BIOLOGICAL SURVEY OF

BARLEE RANGE NATURE RESERVE

Project (N92/5)

Progress Report 14

Prepared by: **Stephen van Leeuwen**

Date: **September 1998**

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 CALM**Science** Division and the Pilbara Regional office).

PROJECT SUPERVISOR:

Stephen van Leeuwen
Research Scientist
CALM Karratha
P.O. Box 835
KARRATHA WA 6714
☎ (08) 9143 1628 🖷 (08) 9144 1118
stephenv@calm.wa.gov.au

PROJECT OFFICERS:

1. Dr Stephen van Leeuwen
   Research Scientist

2. Dr Peter Kendrick
   Assistant Conservation Officer

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 the 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, mammals, birds, reptiles, amphibians and invertebrates (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. Discuss implications of these results with reference to the representativeness of the nature reserve and it's nature conservation values. Make recommendations for management where appropriate.

WORK COMPLETED

Since the submission of the last report work has progressed steadily on this project. Unfortunately, progress has not been as rapid as anticipated because of time constraints associated with other commitments. These commitments have principally involved the secondment of the project supervisor onto an inter-agency taskforce reviewing the Hamersley Range conservation estate during most of 1997, wildfire suppression duties for many weeks during late 1997 and early 1998 and the requirement, by the Executive

Director, to clear overdue long service and outstanding annual recreational and north west leave entitlements.

Notwithstanding these impediments to progress, work towards submission of the final report and completion of this project has continued. As detailed in the previous reports all field work associated with this project has been completed. Laboratory and office work has progressed and in most cases is nearing completion for all targeted biotic groups. Details of this progress follows.

Plants:

Work has progressed to the final stages of identification for the 300 plus taxa recorded within the nature reserve. The identification of many taxa still remains uncertain and unresolved, however, without further collections and, in many instances, detailed taxonomic investigations, these identifications will remain tenuous. Advice from the appropriate specialist taxonomist has been obtained for many of the problematic specimens. Plant identifications to be provided in the final report will reflect current nomenclatural understanding and taxonomic appreciation of the bioregion's flora, even though many groups of species remain poorly resolved.

Approximately 180 of the specimens collected during this project represent new taxa not previously recorded within the reserve. Many of these taxa represent poorly known species which, upon further examination, may represent species not previously recorded in the scientific literature. An example of such a taxon is *Sida* sp. (SVL 1642). This specimen was originally thought to represent a southern form of *Sida cardiophylla,* a common species throughout the Hamersley Range. However, upon closer examination by the specialist taxonomist (Robyn Barker, South Australian Herbarium) this specimen was identified as novel, having not been previously recorded in the scientific literature. The taxon is considered to be endemic to the Barlee Range and is currently listed as a Priority 2 species on the Department's Declared Rare and Priority Flora list (*Sida* sp. `Barlee Range` (S. van Leeuwen 1642)).

Assessments of the conservation significance of the flora recorded within the reserve are currently being prepared. Similarly, floristic richness assessments of representative community types sampled within the reserve have been prepared and will be compared through multivariant analyses procedures.

Vegetation:

The capture of GIS themes required to augment the vegetation map for the reserve has been completed. Such themes included the previous vegetation map produced by Beard, Agriculture Western Australia's landsystem map for the Ashburton River catchment and the Geological Survey of Western Australia's Edmond and Wyloo geological maps.

Development of a rudimentary vegetation map has been completed. This map is basically a refinement of Beard's vegetation map. A more detailed vegetation map will not be produced because of uncertainty in the distribution of many vegetation types over a large proportion of the reserve. This uncertainty has occurred because of the inaccessible predicament of large portions of the reserve, particularly the northern and eastern sections. Interpretation of aerial photographs has been used to map vegetation types within the reserve, particularly within isolated areas, although the reliability of such circumscriptions must be treated as tenuous until sufficient ground truthing can be undertaken to verify the accuracy of the interpretations.

Mammals:

A total of 34 mammal species were recorded in the nature reserve during the project (Table 1). All mammal records collected from within the nature reserve during the course of this project have been databased. This database is now complete and incorporates records and vouchers held at the Western Australian Museum. In addition to these extant mammal records, data were also obtained of another four locally extinct mammal species (*Leporillus apicalis, Notomys longicaudatus, Pseudomys nanus/fieldii, Rattus tunneyi)* from sub-fossil deposits.

Table 1. Mammals of Barlee Range Nature Reserve.

TACHYGLOSSIDAE
Tachyglossus aculeatus

DASYURIDAE
Dasykaluta rosamondae
Ningaui timealeyi
Planigale maculata
Pseudantechinus wooleyae
Sminthopsis longicaudata
Sminthopsis macroura

PHALANGERIDAE
Trichosurus vulpecula arnhemensis

MACROPODIDAE
Macropus robustus
Macropus rufus
Petrogale rothschildii

PTEROPODIDAE
Pteropus alecto

EMBALLONURIDAE
Taphozous georgeanus
Taphozous hillii
Saccolaimus flaviventris

MEGADERMATIDAE
Macroderma gigas

MOLOSSIDAE
Chaerophon jobensi
Mormopteris beccari

HIPPOSIDERIDAE
Rhinonicteris aurantius

VESPATILLIONIDAE
Chalinolobus goudii
Nyctophilus bifax
Scotorepens balstoni
Vespadalus finlaysoni

MURIDAE
Mus domesticus
Notomys alexis
Pseudomys chapmani
Pseudomy delicatulus
P. hermansburgensis
Zyzomys argurus

CANIDAE
Canis familiaris dingo

FELIDAE
Felis catus

EQUIDAE
Equus asinus

BOVIDAE
Bos taurus

The mammal fauna of the nature reserve appears to be particularly rich. The sub-fossil records indicate that the area has suffered similar levels of extinction to that recorded throughout the rest of the arid and semi-arid regions of Western Australia. Six species of dasyurid marsupial and five species of native rodent is a reasonable contemporary mammal fauna for such an area in arid Australia. Records of particular significance were for *Sminthopsis longicaudata, Rhinonicteris aurantius*, *Macroderma gigas*, *Trichosurus* v. *arnhemensis* and *Pseudomys chapmani.* These species are either regionally significant or locally uncommon.

Preparation of the chapter treating the mammals on the nature reserve is complete with the exception of some editorial refinements and incorporation of the latest identifications for additional mammal sub-fossil records.

Reptiles and Amphibians:

All herpetofauna records obtained during this project have been databased. A total of 65 reptiles (Table 2) and six amphibians (Table 3) have been recorded within the reserve.

The majority of reptile and amphibian species recorded within the reserve are common throughout the bioregion. Exceptions include *Egernia formosa*, *Lerista macropisthopus fusciceps*, *Proablepharus reginae*, and *Pseudophryne douglasi*.

Preparation of chapters dealing with the reptile and amphibian treatments are complete with the exception of some editorial refinements.

Table 2. Reptiles of Barlee Range Nature Reserve.

AGAMIDAE
- *Ctenophorus caudicinctus caudicinctus*
- *Ctenophorus isolepis*
- *Ctenoph. maculatus badius*
- *Ctenophorus reticulatus*
- *Gemmatophora longirostris*
- *Pogona minor minor*

GEKKONIDAE
- *Diplodactylus conspicillatus*
- *Diplodactylus elderi*
- *Diplodactylus jeanae*
- *Diplodactylus savagei*
- *Diplodactylus stenodactylus*
- *Diplodactylus wombeyi*
- *Gehyra punctata*
- *Gehyra variegata*
- *Heteronotia binoei*
- *Heteronotia spelea*
- *Oedura marmorata*
- *Rynchoedura ornata*

SCINCIDAE
- *Cryptoblepharus plagiocephalus*
- *Carlia munda*
- *Ctenotus duricola*
- *Ctenotus grandis titan*
- *Ctenotus hanloni*
- *Ctenotus helenae*
- *Ctenotus leonhardii*
- *Ct. pantherinus ocellifera*
- *Ctenotus rubicundis*
- *Ctenotus rutilans*
- *Ctenotus saxatilis*
- *Ctenotus schomburgkii*
- *Cyclodomorphus melanops*
- *Egernia formosa*
- *Lerista bipes*
- *Lerista flammicauda*
- *Lerista. macropisthopus fusciceps*
- *Lerista muelleri*
- *Lerista petersoni*
- *Menetia greyii*
- *Menetia surda*
- *Morethia ruficauda exquisita*
- *Notoscincus ornatus*
- *Proablepharus reginae*
- *Teliqua multifasciata*

PYGOPODIDAE
- *Delma butleri*
- *Delma pax*
- *Lialis burtonis*

VARANIDAE
- *Varanus acanthurus*
- *Varanus brevicauda*
- *Varanus caudolineatus*
- *Varanus eremius*
- *Varanus giganteus*
- *Varanus gouldii*
- *Varanus panoptes rubidis*
- *Varanus tristis*

BOIDAE
- *Aspidites melanocephala*
- *Morelia olivacea barroni*

ELAPIDAE
- *Demansia psammophis cupreiceps*
- *Furina ornata*
- *Pseudechis australis*
- *Pseudonaja nuchalis*
- *Vermicella approximans*
- *Vermicella berthold*

TYPHLOPIDAE
- *Ramph. diversus ammodytes*
- *Ramphotyphlops grypus*
- *Ramphotyphlops hamatus*

Table 3. Amphibians of Barlee Range Nature Reserve.

HYLIDAE
Cyclorana maini
Litoria rubella

LEPTODACTYLIDAE
Neobatrachus aquilonius
Neobatrachus centralis
Neobatrachus sutor
Pseudophryne douglasi

Birds:

A total of 113 species of bird have been recorded within the reserve. This number includes may historical records held by the Western Australian Museum as well as those records collected by participants in the survey. Several interesting records were obtained including those for the Grey Honeyeater, Banded Stilt and Elegant Parrot. Numerous nesting and breeding records were obtained during the survey.

The chapter on the reserves avifauna is almost complete, requiring only a few minor corrections and editorial refinements.

Fish:

Barlee Range Nature Reserve has a relatively rich fish fauna with seven species being recorded during this project (Table 4). All seven species were recorded from Kookhabinna Creek. The presence of *Glossogobius aureus* is of some interest. This species is generally found relatively close to the ocean. To record this species 200 km upstream may indicate that it is distributed more widely than previously thought.

Table 4. Fish of Barlee Range Nature Reserve.

CLUPERIDAE
Nematalosa erebi

PLOTOSIDAE
Neosilurus hyrtlii

MELANOTAENIIDAE
Melanotaenia splendida australis

TERAPONIDAE
Amniataba percoides
Leipotherapon aheneus
Leipotherapon unicolor

GOBIIDAE
Glossogobius aureus

The chapter treating the fish of the nature reserve is almost complete, requiring a few minor editorial refinements.

Invertebrates:

Sorting and identification of non-Formicidae (non-ants) invertebrates has been completed. A total of 107 Arachnid taxa have been identified. Many species appear to be widespread through the region while others are apparently quite restricted. Many specimens represent taxa not previously recorded in the scientific literature.

A total of 65 ant taxa (Formicidae), representing four subfamilies and 15 genera have been recorded within the reserve. The most abundant genera were *Camponotus* and *Iridomyrmex*. Many specimens represent novel taxa.

Eleven mollusc species (five aquatic, six terrestrial) were collected from localities within the reserve. Three of these species, all terrestrial, appear to be scientifically undescribed. All of the aquatic species are common and widely distributed in river pools throughout the Pilbara Region.

Work has commenced on preparing chapters dealing with these biotic groups. It is anticipated that these chapters will be comprised of mostly annotated lists. This approach has been taken as the amount of material to hand and our knowledge of these groups in the Pilbara is insufficient to formulate conclusions about the distribution, species relationships and conservation status of the majority of taxa.

Associated data:

Development of the GIS database and various theme maps is complete. Refinement of some databases and editorial work on the products generated from the GIS themes is required before production of the final maps and cartographical products.

The chemical and physical attributes of soil samples obtained from 15 of the permanent sampling sites has been completed. This edaphic information will be used to assist in the interpretation of multivariant analyses results, as generated from interrogations performed on the biota recorded within the permanent sampling sites.

Outcomes:

Information generated from this project has already been used for management purposes and incorporated into operational programs. Funding received from Environment Australia through the auspices of the Feral Pest Program (ANCA) has been used to erect a fence around Yadjiyugga Claypan in order to exclude feral animals and stock from this vulnerable community. This community has also been nominated for inclusion on the list of Threatened Ecological Communities, although further assessment is required. Information generated during this project has also resulted in Yadjiyugga Claypan and the wetlands within Kookhabinna Gorge being included on the Directory of Important Wetlands in Australia. Similarly, results from this project have been used to assess the rationale for adding Yadjiyugga Claypan to the Register on the National Estate.

Other notable outcomes include:

- The identification of several new flora species (eg. *Wurmbea saccata*, *Sida* sp. 'Barlee Range` (S. van Leeuwen 1642));
- Considerable range extensions in the distribution of a number of reptiles (eg. *Egernia formosa*);
- Confirmation of extant populations of rare and vulnerable mammals (eg. *Rhinonicteris aurantius, Sminthopsis longicaudata, Psuedomys chapmanii*));
- The recollection of *Pseudophryne douglasi* from the TYPE locality after more than 30 years; and
- The collection of substantial sub-fossil material containing the remains of numerous mammals now locally extinct within the reserve.

Final Report Status:

A draft final report for the project will be submitted to the Heritage Council at the end of November. The current status of the report is detailed in Table 5.

Table 5. Progress of chapter preparation for final report.

Chapter	Topic	Status
1	Introduction	Preliminary draft
2	Setting	Preliminary draft
3	Flora and Vegetation	Draft
4	Mammals	Final draft
5	Reptiles	Final draft
6	Amphibians	Final draft
7	Birds	Draft
8	Fish	Final draft
9	Invertebrates	Draft
10	Discussion, biogeographical patterns and conservation significance	Preliminary draft
11	Conclusion and recommendations	Preliminary draft

PROJECT EXPENDITURE

No expenditure statement is included with this progress report as no funds have been debited against this project since the last progress report.

Departmental records indicate that a total of $3 076 is still outstanding from the original $20 000 supplied for this project. It is acknowledged that these remaining funds will be supplied once the final report has been submitted and favourably received by the Heritage Council.

Any over-expenditure on the project will be the responsibility of the Project Supervisor.

* * * * * * * * * * *