BIOLOGICAL SURVEY OF

BARLEE RANGE NATURE RESERVE

Project (N92/5)

Progress Report 12

Prepared by: *Stephen van Leeuwen*

Date: *November 1996*

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:

1. Stephen van Leeuwen
   Research Scientist

2. 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 and subsequent analyses. 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 in August 1996 considerable progress towards completion of this project has occurred. This progress has

mainly been associated with the sorting and identification of invertebrates together with the acquisition and development of GIS themes under MapInfo. Progress is still not sufficiently advanced with flora identification and thus specimen databasing as many taxa still require identification and verification of their taxonomic status. Much of this investigative work is dependent on the assistance of external specialist plant taxonomists with expertise in particular taxonomic groups. Usually these groups of plant exhibit many unresolved taxonomic problems and available taxonomic treatments are inadequate and preclude the correct identification of these arid zone species. Examples of families and genera where these problems are most apparent include the Malvaceae (*Sida* and *Abutilon*), Myoporaceae (*Eremophila*), Scrophulariaceae (*Peplidium*), Solanaceae (*Solanum*) and Poaceae.

Fauna identification and databasing is all but complete with only a few troublesome mammal specimens requiring further investigation. Further comparative anatomical investigations, including the examination of denture ornamentation and cranial morphology, will be required to resolve these problems.

The development of the GIS database is almost complete. This databases contains all available cadastral, topographical, geological and ecological/biological themes. Problems are being experienced with the relief theme, however, planned editing and downsizing of this data set and the use of a more powerful graphics accelerator should alleviate these problems. The development of the GIS database is a dynamic process which will continue until the production of the final report.

Progress on this project, with reference to all biotic groups is outlined in the following sections.

Plants:

Work has progressed on the identification of the 300 plus taxa recorded within the Nature Reserve. Many of the taxa collected within the reserve are poorly known, represent disjunct outliers and are from taxonomically poorly known families. Many species also appear to represent novel taxa as highlighted by the recently described Barlee Range Nature Reserve endemic, *Wurmbea saccata*. Recent discussions with Peter Wilson at the Royal Botanic Gardens in Sydney also indicate that an *Indigofera* specimen collected from within the Nature Reserve is also a new species to science, while another *Indigofera* specimen represents a range extension to a taxon previously thought to be endemic to the Hamersley Range.

The identification of many of the poorly known plant specimens is being undertaken by specialist plant taxonomist with expertises in particular groups. As mentioned in previous reports this is a laborious and tedious task which is taking longer than anticipated. Recent contact

has been made with colleagues involved in this identification process in a effort to expedite the naming process. All taxonomists contacted have agreed to provided identification by mid-February.

Without a comprehensive and taxonomically accurate flora list for the Nature Reserve it will not be possible to fully evaluate the nature conservation and national estate heritage values of the project area. Similarly with an incomplete flora list it will be difficult to fulfil the project's aim of assessing the regional representativeness of the Nature Reserve. The future development of biologically and ecologically rational management recommendations will also be impeded if a comprehensive flora list for the reserve is not available.

Mammals:

All mammal records collected from within the Nature Reserve have been databased. Some taxonomic problems still exist with regards to the identification of the native rodents collected in the reserve. This problem will only be resolved through further taxonomic investigation. In conjunction with staff at the Western Australian Museum, Peter Kendrick is undertaking cranial and dentüre examination of all *Pseudomys* specimens to verify their taxonomic status. Problems appear to exist with respect to the taxonomic status of *P. hermannsburgensis* with some specimens collected from the Nature Reserve possibly representing an undescribed taxon found elsewhere in the Pilbara and adjacent Gascoyne regions.

Reptiles and Amphibians:

All herpetofauna records obtained during this project have been databased. Some taxonomic problems still exist in several reptile groups, particularly the *Lerista* complex, however, recently revised taxonomic keys should help resolve these problems. Identification and clarification of the taxonomic status of various frog species has continuing.

Avifauna:

All 105 species of bird recorded within the Nature Reserve have been databased. Analysis of this data has commence with the relevant chapter in draft format.

Invertebrates:

Sorting and identification of the Arachnida (except Acari) and Myriapoda specimens collected from the Nature Reserve has been completed by Mark Harvey and Julianne Waldock from the Western Australian Museum. A total of 107 taxa were identified, the majority of which represent apparently unnamed taxa previously unreported in the scientific literature or represented in the Western Australian Museum's collections. Distributional data is lacking for most of these species although it appears that some taxa (14 taxa) are probably endemic or

have very restricted distributions in the vicinity of the Barlee Range. For previously recorded taxa interesting records were obtained of the very rare ant-mimic *Damoetus* sp. and for *Isopedella saundersi*. The later taxon is widespread in southern Australia with the record from the Barlee Range Nature Reserve representing a significant range extension. Appendix One provides a summary of the Arachnida (except Acari) and Myriapoda specimens collected in the Nature Reserve.

Identification of the ant fauna is continuing although sorting and the enumeration of taxon has been completed with the assistance of Jonathan Majer from the School of Environmental Biology at Curtin University of Technology. A total of 65 taxa representing 4 subfamiles and 15 genera were identified in the collection. The most diverse family appeared to be the Formicinae which was represented by eight genera and thirty nine taxa. The most abundant genera were *Camponotus* and *Iridomyrmex* with 13 and 9 taxa, respectively. The composition of genera appears similar to that observed in other ant assemblages elsewhere in the Pilbara, although some contrast is evident in the composition of functional groups represented in the Barlee Range material. Preliminary investigations of biogeographic profiles indicate a high proportion of Eyrean and widespread taxa in the Barlee Range species which it typical of other Pilbara ant assemblages examined. More detailed analysis of this ant faunal data is underway and will be enhanced once names can be assigned to the taxa collected. Appendix Two is a summary of the ant genera collected within the Nature Reserve.

In the next few months all flora and fauna identifications will be completed together with the respective specimen databases. Similarly the GIS database will be refined and also completed. Processing and multivariant analyses of the biota data sets has commenced and should also be completed within the next few months. Draft preparation of invertebrate and avifauna chapters is in hand with other chapters planned in the final report in their infancy. A draft of the final report will be submitted to the Heritage Council in April 1997.

EXPENDITURE TO DATE

No expenditure statement is included with this progress report as no Heritage Council funds have been debited against this project since the September 1995 progress report. As detailed in Progress Report 9, at September 1995 a total of $16 924 or 84% of the $20 000 NEGP budget had been consumed. A cost overrun in the budget for this project is not anticipated.

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APPENDIX ONE

Appendix One

Identifications of

Arachnida (except Acari) and Myriapoda

collected from the Barlee Range Nature Reserve

(with distribution annotations)

Determinations provided by

Mark S. Harvey and Julianne Waldock
Department of Terrestrial Invertebrates (Arachnology)
Western Australian Museum

APPENDIX ONE

SCORPIONES

Buthidae

Isometroides sp. 1	
Lychas sp. 1	

Scorpionidae

Urodacus armatus	Widespread in Australia

PSEUDOSCORPIONES

Garypidae

Synsphyronus sp. 1	

Olpiidae

Amblyolpium sp. 1	
Beierolpium sp. 1	
Xenolpium sp. 1	

ARANEAE

Araneidae

Dolophones sp. 1	

Barychelidae

Synothele sp. 1	Probably endemic
Synothele sp. 2	Probably endemic

Clubionidae

Clubiona sp. 1	
Meedo sp. 1	

Corinnidae

Supunna albopunctata	Widespread in Australia
Supunna picta	Widespread in Australia
Genus 1, sp. 1	
Genus 2, sp. 1	
Genus 3, sp. 1	

Ctenidae

Genus 1, sp. 1	

Deinopidae

Deinopis sp. 1	

Desidae

Badumna sp. 1	
Forsterina sp. 1	

Dictynidae

Genus 1, sp. 1	

Filistatidae

Wandella sp. 1	New species, endemic or very restricted

Gnaphosidae

Aristerus sp. 1	
Aristerus sp. 2	
Ceryerda sp. 1	
Eilica sp. 1	
Eilica sp. 2	
Eilica sp. 3	
Hemicloea sp. 1	
Hemicloea sp. 2	
Hemicloea sp. 3	
Genus 1, sp. 1	
Genus 2, sp. 1	
Genus 3, sp. 1	

APPENDIX ONE

Heteropodidae		
	Eodelena sp.	
	Isopedella saundersi	Widespread in southern Australia - significant range extension
	Neosparassus sp.	
	Pediana tenuis	Widespread
Idiopidae		
	Eucyrtops sp. 1	New species, endemic or very restricted
	Eucyrtops sp. 2	New species, endemic or very restricted
Lamponidae		
	Lamponina scutata	Widespread
Linyphiidae		
	Genus 1, sp. 1	
	Genus 2, sp. 1	
Lycosidae		
	Genus 1, sp. 1	
	Genus 1, sp. 2	
Miturgidae		
	Miturga sp. 1	
Oonopidae		
	Grymeus sp. 1	New species, endemic or very restricted
	Grymeus sp. 2	New species, endemic or very restricted
	Grymeus sp. 3	New species, endemic or very restricted
	Myrmopopaea sp. 1	New species, endemic or very restricted
	Myrmopopaea sp. 2	New species, endemic or very restricted
	Opopaea sp. 1	New species, endemic or very restricted
Oxyopidae		
	Oxyopes sp. 2	New species, endemic or very restricted
	Oxyopes sp. 3	New species, endemic or very restricted
Pholcidae		
	Trichocyclus sp. 1	
	Trichocyclus sp. 2	
Prodidomidae		
	Molycriinae sp. 1	
	Molycriinae sp. 2	
	Molycriinae sp. 3	
	Molycriinae sp. 4	
	Molycriinae sp. 5	
	Prodidominae spp.	
Salticidae		
	Damoetus sp. 1	Very rare Genus (ant-mimics)
	'Fissidentati' Genus 1, sp. 1	
	Gangus sp. 1	
	Holoplatys sp. 1	
	Hypoblemum sp. 1	
	Lycidas sp. 1	
	Lycidas sp. 2	
	Salpesia? sp. 1	
	Zenodorus orbiculatus	Widespread
	'Unidentati' Genus 1, sp. 1	
	'Unidentati' Genus 2, sp. 1	
	'Unidentati' Genus 3, sp. 1	
	'Unidentati' Genus 4, sp. 1	
	'Unidentati' Genus 5, sp. 1	
	'Unidentati' Genus 6, sp. 1	

APPENDIX ONE

Segestriidae		
	Genus 1, sp. 1	
Theridiidae		
	Euryopis sp. 1	
	Latrodectus hasseltii	Widespread across Australia
	Steatoda sp. 1	
	Steatoda sp. 2	
Thomisidae		
	Stephanopis sp. 1	
	Stephanopis sp. 2	
	Stephanopis sp. 3	
	Genus indet.	
Trochanteriidae		
	Rebilus sp. 1	
	Rebilus sp. 2	
	Genus 1, sp. 1	
Zodariidae		
	Asteron sp. 1	
	Asteron sp. 2	
	Asteron sp. 3	
	Asteron sp. 4	
	Australutica sp. 1	
	Neostorena sp. 1	
Zoridae		
	Genus 1, sp. 1	
CHILOPODA		
SCOLOPENDRIDA		
Scolopendridae		
	Arthrorhabdus paucispinus	Widespread in Western Australia
	Cormocephalus strigosus	Widespread across Australia
	Ethmostigmus curtipes	Widespread in Western Australia
	Scolopendra laeta	Widespread across Australia
	Scolopendra morsitans	Widespread across Australia
SCUTIGERIDA		
Scutigeridae		
	Allothereua sp.	
DIPLOPODA		
POLYXENIDA		
Polyxenidae		
	Genus indet.	
Synxenidae		
	Genus indet.	
POLYDESMIDA		
Paradoxosomatidae		
	Antichiropus sp. 1	New species, endemic or very restricted
	Antichiropus sp. 2	New species, endemic or very restricted

APPENDIX TWO

Identifications of

Ant (Hymenoptera: Formicidae) specimens

collected from the Barlee Range Nature Reserve

Determinations provided by

Jonathan D. Majer
School of Environmental Science
Curtin University of Technology

APPENDIX TWO

DOLICHODERINAE

Iridomyrmex sp. 1
Iridomyrmex sp. 2
Iridomyrmex sp. 3
Iridomyrmex sp. 4
Iridomyrmex sp. 5
Iridomyrmex sp. 6
Iridomyrmex sp. 7
Iridomyrmex sp. 8
Iridomyrmex sp. 9

FORMICINAE

Calomyrmex sp. 1
Calomyrmex sp. 2
Camponotus sp. 1
Camponotus sp. 2
Camponotus sp. 3
Camponotus sp. 4
Camponotus sp. 5
Camponotus sp. 6
Camponotus sp. 7
Camponotus sp. 8
Camponotus sp. 9
Camponotus sp. 10
Camponotus sp. 11
Camponotus sp. 12
Camponotus sp. 13
Melophorus sp. 1
Melophorus sp. 2
Melophorus sp. 3
Melophorus sp. 4
Melophorus sp. 5
Melophorus sp. 6
Melophorus sp. 7
Meranoplus sp. 1
Meranoplus sp. 2
Meranoplus sp. 3
Meranoplus sp. 4
Meranoplus sp. 5
Meranoplus sp. 6
Meranoplus sp. 7
Meranoplus sp. 8
Opisthopsis sp. 1
Polyrhachis sp. 1
Polyrhachis sp. 2
Polyrhachis sp. 3
Polyrhachis sp. 4
Polyrhachis sp. 5
Polyrhachis sp. 6
Rhytidoponera sp. 1
Stigmacros sp. 1

MYRMICINAE

Crematogaster sp. 1
Monomorium sp. 1
Monomorium sp. 2
Monomorium sp. 3
Monomorium sp. 4
? *Monomorium* sp. 5
Pheidole sp. 1
Pheidole sp. 2
Pheidole sp. 3
Pheidole sp. 4
Pheidole sp. 5
Tetramorium sp. 1
Tetramorium sp. 2
Tetramorium sp. 3
Tetramorium sp. 4

PONERINAE

Anochetus sp. 1
Cerapachys sp. 1