boulenger's skink	X	X	X	X	X
<i>Tiliqua scincoides</i>	common blue tongue			X	X	X
<i>Ramphotyphlops nigrescens</i>	blackish blind snake	X	X	X	X	
<i>Pseudechis porphyriacus</i>	red-bellied black snake	X		X	X	X
<i>Pseudonaja textilis</i>	eastern brown snake				X	
<i>Suta spectabilis</i>	black-headed snake				X	
Number of species recorded		8	13	8	18	12

Table 4. Number of reptiles of each species caught in pitfall traps at sites in the Gigerline Nature Reserve from 16 November to 16 December 1993.

Species	Ridge Top	Dyballs Creek	River's Edge	Reedy Creek	Reedy Creek Slopes	Reedy Creek T-tree	Angle Crossing	Burra-burroo	Griffin's 1	Griffin's 2	Total Number of animals	Number of sites
<i>Chelodina longicollis</i>	0	1	0	0	0	1	0	0	0	0	2	2
<i>Diplodactylus vittatus</i>	0	2	0	0	0	0	0	0	0	0	2	1
<i>Aprasia parapulchella</i>	0	4	0	1	0	1	0	0	0	0	6	3
<i>Delma inornata</i>	2	0	0	0	0	0	0	0	0	0	2	1
<i>Lialis burtonis</i>	0	3	0	1	2	0	1	1	0	0	8	5
<i>Amphibolurus nobbi</i>	0	5	11	0	0	0	1	4	1	0	22	5
<i>Amphibolurus muricatus</i>	0	0	0	0	0	0	0	0	1	0	1	1
<i>Carlia tetradactyla</i>	0	5	0	0	7	2	13	0	0	0	27	4
<i>Ctenotus robustus</i>	2	1	5	21	6	0	0	0	0	0	35	5
<i>Ctenotus taeniolatus</i>	0	1	9	0	0	0	1	11	0	4	26	5
<i>Egernia cunninghami</i>	0	0	4	0	0	0	0	0	0	0	4	1
<i>Eulamprus heatwolei</i>	0	0	1	1	0	0	0	0	0	0	2	2
<i>Lampropholis delicata</i>	10	22	3	9	19	38	26	26	14	14	181	10
<i>Lampropholis guichenoti</i>	0	0	0	0	0	0	0	0	2	3	5	2
<i>Menetia greyii</i>	0	6	0	0	0	0	0	0	0	0	6	1
<i>Morethia boulengeri</i>	3	9	2	5	2	2	1	3	0	3	30	9
<i>Ramphotyphlops nigriscens</i>	1	3	0	0	1	4	4	5	0	1	19	7
<i>Suta spectabilis</i>	0	0	0	0	2	0	0	0	0	0	2	1
Total no. of animals caught	18	62	35	38	39	48	47	50	18	25	380	N/A
Total no. of species caught	5	12	7	6	7	6	7	6	4	5		

Hand-searching beneath stones and logs

Reptiles were found at 20 of the 22 hand-searched sites with a total of 115 reptiles representing 11 species captured and identified during hand-searching.

Lampropholis delicata and *Aprasia parapulchella* were the most commonly found and numerically abundant reptiles during hand-searching. *L. delicata* was found at 15 of the 22 sites (68 per cent of sites), and was also the most abundant reptile caught with 48 individuals caught representing 42 per cent of all captures. *Aprasia parapulchella* was located at 14 sites (64 per cent of sites), with a total of 43 individuals recorded representing 37 per cent of all reptiles caught during hand-searching. All other reptiles were recorded at substantially fewer sites and in lower numbers (Table 5).

Table 5. Reptiles found by hand-searching under rocks and logs at 22 sites in the Gigerline Nature Reserve

Species	Number of individuals	Number of sites where found
<i>Lampropholis delicata</i>	48	15
<i>Aprasia parapulchella</i>	43	14
<i>Ctenotus taeniolatus</i>	8	3
<i>Morethia boulengeri</i>	4	1
<i>Diplodactylus vittatus</i>	2	2
<i>Lialis burtonis</i>	2	2
<i>Ramphotyphlops nigrescens</i>	2	2
<i>Amphibolurus nobbi</i>	2	2
<i>Ctenotus robustus</i>	2	1
<i>Suta spectabilis</i>	1	1
<i>Carlia tetradactyla</i>	1	1

Observation.

Five of the 23 species of reptile recorded for the study area were only detected through observation. These include *Pseudechis porphyriacus*, *Physignathus lesueurii*, and *Tiliqua scincoides* which were observed on several occasion and in different locations. One individual *Varanus rosenbergi* was observed at one site on several occasions. The only documented record of *Pseudonaja textilis* for the study area is from an observation lodged to the ACT Vertebrate Atlas database and an accompanying photograph (D. Roso).

Mammals

Twenty-six species of mammal, representing 14 families, were recorded in the Gigerline Nature Reserve (Table 6). During the survey direct observations were made of all but two of the species listed. The inclusion of pigs is through observation of pig diggings, and the dog through communication with several of the lease holders who confirmed the occasional sighting of dogs (and pigs), as well as other evidence of their presence.

Bats

Eight species of bats (105 individuals) were caught during the survey. One individual *Chalinolobus gouldii* (Gould's wattled bat) was caught by hand during daylight hours, the rest (104 individuals) were caught in harp traps at five of the six sites sampled.

The little forest bat (*Vespadelus vulturnus*) was the most frequently captured species, with a total of 60 individuals being caught during the survey. This represents 57.7 per cent of all bats caught, or 51.7 individuals per 100 trap nights. (Table 7). Four species (*Tadarida australis*, *Nyctophilus gouldi*, *Falsistrellus tasmaniensis* and *Vespadelus regulus*) were recorded in the study area on the basis of only one record each, which represents 0.86 individuals per 100 trap nights (Table 7).

Sites in dry sclerophyll forest had the highest bat captures, with site 5 (Guises Creek) having the highest overall numbers with 46 individuals captured over 18 trap nights (Table 7). This is equivalent to 255.6 bats per 100 trap nights. The *Callitris* site, (Site 6 – Stream Gauge) was the only site where bats were not caught.

Small ground dwelling mammals

Four species of small terrestrial mammals were recorded in the study area during the survey. The introduced house mouse (*Mus domesticus*) was the most frequently captured small mammal, being caught in Elliot traps at five sites with a total of 25 individuals, representing 71 per cent of all small mammals trapped during the survey. It was recorded in five of the seven broad vegetation types surveyed. The brown antechinus (*Antechinus stuartii*) was caught in dry sclerophyll forest, *Callitris* woodland and Eucalypt woodland during the study. It was caught in very low numbers in Elliot traps at three sites, as well as in a pitfall trap at one of these sites. The black rat (*Rattus rattus*) was recorded at two sites, with one individual caught at each. Two individuals of the common dunnart (*Sminthopsis murina*) were caught in pitfall traps. One was located in tea-tree scrub and the other in dry sclerophyll forest (Table 8).

Table 6. Systematic list of mammals recorded in the Gigerline Nature Reserve. * Introduced animals

Family Tachyglossidae Short-beaked echidna	<i>Tachyglossus aculeatus</i>
Family Ornithorhynchidae Platypus	<i>Ornithorhynchus anatinus</i>
Family Dasyuridae Brown antechinus Common dunnart	<i>Antechinus stuartii</i> <i>Smithopsis murina</i>
Family Phalangeridae Common brushtail possum	<i>Trichosurus vulpecula</i>
Family Petauridae Sugar glider	<i>Petaurus breviceps</i>
Family Vombatidae Common wombat	<i>Vombatus ursinus</i>
Family Macropodidae Eastern grey kangaroo Wallaroo Swamp wallaby	<i>Macropus giganteus</i> <i>Macropus robustus</i> <i>Wallabia bicolor</i>
Family Molossidae White-striped mastiff bat	<i>Tadarida australis</i>
Family Vespertilionidae Gould's long-eared bat Lesser long-eared bat Gould's wattled bat Chocolate wattled bat Eastern falsistrelle Little forest bat Southern forest bat	<i>Nyctophilus gouldi</i> <i>Nyctophilus geoffroyi</i> <i>Chalinolobus gouldii</i> <i>Chalinolobus morio</i> <i>Falsistrellus tasmaniensis</i> (formerly <i>Pipistrellus</i>) <i>Vespadelus vulturnus</i> (formerly <i>Eptesicus</i>) <i>Vespadelus regulus</i> (formerly <i>Eptesicus</i>)
Family Muridae Water rat *Black rat *House mouse	<i>Hydromys chrysogaster</i> <i>Rattus rattus</i> <i>Mus domesticus</i>
Family Leporidae *European rabbit	<i>Oryctolagus cuniculus</i>
Family Canidae *Dog *Fox	<i>Canis familiaris</i> <i>Vulpes vulpes</i>
Family Felidae *Cat	<i>Felis catus</i>
Family Suidae *Pig	<i>Sus scrofa</i>

Table 7. Number of bats of each species recorded at sites in the Gigerline Nature Reserve. The number in brackets shows the number of bats standardised per 100 trap nights. x = Number of harp trap nights

The vegetation at each trapping site and number of trap nights is shown.

Vegetation Types : W = Eucalypt woodland, R = Riparian, DSF = Dry sclerophyll forest, C = Callitris woodland / forest.

Site numbers correspond to the locations in Figure 5.

Site Number	1	2	3	4	5	6	
Vegetation type	W	R	DSF	DSF	DSF	C	
Scientific name	Common name	x = 38	x = 12	x = 18	x = 12	x = 18	x = 18
<i>Tadarida australis</i>	white-striped mastiff bat	0	0	0	0	1 (5.6)	0
<i>Nyctophilus gouldi</i>	Gould's long-eared bat	1 (2.6)	0	0	0	0	0
<i>Nyctophilus geoffroyi</i>	lesser long-eared bat	3 (7.9)	1 (8.3)	4 (22.2)	0	10 (55.6)	0
<i>Chalinolobus gouldii</i>	Gould's wattled bat	2 (5.3)	0	1 (5.6)	0	5 (27.8)	0
<i>Chalinolobus morio</i>	chocolate wattled bat	2 (5.3)	0	5 (27.8)	0	7 (38.9)	0
<i>Falsistrellus tasmaniensis</i>	eastern falsistrelle	0	0	0	0	1 (5.6)	0
<i>Vespadelus vulturnus</i>	little forest bat	13 (34.2)	2 (16.7)	16 (88.9)	7 (58.3)	22 (122.2)	0
<i>Vespadelus regulus</i>	southern forest bat	0	0	1 (5.6)	0	0	0
Total number of bats caught per site		21 (55.3)	3 (25)	27 (150)	7 (58.3)	46 (255.7)	0
							104
							89.6

Table 8. Small terrestrial mammals caught at sites in the Gigerline Nature Reserve in pitfall and Elliott traps.

Vegetation types

DSF = Dry Sclerophyll Forest

C = Callitris

W = Eucalypt Woodland

R = Riparian

MG = Mixed Grassland

TT = Tea-tree scrub

W & MG = Woodland and Mixed Grassland.

Species

Mus domesticus (house mouse)

Rattus rattus (black rat)

Antechinus stuartii (brown antechinus)

Sminthopsis murina (common dunnart)

Site name	Vegetation type	Number of Elliott trap nights	Species and number	Number of pitfall trap nights	Species and number
Griffin's 1 & 2	DSF	300	<i>A. stuartii</i> (1)	1200	<i>A. stuartii</i> (1) <i>S. murina</i> (1)
Stream gauge	C	400	<i>A. stuartii</i> (2) <i>M. domesticus</i> (6)	nil	N/A
Dyballs Creek	W	300	<i>A. stuartii</i> (2) <i>R. rattus</i> (1)	600	nil captures
River's Edge	R	300	<i>M. domesticus</i> (8) <i>R. rattus</i> (1)	600	nil captures
Ridge Top	MG	300	<i>M. domesticus</i> (2)	600	nil captures
Reedy Ck T-tree	TT	300	<i>M. domesticus</i> (5)	600	<i>S. murina</i> (1)
Reedy Creek woodland	W	300	<i>M. domesticus</i> (4)	nil	N/A
Reedy Creek Slopes	MG	300	nil captures	600	nil captures
Burraburroo	W & MG	nil	N/A	600	nil captures
Angle Crossing	MG	nil	N/A	600	nil captures
Reedy Creek	MG	nil	N/A	600	nil captures

Arboreal mammals

Two species of arboreal mammal were recorded during the study. The common brushtail possum was the most commonly observed species, with a total of 10 individuals recorded during spotlighting. This species was found in woodland and open forest only. The sugar glider (*Petaurus breviceps*) was observed on one occasion only in a *Eucalyptus viminalis* close to the river near Guises Creek. Several calls were heard on another occasion in dry sclerophyll forest (near "Griffins 1 and 2" pitfall trapping sites), however these animals were not observed and there is some doubt about the correct identification of the calls.

Other mammals

Native

Three species of macropod were recorded. The grey kangaroo (*Macropus giganteus*) was present in greatest numbers in the cleared, mixed grasslands of the study area, where it was frequently seen in large groups (up to 50 individuals). The species was also observed to utilise woodland, forest and tea-tree habitats, but numbers here were much fewer than in the open paddocks and their occurrence in these habitats appeared to be associated with resting periods. The species was also frequently encountered in and around the pine plantation adjacent to the study area off Smiths Road. Wallaroos (*Macropus robustus*) were observed at several locations during the survey. It was recorded in woodland, forest, mixed grassland and tea-tree scrub. This species was observed much less frequently than *M. giganteus* and in smaller numbers, being most often observed in groups of two to three animals. The swamp wallaby (*Wallabia bicolor*) was recorded in woodland, forest and tea-tree and in mixed grassland adjacent to these vegetation types. It was most often observed as individual animals, however on one occasion a group of four animals was recorded near a tea-tree covered creek line.

Wombats (*Vombatus ursinus*), or evidence of their presence (burrows and droppings), were recorded in all habitat types throughout the study area. However, areas adjacent to the river and some creek banks appeared to be more heavily utilised by this species.

During the survey, water rats (*Hydromys chrysogaster*) were observed along the Murrumbidgee River at "Lobbs Hole". In the vicinity of this location one individual was also trapped. On Reedy Creek, above the gorge, yabby remains (in the typical manner which indicates the presence of water rats) were found on a flat rock at the creeks edge. Platypus, *Ornithorhynchus anatinus*, were recorded at "Lobbs Hole", with two individuals being observed on one occasion.

during the survey, only one echidna *Tachyglossus aculeatus* was observed in tea-tree scrub near Reedy Creek. The skull of an echidna was also found on a rocky outcrop in dry sclerophyll forest, near the "Griffin's 2" pitfall trapping site.

Introduced

Rabbits, *Oryctolagus cuniculus*, and evidence of their activity were recorded in all habitat types throughout the study area. Very few individuals were actually seen, and it appears that numbers were relatively low at the time of the survey.

Cats were observed on several occasions during the survey. All sightings were close to the river, mainly around the Angle Crossing area. Cat footprints were also regularly observed on sandy stretches of river bank near the Dyballs Creek confluence.

Although no dogs were observed during the survey, many of the land holders of the study area have reported dogs killing and injuring sheep. The origin of these dogs is not clear but it appears that they may be a combination of roaming town and farm dogs as well as dogs that have become wild. Their occurrence is reported to be widespread in the cleared paddocks where sheep are grazing. It is likely that refuge for these animals is provided in the more wooded and scrubby areas.

Foxes were observed regularly over most of the areas covered during the survey. They appeared however to be more common along creeklines and footprints were regularly seen along sandy stretches of the rivers edge. Quite a few individuals were also seen in the pine plantation adjacent to the study area, particularly near Reedy Creek.

Pigs were not observed during the survey, however evidence of pig digging was observed in two wet areas on the "Guises Flat" property, one along a small tributary of Guises Creek and the other in an open low lying paddock nearby. Local land-holders also reported the occasional sighting of pigs and pig diggings.

DISCUSSION

Frogs

The frogs recorded in the Gigerline Nature Reserve closely reflect the species predicted for the Murrumbidgee River Corridor generally (NCDC 1981), however, few species which were expected to occur were not recorded during this survey. Frogs recorded, also compared closely with the frogs located in the Stony Creek Nature Reserve in the previous year (Rauhala 1993a), with a few exceptions. *Pseudophryne bibroni* and *Litoria peronii* were recorded during the present survey, however they were not located in the Stony Creek Nature Reserve in the previous year. Alternatively, *Litoria latopalmata*, which was present at several locations in the Stony Creek Nature Reserve, was not recorded at Gigerline Nature Reserve despite the presence of seemingly suitable habitat, including the river margins, rocky creekline and farm dams. It has been suggested (Rauhala and Osborne 1994) that this species may not extend much further south along the Murrumbidgee River than the Pine Island area.

The results of the pitfall trapping indicate that all five species recorded by this technique were much more abundant in the study area, than in the Stony Creek Nature Reserve in the previous year (Rauhala 1993a). Frog abundance is to a large extent determined by the availability of breeding sites such as dams, creeks, flooded grassy depressions and backwater pools off the river and these would all be affected by the amount of rain in the preceding months. The difference in the abundance of frogs in the two different areas (one year apart) may reflect the rainfall of the previous years. Average rainfall for 1991 was 598.2 mm, compared with 770.4 mm in 1992 (Bureau of Meteorology data). This may indicate that a relatively dry year and a dry breeding season (271.8 mm from September 1991 to January 1992) resulted in small numbers of frogs being recruited to the population – the result subsequently seen in the 1992 trapping. Alternatively a relatively wet 1992 (including the breeding season, with 474.6 mm between September 1992 and January 1993), may have resulted in the large numbers seen during the present survey.

Apart from the difference in rainfall preceding the two surveys, which may have led to higher numbers of frogs in the present survey, the presence of farm dams (relatively reliable breeding habitat) in the Gigerline Nature Reserve probably affected the presence and abundance of species such as *Litoria peronii* and *Uperoleia laevis* which were noted make exclusively use farm dams as breeding sites. These species were relatively rare or absent from the Stony Creek study area in the previous year, where no farm dams exist within the study area.

The abundance of frogs at Gigerline Nature Reserve, therefore, is likely to be a combination of the availability of reliable breeding habitats and the wetter conditions experienced in the previous breeding season, which would have enabled a larger recruitment of young frogs into the population. These

findings, however, are not conclusive, as the Stony Creek sites were not surveyed at the same time as the current survey.

The presence of a small population of *Pseudophryne bibronii* in the study area is an important finding. It is widely accepted that this species was once common in the Canberra region (J. Wombey, E. Slater pers. comm.) and was one of the most common frogs in the Mount Ainslie, Mount Majura and Black Mountain reserves (Kukolic 1990). However, it has undergone a serious decline in distribution and abundance in this region in the last decade, to the extent that it was thought to have become locally extinct (Osborne 1990). The reason for this dramatic decline is not clear, however, it has been suggested that prolonged, dry conditions, including the drought in 1982–83 may have affected this and other frogs in the region (Osborne 1990). The finding of this species in the study area is therefore of significant conservation interest as it is currently known from as few as three other locations in the ACT, and it represents the only known record of the species east of the Murrumbidgee River in the ACT.

The long term persistence of *P. bibronii* at this site, therefore, should be a primary conservation objective for the Reserve. The population, as well as the habitat at the site and the adjacent areas should be monitored annually to determine any trends in the frog's abundance and distribution. The possible effects of encroachment by the tea-tree *Kunzea ericoides*, which may jeopardise the site in the short to medium term should be investigated, and control measures considered.

The activity of feral pigs was observed at this site with ground around the seepage areas and adjacent paddock up-rooted. Although it is not known what effect the disturbance of the ground by pigs might have on this species of frog, it would be worthwhile to monitor this area to determine if the pigs use it on a regular basis and if the degree of damage warrants a program of pig poisoning or other control measures.

If necessary appropriate management actions may need to be taken to maintain or enhance the habitat of *P. bibronii* and to extend the potential breeding habitat at this site, particularly through an examination of adjacent low lying, damp areas, where apparently suitable breeding habitat exists but is currently dominated to a large extent by tea-tree *Kunzea ericoides*. Dead timber and logs, as well as rocks should not be removed from adjacent areas of pasture and woodland to ensure that over-wintering sites are not a limiting factor for the survival of the species. Construction of roads or drains immediately up-slope of the site should be avoided.

The presence of *Litoria peronii* in the study area appeared to be strongly associated with farm dams, which it seemed to utilise exclusively as breeding sites. It is likely that this species forages widely, but was not recorded in pitfall traps as it is easily able to climb out (Osborne 1985). Although this species was not recorded in the Stony Creek Nature Reserve (Rauhala 1993a), it was recorded calling from a

well vegetated farm dam adjacent to the study area, again further evidence for its preference for still, permanent, water bodies for breeding habitat.

Litoria lesueurii appeared to be strongly associated with rocky and cobbly sections of the river edge and the lower reaches of some of the major creek lines entering the river and can be considered restricted in its choice of breeding habitat. Although this species is known to forage long distances from water (Cogger 1992), it was not recorded in pitfall traps, probably due to its ability to climb out of them (Osborne 1985). The finding of several sub-adult individuals, several hundred metres from a creek where tadpoles were observed, suggests that young individuals move away from the breeding habitats to forage widely before returning to the stream habitats for breeding. In the Stony Creek Nature Reserve (Rauhala 1993a), the species was found to be similarly restricted in its occurrence to suitable sections of the river's edge.

The most widespread, although not the most abundant frog during the survey was *Crinia signifera*. As the species appears to utilise a wide range of habitats as breeding sites, it is not surprising that the species was found at all pitfall trapping sites, even those well away from the more obvious water bodies. The species was particularly abundant at the "Griffin's 1" site, probably due to the proximity of several dams, a creek and flooded grassy areas where the species was heard calling in large numbers.

Crinia parinsignifera was the most uncommon species found in pitfall traps. This is probably due to the fact that unlike *C. signifera*, it appears only to utilise relatively stable and permanent water bodies as breeding sites. Therefore, pitfall traps, which were often far from permanent water, did not capture large numbers of this species, and therefore, it appears that the species does not forage widely away from these permanent water bodies. At suitable breeding sites, however, it appeared to be one of the most abundant frog species calling.

Limnodynastes dumerilii and *Limnodynastes tasmaniensis* were both widespread and moderately abundant in the study area. *L. dumerilii* appears to forage widely from its breeding habitats which seem only to include larger creeks and sections of the river. It was surprising that this species was not recorded in any of the farm dams during the survey, as the species is known to utilise these in other areas. *L. tasmaniensis* on the other hand appears to favour farm dams as breeding sites and were often heard calling in large numbers at these locations. It is not evident why this species was so abundant at the "Angle Crossing" pitfall trapping site, as seemingly similar habitat exists at many of the other sites, and it is not particularly close to known breeding locations.

The abundance of *Uperoleia laevis* during the study was somewhat surprising, considering that at Stony Creek in the previous year it was the most uncommon frog species recorded (Rauhala 1993a). As already discussed, this difference may reflect the greater availability of suitable breeding sites in the

Gigerline Nature Reserve, combined with more favourable rainfall in the previous season, which may have resulted in increased recruitment to the population. The species was also widespread, which is interesting considering that it was only heard calling at farm dams, most of which are well away from pitfall trapping sites. This suggests that the non-breeding frogs forage long distances from the breeding sites.

Fewest frogs were caught at the "Ridge top" trapping site. This site is heavily grazed by sheep and located in an elevated, exposed situation. The large numbers of frogs that were trapped in the relatively dissimilar sites "Angle Crossing" and "Burraburro" is of interest. The result, however, largely reflects the high numbers of *Uperoleia laevis* found at these sites. Therefore, these sites rather than being considered excellent frog habitat overall, can be considered ideal for this species only but suitable for many others. The frogs caught at all trapping sites probably represent part of the non-breeding component of the populations of each species. Foraging, shelter and moisture requirements therefore, appear to be met in a variety of forested, grassy, tea-tree and other habitats, some a long distance from breeding sites.

Reptiles

General

The 23 species of reptile recorded in the Gigerline Nature Reserve, correlate closely with the 24 species recorded for the Stony Creek Nature Reserve (Rauhala 1993a) and the 20 species for the Lower Molonglo River Corridor (Barrer 1992). Similarly, most of the species recorded for Gigerline Nature Reserve have also been recorded at the lower altitudes in the nearby Mount Tennent – Blue Gum Creek area (Gilmour et al. 1987). The basic similarity in species composition in all these areas is to be expected, as all comprise of similar elevations and habitats and most are linked to each other.

Species which were recorded at Stony Creek Nature Reserve (Rauhala 1993a), but not during the present survey, and vice versa, were all reptiles that were recorded in their respective areas in small numbers and / or were found to be highly localised in occurrence. It is therefore very likely that species such as *Hemiergis decresiensis*, *Pseudemoia platynota*, *Ctenotus uber* and *Pogona barbata* (which were not recorded in the present survey, but found in the Stony Creek Nature Reserve) are also present in the Gigerline Nature Reserve, probably in low numbers and / or in localised habitats.

Use of habitats and sites

The combined pitfall, hand-searching, and direct observation records of reptiles indicate that the mixed grassland habitats support the highest reptile species richness of all habitat types surveyed. However, it is also possible that because most of the study area is comprised of this vegetation type, and accordingly more sites were hand-searched and pitfall trapped in this type of habitat, that consequently more species were recorded. Alternatively, the apparent reptile species richness in this habitat type could be attributed to the fact that "mixed grassland" is a broad term and in this context encompasses sites with a very wide range disturbance levels, aspects and structural and vegetative features which provide a suitable environment for a large range of reptiles.

Although this study was not designed to assess the impact of livestock grazing on reptiles, results of pitfall trapping and hand-searching conducted in heavily grazed sites suggest that highly modified and disturbed grasslands may support fewer species and individuals. Alternatively, lightly grazed areas, and particularly those with abundant rock cover, appear to support a good variety of reptiles, including species such as *Aprasia parapulchella* that are intimately associated with areas of partially buried rocks and a cover of native grasses (Osborne et. al. 1991, Osborne and McKergow 1993, Rauhala 1993b).

Woodlands supported a moderately rich community of reptiles when considering the relatively small survey effort devoted to this habitat type and the small area of this community represented in the study area. The woodland sites examined during this survey were relatively diverse structurally, containing rocky outcrops, woody debris, and a grass and shrub under-storey to the tree canopy. Tree canopy cover was generally sparse and patchy, thereby allowing exposure to the sun for basking reptiles but also containing abundant opportunities for retreat from extreme conditions. The "Dyballs Creek" pitfall trapping site (woodland) can be considered among the most important areas in the Gigerline Nature Reserve in terms of its reptile species richness and the only known location in the reserve to support a population of the regionally uncommon skink *Menetia greyii*, and probably forming part of the home range of *Varanus rosenbergi* which is known to occur a few hundred metres away at the bottom of the river escarpment.

The riparian habitat examined during the survey recorded a relatively rich reptile fauna. As expected, many of the species recorded in this type of habitat (e.g. *Physignathus lesueurii* and *Eulamprus heatwolei*) were restricted throughout the study area to situations with water. One surprising finding in the riparian habitat was that of relatively large numbers of *Amphibolurus nobbi*, a species which, although known from a large number of locations throughout the Murrumbidgee River Corridor (Rauhala 1993b), was not previously recognised to inhabit the river flats. In comparison to other pitfall trapping sites, the numbers recorded at this site ("River's edge") were much higher considering that drift fences were not installed at this site. All individuals were trapped in relatively open areas with areas of

sand, some African lovegrass, occasional tea-tree *Kunzea ericoides* and *Callitris endlicheri*. These features are similar in most respects to the habitat characteristics known to be utilised by the species in the ACT (Rauhala 1993b).

One of the most significant findings during the survey was that of *Varanus rosenbergi* in the Gigerline Gorge area. It is considered an uncommon species in the ACT (Hogg 1990), and although a "goanna" was seen in the area approximately 12 years ago (G. Webb pers. comm.), this is the first confirmed siting of the species along the Murrumbidgee River Corridor in the ACT. One individual of this species was observed on several occasions near the confluence of Dyballs Creek and the river. The area is characterised by sand deposits and backwater pools among extensive rock terraces composed of boulders, large rocks and exposed rock surfaces carrying mainly shrub vegetation. A steep rocky escarpment rises from this area which is vegetated by shrubs such as *Dodonea viscosa*, *Bursaria spinosa*, *Kunzea ericoides* and trees such as *Callitris endlicheri* and *Eucalyptus rossii* higher up. A good population of the regionally uncommon *Acacia doratoxylon* also exists in this area. The home range of *V. rosenbergi* is large and daily movements of several kilometres have been reported (Green and King 1993). It is likely, therefore, that the entire Gigerline gorge/ Dyballs Creek area including the woodland, escarpment and river flats comprise the home range of this animal, and it is hoped that other individuals and a viable population also exists in the area.

Visitation to this area is currently moderately low, probably due to a lack of formal access from the recreational nodes at Tharwa Sandwash, the Gudgenby confluence and Smiths Road. The major activities conducted in this area are swimming, fishing, canoeing and bushwalking. These activities do not currently appear to impact heavily on the area and most of the activity is restricted to the river itself or close to the rivers edge. It is strongly recommended that no formal access, or better facilitation of current informal access, be provided in this area, and that any increased visitation should be closely monitored to ensure it does not lead to environmental degradation.

The riverine edge and escarpment areas are particularly vulnerable to damage by livestock, which are currently agisted in this area. It is recommended that grazing be excluded from the river edge environment and adjacent escarpment and fencing should be repaired and maintained to ensure that no stock stray into the area. Grazing in the woodland could be maintained, but at levels where grass and herb cover are not seriously depleted, to ensure that habitat quality for reptiles, as well as other native animals is retained.

Relatively few species of reptile were encountered in the mixed grassland with varying degrees of tea-tree encroachment. Most of the species recorded were wide ranging throughout a range of habitats and all species also occurred in mixed grassland habitats that did not have tea-tree. Pitfall trapping in the mixed grassland/tea-tree vegetation type revealed that of the six species of reptile caught in traps, one

species, *L. delicata*, dominated the sample and was found at this site in the highest numbers, whereas all other species were recorded in very low numbers.

Dry sclerophyll forest revealed relatively few species and individuals. This contrasts with findings at Stony Creek (Rauhala 1993a), where this habitat type was found to support many more species. However, it is difficult to establish whether these findings reflect actual differences between the two areas or are simply the result of differences in sampling (Stony Creek sites were trapped for a further three weeks), or the amount of time spent generally in that vegetation type. It is interesting to note that *Lampropholis guichenoti* was only recorded in dry sclerophyll forest. This species was not recorded in the Stony Creek survey (Rauhala 1993a), although it has been found in the Lower Molonglo River corridor nearby (Barrer 1992). The species can be considered uncommon, perhaps with a patchy distribution in the Gigerline Nature Reserve.

Mammals

Bats

The results of bat surveys are often difficult to interpret beyond species presence. This is because uniformity in trapping effort is hard to achieve, with factors such as temperature, rain, wind, moon phase and precision of trap placement affecting trapping success.

Twelve species of insectivorous bats have been recorded in the ACT and immediate surrounds (Hogg 1990). Species richness in the Gigerline Nature Reserve (8 species recorded) appears comparable to other areas of the ACT which have been surveyed such as Stony Creek Nature Reserve (Rauhala 1993a), Googong Foreshores (Winderlich 1985), Mulligans Flat (D. Smillie unpublished information), and the Gudgenby Region (Lintermans 1993).

The little forest bat (*Vespadelus vulturnus*) was by far the most commonly recorded species, as was the case in the Stony Creek Nature Reserve (Rauhala 1993a) and Mulligans Flat (Smillie unpublished data) and is generally regarded as common throughout all forest types in the ACT (Richards unpublished.).

Most bats were trapped in the dry sclerophyll forest sites of the study area. This is probably due to a number of factors including the greater abundance of tree hollows and insects, combined with the greater likelihood of selecting suitable flight paths for trapping in this vegetation type compared with more open vegetation. The callitris forest/woodland (Site 6) was the only location where bats were not recorded. During the trapping of this location, the weather was rainy and cool, and therefore is likely to have inhibited bat movement. In addition, similar callitris habitat in the Stony Creek Nature Reserve (Rauhala 1993a) produced very few bat captures compared with other vegetation types. It can be suggested that

this vegetation type is not favoured by bats. Insect abundance may be less here than in the insect pollinated eucalypt woodlands and forest, and tree hollows very scarce due to the resistance of callitris wood to hollow forming insect attack.

The importance of mature and senescing trees containing tree hollows is regarded as an important habitat requirement for most insectivorous bats, as is the presence of wooded and forested areas for foraging. It is therefore strongly recommended that no further tree clearing (including removal of dead standing trees) take place in the Gigerline Nature Reserve to ensure that the habitat of hollow reliant species of bats, as well as possums and birds is retained and trees allowed to mature and develop hollows.

Although the survey technique used during this survey (harp trapping) detected a large proportion of the bat fauna known to occur in the ACT, it does not provide information on differential habitat use by each species and does not ensure that all species in an area are detected. The harp trap tends usually to catch only the species which forage under the forest canopy and therefore species which fly above the canopy are always either under-represented or absent from the sample. This survey method is also relatively labour intensive and reliant on good trap placement and therefore results between locations are difficult to compare. Where possible, any further work which aims to record all species of bat present and relative numbers, should ideally use bat echolocation calls as a more reliable and comprehensive survey technique.

Small ground dwelling mammals

Of the four species of small terrestrial mammal recorded during the survey, the introduced house mouse *Mus domesticus* was the most commonly captured species. As was the case at Stony Creek (Rauhala 1993a), this species was caught in highest numbers in the riparian edge environment comprising sandy soils, flood debris and a cover of shrubs. The species is recognised as a highly adaptable and opportunistic rodent, capable of colonising a large range of habitats which is reflected in its presence in 5 of the seven vegetation types surveyed.

The brown antechinus *Antechinus stuartii* was caught in dry sclerophyll forest, callitris forest and eucalypt woodland in low numbers, indicating that the species is present in a range of habitats in the Gigerline Nature Reserve, but that it occurs generally at low densities. Its absence from traps at seven locations surveyed in the Stony Creek Nature Reserve (Rauhala 1993a) provides further evidence that the species is uncommon generally along the Murrumbidgee River Corridor.

The black rat *Rattus rattus* was recorded at two sites on the basis of one individual caught at each. The species appears to be uncommon and generally favours areas with rocky outcrops or piles of woody debris.

The common dunnart *Sminthopsis murina* was recorded in dry sclerophyll forest and tea-tree scrub in the Gigerline Nature Reserve during the survey. This is identical to the situation found in the Stony Creek Nature Reserve (Rauhala 1993a) where two individuals were recorded, one in each of these vegetation types. All individuals caught were trapped in pitfall traps rather than Elliott traps, which supports the view that the species is generally difficult to capture in Elliott traps. The low numbers caught indicate that the species is localised in occurrence and uncommon in the study area.

Arboreal mammals

Only two species were recorded during the survey : the common brush tailed possum *Trichosurus vulpecula* and the sugar glider *Petaurus breviceps*. The common brush tailed possum appeared to be far more abundant, however, it is also evident that this species is far more conspicuous and easy to locate than the relatively small and wary sugar glider. Nevertheless the sugar glider appeared to be very restricted in occurrence (being recorded on one occasion only) whilst the brush tail was recorded in woodland and forest on a number of occasions.

Other mammals

Native

The water rat *Hydromys chrysogaster* and platypus *Ornithorhynchus anatinus* were both recorded in a large pool of the Murrumbidgee River directly upstream of the confluence of Guises Creek and the Murrumbidgee River. It is likely that other large pools along the river provide suitable habitat for both these species and that the water rat extends up into some of the more permanent creek lines entering the river.

Three species of macropod (the eastern grey kangaroo *Macropus giganteus*, eastern wallaroo *Macropus robustus* and swamp wallaby *Wallabia bicolor*) were recorded in the study area during the survey. By far the most abundant and widespread species was the eastern grey kangaroo, with the wallaroo and swamp wallaby being far less frequently observed and in smaller numbers. Wombats *Vombatus ursinus* were widely distributed throughout the study area, however the greatest evidence of their presence (scats and burrows) was generally in the sandy soils close to the river and along some creek banks. Echidnas *Tachyglossus aculeatus* were uncommon in the study area at the time of the survey.

Introduced

Rabbits were widespread, but not particularly abundant in the areas surveyed in the Gigerline Nature Reserve. Whilst relatively few individuals were observed, evidence of their presence, warrens and droppings, were present in most habitat types.

Cats were observed on three occasions only during the survey. All sightings were near Angle Crossing. However, footprints were widespread along the sandy stretches of the rivers edge in other parts of the survey area. Cats are probably far more abundant than their sightings suggest, as they are a secretive animal which prefers to hunt in the night and to rest under cover in the day.

Dogs are present in the study area, and are reported to kill significant numbers of sheep. They undoubtedly also have an effect on wildlife but probably find sheep a relatively easy target. Some of the landholders have undertaken trapping and one has introduced Maremma guard dogs in order to reduce sheep losses to roaming domestic and wild dogs.

Foxes are widespread in the study area, but appear to favour open pastures, creek lines and the rivers edge. These areas probably provide the greatest food resources for this predatory and scavenging species.

Pigs appear to be relatively uncommon in the study area, with localised evidence of their presence being reported from the land-holders, along with only occasional sightings. One area in which pig damage was observed during the survey was the area in which the regionally rare Bibron's toadlet *Pseudophryne bibronii* was located. It is not known what effect the disturbance of the ground by pigs might have on this species of frog, however, it would be worthwhile to monitor this area to determine if the pigs use it on a regular basis and if so, a program of pig poisoning or other measures for control should be considered.

CONCLUSIONS AND RECOMMENDATIONS

The fauna of the Gigerline Nature Reserve is similar in most respects to that of the Stony Creek Nature Reserve, documented in Rauhala (1993a). However, some species recorded in the current survey were not recorded at Stony Creek and vice versa. The species which were not common to both reserves were usually uncommonly recorded or highly localised in occurrence, and it is possible that not all such species were detected in the survey, although they may have been present.

Most of the species recorded during the current survey are widely distributed and regionally common, with a few exceptions. Bibron's toadlet *Pseudophryne bibronii*, Rosenberg's monitor *Varanus rosenbergi*, Burton's legless lizard *Lialis burtonis*, Grey's skink *Menetia greyii* and the black-headed snake *Suta spectabilis* are all frogs and reptiles considered rare or uncommon in the ACT (Hogg 1990). Several uncommon mammals (Hogg 1990) were also recorded. These were the great pipistrelle *Falsistrellus tasmaniensis*, the white striped mastiff bat *Tadarida australis*, the common dunnart *Sminthopsis murina* and the eastern wallaroo *Macropus robustus*.

Several sites or parts of the Gigerline Nature Reserve stand out as being of special significance due to the presence of rare or uncommon species or for their general species richness.

Dyballs Creek

The Dyballs Creek area, including the woodland at the top of the escarpment, the escarpment itself and the area in the vicinity of the creek's confluence with the Murrumbidgee River, is species rich and provides habitat for a number of regionally uncommon species. Potential threats to this area include overgrazing by stock which may adversely affect forb, shrub and tree regeneration and subsequently has potential longer term effects on the wildlife that inhabit the area.

The area is, to a large extent, protected from visitor over-use due to its relative remoteness from public access roads. Activities are generally confined to bush walking, canoeing, fishing and swimming which are all confined mainly to the river and rivers edge.

It is recommended that;

- grazing be excluded from this area, at least periodically, to allow some of the vegetation characteristics of this area to develop naturally. Subsequent monitoring of the area should then be conducted to observe changes to the fauna and flora.
- grazing should not be permitted in the highly sensitive and erodable escarpment areas and fencing needs to be established and repaired in places to ensure stock is kept out.

- no formal access, or better facilitation of current informal access, should be considered for this area. Any increase in visitation, leading to degradation should be monitored and managed.

Guises Creek

Other areas of conservation significance include the extensive wooded and forested land extending north from, and including the Guises Creek area. This area is relatively inaccessible to the public and is not currently grazed by stock. The vegetation cover remains relatively intact and is representative of the type of vegetation that was the predominant vegetation over much of the study area prior to land clearing. From this point of view it provides an invaluable remnant habitat for a variety of animal species that rely on the attributes of a forested environment. In addition, this area adjoins the Rob Roy Range Nature Reserve and thereby forms a more extensive area of woodland and forest providing significant areas of animal habitat which have a potential for providing for movement and dispersal of fauna.

This area also contains the site of the only known record of Bibron's toadlet *Pseudophryne bibronii* east of the Murrumbidgee River in the ACT. The species is known to have undergone a serious decline in the ACT region over the last twenty years to the point that it was thought to have become extinct.

It is recommended that;

- the Guises Creek area, along with the existing vegetation link to the Rob Roy Range should be maintained as woodland and forest.
- tree removal, including the removal of dead timber which provides crucial habitat for many animals known to be present in the area, should not be permitted.
- no grazing by domestic stock of any kind should be permitted in this area.
- the population of *Pseudophryne bibronii* and its habitat should be protected and monitored regularly to identify any potential changes that may threaten the existence of this species in the area. A more detailed discussion of monitoring needs and potential management intervention is provided on page 29.

Other important habitats in the Gigerline Nature Reserve

All other remnant woodland and forest in the study area such as that which occurs near Reedy Creek, and on the Burraburroo, Guises Flat and South Lanyon properties provide habitat and refuge in the

extensive cleared pastures that generally predominate the landscape. In addition, many of the major and minor creek lines have associated remnant vegetation that provides important animal habitat.

It is recommended that;

- areas of remnant woodland, forest, and creek line vegetation be retained.

Kunzea ericoides

Although a variety of wildlife is known to utilise tea-tree *Kunzea ericoides* scrub, most species recorded there were also present in the mixed grasslands which usually adjoined these stands of tea-tree.

It is recommended that;

- specific research be conducted on the extent to which tea-tree scrub and its apparent spread affects wildlife habitats and how it is utilised by animals, especially uncommon species such as the "common" dunnart *Sminthopsis murina*.

Callitris endlicherii

Very few areas in the study area are dominated by black cypress pine *Callitris endlicherii*. Consequently comparatively little of the survey effort was devoted to this vegetation type. On the basis of observations made, relatively few species of wildlife utilise this type of woodland and forest compared with the eucalypt woodland and forest. However, this vegetation type is known to be utilised by species such as the eastern wallaroo *Macropus robustus* and small mammals such as the brown antechinus *Antechinus stuartii* which is uncommon in the study area generally and only recorded in two other habitat types. *Callitris* generally occurs on steep, well drained slopes and consequently supports little ground cover vegetation. This makes areas supporting *callitris* inherently susceptible to erosion, particularly as a result of damage by stock.

It is recommended that;

- grazing be excluded from areas supporting *Callitris endlicherii* woodland and forest.
- *Callitris endlicherii* woodland and forest should not be cleared of vegetation.

Grazing

The cleared pastures of the study area support many species of fauna. Of particular importance in this vegetation type are the rocky outcrops which provide habitat for a variety of reptiles. It is important that whilst grazing continues in these pastures, overgrazing is avoided, particularly around the rocky outcrops which provide structural diversity required by many reptiles. One example of the effect of

grazing on these rocky outcrops in pasture is the ridge top pitfall trapping and hand-searching site, where very few reptile or amphibian species and few individuals were recorded amongst a structurally diverse but heavily grazed rocky landscape. This site is part of an area where sheep regularly camp and as a consequence was heavily grazed and affected by weeds. It is interesting to note that a rocky outcrop at the northern end of this ridge top which was not heavily impacted by stock, was found to be inhabited by a surprising variety of reptiles, contrasting strongly with the location of the trap site on the southern end of the ridge on an east facing slope. Although this observation in itself, is not sufficient to suggest that grazing is the only factor affecting reptile and amphibian occurrence, it does indicate the effects that overgrazing may have on reptile habitat in particular. To gain a better understanding of the effect of different levels of grazing, especially on the habitat of reptiles and amphibians, further specifically designed investigations would need to be conducted.

Areas with potential for nature interpretation.

The number of areas suitable for interpretative activities in the Gigerline Nature Reserve is limited by the relative inaccessibility of most areas. The main points of access are the Angle Crossing area and the Tharwa Sandwash.

Currently interpretative walks are conducted from the Tharwa Sandwash to near the Dyballs Creek confluence at the downstream end of the Gigerline Gorge. Carefully planned and professionally conducted walks extending up to the Dyballs Creek Gorge and the Dyballs Creek woodland would enable visitors to observe spectacular, rugged scenery as well as a wide variety of wildlife.

Although access from public roads is difficult, the Guises Creek area extending from the creeks confluence with the river provides a scenic route for interpretative walks and contains a variety of opportunities for the observation of wildlife, particularly reptiles and frogs. Several substantial pools exist along the river immediately upstream of the Guises Creek confluence, providing an opportunity to view platypus and water rats (mainly at dusk and dawn) and a variety of frogs along the cobble and sand terraces in the vicinity of the Creeks confluence.

A more easily accessible area for interpretation is the Reedy Creek area extending from the top of the Gorge near the pine plantation to the Murrumbidgee River. This stretch of creek provides a scenic walk during which many species of wildlife as well as a variety of plant species in the remnant woodland on the southern bank of the creek near the top of the gorge can be observed.

REFERENCES

- ACT Parks and Conservation Service (In prep) Murrumbidgee River Corridor, ACT. Draft Management Plan. ACT Parks and Conservation Service, Canberra.
- Barrer, P.M. (1992). A study of flora and fauna in the lower reaches of the lower Molonglo River in the ACT. Final report to the ACT Heritage Council.
- Burbidge, N.T. and Gray, M. (1979). Flora of the Australian Capital Territory. ANU Press, Canberra.
- Canberra Ornithologists Group (1986). Murrumbidgee River Corridor bird survey. Final report to National Capital Development Commission.
- Cogger, H. G. (1992). Rreptiles and Amphibians of Australia. Revised Edition. Reed, Sydney.
- Ehmann, H. (1992). The Encyclopedia of Australian Animals : Reptiles. Angus and Robertson, Sydney.
- Gilmour, P.M., Helman, C. E. and Osborne, W. S. (1987). An ecological study of the Mt Tennent–Blue Gum Creek area, ACT. Report to the Conservation Council of the South–East Region and Canberra.
- Green, B and King, D. (1993). Goanna – The biology of varanid lizards. New South Wales University Press, Kensington.
- Greenham, P. (1981). Murrumbidgee River aquatic ecological study. Report to the National Capital Development Commission and the Department of the Capital Territory.
- Hicks, J. and Nethery, W. (1974). Vegetation of the Bullen Range, Department of the Capital Territory Forest Section internal report.
- Hogg, D. McC. (1990). The ecological resources of the ACT. A review of recent information. Report to the National Capital Planning Authority.
- Ingwersen, F. and Johnson, A. (1992). Murrumbidgee River Corridor Vegetation (Map 1:10 000). ACT Parks and Conservation Service. Canberra.

- Kukolic, K. (1990). A survey of the vertebrate fauna of Mt Ainslie, Mt Majura and Black Mountain, 1975–76. Research Report 1., ACT Parks and Conservation Service. Canberra.
- Lamm, D. W. and Calaby, J. H. (1950). Seasonal variation of bird populations along the Murrumbidgee in the ACT., The Emu 50, Oct. 1950.
- Lintermans, M. (1993). The vertebrate fauna of the Gudgenby Region, Australian Capital Territory : A review. Technical Report 1. ACT Parks and Conservation Service, Canberra.
- NCDC (1981). Murrumbidgee River ecological study. National Capital Development Commission Technical Paper No. 33.
- NCDC (1984). The ecological resources of the ACT. National Capital Development Commission Technical Paper No. 42.
- Osborne, W. S. (1985). Techniques and strategies for sampling frog populations and communities. Graduate Diploma of Science Thesis, ANU, Canberra.
- Osborne, W. S. (1990). Declining frog populations and extinctions in the Canberra region. Bogong Vol 11(4).
- Osborne, W. S., Lintermans, M. and Williams, K. D. (1991). Distribution and conservation status of the endangered pink-tailed legless lizard *Aprasia parapulchella* (Kluge). Research Report 5, ACT Parks and Conservation Service, Canberra.
- Osborne, W. S. and McKergow, F. V. C. (1993). Distribution, population density and habitat of the pink tailed legless lizard *Aprasia parapulchella* in Canberra Nature Park. Technical Report 3, ACT Parks and Conservation Service, Canberra.
- Rauhala, M. A. (1993a). The reptile, amphibian and mammal fauna of the Stony Creek Nature Reserve, Australian Capital Territory. Technical Report 6, ACT Parks and Conservation Service, Canberra.
- Rauhala, M. A. (1993b). Distribution and habitat of the nobby dragon *Amphibolurus nobbi* in the Australian Capital Territory. Technical Report 5, ACT Parks and Conservation Service, Canberra.

- Rauhala, M. A. and Osborne, W. S. (1994). Recent records of the broad-palmed frog *Litoria latopalmata* in the ACT : A southerly extension of the known range of the species in south-eastern Australia. Herpetofauna 24 (1)
- Richards, G.C. and Hall, L. S. (1994). Draft Action Plan for Bat Conservation. Report to the Australian Nature Conservation Agency.
- Strahan, R. (ed). (1983). The Australian Museum complete book of Australian mammals. Angus and Robertson, Sydney.
- Tidemann , C. R. and Woodside, D. P. (1978) A collapsible bat trap and comparison of results obtained with the trap and with mist-nets. Australian Wildlife Research 5:355-362.
- Winderlich, S. (1985). Preliminary report on vertebrate survey of Googong Foreshores. Macroderma Vol 1 No 1.

Appendix 1. Pitfall trapping site descriptions.

SITE NAME	GRID REF.	ALTITUDE (metres)	ASPECT	VEGETATION AND STRUCTURAL CHARACTERISTICS
(1) Ridge Top	893643	715	north-east	<u>Mixed grassland</u> – Exotic grasses and weeds dominate this site. Species include <i>Bromus</i> spp., <i>Vulpia myuros</i> , <i>Hordeum leporinum</i> , <i>Carthamus lanatus</i> , <i>Hypericum perforatum</i> , <i>Verbascum</i> sp. and <i>Rosa rubiginosa</i> . Some native grasses such as <i>Poa labillardieri</i> and <i>Danthonia racemosa</i> also persist at this highly disturbed, steeply sloping site. Extensive rocky outcrops occur, along with scattered surficial and lightly embedded rock.
(2) Dyballs Creek	899650	620	north-west	<u>Woodland</u> – Mixed woodland of <i>E. polyanthemus</i> and <i>E. melliodora</i> on the higher slopes with <i>E. rossii</i> increasing in abundance further downslope along with <i>Callitris endlicheri</i> and <i>Acacia doratoxylon</i> . Shrubby understorey occurs mainly in the rocky outcrops. Common species here include <i>Pomaderris angustifolia</i> , <i>Cassinia</i> sp., <i>Bursaria spinosa</i> , <i>Leucopogon</i> aff. <i>fletcheri</i> , <i>Correa reflexa</i> . <i>Acacia doratoxylon</i> and <i>Desmodium brachypodium</i> are two species which occur at this site and are considered uncommon in the ACT. The grassy understorey includes native grasses and forbes such as <i>Themeda triandra</i> , <i>Danthonia</i> spp., <i>Cymbopogon refractus</i> , <i>Helichrysum apiculatum</i> , <i>Wahlenbergia communis</i> as well as some exotic grasses and weeds. Rocky outcrops and woody debris are scattered throughout this moderately sloping area.
(3) Rivers Edge	897652	580	north-west	<u>Riverine (riparian)</u> – The area is characterised by sand deposits and backwater pools among extensive rock terraces composed of boulders, large rocks and exposed rock surfaces carrying mainly shrub vegetation including <i>Kunzea ericoides</i> , <i>Callistemon paludosus</i> , <i>Calytrix tetragona</i> and <i>Bursaria spinosa</i> . Dominant trees and tall shrubs include <i>Callitris endlicheri</i> , <i>Acacia doratoxylon</i> and <i>A. rubida</i> . A steep rocky escarpment rises from this area which is vegetated by shrubs such as <i>Dodonea viscosa</i> , <i>Bursaria spinosa</i> and <i>Kunzea ericoides</i> . Open sandy stretches are a feature of the site with some patches of <i>Eragrostis curvula</i> which is now recognised as a highly invasive weed.
(4) Reedy Creek	901619	650	north-west	<u>Mixed grassland</u> – On the edge of a remnant woodland, this site is located adjacent to a rocky creek. Vegetation is characterised by a large variety of both native and exotic grasses such as <i>Bromus</i> spp., <i>Vulpia</i> sp., <i>Aira</i> spp., <i>Danthonia</i> spp., <i>Poa</i> spp., <i>Eragrostis curvula</i> , <i>Stipa falcata</i> and <i>Dichanthium sericeum</i> . Shrubs are scattered in and around the rocky outcrops surrounding this site and include <i>Correa reflexa</i> , <i>Cryptandra amara</i> , and <i>Hibbertia obtusifolia</i> , <i>Bursaria spinosa</i> and <i>Brachyloma daphnoides</i> .

SITE NAME	GRID REF.	ALTITUDE (metres)	ASPECT	VEGETATION AND STRUCTURAL CHARACTERISTICS
(5) Reedy Ck Slopes	904619	670	north	<u>Mixed grassland</u> . Native grasses are dominant, including <i>Themeda triandra</i> , <i>Sorghum leiocladium</i> , <i>Dichneileum sericeum</i> . Native shrubs are confined mainly to the scattered rocky outcrops with <i>Hibbertia obtusifolia</i> , <i>Cryptandra amara</i> and <i>Melichrus urceolatus</i> being the most conspicuous species.
(6) Reedy Ck Tea-tree	909623	640	west	Tea tree. Stands of <i>Kunzea ericoides</i> of varying density interspersed with patches of grassland (<i>Themeda triandra</i> , <i>Danthonia</i> spp., <i>Vulpia bromoides</i> , <i>Aristida ramosa</i>). The main shrub species present at the site is <i>Brachyloma daphnoides</i> , which occurs as very scattered individuals. Areas of outcropping rock occur around the site but very little scattered surficial rock is present.
(7) Angle Crossing	913605	650	west	<u>Mixed grassland</u> . - Native and exotic grasses dominate this site which is vegetatively species rich. Grasses include <i>Danthonia</i> spp, <i>Sorghum leiocladium</i> , <i>Stipa falcata</i> , <i>Poa sieberana</i> , <i>Vulpia bromoides</i> , <i>Bromus</i> spp., <i>Aira</i> spp. Native and exotic forbs as well as native shrubs such as <i>Cryptandra amara</i> , <i>C. propinqua</i> , and <i>Hibbertia obtusifolia</i> occur at the site, especially in the few rocky outcrops. Some loose and lightly embedded surficial rock is scattered throughout the site.
(8) Burraburroo	915615	700	north-west	<u>Woodland/grassland edge</u> - This site is characterised by open <i>E. rossii</i> woodland on a rocky hillside (spur). Shrub understorey consists of <i>Brachyloma daphnoides</i> , <i>Dillwynia sericea</i> , <i>Kunzea ericoides</i> , <i>Hibbertia obtusifolia</i> , <i>Bossiaea buxifolia</i> , <i>Indigofera australis</i> , <i>Lomandra</i> sp. The more open part of this site is dominated by grasses, especially <i>Danthonia pallida</i> . Other grasses include <i>Danthonia</i> spp., <i>Stipa falcata</i> , <i>Poa tenera</i> , <i>Panicum effusum</i> , <i>Aristida</i> sp. A moderate amount of woody debris is present and the area is generally rocky with outcropping and surficial rock present.
(9) Griffin's 1	913647	750	south-west	<u>Woodland/forest</u> - Dominated by <i>Eucalyptus nortonii</i> . Understorey shrubs include <i>Dillwynia sericea</i> , <i>Pultenaea procumbens</i> , <i>Hibbertia obtusifolia</i> and <i>Kunzea ericoides</i> . Scatter of small surficial rocks, abundant leaf litter, logs and branches. Large areas of bare ground are also present.
(10) Griffin's 2	913645	750	south-west	<u>Woodland/forest</u> - <i>E. rossii</i> , <i>E. nortonii</i> and <i>Callitris endlicheri</i> (including abundant regrowth). <i>Acacia doratoxylon</i> (scattered). Rich shrub understorey including <i>Dillwynia sericea</i> , <i>Hibbertia obtusifolia</i> , <i>Brachyloma daphnoides</i> , <i>Stypanopogon aff. fletcheri</i> , <i>Leucopogon attenuatus</i> , <i>Cassinia arcuata</i> , <i>Pultenaea procumbens</i> , <i>Leucopogon</i> spp., <i>Melichrus urceolatus</i> , <i>Calytrix tetragona</i> and <i>Kunzea ericoides</i> . Scattered small to medium sized rocks, both surficial and buried. Leaf litter and woody debris is abundant and large areas of bare ground are present.

Appendix 2. Notes on the occurrence of each species of reptile recorded in the Gigerline Nature Reserve

Chelodina longicollis (eastern snake-necked tortoise)

This species appeared to be relatively common in suitable habitats in the study area. It was reliably seen in backwater pools off the river near the confluence of Dyballs Creek and the river, and was pitfall trapped in woodland and tea-tree scrub. Animals were also observed in Reedy Creek and another creekline near the "Burraburroo" pitfall trapping site. One farm dam just outside the study area on the "Guises Flat" property appeared to support a substantial population of tortoises, with eleven individuals being observed on one occasion. This species is common in farm dams at lower altitudes in the ACT and is considered widespread along the Murrumbidgee River (Lintermans 1993).

Diplodactylus vittatus (stone gecko)

The stone gecko was recorded in the study area on four occasions. Two individuals were caught in pitfall traps at "Dyballs Creek" and one was uncovered nearby by hand searching. One other individual was located under a stone near the "Burraburroo" pitfall trapping site. All individuals of this species were closely associated with rocky outcrops. The species appears to be uncommon in the study area and is considered uncommon elsewhere in the ACT (Hogg 1990).

Aprasia parapulchella (pink-tailed legless lizard)

This endangered species was relatively common and widespread on the eastern side of the river, where it was found in mixed grassland, grassland with tea-tree, and woodland. It was found by hand searching at 14 sites, mainly in unimproved mixed grasslands with rocky outcrops. At sites where it occurred, it was often the most abundant reptile species present. Potential habitat for the species is widespread in the study area, however all areas are periodically grazed and the species appears to be absent from areas that have become severely degraded through grazing, trampling and weed infestation. The species is present at a large number of sites along the Murrumbidgee River Corridor and the urban hill reserves around Canberra (Osborne and McKergow 1993).

Delma inornata (inornate legless lizard)

This species was found in pitfall traps at the "Ridge Top" site only. Two individuals were located during the survey at this highly degraded site and it appears that the species is very uncommon in the study area. It has been recorded along the Murrumbidgee River Corridor at Shepherd's Lookout (D. Roso pers. comm.) and at Pine Island (ACT Vertebrate Atlas), however, it was not found during the recent fauna

survey of the Stony Creek Nature Reserve (Rauhala 1993a). This legless lizard appears to be more common in and around the urban reserves and open spaces of Canberra and in the Gungahlin area (pers. obs.).

Lialis burtonis (Burton's legless lizard)

This characteristic and impressive looking pygopodid was located in very low numbers at five pitfall trapping sites and at two hand-searching sites in mixed grassland and woodland. The species has also been recorded from other areas along the Murrumbidgee River Corridor such as Stony Creek Nature Reserve (Rauhala 1993a), Shepherd's Lookout (D. Roso pers. comm.), Kambah Pool (pers. obs.), Mount Ainslie (Osborne and McKergow 1993) and Mount Majura (Kukolic 1990). It is regarded as an uncommon but widespread species in the ACT (Hogg 1990).

Amphibolurus muricatus (jacky lizard)

This medium sized dragon lizard was encountered on very few occasions during the survey. It was located in one pitfall trap in dry sclerophyll forest (Griffin's 1") and observed on four occasions resting on dead timber in open mixed grasslands. As was found in the Stony Creek Nature Reserve (Rauhala 1993a), the species can be considered relatively uncommon in the Gigerline Nature Reserve. The species is probably more common in the urban reserves in and around Canberra.

Amphibolurus nobbi (nobbi dragon)

This small dragon lizard was found at five pitfall trapping sites. The species appears to avoid open grasslands areas and favours open woodland with abundant rock and woody debris. It was found to be most abundant at the "Rivers Edge" pitfall trapping site, where, although no drift fence was installed the species was found in relatively high numbers. The site consists of large boulders and rocks in a sandy substrate at the foot of a rocky escarpment. At this site, a sparse cover of grass, (mainly the introduced African lovegrass) forms the main ground cover and the presence of large areas of bare sand and rock is a feature of the site. In the ACT the species is considered to be closely associated with habitats along the Murrumbidgee River Corridor and is known from sites along the full length of the river in the ACT (Rauhala 1993b). It is probably the most common terrestrial dragon along the Murrumbidgee River Corridor.

Physignathus lesueurii (water dragon)

This species was commonly observed along the rivers edge where individuals were often disturbed whilst basking on logs and rocks at the waters edge. It was also frequently seen in and around the

backwater pools of the river. In addition, the species was recorded at Reedy Creek, Guises Creek, Lobbs Hole Creek and Dyballs Creek often up to two kilometres from the river and is likely to inhabit the lower reaches of some of the smaller creeks entering the river. This species is considered common along the length of the Murrumbidgee River in the ACT.

Varanus rosenbergi (Rosenberg's monitor)

One individual of this species was observed on several occasions near the confluence of Dyballs Creek and the river in the Gigerline Gorge area. The habitat consisted of rocky and sandy stretches and backwater pools adjacent to the river at the base of a steep rocky escarpment. Vegetation at the site included tea-tree (*Kunzea ericoides*), *Acacia rubida*, *Callitris endlicheri* and a sparse cover of grasses (mainly African lovegrass).

This is only the second recorded sighting of a goanna in the Murrumbidgee River Corridor in the ACT. A goanna (presumable *V. rosenbergi*) was seen approximately 300 metres south of this location, higher up on the hill slope, about 12 years ago (G. Webb pers. comm.). This species has also been recorded at Ginninderra falls in NSW (W. Osborne pers. comm.) and twice in West Belconnen in the mid 1980's (R. Bennett pers. comm.). The species can be considered uncommon in the ACT (Hogg 1990).

Carlia tetradactyla (four-fingered skink)

This species was recorded on relatively few occasions during the survey. It was found at four pitfall trapping sites, most individuals being trapped in the mixed grassland and woodland. All these sites were characterised by a good cover of native grasses, predominantly *Themeda triandra*. During hand-searching only one individual of this species was recorded. The species is moderately abundant at some sites in the Stony Creek Nature Reserve (Rauhala 1993a) and has been recorded at Mt Tennent (Gilmour, Helena and Osborne 1987). It appears to be relatively uncommon in and around Canberra.

Ctenotus robustus (robust skink)

The robust skink was found to be quite uncommon in the Gigerline Nature Reserve. It was recorded at one site only through hand searching and at five sites by pitfall trapping. It was moderately abundant at one site ("Reedy Creek") where 21 individuals were trapped. This is in contrast to the distribution and abundance of the species in the previous year in the Stony Creek Nature Reserve (Rauhala 1993a) where it was found to be one of the most abundant and widespread reptiles overall. The species is widespread and common in the urban reserves around Canberra (Osborne and McKergow 1993).

Ctenotus taeniolatus (copper-tailed skink)

This species was located at five pitfall trapping sites and three hand-searching sites during the survey. It was caught in highest numbers in the riparian habitat ("River's Edge" site) and the open woodland/grassland habitat at "Burraburroo". The species is known from a wide range of sites along the Murrumbidgee River Corridor and from the urban reserves in and around Canberra. It is considered common and widespread in the ACT (Hogg 1990).

Egernia cunninghami (Cunningham's skink)

This large skink was caught in pitfall traps at the "River's Edge" site at the base of a steep, rocky escarpment. One individual was also trapped twice in an Elliott trap in a woodland remnant near Reedy Creek. The species appears to be uncommon in the study area although areas of seemingly suitable habitat (outcropping rocks with moderately large crevices) occur in many areas, particularly along the larger creek systems. Apart from the Murrumbidgee River Corridor, the species is known from a large number of locations in the ACT, including many urban reserves (Osborne and McKergow 1993, Kukolic 1990), Mt Tennent (Gilmour, Helman and Osborne 1987) and the Gudgenby region (Lintermans 1993). This species is considered common but localised in occurrence (Hogg 1990).

Eulamprus heatwolei (warm-temperate water skink)

This skink was recorded along Reedy Creek, Guises Creek and sites along the River, particularly the backwater pools. It was moderately abundant and readily observed due to its habit of basking on rocks and logs at the water's edge. Only two individuals were caught in pitfall traps during the survey, however, pitfall trapping results probably do not give true indication of the localised abundance of this species due to the lack of pits sufficiently close to water courses. This species is considered common in association with water courses at the lower altitudes in the ACT.

Lampropholis delicata (delicate skink)

This species was widespread and abundant throughout the study area. It was recorded at all pitfall trapping sites and was the most abundant reptile overall using both this and the hand-searching technique. The species is common and widespread in the ACT (Hogg 1990).

Lampropholis guichenoti (spotted grass skink)

In contrast to *L. delicata*, this skink was uncommon in the sites surveys in the Gigerline Nature Reserve. Only five individuals were recorded in pitfall traps, both in dry sclerophyll forest ("Griffin's 1 and 2")

and one animal was found under a piece of tin at the site of the remnant manna gums *Eucalyptus viminalis* near the Guises Creek confluence. The species was not recorded at the Stony Creek Nature Reserve (Rauhala 1993a), however it has been described as common in the Mt Tennent – Blue Gum Creek area (Gilmour, Helman and Osborne 1987), the Gudgenby region (Lintermans 1993) and the Lower Molonglo River Corridor (Barrer 1992). The species is uncommon in the lowland areas of the ACT.

Menetia greyii (Grey's skink)

This tiny, four fingered skink was found to be highly localised and uncommon being recorded as six individuals at one site only ("Dyballs Creek") through pitfall trapping. At Stony Creek Nature Reserve the species was similarly uncommon and localised (Rauhala 1993a). It is considered uncommon in the ACT (Hogg 1990).

Morethia boulengeri (Boulenger's skink)

This species was found in a wide range of habitats. It was caught in low numbers at all but one pitfall trapping site however it was only recorded at one hand-searching site during the study. At Stony Creek Nature Reserve (Rauhala 1993a) the species was also found to be widespread but not abundant and is also widespread in the urban reserves of the ACT (Osborne and McKergow 1993).

Tiliqua scincoides (common blue-tongue)

Only two sightings were made of this lizard during the survey, both in mixed grassland. One dead specimen was found near the Dyballs Creek confluence several years before (pers. obs.). This species is likely to be widespread but not abundant throughout the study area, however, it is considered common and widespread in the ACT (Hogg 1990).

Ramphotyphlops nigrescens (blackish blind snake)

This small snake was found in low to moderate numbers at seven pitfall trapping sites and two hand searching sites in the study area and appears to utilise wide range of habitat types. The species is considered common and widespread in the ACT (Hogg 1990).

Pseudechis porphyriacus (red-bellied black snake)

This snake was recorded by sightings only. It was observed on several occasions during the survey, often in association with riparian habitats and creeks. It was also recorded in dry sclerophyll forest and

tea-tree scrub. This snake is considered common and widespread along the water courses in the lowland regions of the ACT(Lintermans 1993, Hogg 1990).

Pseudonaja textilis (eastern brown snake)

This species appears to be relatively uncommon in the study area, where it was not recorded during the survey. The species has been recorded previously in the study area on the Angle Crossing Road between Angle Crossing and the Monaro Highway (D. Roso pers. comm.) and is considered common and widespread in the rural areas and lowlands of the ACT (Lintermans 1993).

Suta spectabilis (black-headed snake)

Found at two sites only during the study., this species appears to be uncommon in the study area. It was recorded in mixed grassland near a rocky outcrop ("Reedy Creek Slopes") and by hand searching on an exposed ridge top near the "Ridge top" site. It is probably highly localised in distribution and is considered uncommon in the ACT (Hogg 1990).

Appendix 3. Source of scientific and common names used in this report.

<u>Taxonomic group</u>	<u>Scientific name</u>	<u>Common name</u>
Reptiles	Cogger (1992)	ACT Vertebrate Atlas Ehmann (1992)
Frogs	Cogger (1992)	ACT Vertebrate Atlas
Bats	Richards and Hall (1994)	ACT Vertebrate Atlas
All other mammals	Strahan (1983)	ACT Vertebrate Atlas
Plants	Burbidge and Gray (1979)	Burbidge and Gray (1979)

OTHER REPORTS PUBLISHED BY ACT PARKS AND CONSERVATION SERVICE

RESEARCH REPORT SERIES

- Kukolic, K. 1990. A survey of the vertebrate fauna of Mt Ainslie, Mt Majura and Black Mountain, 1975-76. Research Report 1
- Lintermans, M., Rutzou, T. and Kukolic, K. 1990. The status, distribution and possible impacts of the oriental weatherloach *Misgurnus anguillicaudatus* in the Ginninderra Creek catchment. Research Report 2.
- Jones, H. A., Rutzou, T. and Kukolic, K. 1990. Distribution and relative abundance of fish in the Naas-Gudgenby catchment. Research Report 3
- Lintermans, M. and Rutzou, T. 1990. The fish fauna of the Upper Cotter River Catchment. Research Report 4
- Osborne, W. S., Lintermans, M. and Williams, K. D. 1991. Distribution and conservation status of the endangered pink-tailed legless lizard *Aprasia parapulchella* (Kluge). Research Report 5
- Lintermans, M. and Rutzou, T. 1991. The status, distribution and management of the Murray crayfish *Euastacus armatus* in the Australian Capital Territory. Research Report 6

TECHNICAL REPORT SERIES

- Lintermans, M. 1993. The vertebrate fauna of the Gudgenby region, Australian Capital Territory. Technical Report 1
- Ormay, P. and Ingwersen, F. 1993. Management of *Xanthorheia australis* in Tidbinbilla Nature Reserve. Technical Report 2
- Osborne, W. S. and McKergow, F. V. C. 1993. Distribution, population density and habitat of the pink-tailed legless lizard *Aprasia parapulchella* in Canberra Nature Park. Technical Report 3
- Lintermans, M. 1993. Oriental weatherloach *Misgurnus anguillicaudatus* in the Cotter River : A new population in the Canberra region. Technical Report 4
- Rauhala, M. 1993. Distribution and habitat of the nobby dragon *Amphibolurus nobbi* in the Australian Capital Territory. Technical Report 5
- Rauhala, M. 1993. The reptile, amphibian and mammal fauna of the Stony Creek Nature Reserve, Australian Capital Territory. Technical Report 6
- Rutzou, T. V., Rauhala, M. A. and Ormay, P. I. 1994. The fish fauna of the Tidbinbilla River catchment. Technical Report 7.
- Sharp, S. 1994. Lowland native grasslands in the ACT and surrounding region : A review and research strategy for a recovery plan. Technical Report 8.
- Driscoll, D.A. 1994. Invertebrates of lowland native grasslands in the Australian Capital Territory : Conservation and research strategies for a recovery plan. Technical Report 9.
- Osborne, W.S. and Jones S. R. 1995. Recovery plan for the pink-tailed worm lizard (*Aprasia parapulchella*). Technical Report 10.