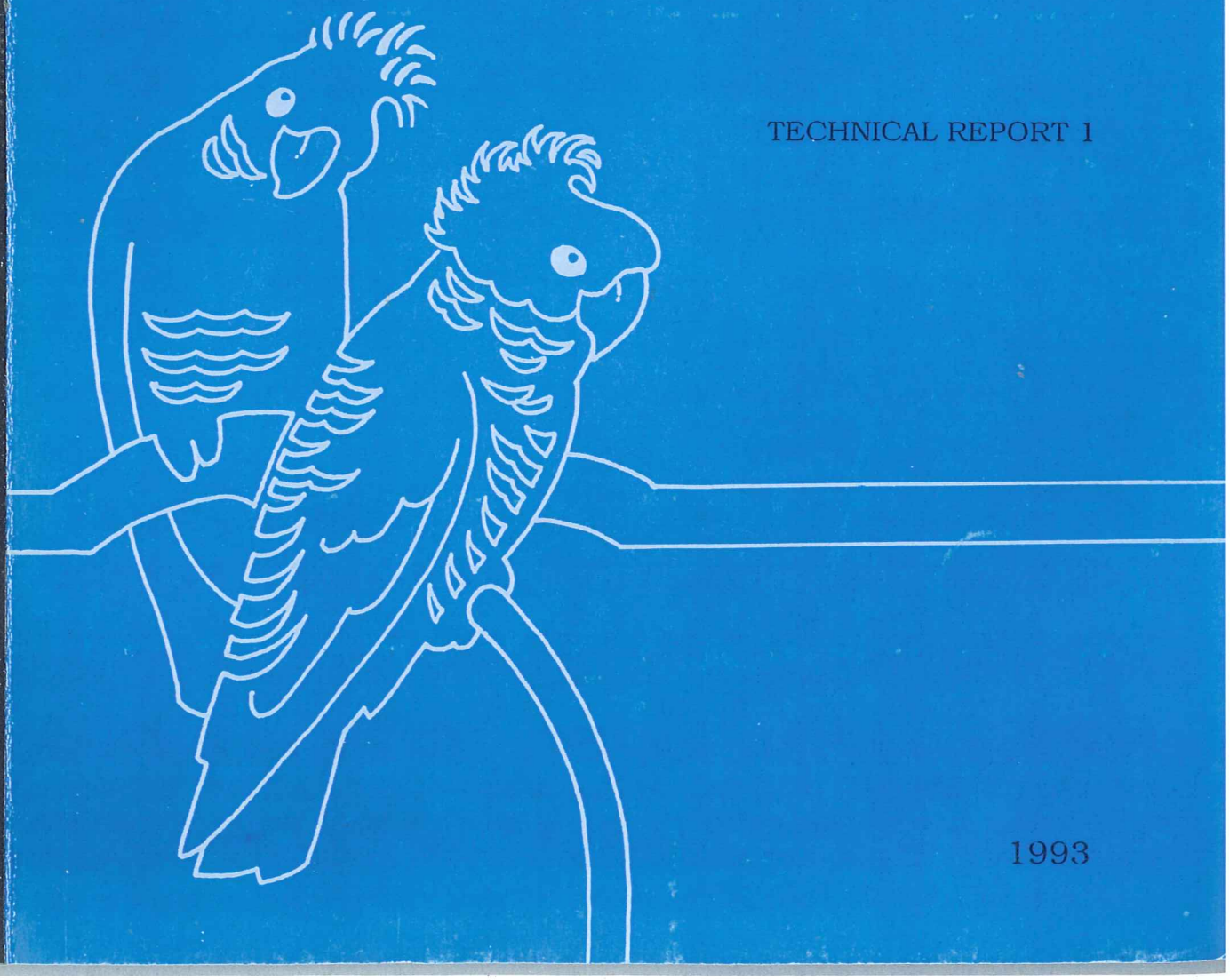
ACT PARKS and CONSERVATION SERVICE

THE VERTEBRATE FAUNA OF THE GUDGENBY REGION, AUSTRALIAN CAPITAL TERRITORY : A REVIEW

M. LINTERMANS



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ABSTRACT

The Gudgenby region covers approximately 62,000 hectares of predominantly mountainous terrain at the southern end of the Australian Capital Territory.

The vertebrate fauna of the Gudgenby region was poorly documented with the majority of information residing in notebooks or unpublished and generally inaccessable documents. This report synthesises the current knowledge of the vertebrate fauna of the region with notes presented on the distribution, abundance and habitat associations of each species.

A total of 239 species of vertebrate have been reliably recorded from Gudgenby comprising 41 mammal, 29 reptile, 10 frog, 156 bird and 3 fish species. One mammal (*Petrogale penicillata*) and one frog species (*Litoria raniformis*) are thought to be locally extinct with no records of *P. penicillata* since the late 1950's and no records of *L. raniformis* since the 1970's.
A further 25 vertebrate species (14 mammal, 10 reptile and 1 frog) are known to occur in surrounding areas and are thought likely to occur in Gudgenby.

Faunal groups and areas requiring further research or monitoring are identified.

INTRODUCTION

The vertebrate fauna of much of the ACT is not well documented and the Gudgenby region is no exception. The recent efforts by the Canberra Ornithologists Group in documenting the birds of the ACT is a notable exception but the remaining vertebrate groups of the ACT are only beginning to be recorded comprehensively.

There have been a number of publications which list the Gudgenby fauna (Margules & Deverson 1976; National Capital Development Commission 1984a,1984b; Tidemann *et al.* 1980) but closer examination often reveals these lists to contain substantial numbers of species which are "expected to occur". For example of the 94 vertebrate species (excluding birds) listed for Gudgenby by the National Capital Development Commission (1984a), 40 percent of fish species, 89 percent of amphibians, 68 percent of reptiles and 45 percent of mammal species were listed as "expected to occur but not confirmed". Such lists may arguably be sufficient as an interim measure but their continued use as the only source documents for the Gudgenby fauna is questionable.

This document aims to review all that is known of the Gudgenby fauna by drawing together both published and unpublished information from a variety of sources. The source of all information used is acknowledged; all unreferenced information is that of the author.

THE STUDY AREA

Location

The Gudgenby region, covering 62,000 hectares, lies at the southern end of the ACT and forms part of a chain of native forest and mountainous terrain which extends down to and across the Victorian border (Fig. 1). The eastern, southern and part of the western boundaries of the region form the boundary of the ACT with New South Wales. The remainder of the western boundary is formed by a high ridgeline which separates the Gudgenby region from the Cotter Catchment portion of Namadgi National Park (Fig. 2). To the west of the Cotter Catchment lies the Bimberi Nature Reserve and to the south-west is Kosciusko National Park.

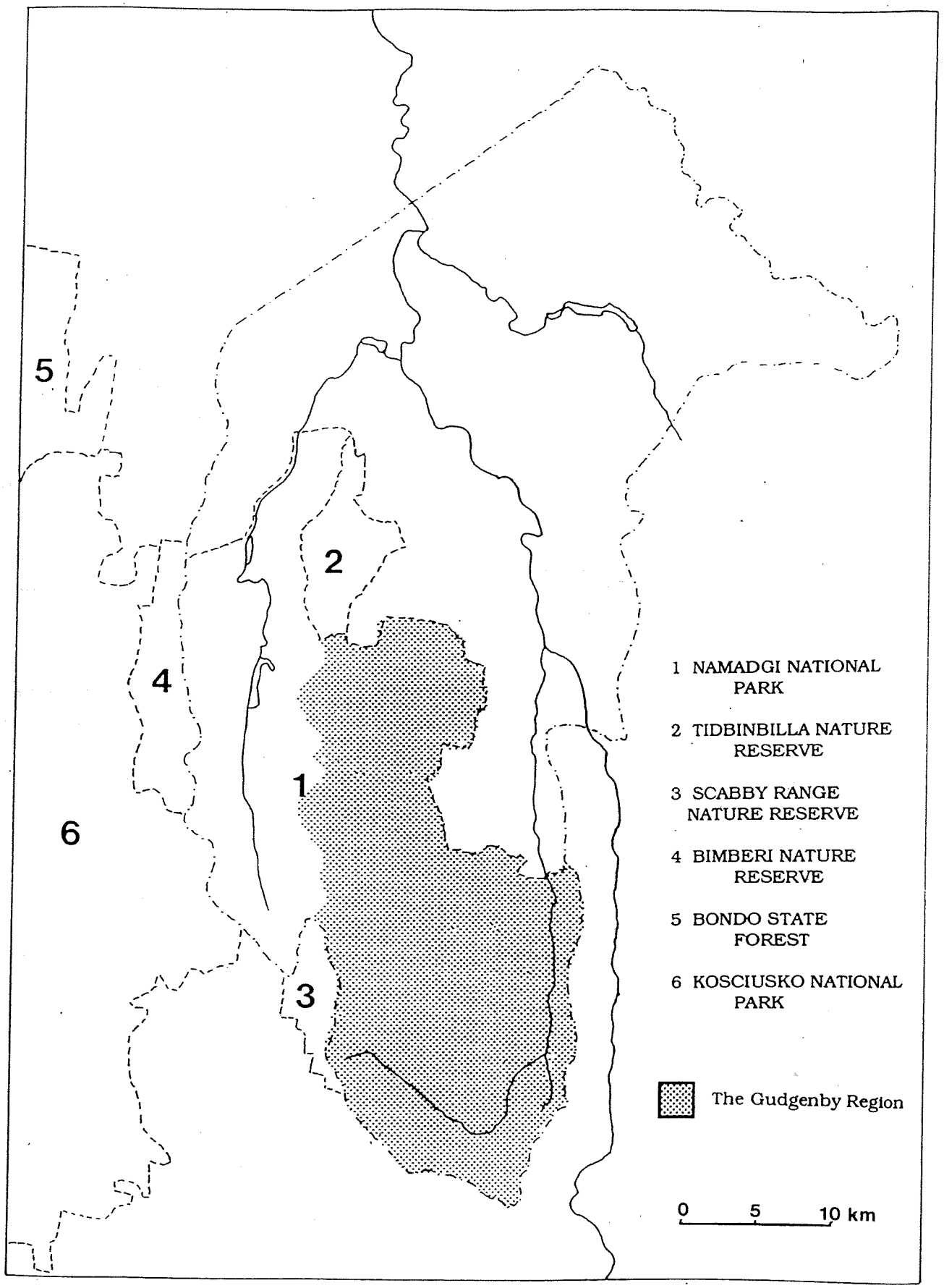

Figure 1. Land use of areas bordering the Gudgenby region.

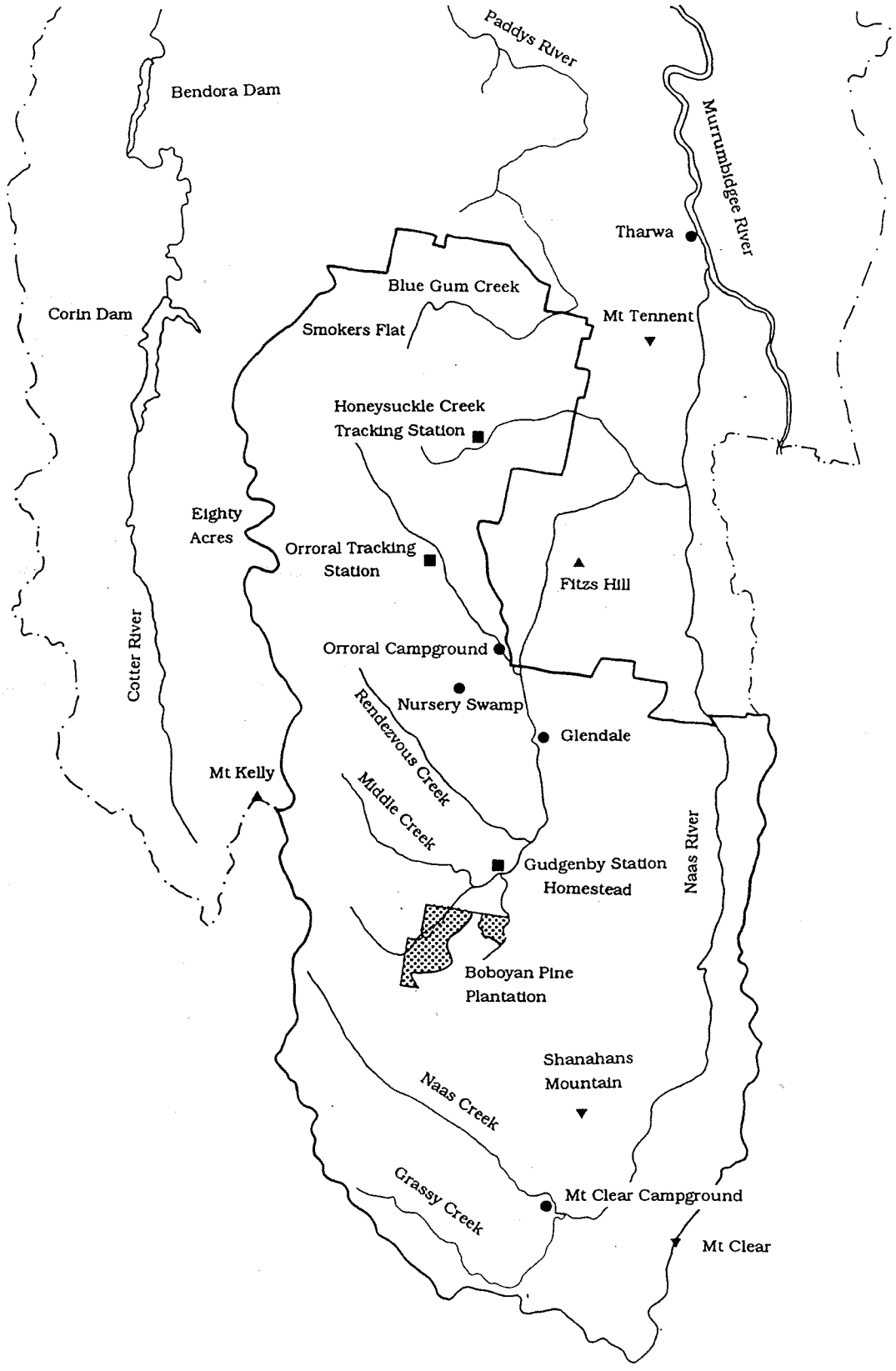

Figure 2. Map of the Gudgenby region showing place names used in the report.

Geology and topography

The major rock type in the Gudgenby area is Shannons Flat Adamellite, forming part of the Murrumbidgee batholith. A narrow strip of ordovician sediments runs north–south, commencing near Orroral Crossing and extending south across the ACT/NSW border. This belt of sedimentary rock effectively bisects the Gudgenby region south of Orroral Crossing.

Gudgenby is a mountainous area with the main mountain ranges running in a northwest–southeast direction. The maximum relief in the area is 1089 m with altitude rising from north to south. Minimum altitude is 650 m at Naas Station with the higher peaks in the west and south–west. The maximum altitude is 1739 m on Mt Gudgenby.

Soils

There are four main soil types in the Gudgenby area (National Capital Development Commission 1984a).

i) Red–Yellow Podzolics – widespread on the lower slopes and valleys generally overlaying clay subsoils.

ii) Skeletal Red–Yellow Podzolics – common on the higher and steeper slopes.

iii) Wet Humic Gley Soils – found along drainage lines and in swamps and bogs.

iv) Alpine Humus Soils – occur near the crest of ranges at higher altitudes. They have a high organic matter content because of the slow decomposition rate as a result of low temperatures.

Climate

Meteorological data is available for only a few localities in the Gudgenby area. Long–term averages are available for Gudgenby Station and short–term averages for Honeysuckle Creek Tracking Station and Orroral Valley Tracking Station (Table 1). Winter snow is common on the higher peaks and can lie for short periods in the valleys. Fogs and frosts are common in the valleys from May to September.

Table 1. Annual climatic averages for Orroral Valley and Honeysuckle Creek Tracking Stations, Gudgenby Station, and Canberra AMO (Bureau of meteorology 1989).

	ORRORAL VALLEY (1968–85)	GUDGENBY STATION (1967–85)	HONEYSUCKLE CREEK (1967–81)	CANBERRA AMO (1939–88)
Elevation (m) A.S.L.	925	975	1116	571
Annual rainfall (mm)	871	782	1001	627
Rain days per year	123	148	135	108
Av. daily max. temp °C	17.3	17.0	15.6	19.6
Av. daily min. temp °C	4.2	3.0	4.8	6.3
Days with terrestrial minimum less than 0°C	102	119	83	63
Days with frost	141	140	135	102
Days with snow	6	10	14	2

Vegetation

Shorthouse (1979) classified the vegetation of the ACT into 17 structural formations covering 19 floristic alliances. The system of classification used (Specht, Roe and Broughton 1974) was neither purely structural nor floristic but was intermediate between the two, based on the structural characteristics of life-form, height and cover of the highest stratum and on important floristic characters . The inclusion of floristic data as groups of associations or alliances reduces the problem of excessively detailed floristic information while giving more detail than a simple structural classification (National Capital Development Commission 1984b).

There are seven of these broad vegetation communities which are found in the Gudgenby region (Shorthouse 1979). They are:

	Formation	**Dominant species**
i)	Savannah Woodland	– *Eucalyptus bridgesiana, E. dives E. viminalis*
ii)	Wet Sclerophyll Forest (a)	– *E. viminalis, E. robertsonii, E. dalrympleana, E. dives, E. pauciflora, E. viminalis*
iv)	Savannah Woodland (montane form)	– *E. pauciflora, E. stellulata, E. rubida*
v)	Tablelands Grassland	– *Poa* spp.
vi)	Swamp & Bog associations	
vii)	Communities associated with rock outcrops and dry exposed ridge tops	

The last two vegetation communities mentioned represent an amalgamation of small but important ecological types. They include alpine herbfields, montane/subalpine bogs, fens and various forms of heath. These communities can range in size from less than one hectare to several hectares.

As well as the above-mentioned native vegetation communities there are several introduced or highly modified plant communities. These include:

(a) Boboyan Pine Plantation – This is a small but significant area of exotic softwoods (*Pines radiata*) covering approximately 380 hectares. The plantation was established in 1967 but is not considered to be viable commercially because of poor growth rates, damage by fire and distance to mills. The plantation is to be phased out.

(b) Modified Grassland - Extensive areas of degraded native grassland occur in the Gudgenby region, particularly around the Boboyan Pines - Rendezvous Creek area of Gudgenby Station. Extensive grazing by cattle and sheep as well as the application of fertilizers and some grass species introductions has altered the species mix and composition of these grasslands. They still represent an important visual component of the area, and their ecological importance, though now reduced, is not known.

History of land use

The Gudgenby region was first investigated in the 1820's when Alan Cunningham `the Government Botanist' crossed the Murrumbidgee River in 1824. He discovered the Gudgenby River and named Mt Currie (now Mt Tennent). By the early 1830's a number of graziers had established `runs' in the Gudgenby area with stations at Naas, Boboyan and Orroral (Corp 1989). It was not until 1837 that pasturage licences were granted for land west of the Murrumbidgee, legalising the grazing activities in Gudgenby.

Most of the grazing runs in the Gudgenby area were concentrated in the broader valleys where considerable tree clearing was carried out. One of the largest and longest running grazing properties was Gudgenby Station which in 1865 comprised 11736 hectares and carried 960 head of cattle. In 1885 Gudgenby Station was reportedly carrying 1000 sheep, 1000 cattle and 100 horses (Corp 1989). Gudgenby Station was to remain in existence from the 1840's to 1975 when the freehold land was purchased by the Department of the Capital Territory. Gudgenby Station continued to run on a leasehold basis until 1989 when grazing ceased.

With the discovery of gold at Kiandra in 1859 the Gudgenby area received increased traffic as prospectors forged trails to the new goldfields, the routes of which are still evident.

In 1963 the National Parks Association (NPA) of the ACT first proposed that an area in the Gudgenby region be set aside as a national park. Over the next 16 years the NPA and the Department of the Interior developed a number of proposals for a Gudgenby National Park with the maximum area suggested covering approximately 72,065 ha (Margules & Deverson 1976).

In 1979 the Gudgenby Nature Reserve was finally declared, covering 51,000 ha but still including a number of parcels of freehold land along the valley floors. By 1984 the size of the nature reserve had increased to 62,000 ha and most freehold land within the reserve had been resumed. In 1984 Namadgi National Park was declared, incorporating all of the former Gudgenby Nature Reserve as well as another 32,000 ha of the adjacent Cotter River catchment.

RESULTS

The following lists of fauna include all known species which positively have been recorded from the study area. Lists of animals which have been recorded from other areas of the ACT and are thought likely to occur in Gudgenby are also presented.
Brief notes are given on the distribution of each species in the Gudgenby region and in the ACT generally. Where enough information is available, the abundance status in Gudgenby of each species is assessed.

The abundance status for the majority of species, particularly the arboreal and small mammals and the frogs must be regarded as preliminary estimates only. These estimates are based to a large extent on the abundance status of the species elsewhere in the ACT as little information is available for the Gudgenby region itself.

Mammals

A total of 41 mammal species have been recorded from the Gudgenby region (Table 2). There are a further 14 mammal species which have been recorded from surrounding areas and which could occur in Gudgenby (Table 3).

Monotremata

Short-beaked Echidna, *Tachyglossus aculeatus*

Echidnas generally hibernate in the ACT from May to September and so are unlikely to be found between these months. Otherwise they are commonly reported and may be found in a variety of habitats and at a variety of altitudes. They have been recorded from the Honeysuckle valley (J. Hone pers. comm.), Orroral Valley, Boboyan Valley, Glendale, Hospital Hill and Gudgenby Station. Common.

Platypus, *Ornithorhynchus anatinus*

The platypus is common in the adjacent Cotter Catchment and Tidbinbilla Nature Reserve as well as the Murrumbidgee River. Individuals have been reported from the Gudgenby River (T. Rutzou pers. comm.), Rendezvous Creek (R. Saillard pers. comm.), Middle Creek (D. Rush pers. comm.) and the Naas River. Their abundance in the Gudgenby region is unknown due to the lack of surveys but they are generally common in ACT streams.

Table 2. List of mammals known to occur in Gudgenby.

MONOTREMATA	
Short-beaked Echidna	*Tachyglossus aculeatus*
Platypus	*Ornithorhynchus anatinus*
MARSUPIALIA	
Common Dunnart	*Sminthopsis murina*
Brown Antechinus	*Antechinus stuarti*
Dusky Antechinus	*Antechinus swainsonii*
Common Ringtail Possum	*Pseudocheirus peregrinus*
Sugar Glider	*Petaurus breviceps*
Greater Glider	*Petauroides volans*
Common Brushtail Possum	*Trichosurus vulpecula*
Eastern Pygmy Possum	*Cercatetus nanus*
Feathertail Glider	*Acrobates pygmaeus*
Common Wombat	*Vombatus ursinus*
Koala	*Phascolarctos cinereus*
Eastern Grey Kangaroo	*Macropus giganteus*
Red-necked Wallaby	*Macropus rufogriseus*
Wallaroo	*Macropus robustus*
Brush-tailed Rock Wallaby*	*Petrogale penicillata*
Swamp Wallaby	*Wallabia bicolor*
CHIROPTERA	
Lesser Long-eared Bat	*Nyctophilus geoffroyi*
Gould's Long-eared Bat	*Nyctophilus gouldi*
White-striped Bat	*Tadarida australis*
Gould's Wattled Bat	*Chalinolobus gouldii*
Chocolate Wattled Bat	*Chalinolobus morio*
King River Little Bat	*Eptesicus regulus*
Little Brown Bat	*Eptesicus vulturnus*
Darted Little Bat	*Eptesicus darlingtoni*
Great Pipistrelle	*Falsistrellus tasmaniensis*

RODENTIA

Black Rat	*Rattus rattus*
Southern Bush Rat	*Rattus fuscipes*
Water Rat	*Hydromys chrysogaster*
House Mouse	*Mus domesticus*

LAGOMORPHA

European Rabbit	*Oryctolagus cuniculus*
Brown Hare	*Lepus capensis*

CARNIVORA

European Fox	*Vulpes vulpes*
Dingo/Dog	*Canis familiaris*
Cat	*Felis catus*

ARTIODACTYLA

Feral Pig	*Sus scrofa*
Feral Goat	*Capra hircus*
Sheep	*Ovis aries*
Cattle	*Bos taurus*

PERISSODACTYLA

Horse	*Equus caballus*

* Now extinct

Marsupialia

Common Dunnart, *Sminthopsis murina*

This species is generally found in woodland, open forest and heathland in south-east Australia (Fox 1983). However the species is difficult to locate as it is not readily caught in Elliott traps and has been known to escape from pitfall traps which are too shallow. It has been collected from the Ainslie-Majura Range in urban Canberra (Kukolic, 1990), Kowen Forest (Linnett 1988), the Gungahlin area (K. Kukolic pers. comm.) and has also been collected from Googong Foreshores, some 28 km to the north-east of Gudgenby (Winderlich 1985). Shorthouse (1979) and the National Capital Development Commission (1984b) record this species from "Woodland in Gudgenby Nature Reserve" but give no source for this information. The National Capital Development Commission (1984a) lists the species as "expected to occur but not confirmed" for the Gudgenby region. Suitable habitat is abundant in Gudgenby but confirmation of the species presence in this area is required.

Brown Antechinus, *Antechinus stuartii*

The Brown Antechinus is one of the commonest small mammals in the forested areas of the ACT. It is found at a range of elevations and in most habitats where there is some tree or shrub cover. In Gudgenby it has been recorded from Honeysuckle Creek (Namadgi National Park unpubl. data), Brayshaws Hut area, Boboyan Valley (Tidemann *et al.* 1979), Shanahans Mountain and Smokers Trail. Common.

Swainson's Antechinus, *Antechinus swainsonii*

Uncommon throughout most of the lower elevations of the region, this species prefers the cooler moister habitats provided by dense forest such as those around Smoker's Trail. It is often found along creeks or drainage lines at high elevations. Recorded from Brayshaws Hut area and Boboyan Valley (Tidemann *et al.* 1979), Honeysuckle Creek (Namadgi National Park unpubl. data), and smokers Trail. Uncommon.

Common Ringtail Possum, *Pseudocheirus peregrinus*

The Ringtail possum is widely distributed throughout the ACT and can be easily observed in the Gudgenby region around the Mount Clear – Boboyan Valley section of the reserve. It seems to favour the forest rather than woodland communities and is uncommon throughout Gudgenby.

Sugar Glider, *Petaurus breviceps*

The Sugar Glider is widely distributed throughout the Gudgenby region and has been recorded in a variety of timbered habitats. Recorded from Glendale (R. Watchorn pers. comm.), Brayshaws Hut area, (Tidemann *et al*), Nursery Swamp and Shanahans Mountain. Limited survey effort precludes the accurate assessment of abundance

Greater Glider, *Petauroides volans*

The Greater Glider has been reported from the Alpine Ash – Mountain Gum forest along Smoker's Trail. This habitat is similar to that which it occupies in the adjacent Tidbinbilla Nature Reserve and Cotter River Catchment. It seems to prefer the taller forests. Mayo (1986) recorded this species in surprisingly high proportions in fox scats around the Boboyan Pines area. While it is unusual for this species to come to the ground, it was postulated that a shortage of food due to wildfires had forced individuals to forage on low–growing epicormic and lignotuber growth. Uncommon.

Common Brushtail Possum, *Trichosurus vulpecula*

The Brushtail possum is the most abundant of the arboreal mammals in the Gudgenby region from the limited survey effort to date. Recorded from Brayshaws Hut area (Tidemann *et al.*) and the Boboyan Valley It is not known whether this species is found at the higher elevations or whether it is replaced by the Mountain Possum *Trichosurus caninus*. Brushtail possum scats have been observed at a number of localities but it is not known whether these were from bobucks or common brushtail possums.

Eastern Pygmy Possum, *Cercatetus nanus*

This species is not commonly encountered in the ACT. Terrestrial trap records appear to be more common following fire (Dickman and Happold 1988). Individuals have been recorded from the Boboyan Valley (Tidemann *et al.* 1979), Glendale Crossing and Naas Creek (J.Graham pers. comm.) as well as the lower Cotter catchment (R.Watchorn, pers. comm.) and the High Range near Corin Dam, but their occurrence is unpredictable. Uncommon.

Feathertail Glider, *Acrobates pygmaeus*

This species is not often recorded in the ACT but this is partly due to its small size which makes it difficult to detect while spotlighting. It has been recorded from Honeysuckle Ck. (Gilmour *et al.* 1987), Glendale (R.Watchorn pers. comm.) and Booroomba Rocks (J.Graham pers. comm.) as well as the Tidbinbilla Nature Reserve and Cotter Catchment (Eberhard & Schulz 1973). It should be widely distributed throughout forest and woodland communities. Uncommon.

Common Wombat, *Vombatus ursinus*

Wombats are widespread and abundant throughout the Gudgenby area and are found at all elevations and all habitats where the ground is not permanently waterlogged. Whilst the animals themselves are not often seen during daylight, their unmistakable burrows and scats are easily observed. Common.

Koala, *Phascolarctos cinereus*

Koalas were released in the Orroral Valley and at Bushfold in 1978 and individuals have been occasionally sighted since then (Lintermans & Crisp 1986, Phillips 1989). Sightings of koalas in the Gudgenby area are probably of animals descended from those released in 1978 or of escapees from the colony at Tidbinbilla Nature Reserve, although local koalas still occur around Bredbo and Wee Jasper. In November 1987 a roadkill koala was seen on the Boboyan Road about one kilometre south of the ACT/NSW border (I. Taylor pers. comm.) and this along with a sighting near Booroomba Rocks in December 1984 are the most recent records from the Gudgenby region. Koalas must be considered extremely rare in Gudgenby and the ACT generally.

Eastern Grey Kangaroo, *Macropus giganteus*

The Eastern Grey Kangaroo is widespread and abundant throughout the whole of Gudgenby, with the highest concentrations being found on the grassy valley floors and in lowland woodlands. Very large numbers occur on Gudgenby Station and in the Orroral Valley. Common.

Red Necked Wallaby, *Macropus rufogriseus*

These wallabies prefer forests with a shrubby understorey adjacent to open grazing areas. They are commonly observed along the Boboyan Road from Glendale Crossing to Mt Clear campground and are widespread throughout suitable habitat within the region. Common.

Wallaroo, *Macropus robustus*

The Wallaroo is generally confined to the drier, steep ridges and rocky hills of the Gudgenby area. It has been recorded from the ranges flanking the Naas River, the Boboyan Pines and Apollo Road. During the 1979 - 1983 drought and the 1991/92 summer, individuals could often be seen feeding in the lucerne paddock at the northern base of Fitzs Hill. Uncommon.

Brush-tailed Rock Wallaby, *Petrogale penicillata*

The ACT is possibly marginal habitat for Brush-tailed Rock Wallabies although they were once relatively common in suitable habitats (Ormay In prep.). No sightings of this species in the ACT have been recorded since the late 1950's. Sub-fossil remains have been collected from a number of sites in the Gudgenby area including Bushfold, the Orroral ridge and Mt McKeahnie and a substantial population was reported to live at the northern end of the Naas Valley (Ormay 1987). The species is extinct in the wild in the ACT although a captive population is maintained at the Tidbinbilla Nature Reserve.

Swamp Wallaby, *Wallabia bicolor*

The Swamp Wallaby lives in thick undergrowth in forest and woodland habitats and in the Gudgenby area is often associated with cool or damp gullies. This animal is often seen around Shanahans Mountain and the Cotter Hut Road and Smoker's Trail area. Common.

Chiroptera

Lesser Long-eared Bat, *Nyctophilus geoffroyi*

This species occurs over most of Australia in both urban, rural and forested areas. It has been recorded from the Mt Tennent (Gilmour *et al.* 1987) and Mt Clear regions (Tidemann *et al.* 1979) in Gudgenby as well as Tidbinbilla Nature Reserve and the Cotter Catchment and Mt Kelly. Abundant.

Gould's Long-eared Bat, *Nyctophilus gouldii*

This bat has been recorded from Mt Clear (Tidemann *et al.* 1979), Tidbinbilla and the Cotter Catchment (Eberhard and Schulz 1973) and is generally widespread and abundant throughout the ACT. It favours sclerophyll forest and savannah woodland.

White-striped Mastiff-Bat, *Tadarida australis*

This widespread and common bat is easily identified by its audible call. It occupies a range of habitats and can often be heard in urban areas hawking around street lights. Recorded from Shanahans Mountain where it was attracted to the spotlight beam.

Gould's Wattled Bat, *Chalinolobus gouldii*

Recorded from Blue Gum Creek (Gilmour *et al.* 1987), the Cotter Catchment (Eberhard and Schulz 1973), Mt Clear (Tidemann *et al.* 1979), Mt Kelly and Tidbinbilla. This bat is commonly found in a variety of habitats including open forest, dense forest, tall shrubland and open areas. Common.

Chocolate Wattled Bat, *Chalinolobus morio*

This species is abundant and widespread in the ACT with specimens collected from Mt Clear (Tidemann *et al.* 1979), the Cotter Catchment (Eberhard and Schulz 1973), Blue Gum Creek (Gilmour *et al.* 1987), Tidbinbilla and Mt Kelly. It is found in a variety of forest and woodland habitats.

King River Eptesicus, *Eptesicus regulus*

This species is widely distributed in the ACT and favours dense sclerophyll forest. It has been collected from Mt Clear (Tidemann *et al.* 1979), Mt Tennent, Blue Gum Creek, and Gibraltar Falls (Gilmour *et al.* 1987) as well as the Cotter Catchment (Eberhard and Schulz 1973) and Tidbinbilla. This small bat is one of the most abundant species in the ACT.

Little Forest Eptesicus, *Eptesicus vulturnus*

The Little Forest Eptesicus favours open forest and woodland and is the least common of the three *Eptesicus* which occur in the Gudgenby region. It has been collected from Blue Gum Creek (Gilmour *et al.* 1987), the Cotter Catchment (Eberhard and Schulz 1973) and Tidbinbilla.

Large Forest Eptesicus, *Eptesicus darlingtoni*

This bat is abundant in the ACT and favours dense wet and dry sclerophyll forest. It has been collected from Mt Clear (Tidemann *et al.* 1979), Blue Gum Creek (Gilmour *et al.* 1987), the Cotter Catchment (Eberhard and Schulz 1973) and Tidbinbilla.

Great Pipistrelle, *Falsistrellus tasmaniensis*

The Great Pipistrelle has been collected from the Gibraltar Falls area (Gilmour *et al.* 1985), Cotter Catchment (Eberhard and Schulz 1973) and Tidbinbilla. It prefers gullies with tall, wet sclerophyll vegetation and must be considered uncommon in the Gudgenby region. It was commonly believed that this species migrated coastwards for the winter but other studies suggest that it remains in the area (Phillips *et al.* 1985).

Rodentia

Southern Bush Rat, *Rattus fuscipes*

Remarkably few Bush Rats have been recorded recently from Gudgenby and this may be attributed to the drought followed by severe wildfires which burnt over 30,000 hectares of the Gudgenby region in 1983. Bush Rats prefer dense ground cover of shrubs and ferns and are often found along streams and in gullies.

They have been recorded from the Brayshaws Hut area, Boboyan valley (Tidemann *et al.* 1979), Honeysuckle Creek (Namadgi National Park unpubl. data), and Smokers Trail. Uncommon throughout most of the area but common in the Smoker's Trail area.

Water Rat, *Hydromys chrysogaster*

The Water Rat is invariably associated with permanent bodies of water in the ACT and is common in the Cotter, Tidbinbilla, Molonglo and Murrumbidgee Rivers. It has been recorded from the Gudgenby River at Rocky Crossing (L. Kusumawardhani pers. comm.), the Naas River and should be present in the Orroral River and associated creeks. Uncommon.

House Mouse, *Mus domesticus*

The House Mouse occupies a variety of habitats in the ACT but in the Gudgenby area is generally found associated with human habitation or altered habitats. This species is common around Orroral and Honeysuckle Creek Tracking Stations, Orroral and Mt Clear campgrounds and several of the huts in the more remote localities. Gilmour *et al.* (1987) recorded this species as common in *Poa labillardieri* tussock grassland along Honeysuckle Creek.

Lagomorpha

European Rabbit, *Oryctolagus cuniculus*

Rabbits are widespread and abundant and are found in virtually all grassy areas of Gudgenby and the ACT. They can also be found in timbered country immediately adjacent to grassed areas. Numbers have been reduced in the past decade through harbour destruction, poisoning and release of myxomatosis.

Hare, *Lepus capensis*

Hares are quite common in the rural areas of the ACT and surrounding NSW but are rarely recorded from Gudgenby. They have been recorded from Honeysuckle Creek (Gilmour *et al.* 1987) and possibly would occur in the Orroral Valley and around Gudgenby Station. Rare.

Carnivora

European Fox, *Vulpes vulpes*

Foxes are widely distributed throughout the ACT and the Gudgenby region and their scats can be detected easily, particularly on tracks and roads. Common.

Dingo, *Canis familiaris*

There are probably no genetically pure dingoes left in the ACT and surrounding areas but a substantial number of dingo-wild dog crosses can be found. These animals or their sign can be found on the borders of timbered and open country where they prey on rabbits, wombats and a variety of macropods. Common.

Cat, *Felis catus*

Feral cats are found in a variety of habitats throughout the Gudgenby region but are rarely encountered. Uncommon.

Artiodactyla

Pig, *Sus scrofa*

Feral pigs occur throughout the Gudgenby area and are found in all habitats. Numbers tend to be greatest on the valley floors and surrounding timbered slopes. A major control program was initiated in 1985 using the anti-coagulant poison "Warfarin" (Braysher 1987). This control technique has proved highly effective and is ongoing. Common.

Goat, *Capra hircus*

Feral Goats are localized in the Gudgenby area and are confined mainly to the Booth, Billy and Clear Ranges in the east. Uncommon.

Sheep, *Ovis aries*

Vagrant sheep occurred previously in the Naas and Orroral valleys. These were escapees from grazing leases which have now been resumed. Occasional animals are still expected to stray from adjoining properties in NSW. Uncommon.

Cattle, *Bos taurus*

Feral cattle occurred in the far south of the Gudgenby region around Grassy Creek and also around the top end of the Orroral Valley until the late 1980's. Efforts to muster and remove these cattle over recent years appear to have been successful but some individuals may still remain. Uncommon.

Perissodactyla

Horse, *Equus caballus*

A small number of horses were resident in the areas of Creamy Flats, Rock Flat, Smokers Flats, and Long Flat and horses have also been seen on the ridgeline north of Orroral Valley. These animals were causing damage to sensitive vegetation communities and have been removed, although indications of their previous presence (eg. dung piles, trails) are expected to persist for some time.

The mammals listed in Table 3 have not been confirmed in the Gudgenby region but do occur in surrounding regions. Following is an account of the distribution of each species and where possibly it could occur within the Gudgenby region.

Marsupialia

Squirrel Glider, *Petaurus norfolcensis*

The Squirrel Glider is very similar in appearance to the closely related Sugar Glider, *Petaurus breviceps* which is widespread in the ACT. It is difficult to distinguish between the two species in the field so Squirrel Gliders may have been seen but recorded as Sugar Gliders.

Squirrel Gliders are reported to occur just east of the Gudgenby Nature Reserve around the Michelago area (C. Tidemann, pers. comm.) and they may occur in the Clear Range in Gudgenby. Mayo (1986), using hair analysis, reported the presence of Squirrel Gliders in fox scats from the Boboyan Pines. This record needs further confirmation as it is very difficult to distinguish between congeneric species using this technique.

Yellow-bellied Glider, *Petaurus australis*

These gliders are known to occur in the Cotter Catchment where they prefer the cooler eastern and south-eastern aspects which are dominated by *Eucalyptus fastigata* (M. Lintermans, unpubl. data). Helman *et al.* (1988) recorded the characteristic feeding scars of this species on *Eucalyptus dalrympleana* near Long Creek in the Upper Cotter Catchment. While suitable habitat is limited in the Gudgenby region, this glider may occur in the Smoker's Trail area where there are patches of high alpine ash (*E. delegatensis*) forest.

Table 3. Mammals from surrounding areas which could occur in Gudgenby.

MARSUPIALIA	
Squirrel Glider	*Petaurus norfolcensis*
Yellow-bellied Glider	*Petaurus australis*
Bobuck or Mountain Possum	*Trichosurus caninus*
Tiger Quoll	*Dasyurus maculatus*
RODENTIA	
Smoky Mouse	*Pseudomys fumeus*
Broad-toothed Rat	*Mastacomys fuscus*
CHIROPTERA	
Little Mastiff Bat	*Mormopterus planiceps*
Large Footed Bat	*Myotis adversus*
Bent-winged Bat	*Miniopterus schreibersii*
Grey-headed Flying Fox	*Pterupus policephalus*
Red Flying Fox	*Pteropus scapulatus*
Eastern Broad-nosed Bat	*Scotorepens orion*
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*
ARTIODACTYLA	
Deer	*Cervus* or *Dama* spp.

Bobuck or Mountain Possum, *Trichosurus caninus*

Bobucks have been reported from the lower Cotter Catchment (S. Davey pers. comm.) and the Tidbinbilla Range and trapped in the High Range (NE of Corin Dam). They generally favour the wet sclerophyll forests at the higher elevations with a well developed understorey and are particularly fond of the Silver Wattle *Acacia dealbata*. It is possible that this animal occurs around the Honeysuckle Creek – Smokers Trail area.

Tiger Quoll, *Dasyurus maculatus*

There have been several unconfirmed reports of quolls with sightings occurring at Gudgenby Station, Cotter Hut Road and Bendora Dam. The species is known to raid fowl-houses at nearby Queanbeyan and Bungendore and has also been recorded in Tidbinbilla Nature Reserve (Dept of the Capital Territory 1975). In 1990 two isolated individuals were collected in the Canberra urban area, one in a backyard in Macgregor and one as a roadkill in Woden. These are the first confirmed records of this species from the ACT for more than a decade. It is considered highly likely that these animals occur in the Gudgenby region. Rare.

Rodentia

Smoky Mouse, *Pseudomys fumeus*

Originally this species was thought to be endemic to Victoria. However in 1985 a single specimen was captured in the Cotter Catchment in the vicinity of New Chums Road (Osborne and Preece 1986). Mayo (1987) recorded this species on Mt Kelly, only one kilometre west of Gudgenby. Subsequent attempts to locate the species have failed (Lintermans 1988) but habitat similar to both capture sites occurs in Gudgenby. The species appears to be rare in the ACT but probably occurs in the Gudgenby region.

Broad-toothed Rat, *Mastacomys fuscus*

This species has been recorded from Murrays Gap (altitude 1530 m) in the Upper Cotter Catchment by Eberhard and Schulz (1973) and Lintermans (1986). Helman *et al.* (1988) captured this species near Cotter Hut (altitude 1060 m) and scats of Broad toothed rats have recently been collected at Eighty Acres (altitude 1200 m) (W. Osborne and R. Saillard pers. comm.), and near Cotter Gap (altitude 1320 m) (D. Whitfield pers. comm.). Both Eighty Acres and Cotter Gap are immediately adjacent to the western boundary of Gudgenby

Broad-toothed rats prefer moist montane heathlands above 1400m and are also found in grasslands at higher altitudes (Happold 1989). However in Victoria the species is found at much lower altitudes in wet sclerophyll forests and swamps (Seebeck 1971). The recent records of this rodent at Cotter Gap and Eighty Acres enhance the possibility of its occurrence in Gudgenby.

Artiodactyla

Deer, *Cervus* or *Dama* spp.

Deer of unknown species have been reported from the Cotter Catchment from time to time with a recent report of Sambar *Cervus unicolor* near Bushrangers Creek (R. Dykstra pers. comm.). Their occurrence as vagrants in the Gudgenby area is possible.

Reptiles

The reptiles are one of the least studied vertebrate groups in the Gudgenby region and the ACT generally. Many members of this group are either small, fast moving or cryptic and to the untrained eye many species appear confusingly similar in the field.

A total of 29 reptile species from four families have been recorded from Gudgenby (Table 4). A further ten reptile species have been recorded from areas surrounding Gudgenby and could occur within the study area (Table 5).

The scientific nomenclature used in this report follows Cogger (1986).

Agamidae

Bearded dragon, *Pogona barbatus*

Commonly found in dry sclerophyll forest and woodlands in the lowland areas of the ACT. Widespread throughout the lower, warmer areas of Gudgenby. Recorded from near Orroral Campground, and Fitzs Hill. Status unknown.

Jacky Lizard, *Amphibolurus muricatus*

Habitat as for *Pogona barbatus*. Recorded from Boboyan Trig (W. Osborne pers. comm.), Orroral Valley, Gudgenby Station, Nursery Swamp and Fitzs Hill. Common.

Mountain Dragon, *Amphibolurus diemensis*

Very few records of this small dragon are known from Gudgenby but this almost certainly represents limited collecting effort rather then lack of suitable habitat. As its name suggests the Mountain dragon is restricted to the high montane areas of the ACT (generally above 1400 m). Recorded from the head of Blue Gum Creek at the northern edge of Gudgenby and from Boboyan Trig (W. Osborne pers. comm.). Uncommon.

Table 4. List of Reptiles known to occur in Gudgenby.

AGAMIDAE	
Bearded Dragon	*Pogona barbatus*
Jacky Lizard	*Amphibolurus muricatus*
Mountain Dragon	*Amphibolurus diemensis*
Gippsland Water Dragon	*Physignathus lesueurii howittii*
SCINCIDAE	
Striped Skink	*Ctenotus robustus*
Cunningham's Skink	*Egernia cunninghami*
Black Rock Skink	*Egernia saxatilis intermedia*
White's Skink (widespread ACT form)	*Egernia whitii*
Sup-alpine White's Skink	*Egernia sp.*
Three-toed Skink	*Hemiergis decresiensis*
Coventry's Skink	*Leiolopisma coventryi*
Grass Skink	*Leiolopisma entrecasteauxii* (A)
Brown Skink	*Leiolopisma entrecasteauxii* (B)
Red-throated Skink	*Leiolopisma platynotum*
Three-lined Skink	*Leiolopisma duperreyi*
Delicate Skink	*Lampropholis delicata*
Spotted Grass Skink	*Lampropholis guichenoti*
Spencer's Skink	*Pseudemoia spenceri*
Heatwole's Water Skink	*Eulamprus heatwolei*
Highland Water Skink	*Eulamprus tympanum*
Blotched Bluetongue	*Tiliqua nigrolutea*
Common Bluetongue	*Tiliqua scincoides*
ELAPIDAE	
Eastern Small-eyed Snake	*Cryptophis nigrescens*
Highlands Copperhead	*Austrelaps ramsayi*
White-lipped Snake	*Drysdalia coronoides*
Mainland Tiger Snake	*Notechis scutatus scutatus*
Red-bellied Black Snake	*Pseudechis porphyriacus*
Common Brown Snake	*Pseudonaja textilis textilis*
CHELIDAE	
Eastern Snake-necked Tortoise	*Chelodina longicollis*

Gippsland Water Dragon, *Physignathus lesueurii howittii*

As its name suggests this species is associated with water courses. Recorded from Blue Gum and Honeysuckle Creeks (Gilmour *et al.* 1987) and the Gudgenby, Naas and Orroral Rivers. Locally Common.

Scincidae

Striped Skink, *Ctenotus robustus*

This species is generally more abundant through the lower altitudes of the ACT. It is commonly found in savannah woodland and has been recorded in Gudgenby from Brandy Flat (R. Bennett pers. comm.), Mt. Tennent (Gilmour *et al.* 1987), the Billy Range and Orroral Valley,. Uncommon.

Cunningham's Skink, *Egernia cunninghami*

This species is usually associated with granite rock outcrops at lower altitudes. It is the commonest large skink below 1000 metres. Recorded from the Orroral Valley, Honeysuckle Creek, Glendale, Nursery Swamp, Naas Creek and Gudgenby River. Widespread and common.

Black Rock Skink, *Egernia saxatilis intermedia*

This species replaces *E. cunninghami* above approximately 1100 metres. Like Cunningham's Skink it is usually associated with rock outcrops. Recorded from Booroomba Rocks, Mt Clear, Mt McKeahnie (F. Ingwersen pers. comm.) and the Scabby Range. Locally common.

White's Skink, *Egernia whitii* (widespread ACT form)

This skink is often found associated with rocky outcrops but is not as dependent on them as the above two species. It is also found amongst fallen timber in woodland and dry heath. This species tends to be more common at mid to high altitudes. Recorded from Honeysuckle Creek (Gilmour *et al.* 1987) Orroral Valley, Nursery Swamp and near Mt Clear. Common.

Sub-alpine Whites Skink, *Egernia sp.*

This medium-sized skink is an undescribed species closely resembling *Egernia whitii* but lacking the prominent white striping on the back, upper lip and shoulder. In the ACT it has only been recorded above 1600 m in the Scabby and Bimberi Ranges where it occurs in and near granite rock outcrops and boulders (W. Osborne pers. comm.) Rare

Maccoy's Skink, *Hemiergis maccoyi*

This skink is found in a variety of habitats ranging from open forest to high altitude bog and heath. It is generally more common in the Cotter River Catchment than Gudgenby but it has been recorded from east of Smokers Flat (Gilmour *et al.* 1987). Uncommon.

Three-toed Skink, *Hemiergis decresiensis*

This species has a widespread distribution in the southern highlands with records coming from as high as 1800 m (Jenkins and Bartell 1980). It is commonly found under rotting timber and sometimes rocks in a variety of habitats. Recorded from Brayshaws Hut (G. Hirth pers. comm.), Mt Clear Campground, Shanahans Mountain, Gudgenby Station, Nursery Swamp, Orroral Valley, Honeysuckle Creek and the Boboyan Valley. Common.

Coventry's Skink, *Leiolopisma coventryi*

This small litter dwelling skink is restricted to the mid to high altitude timbered areas of Gudgenby. Recorded from Shanahans Mountain and Cotter Hut Road near Eighty Acres. Status unknown.

Grass Skink, *Leiolopisma entrecasteauxii* Form A

This form of *Leiolopisma entrecasteauxii* is restricted to grasslands or heath with a grassy ground cover. It is often observed sunning on grass tussocks. Recorded from the head of Blue Gum Creek (Gilmour *et al.* 1987) Orroral Valley and Boboyan Valley (P. Ormay pers. comm.). Uncommon.

Brown Skink, *Leiolopisma entrecasteauxii* Form B

This skink is very commonly recorded from the timbered regions and rock outcrops at mid to high altitudes. Recorded from Mt Clear summit (P.Ormay pers. comm.), Boboyan Valley, Smokers Trail, Mt Clear Campground, Honeysuckle Ridge and Nursery Swamp. Common.

Red-throated Skink, *Leiolopisma platynotum*

This skink is found in a variety of habitats including both timbered and open country and heathlands and rocky outcrops (Jenkins & Bartell 1980). Recorded from Booroomba Rocks and Mt Tennent (Gilmour *et al.* 1987), Honeysuckle Creek (Jenkins & Bartell 1980), Orroral Valley, Grassy Creek and Mt Clear Campground. Uncommon.

Three-lined Skink, *Leiolopisma duperreyi*

This species is commonest at mid to high altitudes where it is often found in woodland or grassland bordering woodland. Recorded from Honeysuckle Creek, Orroral Valley (Jenkins & Bartell 1980), near Smokers Flat (Gilmour *et al.* 1987), Mt Clear summit (P.Ormay pers. comm.), Mt Clear Campground, Grassy Creek, Westermans Homestead, Nursery Swamp and Mt Kelly. Common.

Delicate Skink, *Lampropholis delicata*

This small skink occupies a wide range of timbered and cleared habitats at low to mid altitudes. Recorded from Honeysuckle Creek, Mt Tennent (Gilmour *et al.* 1987), Orroral Valley (Jenkins & Bartell 1980), Boboyan Valley, Horse Gully Hut, and near Eighty Acres on the Cotter Hut Road. Common.

Spotted Grass Skink, *Lampropholis guichenoti*

This is another small skink which has a widespread distribution being commonly found in the woodlands and dry sclerophyll forests at low to mid altitudes. Recorded from Mt Tennent, (Gilmour *et al.* 1987), Westermans Homestead, Mt Clear Campground, Boboyan Valley, Horse Gully Hut, Nursery Swamp, Honeysuckle Creek, Honeysuckle Ridge, Smokers Trail and near Eighty Acres. Common.

Spencers Skink, *Pseudemoia spencerl*

This species has been poorly documented in the southern ACT but appears confined to the higher altitude habitats. Rawlinson (1974) records this species as restricted to regions where rainfall exceeds 750 mm per annum. Recorded from rock stacks at Mt Clear (P. Ormay pers. comm.) and Honeysuckle Ridge, and from Shanahans Mountain and Nursery Swamp where it was abundant on fallen timber. Locally common.

Heatwole's Water Skink, *Eulamprus heatwolei*

Heatwole's Water Skink (formerly known as the warm temperate form of *Sphenomorphus tympanum*) occurs at the lower warmer altitudes where it is often found with the Gippsland Water Dragon (Jenkins and Bartell 1980). It is generally found below 1200 m (Helman *et al.* 1988). Recorded from Orroral Valley, Nursery Swamp and Boboyan Valley. Common.

Highlands Water Skink, *Eulamprus tympanum*

Formerly known as the cool temperate form of *Sphenomorphus tympanum*, Jenkins and Bartell (1980) state that this species is "entirely restricted to the high country at altitudes above 1200 m". However this is not invariably true with specimens being observed at 1030 m in the Cotter catchment (Lintermans 1992). However it can be generally accepted that this species is found in the higher sub-alpine habitats. Recorded from Boboyan Valley and Mt Clear Campground. Common.

Blotched Blue tongue, *Tiliqua nigrolutea*

This is the largest of the skinks found in the Gudgenby area and is commonly observed above approximately 1000 m but has been observed as low as 740 m at Mt Tennent (Gilmour *et al.* 1987). This species is commonly seen on the Boboyan Road, south of Glendale. Recorded from Rock Flats (F. Ingwersen pers. comm.), Grassy Creek, Boboyan Valley, Mt Clear Campground and Orroral Valley. Common.

Common Blue tongue, *Tiliqua scincoides*

This lizard is very common in the lowland areas of the ACT but is rare in the Gudgenby region. A road-kill specimen was recorded at the junction of Naas and Apollo Roads and they have been recorded on Mt Tennent (Gilmour *et al.* 1987). Only one observation is recorded from the Gudgenby Nature Reserve in the Orroral Valley (altitude 1100 m). Rare.

Elapidae

Eastern Small-eyed Snake, *Cryptophis nigrescens*

A shed skin of this species was found in the Orroral Valley in early 1989 and some weeks later a specimen was found in the same location by the ACT Herpetological Association. This is only the fourth ACT locality for this species with other specimens collected from Birrigai, Gungahlin, and the Boboyan Road south of the Orroral Valley (Longmore 1986). Rare.

Highlands Copperhead, *Austrelaps ramsayi*

This snake is widely distributed through the montane southern regions of the ACT and is commonly encountered in swampy country or along drainage lines. Recorded from Mt McKeahine, Glendale, and near Eighty Acres (F.Ingwersen pers. comm.), Blue Gum Hill (Gilmour *et al.* 1987), Orroral River, Gudgenby River, (Jenkins & Bartell 1980), Mt Clear Campground, Brayshaws Hut and Boboyan Valley. Common.

White-lipped Snake, *Drysdalia coronoides*

This small snake is found in a variety of habitats in the high montane regions. Records are scarce for the Gudgenby area but this is most likely due to limited searching. Recorded from Honeysuckle Creek (Jenkins and Bartell 1980), near Smokers Flat (Gilmour *et al.* 1987) and Mt Clear Campground and Nursery Swamp. Uncommon.

Mainland Tiger Snake, *Notechis scutatus scutatus*

This snake appears to be commonest in the marshy habitats associated with creeks and rivers in the Gudgenby area. Recorded from Orroral and Gudgenby Rivers (Jenkins and Bartell 1980), Nursery Swamp (F. Ingwersen pers. comm.) south of Glendale (G. Hirth pers comm.), and from several sites in the Mt Clear region. Uncommon.

Red-bellied Black Snake, *Pseudechis porphyriacus*

This species is commonly encountered in the lowland regions of the ACT where it is abundant along rivers and watercourses. Due to the altitude of the Gudgenby region it is rarely encountered. Recorded from Glendale, Smokers Trail (J. Graham pers. comm.), Fitz's Hill, Grassy Creek and near Rocky Crossing on the Gudgenby River. Uncommon.

Common Brown Snake, *Pseudonaja textilis textilis*

The Brown Snake is abundant in the rural areas and lowlands of the ACT but is rarely recorded in the highland or montane areas. Recorded from Naas River Valley (F. Ingwersen pers. comm.), Mt Clear Campground (G. Hirth pers. comm.), Glendale, Rocky Crossing, Orroral Valley and Fitz's Hill. Uncommon.

Chelidae

Eastern Snake-necked Tortoise, *Chelodina longicollis*

This tortoise is common in farm dams at lower altitudes and is widespread along the Murrumbidgee River. This species has been recorded as a road kill at the northern base of Fitz's Hill but is rarely recorded from Gudgenby. The only known records of its occurrence in Gudgenby are from Nursery Swamp (Hope and Southern 1983) and Gudgenby Station (G. Hirth pers. comm.). The Nursery Swamp record represents one of the highest altitude records of the species (1092 metres). Tortoises are also depicted in aboriginal paintings in a rock shelter near Nursery Swamp.

The reptiles listed in Table 5 have not been recorded in the Gudgenby region but do occur in surrounding areas. An account is given of the distribution of each species and where they could possibly occur within Gudgenby.

Table 5. Reptiles from surrounding areas and which could occur in Gudgenby.

SCINCIDAE	
Four-fingered Skink	*Carlia tetradactyla*
Copper-tailed Skink	*Ctenotus taeniolatus*
Boulenger's Skink	*Morethia boulengeri*
Alpine Water Skink	*Sphenomorphus kosciuskoi*
Bog Skink	*Leiolopisma rawlinsoni*
ELAPIDAE	
Black-headed Snake	*Unechis spectabilis*
PYGOPODIDAE	
Common Scaly Foot	*Pygopus lepidopodus*
GEKKONIDAE	
Stone Gecko	*Diplodactylus vittatus*
VARANIDAE	
Rosenberg's Monitor	*Varanus rosenbergi*
Lace Monitor	*Varanus varius*

Scincidae

Four-fingered Skink, *Carlia tetradactyla*

This species is generally found in the warmer low altitude woodlands and forest. Recorded from Mt Tennent and Gibraltar Creek (Gilmour *et al.* 1987). Possibly occurs in the Naas River Valley.

Copper-tailed Skink, *Ctenotus taeniolatus*

The Copper-tailed Skink is usually associated with the lower altitude dry sclerophyll forests and rocky savannah woodlands. Recorded from Mt Tennent (Gilmour *et al.* 1987), the northern end of the Billy range and Fitz's Hill. Possibly occurs in the Naas River Valley.

Boulenger's Skink, *Morethia boulengeri*

This is the third of the group of small skinks characteristic of the lower altitude, warmer habitats. Like the above-mentioned species if it occurs in Gudgenby it will probably be found in the Naas River Valley.

Alpine Water Skink, *Sphenomorphus kosciuskoi*

This species is confined to high altitudes where it has been found in bog, wet heath and associated wet herbfield (Helman *et al.* 1988). It has been recorded from Mt Scabby, the western range of the upper Cotter Catchment (Helman *et al.* 1988) and Ginini Flats. This species may occur around Mt Kelly and Mt Gudgenby in the south-west corner of Gudgenby but suitable habitat is limited.

Bog Skink, *Leiolopisma rawlinsoni*

This species was only described in 1988 (Hutchinson and Donnellan 1988) and is closely related to the *Leiolopisma entrecasteauxii* group. It has been recorded from Piccadilly Circus, Mt Ginini and Ginini Flats in the ACT and is generally confined to swampy habitats. Further collecting effort may reveal its presence in the Gudgenby region.

Elapidae

Black-headed Snake, *Unechis spectabilis*

This small snake is another of the group of species which inhabit the warmer low altitude woodlands and forests. Recorded from Gibraltar Creek (Gilmour *et al.* 1987). Could possibly occur in the lower Naas River Valley.

Pygopodidae

Common Scaly Foot, *Pygopus lepidopodus*

This is an extremely rare lizard in the ACT with only one specimen known from the southern highlands. Recorded from Tidbinbilla Nature Reserve (Jenkins and Bartell 1980).

Gekkonidae

Stone Gecko, *Diplodactylus vittatus*

The majority of Gudgenby would be considered too high and cold for this species which generally inhabits dry sclerophyll forest and rocky savannah woodlands. The species has been recorded from Mt Tennent (Gilmour *et al.* 1987) the northern end of the Billy Range and the eastern bank of the Murrumbidgee adjacent to Michelago. It could occur in the lower Naas River Valley.

Varanidae

Rosenberg's Monitor, *Varanus rosenbergi*

A road kill specimen of this goanna was collected from the Boboyan Road near Rocky Crossing in early 1990 (C. Armstrong pers. comm.). This locality is only 1.5 km outside the Gudgenby Nature Reserve boundary and so this species almost certainly is found within the reserve. It had previously been assumed that all goannas in the ACT were Lace Monitors, *Varanus varius*. However, re-examination of a number of specimens has revealed that the majority of recent records are in fact *V. rosenbergi*. The species has been recorded from Googong Foreshores, Queanbeyan, Mt Ainslie, Kowen Forest and the Sutton area. Rare.

Lace Monitor, *Varanus varius*

The only record of a goanna from the Gudgenby area is from the Naas River valley above Caloola Farm. A goanna was seen to climb a tree beside the river (G. Tolk pers. comm.) and as *V. rosenbergi* is almost exclusively a terrestrial species it is almost certain this record is of *V. varius*. Jenkins and Bartell (1980) record *V. varius* as being widespread in the southern highlands but this was before the presence of *V. rosenbergi* was identified. Further confirmation of the presence of *V. varius* in Gudgenby is required.

Amphibians

A total of ten species of frogs have been recorded from Gudgenby (Table 6) but this species list only represents a very limited search effort. Further work is unlikely to increase substantially the number of species recorded from Gudgenby but will certainly improve the very scanty information on distribution and abundance.

The most abundant species encountered is the Common Eastern Froglet, *Crinia signifera*. This small but vocal frog has been recorded at nearly all sites where frogs are present. Other commonly encountered frogs are the Southern Toadlet *Pseudophryne dendyi*, the Eastern Banjo Frog *Limnodynastes dumerilli* and the Spotted Grass Frog *L. tasmaniensis*.

Table 6. List of Amphibians recorded from Gudgenby.

HYLIDAE	
Verreaux's Tree Frog	*Litoria verreauxii*
Lesueur's Stream Frog	*Litoria lesueuri*
Southern Swamp Frog	*Litoria raniformis*
MYOBATRACHIDAE	
Spotted Burrowing Frog	*Neobatrachus sudelli*
Spotted Grass Frog	*Limnodynastes tasmaniensis*
Eastern Banjo Frog	*Limnodynastes dumerilli*
Southern Toadlet	*Pseudophryne dendyi*
Common Eastern Froglet	*Crinia signifera*
Plains Froglet	*Crinia parinsignifera*
Orange-groined Toadlet	*Uperoleia laevigata*

The Spotted Burrowing Frog *Neobatrachus sudelli* has been recorded from a single location next to the Gudgenby River at Gudgenby Station. This is a true burrowing frog and is the most infrequently observed frog species in the Canberra region (Osborne 1986).

Litoria verreauxii has only been recorded at a few localities including Long Flat (P. Ormay pers. comm.), Bogong Creek, Orroral Campground and Mt. Clear campground, despite searching being carried out within the breeding or calling season (Brook 1980, W. Osborne pers. comm.). *Uperoleia laevigata* has only been recorded from a single locality (Old Boboyan Homestead ruins) indicating that it too is an uncommon species in Gudgenby.

Another rarely recorded species in Gudgenby is Lesueur's Stream Frog, *Litoria lesueuri*. This species has not been recorded for many years but this may simply represent limited search effort and the quiet call of this species. The species was observed at Rocky Crossing in the mid 1970's (M. Littlejohn unpubl. data) but it is not known whether this frog still persists in Gudgenby. It is present in the adjacent Cotter Catchment (Helman *et al.* 1988, M. Lintermans unpubl. data) and along the Murrumbidgee River.

A further frog species *Litoria peronii* is likely to occur in the northern Gudgenby area. This species has been recorded from Booroomba Station (D. Smillie pers. comm.) and the Tidbinbilla Nature Reserve (W. Osborne pers. comm.), both of which abut the Gudgenby region.

Birds

The birds of Gudgenby are the most diverse vertebrate group in the region with 156 species recorded to date. Their bright coloration, largely diurnal habitats and audible nature also make them the most easily observed and commonly encountered vertebrates.

The bird list presented in Table 7 has been compiled from observations by staff in the Gudgenby Nature Reserve (now Namadgi National Park) and is similar to that published in the Department of the Capital Territory's pamphlet 'Gudgenby Nature Reserve Bird List'. Additional species have been recorded from Gudgenby by the Canberra Ornithologists Group and minor name changes have occurred since the pamphlet was published and these have been incorporated into Table 7. Common names used are those recommended by the Royal Australasian Ornithologists Union (1977).

Table 7 also classifies the abundance, residence status and habitat preferences of each bird species.

The species listed and the classifications allotted to them will no doubt change with time and further observation. A much clearer picture of the Gudgenby avifauna will appear once the ACT Bird Atlas is completed. This project was carried out by the Canberra Ornithologists Group. Field recording finished in September 1989 and a report is proposed to be released in late 1992[1].

1 Since this report was written the ACT bird atlas has been published and is listed in the references under Taylor and Canberra Ornithologists Group 1992

Table 7. List of Birds recorded from Gudgenby.

Key:

Column 1	Abundance
VC	Very Common
C	Common
U	Uncommon
R	Rare
–	Unknown
Column 2	Residence Status
B	Has been known to breed in the area
R	Resident all year
M	Migratory
V	Vagrant or rare visitor
Column 3	Habitat
G	Grassland
S	Savannah woodland
D	Dry sclerophyll forest
W	Wet sclerophyll forest
M	Marshy, moist areas, reeds and shrubby creek banks
L	Lagoons or dams and their banks

Podicipedidae				
Australasian Grebe	*Tachybaptus novaehollandiae*	R	BR	L
Pelecanidae				
Australian Pelican	*Pelecanus conspicillatus*	R	V	L

Phalacrocoracidae

Great Cormorant	*Phalacrocorax carbo*	U	V	L
Little Black Cormorant	*Phalacrocorax sulcirostris*	U	V	L
Little Pied Cormorant	*Phalacrocorax melanoleucos*	U	V	L

Ardeidae

Pacific Heron	*Ardea pacifica*	U	V	GML
White-faced Heron	*Ardae novaehollandiae*	U	BR	ML
Rufous Night Heron	*Nycticorax caledonicus*	R	V	ML

Plataleidae

Sacred Ibis	*Threskiornis aethiopicus*	R	V	ML
Straw-necked Ibis	*Threskiornis spinicollis*	R	V	GM
Yellow-billed Spoonbill	*Platalea flavipes*	R	V	ML

Anatidae

Australian Shelduck	*Tadorna tadornoides*	R	V	L
Pacific Black Duck	*Anas superciliosa*	C	BR	L
Maned Duck	*Chenonetta jubata*	C	BR	GL

Accipitridae

Black-shouldered Kite	*Elanus notatus*	U	V	GS
Black Kite	*Milvus migrans*	R	V	D
Whistling Kite	*Haliaster sphenurus*	R	V	GS
Brown Goshawk	*Accipiter fasciatus*	C	BR	GDW
Collared Sparrowhawk	*Accipiter cirrhocephalus*	R	V	SDW
Grey Goshawk	*Accipter novaehollandiae*	R	V	D
Wedge-tailed Eagle	*Aquila audax*	C	R	SD
Little Eagle	*Hieraaetus morphnoides*	U	R	SD
Marsh Harrier	*Circus aeruginosus*	R	BR	M

Falconidae

Peregrine Falcon	*Falco peregrinus*	R	R	GSD
Australian Hobby	*Falco longipennis*	U	V	GSD
Brown Falcon	*Falco berigora*	C	R	GD
Australian Kestrel	*Falco cenchroides*	C	BR	GSD

Phasianidae

Stubble Quail	*Coturnix novaezelandiae*	U	BR	GS
Brown Quail	*Coturnix australis*	U	BR	GS

Turnicidae

Painted Button-quail	*Turnix varia*	R	?	GS

Rallidae

Dusky Moorhen	*Gallinulas tenebrosa*	R	V	L
Purple Swamphen	*Porphyrio prophyrio*	R	BR	ML
Eurasion Coot	*Fulica atra*	R	V	L

Charadriidae

Masked Lapwing	*Vanellus miles*	C	BR	GM
Banded Lapwing	*Vanellus tricolor*	R	V	GM
Black-fronted Plover	*Charadrius melanops*	U	BR	L

Scolopacidae

Latham's Snipe	*Gallinago hardwickii*	U	M	GM

Laridae

Silver Gull	*Larus novaehollandiae*	R	V	ML

Columbidae

Bar-shouldered Dove	*Geopelia humeralis*	R	V	DW
Common Bronzewing	*Phaps chalcoptera*	U	R	DW
Brush Bronzewing	*Phaps elegans*	R	R	W
Crested Pigeon	*Ocyphaps lophotes*	R	V	W
Wonga Pigeon	*Leucosarcia melanoleuca*	C	BR	W

Cacatuidae

Glossy Black Cockatoo	*Calyptorhynchus lathami*	R	V	DW
Yellow-tailed Black cockatoo	*Calyptorhynchus funereus*	C	M	SDW
Gang-gang Cockatoo	*Callocephalon fimbriatum*	C	BR	SDW
Galah	*Cacatua roseicapilla*	U	BR	GS
Sulphur-crested Cockatoo	*Cacatua galerita*	VC	BR	All

Loriidae

Little Lorikeet	*Glossopsitta pusilla*	R	V	DW

Polytelitidae

Australian King-parrot	*Alisterus scapularis*	U	M	DW

Platycercidae

Crimson Rosella	*Platycercus elegans*	VC	BR	All
Eastern Rosella	*Platycercus eximius*	VC	BR	GSD
Red-rumped Parrot	*Psephotus haematonotus*	U	BR	G

Cuculidae

Pallid Cuckoo	*Cuculus pallidus*	U	BM	GS
Brush Cuckoo	*Cuculus variolosus*	U	M	DW
Fan-tailed Cuckoo	*Cuculus pyrrhophonus*	C	M	DW
Horsfield's Bronze-cuckoo	*Chrysococcyx basalis*	U	M	DW
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*	U	M	DW

Strigidae				
Powerful Owl	*Ninox strenua*	R	BR	W
Southern Boobook	*Ninox novaeseelandiae*	C	BR	All
Barking Owl	*Ninox connivens*	R	BR	W
Tytonidae				
Barn Owl	*Tyto albo*	R	V	GSD
Podargidae				
Tawny Frogmouth	*Podargus strigoides*	C	BR	SDW
Aegothelidae				
Australian Owlet-nightjar	*Aegotheles cristatus*	R	BR	SDW
Apodidae				
White-throated Needletail	*Hirundapus caudactus*	U	M	All
Alcedinidae				
Laughing Kookaburra	*Dacelo novaeguineau*	VC	BR	All
Sacred Kingfisher	*Halcyon sancta*	C	BM	SD
Meropidae				
Rainbow Bee-eater	*Merops ornatus*	U	M	GS
Coraciidae				
Dollarbird	*Eurystomus orientalis*	R	VM	DW
Menuridae				
Superb Lyrebird	*Menura novaehollandiae*	U	BR	W

Alaudidae				
Skylark	*Alauda arvensis*	R	R?	G
Hirundinidae				
Welcome Swallow	*Hirundo neoxena*	C	BM	GS
Tree Martin	*Cecropis nigricans*	U	BM	S
Fairy Martin	*Cecrops ariel*	U	BM	GS
Motacillidae				
Richard's Pipit	*Anthus novaeseelandiae*	C	BR	G
Campephagidae				
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	C	BM	SD
White-winged Triller	*Lalage sueril*	U	M	W
Muscicapidae				
White's Thrush	*Zoothera dauma*	U	BR	DW
Rose Robin	*Petroica rosea*	U	M	DS
Flame Robin	*Petroica phoenicea*	C	BM	All
Scarlet Robin	*Petroica multicolor*	C	BR	All
Hooded Robin	*Melanodryas cucullata*	U	R	SD
Eastern Yellow Robin	*Eopsaltria australis*	C	BR	SDW
Jacky Winter	*Microeca leucophaea*	R	R	SD
Crested Shrike-tit	*Falcunculus frontatus*	U	BR	DW
Olive Whistler	*Pachycephala olivacea*	U	R	DW
Golden Whistler	*Pachycephala pectoralis*	C	BR	SDW
Rufous Whistler	*Pachycephala rufiventris*	C	BR	DW
Grey Shrike-thrush	*Colluricincla harmonica*	VC	BR	SDW
Leaden Flycatcher	*Myiagra rubecula*	C	BM	SD
Satin Flycatcher	*Myiagra cyanoleuca*	C	BM	DW
Restless Flycatcher	*Myiagra inquieta*	C	BR	SD
Rufous Fantail	*Rhipidura rufifrons*	U	M	WM
Grey Fantail	*Rhipidura fuliginosa*	VC	BM	SD
Willie Wagtail	*Rhipidura leucophrys*	C	BR	GS

Orthonychidae

Eastern Whipbird	*Psophodes olivaceus*	U	BR	W
Spotted Quail-thrush	*Cinclosoma punctatum*	C	BR	DW

Sylviidae

Clamorous Reed-warbler	*Acrocephalus stentoreus*	R	M	M
Little Grassbird	*Medalurus gramineus*	R	R?	G
Golden-headed Cisticola	*Cisticola exilis*	U	R	ML
Rufous Songlark	*Cinclorhamphus mathewsi*	U	BM	SDG

Maluridae

Superb Fairy-wren	*Malurus cyaneus*	VC	BR	GS

Acanthizidae

Pilotbird	*Pycnoptilus floccusus*	U	R	W
White-browed Scrubwren	*Sericornis frontalis*	VC	BR	SDW
Speckled Warbler	*Sericornis sagittatus*	U	R	SD
Weebill	*Smicrornis brevirostris*	U	BR	DW
Western Gerygone	*Gerygone fusca*	R	M	SD
White-throated Gerygone	*Gerygone olivacea*	U	M	SD
Brown Thornbill	*Acanthiza pusilla*	VC	BR	SDW
Buff-rumped Thornbill	*Acanthiza regubides*	C	BR	SDW
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	C	BR	GS
Yellow Thornbill	*Acanthiza nana*	U	V	SD
Striated Thornbill	*Acanthiza lineata*	C	BR	SD
Southern Whiteface	*Aphelocephala leucopsis*	U	BR	G

Neosittidae

Varied Sittella	*Daphoenositta chrysoptera*	U	BR	SDW

Climacteridae

Red-browed Treecreeper	*Climacteris erythrops*	U	BR	DW
White-throated Treecreeper	*Climacteris leucophaea*	VC	BR	SDW
Brown Treecreeper	*Climacteris picumnus*	U	BR	S

Meliphagidae

Red Wattlebird	*Anthochaera carunculata*	VC	BR	SDW
Noisy Friarbird	*Philemon corniculatus*	C	BM	SD
Regent Honeyeater	*Xanthomyza phrygia*	R	V	DW
Noisy Miner	*Manorina melanocephala*	U	BR	D
Yellow-faced Honeyeater	*Lichenostomus chrysops*	VC	BM	SDW
White-eared Honeyeater	*Lichenostomus leucotis*	VC	BM	SDW
Yellow-tufted Honeyeater	*Lichenostomus melanops*	R	M	SDL
Fuscous Honeyeater	*Lichenostomus fuscus*	C	M	DW
White-plumed Honeyeater	*Lichenostomus penicillatus*	U	V	S
Brown-headed Honeyeater	*Melithreptus brevirostris*	U	BR	SDW
White-naped Honeyeater	*Melithreptus lunatus*	VC	BM	SDW
Crescent Honeyeater	*Phylidonyris pyrrhoptera*	C	M	W
New Holland Honeyeater	*Phylidonyris novaehollandiae*	U	BM	DW
Eastern Spinebill	*Acanthorhynchus tenuirostris*	C	BR	All

Dicaeidae

Mistletoebird	*Dicaeum hirundinaceum*	U	V	SD

Pardalotidae

Spotted Pardalote	*Pardalotus punctatus*	VC	BR	All
Striated Pardalote	*Pardalotus striatus*	VC	BR	All

Zosteropidae

Silvereye	*Zosterops lateralis*	C	BM	SDW

Ploceidae

Red-browed Firetail	*Emblema temporalis*	C	BR	All
Diamond Firetail	*Emblema guttata*	U	R	G
Double-barred Finch	*Poephila bichenovii*	R	BR	GSD

Oriolidae

Olive-backed Oriole	*Oriolus sagittatus*	R	M	SDW

Paradisaeidae

Satin Bowerbird	*Ptilonorhynchus violaceus*	U	BR	SDW

Corcoracidae

White-winged Chough	*Corcorax melanorhamphos*	C	BR	All

Grallinidae

Australian Magpie-lark	*Grallina cyanoleuca*	C	BR	GSM

Artamidae

White-browed Woodswallow	*Artamus superullosus*	R	M	GS
Dusky Woodswallow	*Artamus cyanopterus*	C	BM	S

Cracticidae

Grey Butcherbird	*Cracticus torquatus*	C	BR	S
Australian Magpie	*Gymnorhina tibicen*	VC	BR	GS
Pied Currawong	*Strepera graculina*	VC	BM	All
Grey Currawong	*Strepera versicolor*	C	BM	All

Corvidae

Australian Raven	*Corvus coronoides*	VC	BR	All
Little Raven	*Corvus mellori*	C	M	GS

Introduced Birds

Blackbird	*Turdus merula*	U	V	W
Common Starling	*Sturnus vulgaris*	C	BR	GS
House Sparrow	*Passer domesticus*	U	BR	G
Feral Pigeon	*Columbia livia*	R	BR	G
European Goldfinch	*Carduelis carduelis*	C	BR	GS

FISH

The fish fauna is probably the best documented vertebrate group of the Gudgenby region (Table 8). In a comprehensive survey of the entire Naas and Gudgenby River catchments by Jones *et al.* (1990) only three species of fish were recorded. These were the introduced Rainbow Trout *Oncorhyncus mykiss* (formerly *Salmo gairdneri*) and Brown Trout, *Salmo trutta* and the native Mountain Galaxias *Galaxias olidus*.

Table 8. List of fish recorded from Gudgenby.

GALAXIDAE	
Mountain Galaxias	*Galaxias olidus*
SALMONIDAE	
Brown Trout	*Salmo trutta*
Rainbow Trout	*Oncorhyncus mykiss*

INTRODUCED SPECIES

Introduced species comprise eight per cent of the vertebrate fauna of Gudgenby with 19 species recorded (Table 9).

Table 9. List of introduced species recorded from Gudgenby.

Mammals	
Black Rat	*Rattus rattus*
House Mouse	*Mus domesticus*
European Rabbit	*Oryctolagus cuniculus*
Brown Hare	*Lepus capensis*
European Fox	*Vulpes vulpes*
Dog	*Canis familiaris*
Cat	*Felis catus*
Pig	*Sus scrofa*
Goat	*Capra hircus*
Sheep	*Ovis aries*
Cattle	*Bos taurus*
Horse	*Equus caballus*
Fish	
Rainbow Trout	*Oncorhyncus mykiss*
Brown Trout	*Salmo trutta*
Birds	
Common Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
Feral Pigeon	*Columbia livia*
European Goldfinch	*Carduelis carduelis*
Blackbird	*Turdus merula*

DISCUSSION

Mammals

The mammal fauna recorded from Gudgenby is similar to that recorded for the Cotter Catchment (Eberhard and Schulz, 1973), the Upper Cotter Catchment (Helman *et al.* 1988) and the Mt. Tennent area (Gilmour *et al.* 1987). Small mammals appeared to be at low population levels in Gudgenby with low trap success rates recorded (M. Lintermans unpubl. data). Much of the study area was burnt in a severe wildfire in early 1983 after the prolonged drought of 1979–83 and the small mammal fauna may not have recovered to their pre-fire or pre-drought levels.

The limited amount of available information seems to indicate that arboreal mammals are uncommon except in the Boboyan Valley where Common Brushtail Possums were common and one Common Ringtail Possum was recorded. However no survey work has been conducted in the Smokers Trail area which is expected to have a diverse possum fauna. This result is in contrast to the pre-drought/fire result of Tidemann *et al.* (1979) who recorded substantial numbers of Common Ringtails in the Boboyan Valley, Brayshaws Hut and Shanahans Mountain areas. Helman *et al.* (1988) observed that Common Ringtail Possums appeared to have suffered a reduction in numbers in the Cotter Catchment when compared to Eberhard and Schulz's (1973) earlier study. This reduction in numbers is also apparent in the Gudgenby region. The Common Ringtail Possum is one of the smallest arboreal folivores and generally prefers young foliage of its selected food plants (Pahl 1984). The extended drought over south-east Australia which ended in 1983 may have reduced the quantity and quality of young foliage available to Common Ringtail Possums and may be implicated in their general decline in the ACT. The severe wildfire which burnt much of the Gudgenby region in early 1983 also would have posed considerable problems for arboreal mammals. In general the arboreal fauna is poorly documented in Gudgenby and further survey work is recommended.

Two arboreal mammals listed as uncommon in the ACT (NCDC 1984b) have been recorded from Gudgenby. The Eastern Pygmy Possum was trapped previously in the Boboyan Valley (Tidemann *et al.* 1979) and two chance records have been made since. Records of this species in the ACT are unpredictable and scarce with only 15 localities recorded to date (Dickman and Happold 1988, M. Lintermans unpubl. data). The second uncommon arboreal mammal recorded is the koala. The status and distribution of the koala in the ACT was recently reviewed by Lintermans and Crisp (1986) with occurrences in Gudgenby recorded from the Orroral Valley, Booroomba Rocks and the Boboyan Road on the southern ACT/NSW border. Koalas were released at Bushfold Flats and the Orroral Valley in 1978 and subsequent sightings are probably of these individuals or their descendants.

Five macropod species were recorded from Gudgenby with the Eastern Grey Kangaroo the most abundant and widely distributed. The Wallaroo was the least common of the macropods, being restricted to the drier, rocky hills such as the Booth, Billy, and Clear Ranges. It has been reported from the range north of Honeysuckle Creek (L. Tong pers. comm.) but was not recorded in the Mt. Tennent - Blue Gum Creek survey of Gilmour *et al.* (1987). The Brush-tailed Rock Wallaby is presumed to be locally extinct in the ACT.

The bat fauna of Gudgenby has not been specifically surveyed but probably represents the richest mammalian faunal group in the area. Nine species have been recorded from Gudgenby with a further seven species likely to occur. This total of 16 species represents all the species recorded from the ACT or immediately adjacent areas.

Reptiles

In addition to the 29 species from four families recorded from Gudgenby, a further ten species have been recorded from surrounding areas and possibly occur in Gudgenby. The reptile fauna is similar to that recorded from the adjacent Upper Cotter Catchment by Helman *et al.* (1988) but is more diverse, reflecting the larger range of habitat types in Gudgenby.

Two of the high-altitude skinks *Sphenomorphus kosciuskoi*, and *Leiolopisma rawlinsonii* recorded by Helman *et al.* (1988) were not recorded from Gudgenby. However, suitable habitat is available though very restricted.

The Gudgenby reptile fauna is also similar in species composition to that of the Mt. Tennent area (Gilmour *et al.* 1987). However the suite of species associated with low altitude, dry rocky woodlands such as *Carlia tetradactyla*, *Ctenotus taeniolatus*, *Morethia boulengeri* and *Diplodactylus vittatus* have not been recorded from Gudgenby. It is possible that some or all of these species may be found in the lower Naas River valley within Gudgenby.

The reptile fauna of the lower Naas River Valley is poorly documented and warrants further investigation. This valley represents the largest area of savannah woodland in Gudgenby and is noticeably drier and warmer with a local climate more similar to the Murrumbidgee and Canberra lowlands to the north (F. Ingwersen pers. comm.).

The only reptile species listed as uncommon (NCDC 1984b) which was recorded from Gudgenby was the White-lipped snake *Drysdalia coronoides*. A number of specimens were located under fallen timber in grassland bordering Nursery Swamp and it was also recorded under logs beside Naas Creek near Mt. Clear Campground.

Another uncommon reptile species was the Eastern Small-eyed Snake, *Cryptophis nigrescens* which was located in the Orroral Valley. This represents only the fourth ACT locality for this small snake species.

A total of six species of snake were recorded which represents most of the snake species recorded for the ACT. The only exceptions were the uncommon Black-headed snake *Unechis spectablis* and Blind snake *Typhlina nigrescens*, both of which are restricted to lower, warmer woodland/forest habitats. The rare Bandy-bandy *Vermicella annulata* also was not recorded from Gudgenby.

Amphibians

Osborne (1986) recorded 16 species of frogs in the ACT of which 10 have been recorded from Gudgenby.

The recording at Gudgenby Station of the Spotted Burrowing Frog *Neobatrachus sudelli* is of interest as this species is the most uncommonly observed of the frogs of the Canberra region (Osborne 1986). This species has been recorded previously from Belconnen, Gungahlin and Mt Majura (W. Osborne pers. comm.) with Gudgenby Station being the highest (980 m) and the southern-most recorded location for the ACT. It was previously thought not to occur above 610 m in the ACT (Department of the Capital Territory 1975). Whether the record from Gudgenby was of an isolated individual or not remains to be seen. Further work is recommended to determine the abundance and distribution of this uncommon frog in Gudgenby.

The Corroboree Frog *Pseudophryne corroboree* was not recorded from Gudgenby although it is listed as `expected to occur' by the National Capital Development Commission (1984b). Helman *et al.* (1988) concluded that the stronghold of the Brindabella Range sub-population of this species is the Upper Cotter Catchment and Ginini Flats area, and considered it unlikely that they occurred east of the Cotter River. Osborne (1989, 1990) after extensive research into the distribution and conservation status of *P. corroboree* in the ACT and NSW concluded that its distribution within the ACT was restricted to the Brindabella Range.

The Orange-groined Toadlet *Uperoleia laevigata* was recorded only from a single site (Old Boboyan Homestead) with much of Gudgenby possibly too high and cold for this species. It was also recorded as uncommon in the Mt. Tennent-Blue Gum Creek study by Gilmour *et al.* (1987). *Crinia parinsignifera* was also uncommon being recorded from only two localities (Old Boboyan Homestead and Orroral Valley). Further survey will probably expand the known range of these species in Gudgenby.

The Common Eastern Froglet *Crinia signifera*, the Spotted Grass Frog, *Limnodynastes tasmaniensis* and the Eastern Banjo Frog *L. dumerilli* were all common and widely distributed throughout the study area.

The Southern Toadlet *Pseudophryne dendyi* was not encountered as often as the above three species but was still relatively common.

The Southern Swamp Frog *Litoria raniformis* was recorded previously from Gudgenby in the 1970's with the only record coming from the Mt. Clear campground area (J. Wombey pers. comm.). This species was also recorded just south of the Gudgenby region in NSW in the 1970's (P. Ormay pers. comm.) but has not been recorded recently from Gudgenby. No recent records exist for the species in the Canberra region (Osborne 1992). This is one of a number of frog species which have undergone a dramatic decline in the ACT and it is probable that *Litoria raniformis* no longer occurs in Gudgenby or the ACT (Osborne 1992).

Another uncommon frog, Verreaux's Tree frog *Litoria verreauxii* has only been recorded at two sites in Gudgenby (Mt. Clear campground and Long Flat) and this is another species which appears to have declined in the ACT in recent years (Osborne 1992). In 1975 M. Littlejohn (unpubl. data) recorded this species at almost every site he sampled between Tharwa and Rocky Crossing but now the species is absent or rare at these locations. Gilmour *et al.* (1987) recorded the species as scarce in the Mt. Tennent area.

Another frog species which has been recorded previously from Gudgenby but not recently is *Litoria lesueuri*. It was recorded from Rocky Crossing in 1975 (M. Littlejohn unpubl. data). No recent records are known from Gudgenby. The species still can be found in the adjacent Cotter River catchment (Helman *et al.* 1988, M. Lintermans unpubl. data).

The cause of the decline of a number of frog species in the ACT is unclear and initially it was thought to be related to the prolonged and severe drought of 1979–83 (Osborne 1986). However, it seems unlikely that the drought would have led to the complete elimination of several frog species in the region especially when it is considered that the species have disappeared from permanent water bodies (Lake Burley Griffin, Jerrabomberra Wetlands) which were relatively unaffected by the drought (Osborne 1990b). The rapid decline of these frog species highlights the importance of baseline distribution and abundance surveys, not just for amphibians, but for all faunal groups.

Birds

The 156 bird species recorded from Gudgenby represents a substantial proportion (approx. 70 percent), of the total of approximately 200 species recorded in the Canberra region (Canberra Ornithologists Group 1985a). This is not surprising since Gudgenby is a large area (approx. 30 percent of the ACT), with a diverse range of habitats available. Previous bird studies in the ACT usually have been concerned with either a relatively small geographic area (Canberra Ornithologists Group 1985b, 1983; Lindenmayer 1992; Ross and Rutzou 1987) or a limited range of habitats (Davidson 1974; Bell 1980). Kukolic (1990) recorded 116 bird species in a survey of Ainslie/Majura and Black Mountain, and 139 species were recorded from the Murrumbidgee River Corridor (Canberra Ornithologists Group 1986).

One group of birds which is poorly represented in Gudgenby is those associated with aquatic habitats. There are only two duck species regularly found in the area with no crakes or rails recorded at all. This low diversity of waterbirds simply reflects the lack of available suitable aquatic habitat. There are no substantial dams or impoundments in Gudgenby with almost all aquatic habitat in the form of rivers or creeks. There are significant areas of fen along some of the valley floors and these are known to contain small wading birds such as Latham's Snipe, but no other small wading species have been recorded.

Three bird species recorded from Gudgenby are regarded as nationally threatened (Garnett 1992). These are the Glossy Black Cockatoo *Calyptorhynchus lathami*, Powerful Owl *Ninox strenua* and Regent Honeyeater *Xanthomyza phrygia*. Using a five-tier classification system (Extinct, Endangered, Vulnerable, Rare, Insufficiently known), one species is classified "endangered" (Regent Honeyeater), and the other two species are considered "rare". All three species are considered rare in Gudgenby with the Glossy Black Cockatoo and Regent Honeyeater recorded as vagrants.

The Glossy Black Cockatoo is usually found in eucalypt woodlands and forests containing casuarina trees (*Allocasuarina spp.*) (Forshaw and Cooper 1989). As casuarina trees are rare in Gudgenby it is unlikely that this cockatoo will ever be more than an occasional visitor to the area.

Powerful Owls have been recorded from three localities in Gudgenby; Mt Booth (J. Hone pers. comm.), Shanahan's Mountain and the Orroral area with one breeding record known (Canberra Ornithologists Group In Press; I. Taylor pers. comm.). The major dietary items of Powerful Owls are arboreal mammals such as the Common Ringtail Possum *Pseudocheirus peregrinus*, Sugar Glider *Petaurus breviceps* and Greater Glider *Petauroides volans*, with the Common Ringtail Possum the favoured prey species (Seebeck 1976; James 1980). In the ACT, the most commonly observed species of prey is the Greater Glider (Fletcher and Reckord 1989) and this is also the case in south-eastern and northern NSW (Kavanagh 1988; Hyem 1979). In the Gudgenby region it seems likely that Powerful Owls will be found usually in areas which support good populations of either of these two possum species.

The Regent Honeyeater has declined greatly since the early 1900's and is estimated to have an Australian population of less than 1000 individuals (Garnett 1992). Its favoured habitat is temperate eucalypt woodland and open forest and the reasons for the species decline are almost certainly habitat loss, degradation and fragmentation (Garnett 1992). Whilst habitat is secure within Gudgenby it is management actions over the rest of Australia which will determine the species' future.

Two other bird species recorded from Gudgenby are listed as "Taxa of special concern" (Garnett 1992). These are the Peregrine Falcon *Falco peregrinus* and Latham's Snipe *Gallinago hardwickii*.

Peregrine falcons are considered threatened over most of their world range with the major threats being pesticides and falconry (Garnett 1992). The Australian sub-species appears to stable, relatively unaffected by pesticides and secure; falconry is illegal in Australia. The species is listed as rare in Gudgenby with records centred around Booroomba Rocks and the Orroral Ridge. The peregrine population in other areas of the ACT is limited by a shortage of suitable nesting cliffs (Olsen 1992), however in the Gudgenby region the population seems to be limited by available food resources (J. Olsen pers. comm.).

Latham's Snipe is a small migratory wader from Japan which is found in south-eastern Australia over the spring-summer months. Each year it is first recorded in the ACT in mid-August with numbers peaking in September or October and then declining until the species leaves the ACT, usually by late March (M. Lintermans unpubl. data). In the early 1980's the world population of this species was estimated to be less than 20 000 (Cox 1978) with approximately 10 000 birds killed annually by hunters in Australia (Naarding 1983). The most recent estimate of the world snipe population was approximately 36 000 (Naarding 1986).

Hunting of snipe is now illegal in all States in eastern Australia.
Latham's Snipe are widely but patchily distributed in the ACT and are listed as uncommon in Gudgenby. Studies on this species at the Jerrabomberra Wetlands have shown that snipe often are not found in apparently suitable habitat and have definite microhabitat preferences relating to period of inundation. Most snipe records from Gudgenby are of single individuals although this probably reflects the cryptic colouration, secretive habits and lack of comprehensive surveys for the species. The major threats to snipe populations in Australia were from hunting and draining of wetlands. The cessation of hunting in most States and the increased public awareness of the value of wetlands means that snipe are now relatively secure.

Fish

Only three species of fish were recorded from the Gudgenby area during this study. These comprised two introduced species, Rainbow Trout *Oncoryhncus mykiss* (formerly *Salmo gairdneri*) and Brown Trout *Salmo trutta*, and the native Mountain Galaxias *Galaxias olidus*. Shorthouse (1979) and the National Capital Development Commission (1984b) listed two additional species as being present "but not absolutely confirmed" in the Naas and Gudgenby Rivers. These were the Western Carp Gudgeon *Hypseleotris klunzingeri* and the River Blackfish *Gadopsis marmoratus*. Greenham (1981) listed both these species as well as Macquarie Perch *Macquaria australasica* as possibly occurring in the Naas and Gudgenby Rivers and also listed, Silver Perch *Bidyanus bidyanus* as possibly present historically, based on anglers recollections. Margules and Deversen (1976) listed Trout Cod *Maccullochella macquariensis* as likely to occur and Murray Cod *Maccullochella peeli* as possibly still occurring in the lower reaches.

No evidence can be found to suggest that the Western Carp Gudgeon, Macquarie Perch, Trout Cod, Murray Cod or Silver Perch have been recorded from the Naas–Gudgenby system and Trout Cod are now considered locally extinct (Lintermans *et al.* 1988, Lintermans 1991b). Jones *et al.* (1990) recorded none of these species or the River Blackfish in their survey of the fish fauna of Naas–Gudgenby. The ACT Parks and Conservation Service has unconfirmed anglers' reports of blackfish in the Gudgenby region with the most recent report being from Honeysuckle Creek in the early to mid 1960's (B. O'Sullivan pers. comm.). Blackfish were known to be present in the Cotter River and in the Murrumbidgee River in the past and it had always been assumed that these fish were River Blackfish *G. marmoratus* (Shorthouse 1979; Greenham 1981; NCDC 1984a, 1984b, 1985, 1986a, 1986b; Hogg and Wicks 1989; National Capital Planning Authority 1989; Helman *et al.* 1988; Jones *et al.* 1990). Recent work has shown that the species of blackfish present in the Cotter River system is the Two-spined Blackfish, *G. bispinosus* (Lintermans and Rutzou 1990a, 1990b), a newly described species (Sanger 1984).

No specimen-backed records of *G. marmoratus* are known from the ACT and it appears likely that all previous references to this species in the ACT were in fact *G. bispinosus*. Blackfish have suffered a range reduction in the ACT in recent years and may no longer be present (if ever) in the Naas–Gudgenby catchment. Blackfish are still common in the Upper Cotter River catchment (Lintermans and Rutzou 1990b; M. Lintermans unpubl. data).

The Mountain Galaxias has a widespread but fragmented distribution in Gudgenby with an inverse relationship between trout and galaxias abundance reported by Jones *et al.* (1990). An even more fragmented distribution of Mountain Galaxias has been shown in the Upper Cotter catchment with Rainbow Trout and Mountain Galaxias having almost mutually exclusive distributions (Lintermans and Rutzou 1990b). The deleterious effect of trout on *Galaxias olidus* has been previously documented by Frankenberg (1966), Tilzey (1976), Cadwallader (1979) and Jackson and Williams (1980).

Brown Trout were first liberated into the Naas River in 1888 (National Trust of Australia 1980) and Rainbow Trout were first introduced into the Monaro district in 1895 (Tilzey 1976) so both species have had ample time to have an impact on native species. The pre-trout distribution and abundance of Mountain Galaxias in the ACT is unknown as few records exist for this period. However, one of the proposed origins of the name "gudgenby" relates to the supposed abundance of "gudgeons" (or Mountain Galaxias) in the region.

Along with Brown trout, 50 English Perch *Perca fluviatilis*, 20 Carp *Cyprinus* sp. or *Carassius* sp., and one Tench *Tinca tinca* were released in the Queanbeyan, Molonglo, Naas and Cotter Rivers in 1888 (National Trust of Australia 1980) although it appears that only the trout established a viable population. However, given the recent dramatic expansion of the range of English Perch in the Canberra region (Lintermans *et al.* 1990) it is simply a matter of time before this species becomes established in the Naas-Gudgenby system.

Introduced species

The vertebrate groups with the greatest proportion of feral species are the fish (67 per cent, two species) followed by the mammals (29 per cent, 12 species), birds (three per cent, five species), and amphibians and reptiles with no introduced species. The most damaging and widespread species are the feral pig and the rabbit. Rabbits were first reported in the ACT region in the early 1890's (Gillespie 1989) after several attempts to establish them between 1850-1865 had failed (Schumack 1967). By 1895 rabbit numbers had increased noticeably and in 1899 it was suggested that the Queanbeyan district be declared a "rabbit infested district" (National Trust of Australia 1980). In the 1920's Gudgenby was overrun with rabbits with the manager of Gudgenby Station employing 20 men to dig them out (Corp 1989). Between 1925 and 1927 on Gudgenby Station alone, 1700 acres of rabbits were dug out. Other control techniques utilised against rabbits in the Canberra and Monaro regions included rabbit-proof fencing, burning-off timber, shooting, trapping and poisoning. Poison carts were used to "lay trails of bran, pollard and phosphorous or to drop a mixture of jam and strychnine" (Hancock 1972).

Rabbit populations in Gudgenby today are mainly confined to the valley floors or old grazing runs and the major techniques used to control them include myxomatosis, harbour destruction, 1080 poisoning and ripping of warrens. Another control technique which has been very successful is the use of explosives for warren destruction at Nursery Swamp (Higginbotham and Brownlie 1981; Perry 1985; Lintermans 1991).

Pigs are known to have been kept by landholders in the Gudgenby area for more than a century with the current feral pig population descended from escapees or deliberate releases of domestic stock (Boreham 1981).

Hone and Stone (1989) attribute the origin of feral pig population of Namadgi National Park to domestic pigs that escaped near Grassy Creek in 1959.

Up until the late 1970's and early 1980's pigs in Gudgenby were concentrated in two main areas; the Honeysuckle Creek/Orroral Valley area and the Gudgenby Station/Boboyan Pine Plantation area (Boreham 1981). Since then the numbers and distribution of pigs in the region have expanded noticeably with pig activity in the Naas River Valley first becoming noticeable in 1984/85.

Commencing in 1986, major control programs using the anti-coagulant poison `warfarin' have been mounted against pigs in Namadgi National Park (McIlroy *et al.* 1989, Braysher 1987). These programs have considerably reduced the pig population which was previously causing considerable damage, particularly to vegetation communities along drainage lines and in grasslands (Alexiou 1983).

Feral dogs and dingo crosses and foxes are widespread through Gudgenby and the southern ACT generally and are known to prey on native fauna. They may play some part in controlling populations of rabbits and there is little that realistically can be done to control these introduced predators.

Feral stock such as sheep and cattle were still present in Gudgenby in the mid 1980's but are now almost non-existent. These animals were strays from previous grazing leases in the region, all of which have now been resumed.

Of the five introduced bird species in Gudgenby, only two, the starling and the goldfinch are reasonably widespread. Blackbirds are recorded mainly around Gudgenby Station and in the northern end of Gudgenby (Tharwa area). House sparrows are generally restricted to the north-eastern section of the region along the Gudgenby and Naas River valleys (Canberra Ornithologists Group 1990). Feral pigeons are recorded as vagrants in the region.

CONCLUSIONS AND RECOMMENDATIONS

This study has shown the fauna of the Gudgenby area to be similar in species composition to that recorded from other areas of the ACT. A diverse reptile fauna has been recorded including elements of the upland community recorded from the Upper Cotter Catchment (Helman *et al.* 1988) as well as lowland species more common to the north of the study area (Gilmour *et al.* 1987, Kukolic 1990). The abundance of small mammals appears to be low and this is attributed in part to the prolonged drought followed by a severe wildfire in 1983. Arboreal mammals were also found to be uncommon although only a comparatively limited effort has been directed at this component of the fauna. A diverse amphibian fauna was recorded with 10 frog species identified. However four of these species were recorded from less than two locations and a further species (*Litoria ranjformis*) appears to be locally extinct in the ACT (Osborne 1992).

While this report has gone some way to documenting the species composition of vertebrates in the Gudgenby area, additional survey work is necessary to document the distribution and abundance of individual species. Of the vertebrate groups present in the Gudgenby area, only the distribution and abundance of the birds and fish is well documented.

For some of the uncommonly encountered species (such as goannas or small possums) the expenditure of considerable effort in labour intensive survey programs may not be particularly effective. However, now that the Vertebrate Atlas of the ACT (Lintermans 1990, 1991c) provides a framework for the collection and storage of incidental or chance observations, it is hoped that a better understanding of species distribution will eventuate. Some faunal groups or specific areas in Gudgenby area in need of further research effort which could provide valuable information with relatively little effort.

(i) Further research is needed to document the reptile fauna of the Naas River Valley. This is the largest area of savannah woodland in Gudgenby and could represent the southern limit of a number of species in the ACT.

(ii) The bat fauna of Gudgenby is poorly known and warrants further investigation.

(iii) Further work is necessary to document the arboreal fauna of the area. The decline of possums around the Mt Clear campground and Boboyan Valleys needs to be re-examined to assess whether recovery has occurred.

(iv) Further study is needed of the distribution and abundance of frogs in Gudgenby. Several species have been recorded from only one or two localities and other species are suffering ACT declines. The censusing of frog calls during spring and autumn would be the quickest and easiest method.

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