

BIOLOGICAL SURVEY OF

BARLEE RANGE NATURE RESERVE

Project (N92/5)

Progress Report 3

Prepared by: *Stephen van Leeuwen*

Date: *21st June 1993*

TITLE OF PROJECT:

Biological survey of the Barlee Range Nature Reserve (A ↑26808)

AGENCY:

Western Australian Department of Conservation and Land Management (CALM) (undertaken jointly by the Science and Information Division and the Pilbara Regional office).

PROJECT SUPERVISOR:

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PROJECT OFFICERS:

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SCOPE OF PROPOSAL:

- a. Select sites that represent the array of communities typical of the Barlee Range.
- b. At all sites establish and sample permanent quadrats recording landform unit, species composition, habitat type and vegetation associations present. Permanent quadrats will enable, through long-term monitoring, the documentation of change over time and after environmental perturbations.
- c. Analyse data sets for each biotic group sampled (flora/vegetation, mammals, birds, reptiles, amphibians and ants) discussing patterns of community structure, species richness and distribution. Prepare descriptions of vegetation associations and landform units present and map their distribution within the reserve.
- d. Publish results of the survey and subsequent analyses. Discuss implications of these results with reference to the representativeness of the nature reserve and its nature conservation values. Make recommendations for management where appropriate.

WORK COMPLETED

To the middle of June 1993, one field trip to the Barlee Range Nature Reserve had been undertaken. The purpose of this trip was to select locations for the establishment of field camps and install the twelve permanently marked vegetation and fauna sampling quadrats. The trip, involving four CALM personnel and two volunteers, was conducted from the 27th April to the 16th of May. The CALM personnel were Stephen van Leeuwen, Peter Kendrick, Robert Bromilow and Michael Hughes. The volunteers were John Angus and Fiona Scarff.

Previous reconnaissance trips to the Barlee Range Nature Reserve had indicated that three field camps would need to be established to effectively undertake a biological survey of the reserve. The establishment of three field camps would make the task of surveying the reserve both logistically and financially more feasible. The location of these field camps together with the permanent quadrat sites are presented in Figure 1. A summary of the latitude and longitude coordinates for the locations depicted in Figure 1 are provided in Appendix 1.

This survey had been designed to sample the typical biotic associations present within the Barlee Range Nature Reserve. These associations were identified with reference to perennial plant assemblages, soil type and landscape unit. Where possible, sample sites for each identified biotic assemblage were established in the vicinity of the three field camps (see Figure 1). Where such replication was not possible, a biotic assemblage identified as having a similar level of dominance to that of other assemblages in the vicinity was selected for sampling. The assemblages sampled at each field camp are presented in Table 1.

Installation of the permanently marked sampling sites involved:

- Establishment of the vegetation sampling quadrat. This is a series of nested quadrats extending up to 100 m²;
- Installation of 8 pairs of 25 litre vertebrate pitfall traps. This included use of a rock drill, blasting with explosives, digging out the holes and erection of a 10 m drift fence linking each pair of pits;
- Installation of 20, 300 ml invertebrate pitfall traps. These traps are within a 15 m² quadrat immediately adjacent to each vegetation quadrat.

A schematic diagram of the layout of the twelve permanent quadrat is depicted in Figure 2.

In addition to the permanent sampling sites a number of sites, which will be sampled opportunistically were identified. These sites include the claypan adjacent to the north western corner of the reserve, the *Melaleuca leucadendra* swamp in Kookhabinna Gorge and the Gilgai upland plains along the southern boundary of the reserve.

During this field trip several records were opportunistically obtained on the fauna of the reserve. These records included the;

- identification of the remains of a Ghost Bat (*Macroderma gigas*) on the northern boundary of the reserve in the vicinity of Wongida Creek;
- identification of the presence of inactive Pebble-mound Mouse (*Pseudomys chapmanii*) mounds in the north western and central southern part of the reserve;
- confirmation of the presence of the Black-footed Rock Wallaby (*Petrogale lateralis*) within Kookhabinna Gorge; and
- identification, although unconfirmed, of the Orange Horseshoe Bat (*Rhinonictis aurantius*) within the northern part of the reserve.

Another major discovery during this trip was the identification of a extensive and probably very significant petroglyph site adjacent to the reserves southern boundary. The site consisted of hundreds of workings, many of which have been superimposed over older ones.

The scheduling of the next trip has been postponed from July to September in the hope that recent rains and more favourable conditions will improve the overall condition of the reserve floristically, thereby ensuring the maximum return for collecting effort. This will also ensure that funds are not wasted on unproductive trips.

During the September trip, sampling of the biota within the reserve will commence in a systematic manner. Each trapping grid for vertebrate and invertebrate fauna will be operated for a minimum of four nights. Birds will be systematically sampled within the vicinity of each sampling site for a duration of two hours on two occasions. The flora will be systematically collected and recorded within each of the nested quadrats. In addition to the systematic sampling, opportunistic sampling of all biota will continue to be undertaken. The September trip is expected to be of sixteen days duration.

EXPENDITURE TO DATE

An expenditure statement from the Administration Assistant in the Pilbara Regional Office is attached as Appendix 2. As of the 21st June a total of \$8 603 or 43% of the budget of \$20 000 had been consumed. A breakdown of the budget in relation to this project is provided in Table 2. Eighty one per cent of this expenditure was on the purchase of material and equipment required to undertake the survey. The remaining 19% was spent on vehicle hire charges and running fees.

Outstanding invoices which do not appear on this account total an additional \$1 130 and are for the purchase of drift fence materials and lids for the vertebrate pitfall traps.

Location plan for field camps and permanent quadrats in the Barlee Range Nature Reserve.

NOT TO SCALE

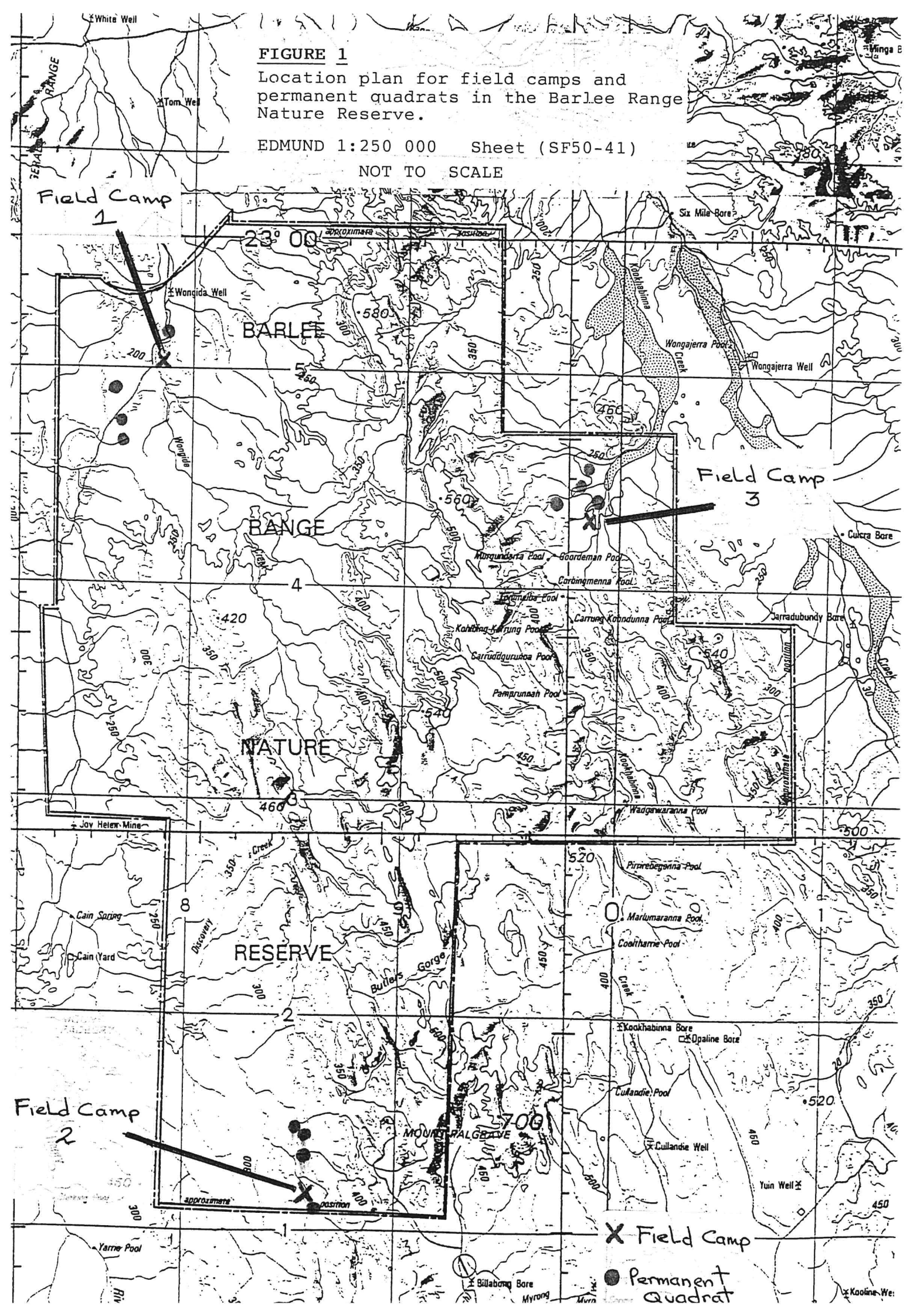


Table 1 Biotic assemblages sampled at each field camp within the Barlee Range Nature Reserve.

Camp	Associations Sampled				
	Riverine (<i>Acacia citrinoviridis</i> - colluvium)	Woodland (<i>Acacia aneura</i> - alluvial)	Stony Gibber (<i>Acacia xiphophylla</i> - cracking clay)	Rocky Uplands (<i>Eucalyptus leucophloia</i> - massive rock)	Hummock Grasslands (<i>Eucalyptus terminalis</i> , <i>Acacia</i> spp. - sand)
1	✓	✓		✓	✓
2	✓	✓	✓	✓	
3	✓	✓		✓	✓

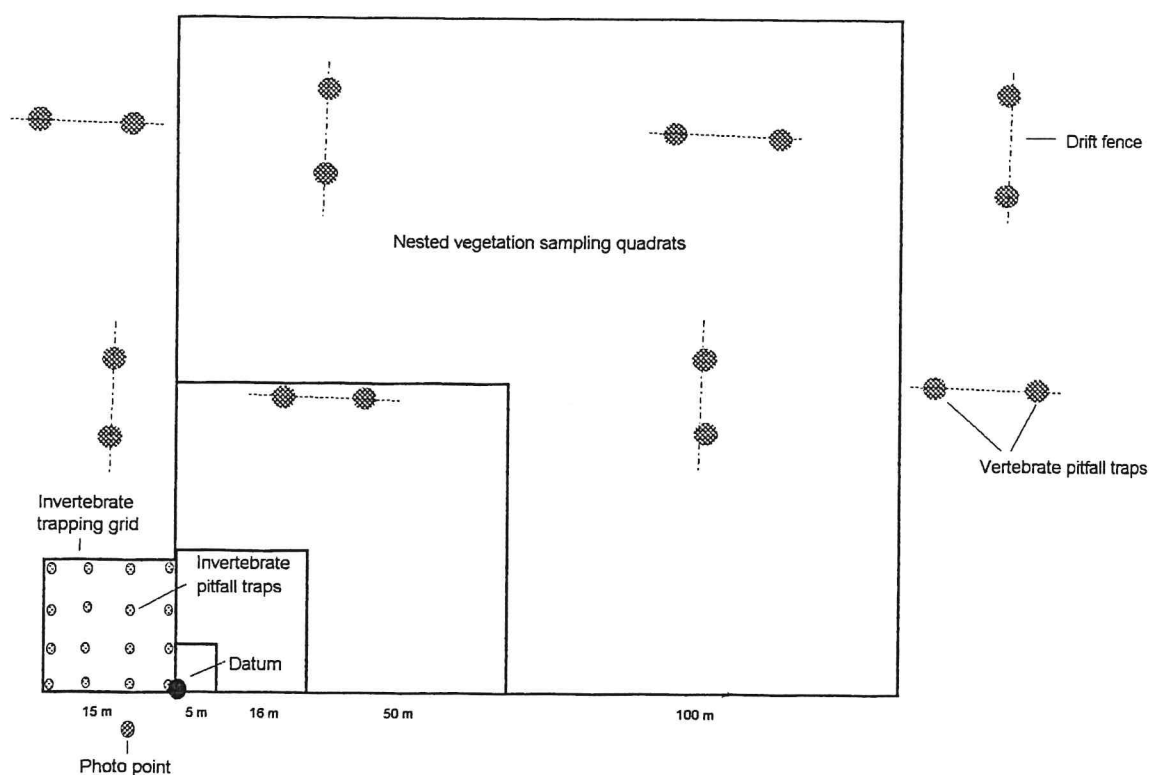


Figure 2 Schematic diagram of the permanent sampling sites established in the Barlee Range Nature Reserve.

Table 2 Breakdown of expenditure of NEGP funds for the Biological Survey of Barlee Range Nature Reserve project.

Materials & Equipment

Month	Item	Amount (\$)	Account Balance (\$)
Sep 92	Field balances	169	169
	GPS hire (40 days @ \$50/day)	2 000	2 169
Feb 93	Calico collecting bags	113	2 282
	Topographical maps	217	2 499
	Vertebrate pitfall traps (buckets)	1 490	3 989
Mar 93	Pitfall trap pegs	53	4 042
	Rock drill bit	115	4 157
May 93	Invertebrate pitfall traps (sleeves)	90	4 247
	Safety equipment	171	4 418
	Rock drill hire charge	500	4 918
	Rock drill freight	57	4 975
	Invertebrate pitfall traps (cups)	83	5 058
	Explosives	687	5 745
	Food for volunteers	369	6 114
	Machinery hire	46	6 160
	Explosive consumables (tape)	50	6 210
Jun 93	Quadrat markers	13	6 223
	Quadrat pegs & droppers	442	6 665
	Rock drill freight (return)	56	6 721
	Volunteers bus fares	143	6 864
	Spotlight	120	6 984

Plant hire and vehicle running

Month	Item	Amount (\$)	Account Balance (\$)
Apr 93	Vehicle running	226	226
May 93	Vehicle running	347	573
	Vehicle running	1 046	1 619

TOTAL EXPENDITURE

Item	Account Balance (\$)
Materials and equipment	6 984
Plant and vehicle running	1 619
Total	8 603

APPENDICES

Appendix 1 Coordinates for the three field camps and twelve permanent sampling sites within the Barlee Range Nature Reserve.

Location	Latitude (°S)	Longitude (°E)
Camp 1	23° 03' 50"	115° 48' 45"
BR1	23° 02' 39"	115° 48' 44"
BR2	23° 03' 41"	115° 47' 14"
BR3	23° 04' 47"	115° 47' 25"
BR4	23° 04' 46"	115° 47' 27"
Camp 2	23° 24' 10"	115° 53' 38"
BR5	23° 24' 41"	115° 53' 39"
BR6	23° 23' 21"	115° 53' 12"
BR7	23° 22' 45"	115° 52' 50"
BR8	23° 22' 31"	115° 52' 57"
Camp 3	23° 07' 06"	116° 00' 30"
BR9	23° 06' 06"	116° 00' 28"
BR10	23° 05' 45"	116° 00' 35"
BR11	23° 06' 21"	115° 59' 52"
BR12	23° 06' 47"	116° 00' 42"

Appendix 2 Statement of expenditure for NEGP project n92/5.

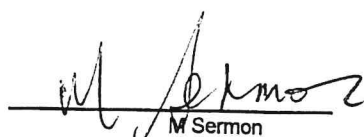
**WESTERN AUSTRALIAN HERITAGE COMMITTEE
NATIONAL ESTATE GRANT PROGRAM
(N92/5)**

Project: **BIOLOGICAL SURVEY OF THE BARLEE RANGE NATURE RESERVE**

Expenditure statement

1992/93	\$
Material & Equipment	<u>6 984</u>
Plant Hire & Vehicle Running	<u>1 619</u>

Total expenditure (21/06/93) \$ 8 603


M Serron
Admin. Assistant
22/6/93