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A PRELIMINARY STUDY OF FAUNA IN
THE NANNUP PINE PLANTATIONS

by

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SUMMARY

A preliminary survey of the Nannup pine plantations carried out in February 1974, has indicated the presence of at least five indigenous and four introduced mammals and forty-nine species of birds. Six species of lizards and one of snakes, one of frogs and one of fish were also found.

The study was concentrated in the Nannup plantation, leaving the Lewana plantation for a future survey. A range of pine plantings from two to eighteen years old were studied, and trapping was confined to within, or along the edge of the pine plantations.

The survey indicates that the diversity of mammal, bird and reptile species was lower than that for the Jarrah forest. Many of the sightings and captures were in the recently planted pine, where a thick ground cover of native vegetation still remains.

INTRODUCTION

The survey dealt with in this report was undertaken at the request of Pine Research Branch, during late February 1974. It complements the survey carried out in the Jarrahwood Sunklands proposed pine planting areas, to provide preliminary information on fauna prior to a more intensive study.

Further work is needed in both the Sunklands and Lowanna plantation, and monitoring surveys need to be done throughout the Sunklands conversion to pines.

Comparison of species encountered in the Sunklands survey and in the Pine Survey may be done. But with some caution, as it must be remembered that before conversion to Pine the Nannup area was predominantly cleared farmland. Thus there was probably a major effect on species before pine planting commenced. How this will affect the ultimate fauna composition in mature pine remains to be seen, there may be a levelling out of species, but it seems important that enough monitoring work be done to make comparisons.

Though large by W.A. standards, the Nannup pine area is still subject to considerable "edge" effect, and is broken up into mature trees with open patches, young closed canopy plantations with sparse ground cover, recently planted areas still containing a thick ground cover of native vegetation and introduced grasses, and unplanted strips and gullies with original vegetation.

The unpublished Research Branch Report No. 22, Forests Commission, Victoria, and subsequent secondary statements are extremely relevant to any study of flora and fauna within pine plantations.

THE STUDY AREAS

The Nannup pines cover an extensive area, and time did not permit examination of all plantations. The survey was

confined to blocks B, C, D and E in the Folly Group, leaving block A and the Lewana and Kirup plantations for a future survey.

Both trapping lines and spotlight surveys were sited to cover as varied a terrain as possible, within the complete range of pine ages. The oldest pine was planted in 1956, and the youngest in 1972. There were several small permanent creeks running through the area, and some large rocky outcrops - some of these were covered by the trapping lines.

METHODS

(1) Trapping

Three types of traps were used; seventy-three 33cm x 30cm x 30cm, Elliot, folding, aluminium traps, seventy-three, 6" x 4" breakback, rat traps and nineteen 56cm x 30cm x 30cm wire cage traps.

To enable capture of a wide variety of species all traps were baited with universal bait - a mixture of peanut butter, bacon, raisins, oatmeal and wheatgerm - and in each trapping line the traps were alternated according to their proportionate number, so that each trap type was distributed over the whole trapping area. Five trap lines were set to cover the range in age classes. The number of traps per area was determined by the diversity of habitat and the ease of capture of the animals thought to be in the area. This tied in with the aim of the survey to determine the species diversity of the plantation.

(11) Observations

(a) Daylight observations

Fauna sighted whilst moving through the area on foot or in vehicles were recorded, though no attempt was made to count the relatively numerous Grey Kangaroo (Macropus fuliginosus)

(b) Night observations

Observations were made from a vehicle with two spotlights. Two spotlighting runs were planned to cover a range of age groups and terrain and all spotlighting was carried out between dusk and 10 p.m.

RESULTS

(i) Trapping

Trapping results are given in Table I. Trap success was confined to the young pine areas. Here two species were caught, the common house mouse (Mus musculus) about five to ten metres from a permanent stream, and the king skink (Scelopora kingii), amongst the rock outcrops of the other young pine area.

(ii) Observations

(a) Daylight

Four species of lizard and one species of fish were found during the day. The lizards were found under rocks or logs and caught by hand. The fish was netted in one of the small permanent streams running through the area.

One snake species was identified by its shed skin.

(b) Night

Spotlighting results are presented in Table 3

The rabbits appeared in young and old pine stands, the grey kangaroos were sighted in 14 and 15 year old pine stands adjacent to farmland, and the ringtail possum was seen up a tree in a fourteen year old stand which was bordered by an indigenous eucalypt forest. Numerous bats were seen on both spotlighting runs, but attempts to shoot them or to catch them in mist nets were unsuccessful.

One species of frog was caught close to a dam.

SYSTEMATIC ACCOUNT OF MAMMALS

1. ORDER MARSUPIALA

A. Family Macropodidae1. Western Grey Kangaroo, Macropus fuliginosus

No attempt was made to count this species, which occurred throughout the area. Individuals were seen mainly in the more open areas and round the edges of mature pine, though one was seen in the older plantations. The presence of scats indicate that they move through the older pine, and there are several reported sightings within the pine over the past few years.

2. Brush wallaby, Macropus irma

None was seen either by day or spotlight, but its presence was confirmed by a road casualty. There are also reports of sightings within the plantation area.

B. Family Phalangeridae3. Common or brush-tailed possum, Trichosurus vulpecula

None was seen within the plantation area, but their presence was confirmed by a dead specimen found on the edge of the pines. They have also been reported from nearby State Forest and Private land.

C. Family Petauridae4. Ringtail possum, Pseudocheirus peregrinus

One was seen by spotlight within the pine. There have been no recorded sightings over the past few years, so numbers are probably very low.

D. Family Dasypodidae5. Native squirrel, Phascogale tapostafa

None were seen or trapped during the survey.

There is one confirmed road casualty within a few hundred yards of the pine plantations, and it is likely that they occur throughout the area.

2. ORDER RODENTIA

6. Southern bush-rat, Rattus fuscipes

None was caught or seen during the survey and there is no evidence that they exist within the areas surveyed. Some have recently been caught within the Lewana plantations however.

7. House mouse, Mus musculus

Six were caught in traps, all on the same trapping line. This was in recently planted pine where there was a thick ground cover of native vegetation. There was no evidence of mice being in the older closed canopy pine.

3. ORDER CHIROPTERA

8. Bats

These were in evidence throughout the pine, though more numerous in the open spaces near the edge of the plantations. At least 2 species were seen, but attempts to obtain specimens by mist netting

ORDER: CARNIVORA

10. Fox, Vulpes vulpes

Identified from scats, many were in evidence in the open areas where rabbits were numerous. No signs were seen within the older plantations.

11. Feral cat, Felis catus

Prints were seen but no specimens sighted. It probably occurs throughout the area though the population would be low.

DISCUSSION

Limitations of the Study

This survey was only a preliminary study, and not intended to be exhaustive. There are several reasons why the results should be interpreted with caution.

(a) Study areas

Only the Folly Group of plantations was studied, and block A in this group was not covered. This block, together with the whole of the Lewana and Kirup plantations, must be surveyed in the future to give an overall picture.

Within the study area, as wide a variety of terrain as possible was covered. This included the different age groups of pine, gullies through large pine and recently planted areas, rocky outcrops and recently planted areas still containing a thick growth of native vegetation. There were several representative areas of each of these types, but only one of each could be covered thoroughly.

(b) Trapping

Trapping was confined to limited areas, and only one type of traps were used. Thus it is unlikely that all types of small mammals present were caught, as these often occur in low densities and are unevenly distributed. It is also likely that larger catches might be made at a different time of year. Time and Personnel did not allow other types

trap - pen traps, pit traps, snares, bottle traps etc. This have caught a wider range of species.

(c) Spotlighting

Two runs were made, using 2 spotlights from the vehicle, and covering all types of terrain and ages of pine. Within the older pine plantations vision was good. The dense cover of ground scrub made spotting difficult in the recently-planted pine and smaller ground-dwelling mammals could have been very difficult to spot.

One of the spotlighting runs produced no sightings whatsoever, while the second produced 3 types of mammal and 1 of birds, including the only sighting of a ring-tailed possum. More intensive spotlighting in selected areas at different times of year could be profitable.

(d) Scat analysis, prints and runs

Interpretation of these is an important part of any survey. Of the 9 mammal species listed, 2 were identified by prints or scats. Within the older pines prints and runs are extremely difficult to pick up, but scats are more easily seen. The animals themselves, particularly the domestic cat gone wild, are seldom seen, but their tracks along sandy creek beds, along recently ploughed fire-breaks etc. are easily detected.

The scats themselves, particularly fox scats, can yield information from the bones and hair found within them.

DISCUSSION OF RESULTS

The result of this survey, on species identified, could be considered disappointing when compared with that of the Sunklands. There are, however, several significant differences in the 2 areas, in addition to the obvious one of different tree species.

The most important of these is the previous use of the land before pine planting commenced at Mamup. It was

almost all farming country, cleared and cultivated or grazed for a long period. It is certain that most of the native species would have disappeared long before the pines were planted.

As the area was farming country, rabbits had built up to considerable numbers, and before pine planting commenced control measures taken. These were poison baits of carrots, apples and oats, all of which are attractive to some species of native mammals. Also trapping and fumigating of burrows was done, and these measures could have reduced native species considerably.

Burning under pine is much less frequent than burns in Jarrah/Harri bush, thus the fresh vegetation needed for food supply by native mammals would no longer be available.

In view of these facts, the survey results are not as bad as they appear to be, and the plantation area is by no means a biological desert. Particularly as more species may well be found in the areas left to do. There are museum records of the quokka (Semionik brachyurus) and the Pigmy possum (Cercartetus concinnus) in the Wannup locality, though these are unlikely to remain within the plantation area. There is no evidence whatsoever for the presence of either the Tamar (Macropus eugeni) or the wallie (Pettongia penicillata). There is a strong possibility that the short-nosed bandicoot (Isaoden obesulus) could be present, there is a reported sighting of this within the Kirup plantation. Both the dunnart (Sminthopsis murina) and the Hardo (Antechinus flavipes) could also exist in or around the edges of pine plantations. The common rat, (Rattus rattus) may also be present.

Though only 6 lizards, one snake and one frog were recorded, it was not a good time of year to find these and the list would almost certainly be bigger after a more intensive survey.

The total of 49 birds is satisfactory. One of these 49, the Black Falcon (Falco subniger), is listed as a possible

sighting as on the two occasions it was seen, the distance was too great for positive identification. This species has been recorded only once before in the south-west.

REFERENCES

- Glauert, L - A Handbook of the Lizards of Western Australia
Ride, W.D.L. - A Guide to the Native Mammals of Australia.
Serventy, D.L. and Whittell, H.M. - Birds of Western Australia.
Forests Commission, Victoria - Unpublished Research Branch Reports
West Australian Forests Dept. - Unpublished Reports by
Research Branch.

ACKNOWLEDGEMENT

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TABLE I - TRAPPING RESULTS

Area	No. of trap nights (all types)	Mammals	No. of individuals	Reptiles	No. of individuals	Mammals	No. of individuals	Reptiles	No. of individuals	Mammals	No. of individuals	Reptiles	No. of individuals
Gully through 11-year-old pine	160	Nil		Nil		Nil		Nil		Nil		Nil	
Two-year-old pine	120	mus musculus	6	Nil		Nil	5	Nil		Nil	5	Nil	
Fourteen-year-old pine	176	Nil		Nil		Nil		Nil		Nil		Nil	
Between 14-year-old and 18-year-old pine	108	Nil		Nil		Nil		Nil		Nil		Nil	
Steep rocky gully through 4 year-old pine	66	Nil		Nil		Nil		King snake	9	Nil		Nil	
													13.6
													13.6
													13.6

1950
Mammals
Reptiles
Combined

TABLE 2

BREAKDOWN OF SPECIES CAUGHT IN DIFFERENT TRAP TYPES

Trap Type	SPECIES CAUGHT	
	<i>Rtus musculus</i>	<i>Egernia kingii</i>
Elliott	5	5
Break-back	1	4
Wire cage	-	-

MANUAL SPOTLIGHTING RESULTS

Area	Hours	Miles travelled during spotlighting	Specimens detected	Specimens per hour	Specimens per mile	Remarks
Lindsay Rd to Pt 955, Gordon Rd to Brocken Rd with eucs on left.	0.75	3.6	Nil	Nil	Nil	
Zircon Rd, Asplin Rd, Polly Rd, Northside Rd, Dunnet Rd, Huntly Rd.	2.05	5.26	7 rabbits 5 Grey kangaroo 1 Ring-tail possum	6.40	2.47	2 Barn Owls 1 Koekabura and 1 Honeyeater also seen

TABLE 4

MAMMAL SPECIES IDENTIFIED

Species	Trapped	Observed	Identified from prints, coats, or furmels	Spotlights	Road casualty
<i>Macropus fuliginosus</i>		*	*	*	*
<i>Macropus irma</i>					*
<i>Trichosurus vulpecula</i>				*	
<i>Pseudocheirus peregrinus</i>	*			*	
<i>Mus musculus</i>		*		*	
Bat (species unknown)		*	*	*	
<i>Oryctolegus cuniculus</i>			*	*	
<i>Vulpes vulpes</i>			*		
<i>Felis catus</i>					

ND. These species were identified by the survey team within the plantation area. Other species recorded by the W.A. Museum or other sources, in or near the area, are mentioned in the "systematic account of mammals" on page 6, or in the discussion on page 8.

LIST OF REPTILES, AMPHIBIANS AND FISHES IDENTIFIED

Lizards

Varanus gouldii	(O)
Tiliqua rugosa	(O)
* Egernia kingii	(T)
* Macalergis peronii	(C)
* Menetia greyi	(C)
* Morethia obscura	(C)

Snakes

Demansia nuchalis affinis (S)

Frogs

Hyla moorei (C)

Fishes

Salmo gairdneri (W)
(rainbow trout)

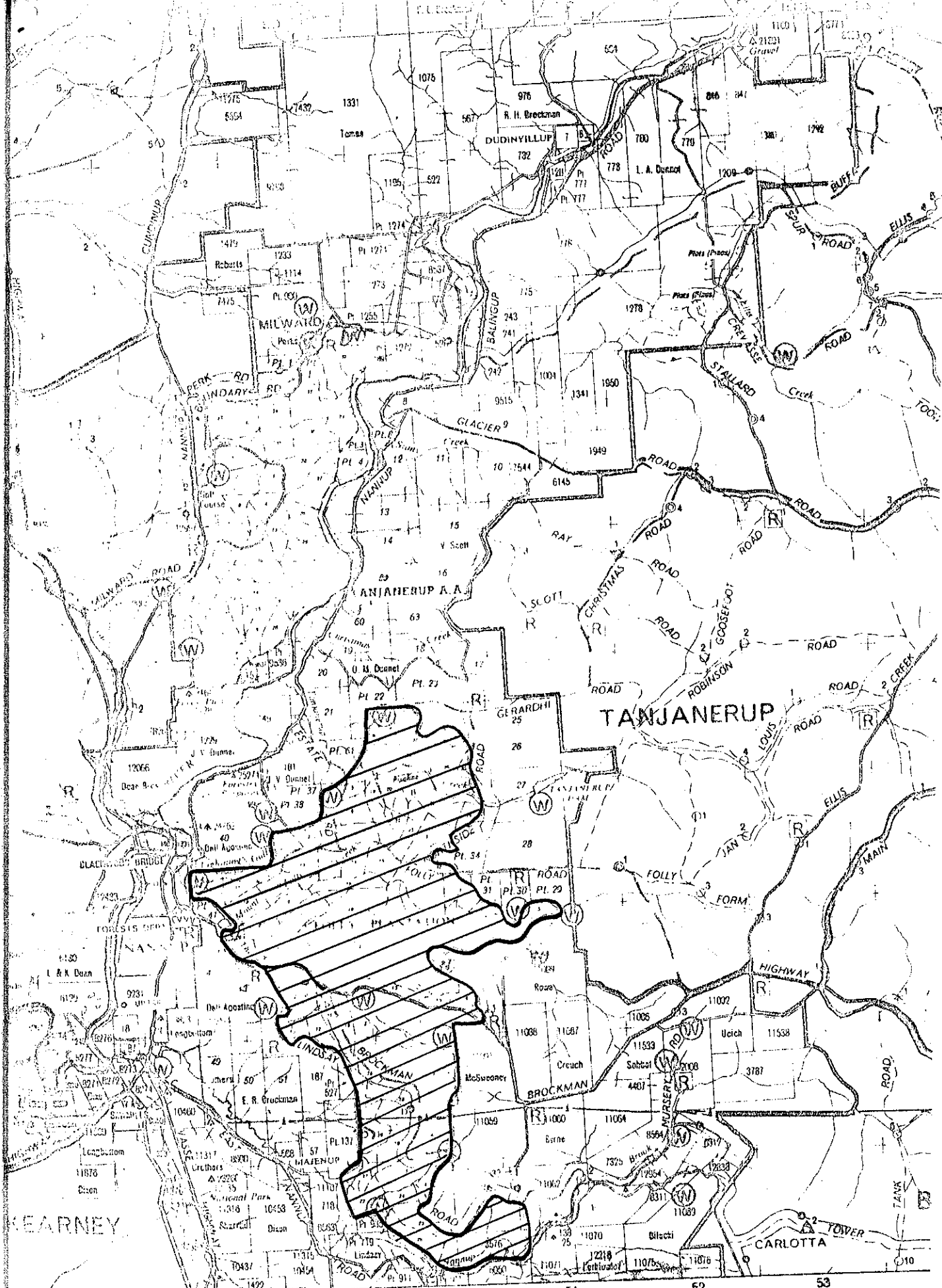
C - caught by hand
O - observed
T - trapped
N - netted
S - identified by cast skin.


NB. Four lizards marked by * identified by W.A. Museum. Remainder follow the identifications in "A Handbook of the lizards of Western Australia" by L. Glauert.

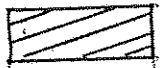
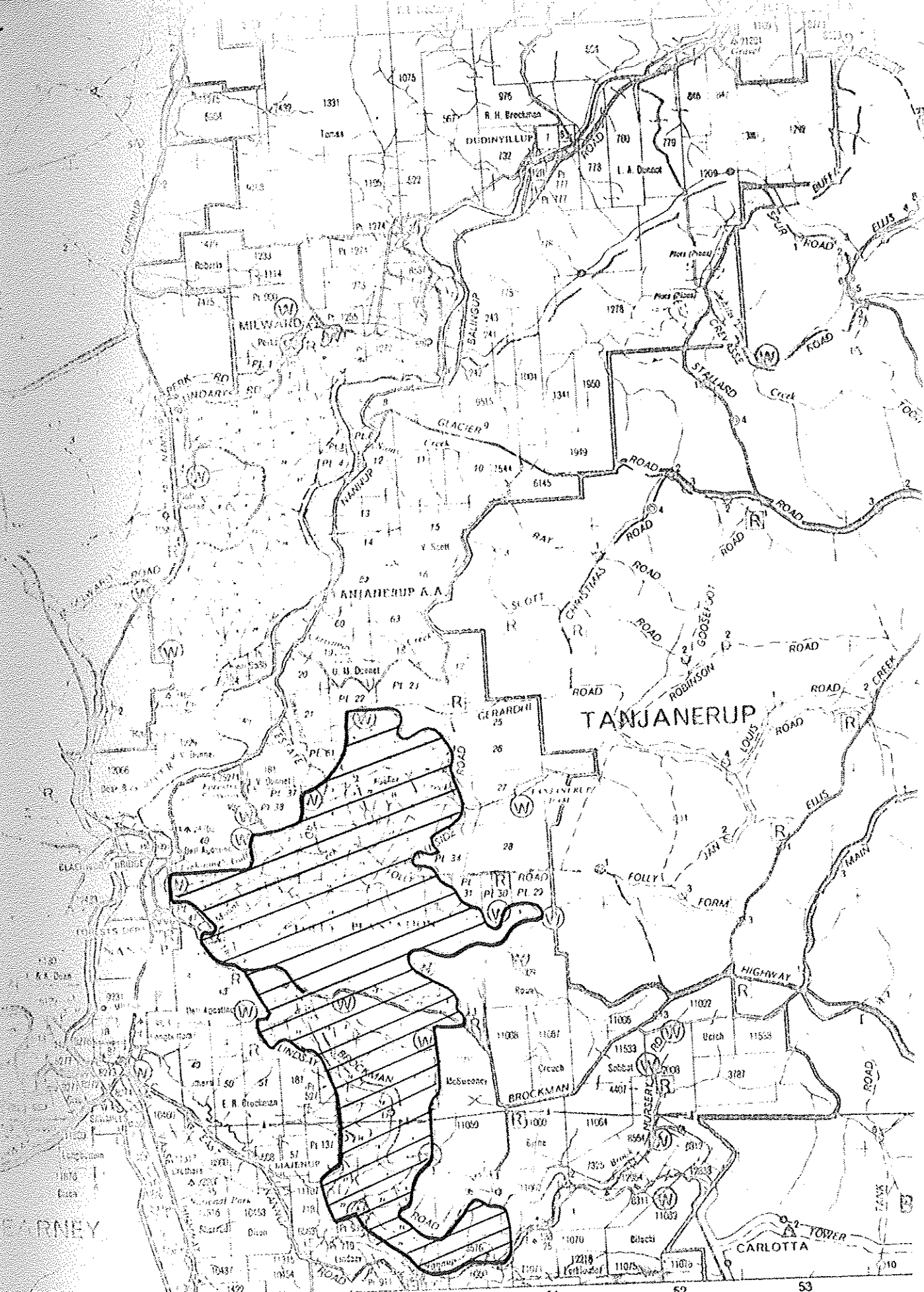
BIRDS IDENTIFIED

Emu	(<i>Dromaius novaehollandiae</i>)
Little Pied Cormorant	(<i>Phalacrocorax melanoleucos</i>)
White faced Heron	(<i>Ardea novae-hollandiae</i>)
Black Duck	(<i>Anas superciliosa</i>)
Musk Duck	(<i>Biziura lobata</i>)
Brown Hawk	(<i>Falco berifera</i>)
Kestrel	(<i>Falco conchroides</i>)
• Black Falcon	(<i>Falco subniger</i>)
Common Bronzewing	(<i>Phaps chalcoptera</i>)
Brush Bronzewing	(<i>Phaps elegans</i>)
White tailed Black	(<i>Calyptorhynchus baudini</i>)
Cockatoo	
Western Rosella	(<i>Platycercus feterotis</i>)
23 Parrot	(<i>Barnardius zonarius</i>)
Barn Owl	(<i>Tyto alba</i>)
Frogmouth	(<i>Podargus strigoidea</i>) Both on main
Whet Nightjar	(<i>Aegotheles cristatus</i>) road from Bridgetown near pines
Wellcome Swallow	(<i>Hirundo neoxena</i>)
Tree Martin	(<i>Petrochelidon nigricans</i>)
Kookaburra	(<i>Dacelo gigas</i>)
Sacred Kingfisher	(<i>Halcyon sancta</i>)
Rainbow bird	(<i>Merops ornatus</i>)
Pipit	(<i>Anthus novaeseelandiae</i>)
Black faced Cuckoo	(<i>Coracina novae-hollandiae</i>)
Shrike	
Banded Blue Wren	(<i>Malurus splendens</i>)
Red winged Wren	(<i>Malurus elegans</i>)
Broadtailed Thornbill	(<i>Acanthiza apicalis</i>)
Western Thornbill	(<i>Acanthiza incornata</i>)
Yellow Tailed Thornbill	(<i>Acanthiza chrysorrhoa</i>)
Spotted Scrub Wren	(<i>Bericornis maculatus</i>)
Scarlet Robin	(<i>Petroica multicolor</i>)
Red capped Robin	(<i>Petroica goodenovii</i>)
Western Yellow Robin	(<i>Eopsaltria griseogularis</i>)
Whitebreasted Robin	" <i>georgiana</i>)
Grey Fantail	(<i>Rhipidura fuliginosa</i>)
Willie Wagtail	" <i>leucephrys</i>)
Golden Whistler	(<i>Pachycephala pectoralis</i>)
Western Shrike Thrush	(<i>Colluricincla rufiventris</i>)
Silvereye	(<i>Zosterops gouldi</i>)
White naped Honeyeater	(<i>Melithreptus lunatus</i>)
Spinbill	(<i>Acanthorhynchus superciliosus</i>)
Tawny Crowned Honeyeater	(<i>Cliciphila melanops</i>)
New Holland Honeyeater	(<i>Phylidonyria novaehollandiae</i>)
Little Wattle Bird	(<i>Anthochaera chrysoptera</i>)
Red-eared Firetail	(<i>Zonaegehinthus oculatus</i>)
Maggie Lark	(<i>Grallina cyanoleuca</i>)
Dusky Wood Swallow	(<i>Artamus cyanopterus</i>)
Squeaker	(<i>Strepera versicolor</i>)
Western Magpie	(<i>Gymnorhina dorsalis</i>)
Raven	(<i>Corvus coronoides</i>)

* Two brief sightings only and identification will need to be confirmed by further sightings



 Area of survey



Area of survey