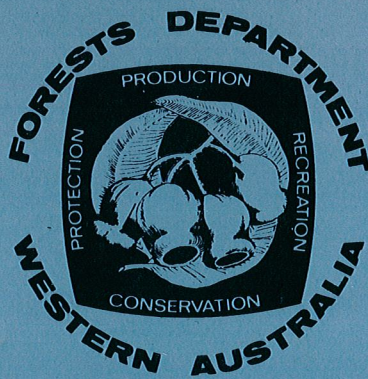


**FOREST AND WOODLAND
FAUNA RESEARCH
IN
SOUTH-WESTERN AUSTRALIA**

Compiled by

Forest Fauna Research Working Group



FORESTS DEPARTMENT OF WESTERN AUSTRALIA

TECHNICAL PAPER NO. 13

**FOREST AND WOODLAND
FAUNA RESEARCH
IN
SOUTH-WESTERN AUSTRALIA**

**A List of Current Research Projects
and Recent Publications**

Compiled by

Forest Fauna Research Working Group

**Forests Department of W.A.
P. J. McNamara
Acting Conservator of Forests
1984**

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PREFACE

This survey is published by the Acting Conservator of forests on behalf of the Forest Fauna Research Working Group.

The Forest Fauna Research Working Group, under the auspices of the Steering Committee for Research on Land Use and Water Supply, co-ordinates and encourages research on forest fauna, and its work complements that of the Forests Department and other agencies involved in this field.

INTRODUCTION

In 1979, following a recommendation of the Environmental Protection Authority the Government of Western Australia appointed a "Research Co-ordinating Committee" to determine research priorities in the south-west of the state. Three major land uses: water supply, forestry, and agriculture, are represented on the committee.

To provide technical and scientific back-up for this committee a "Steering Committee for Research on Land Use and Water Supply" was set up.

The task of this Committee is:

(i) To develop research programmes which will provide, where necessary, the technical basis for land use planning and management in south-western Australia in areas where agriculture, forestry, open cast mining, and water production interact; and to assess their environmental effects of these activities.

(ii) To report and evaluate results of research to the Research Co-ordinating Committee, and evaluate them in terms of their implications for land management.

(iii) To publish periodic reviews.

A series of Working Groups has been set up to assist the Steering Committee in its task. One of these, the Forest Fauna Research Working Group is concerned with co-ordinating fauna research in the forests and woodland areas of the south-west, identifying areas of research need, and providing a forum for discussion and evaluation of results. The group has assembled a list of current research projects and a list of recent publications on forest fauna in the south-west. This publication aims to disseminate this information to interested researchers and students.

RESEARCH PROJECTS

This is a list of research projects on forest and woodland fauna carried out by various institutions in the south-west area. Research work is continually in a state of flux: researchers leave, projects are terminated, and new ones started. It is therefore impossible to cover all the work which may be going on at any one time. We have tried to concentrate on work which is relatively permanent. The list gives an indication of the researchers in the field and their main areas of interest. We have not attempted to list student and other short term projects. Details of such projects may be obtained by contacting the researchers listed in the various organisations.

SELECT BIBLIOGRAPHY

The list of publications is very limited in scope. We have gathered the latest references only and made no attempt at a complete literature search. It is hoped that it may nevertheless prove useful to the student or researcher interested in forest fauna ecology in the south-west.

UPDATING

It is intended to update both the lists of projects and the references at fairly frequent intervals. It is hoped that in time the reference list in particular will become more complete and be a useful cornerstone in forest fauna research. To this end we invite interested persons to send in additions and corrections for inclusion in future publications. Please include a reprint.

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N.B. In the interest of saving time and money, this list has not been fully edited and the authors apologise for any small errors which may be in the text.

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FOREST FAUNA RESEARCH PROJECTS

STATUS

PLANNED = P COMPLETED = C

ONGOING = 0 BUT UNPUBLISHED

SPECIES	RESEARCHER	INSTITUTION	LOCATION	OBJECT OF RESEARCH	METHODS USED	STATUS
<u>MAMMALS</u>						
Bats	M. Sawle	Murdoch Uni.	Perup	Species present and seasonal abundances.	Mist netting, Bat traps, Banding and Nest boxes.	C
Bat species	O. Nicholls	Alcoa		Basic biology and distribution study.	Trapping, mist netting and banding in rehabilitated and unmined forest.	C
<u>Dasyurus geoffroii</u>	A. Bradley	U.W.A.	Various sites in SW forests	Life history, physiological changes associated with life history, stress and reproduction.	Live trapping, mark/release blood sampling, measurement of steroid hormones.	P
Fox (<u>Vulpes vulpes</u>)	K. Maisy	Forests Dept.	Perup	Monitor population levels and food species.	Scat collections on 1 km transects.	0
Honey possums and Honeyeater birds (mostly woodlands and heathlands)	R. Wooller	Murdoch Uni.	Coastal Sandplains	Nectarivory, bandstias and population dynamics.	Pitfall trapping and mist netting. Mark-recapture.	0
Honey and pigmy possum		Worsley Alumina	Boddington	Seasonal flora feeding preferences.	Fur sampled for pollen analysis.	0
Possum & Kangaroo surveys	P. Christensen & G. Wardell-Johnson	Forests Dept.	E. of Manjimup	To keep records of long term fluctuations.	Spotlight surveys and evening surveys from vehicle on a permanent transect.	0
<u>Artechinus flavipes</u>	M. Mason	Forests Dept.	Dwellingup	Succession following fire in ti-tree swamp. Dry sclerophyll jarrah forest - long term.	Grid trapping - trap - mark - release.	C

Mardo (<u>A. flavipes</u>)	C. Carati	Murdoch Uni.		Obtain information on ecology in forest for use in rehabilitation design.	Grid trapping, radio-tracking, various other methods.	C
Mardo (<u>A. flavipes</u>)	A. Bradley	U.W.A.	Pemberton Jarrahdale	Physiological changes during life history, culminating in stress-related male mortality. Sodium and water turnover.	Live trapping. Laboratory measurement of nitrogen metabolism. Field use of ^{22}Na and $^3\text{H}_2\text{O}$.	O
Mammals		A.P.B.		Testing a range of species of native fauna for susceptibility to fluoracetate.		O
Mammals in general (including bats)		Worsley Alumina	Boddington & Worsley	Habitat and feeding preferences, reproductive biology and behaviour, and seasonal trends in abundance within represented vegetation communities.	Pit-trap/drift fence, box and cage trapping, head-torching, mist netting and bat trapping. Mark/recapture.	O
Mammals - species studies	O. Nichols	Aicoa		Assess suitability of rehabilitation, improve where desirable.	Trapping, tagging, occasional radio-tracking. (<u>Antechinus flavipes</u> , <u>Phascogale tapoatapa</u> .)	C
Rabbits (<u>Oryctolagus cuniculus</u>)		A.P.B.	Cape Naturalist Chidlow	Studies on the diet of rabbits. The use by rabbits of native flora as food.	Trapping, scat collection.	O
<u>Rattus fuscipes</u> and <u>Antechinus flavipes</u> Warren Block study.	P. Christensen, G. Liddelow and G. Wardell-Johnson	Forests Dept.	Pemberton area	Succession following intense burn in wet sclerophyll karri forest - long term.	Grid trapping - capture - mark - release.	C

<u>Nurbat (Myrmecobius fasciatus)</u>	T. Friend	Fisheries & Wildlife	Dryandra Forest	Population studies, ecological studies relevant to management.	Radio tracking.	0
Nurbat	T. Friend	Fisheries & Wildlife	S.W. area	Survey of distribution	Sightings and foot surveys. and habitat description.	0
Nurbat	T. Friend	Fisheries & Wildlife	Dryandra	Re-introduction to areas of former occurrence.	Hand captures	0
Nurbat	T. Friend	Fisheries & Wildlife	Dryandra	Establishment of breeding colony.		0
<u>Red-tailed Warbenger (P. calura)</u>	A. Bradley	U.W.A.	Tuttanning & Yormaning Nature Reserves	Habitat preference. Physiological changes during life history, culminating in stress-related male mortality. Sodium and water turnover.	Live trapping. Laboratory measurement of nitrogen metabolism. Field use of ^{22}Na and $^3\text{H}_2\text{O}$.	0
<u>Woylie (Bettongia penicillata) and Tammar (Macropus eugenii) Boylup study.</u>	P. Christensen	Forests Dept.	Perup	Effect of autumn fire on population including food. Dry sclerophyll jarrah forest - long term.	Grid trapping - capture mark - release. Radio tracking scat analysis. Digging activity.	0
<u>Woylie (Bettongia penicillata) and</u>	P. Christensen	Forests Dept.	State Forests area	To determine the feasibility of establishing new colonies of woylies in places where they used to be. Includes the impact of the fox - data to be used for Management Priority Areas.	Grid trapping - capture - mark - release. Sand tracks, digging activity.	0

BIRDS

Birds	R. Woolter	Mudroch Uni.	Big Brook/ Treen Brook/ Tone River	Diets of passerines in karri and jarrah forests. Longevity and sedentariness of passerines in forests.	Mist netting, faecal analysis, banding	0
Birds - survey work and population studies in jarrah forest and rehab- ilitated mined areas	B. Wykes & B. Collins	W.A.I.T.	Jarraldale	To determine nutritional, breeding and other requirements of birds.	Mist netting, transects, bird and invertebrate sampling, floristic analysis.	0
Birds		Worsley Alumina	Boddington & Worsley	Habitat and feeding preferences, reproductive biology, behaviour and seasonal movements/ abundance within represented vegetation communities.	Seasonal Bird Observation Quadrat (200m x 200m) studies, opportunistic sightings and specific searching for nests.	0
Birds - community study. Iffley and Crowea studies.	J. Serventy	Forests Dept.	Pemberton area	Effects of clear felling karri forest.	Permanent transects.	0
Birds - community study	G. Wardell-Johnson	Forests Dept.	Karri forest	Use of nest boxes in karri.	Nest boxes.	0
Birds - community study	G. Wardell-Johnson	Forests Dept.	Karri forest	To record the details of successions in regenerating hardwood stands.	Mist netting - transects, radio-tracking - (this study is just being started).	0
Honeyeaters in the wheatbelt	B. Collins & C. Newland	W.A.I.T.	Wongamine	Determination of variations in population density, food preferences, energetics and roles as pollinators.	Regular monitoring of bird numbers, activity, food selection and habitat preferences.	0

Avifauna	O. Nichols	Alcoa	Use of nest boxes.	Large and small nest boxes.	O
Avifauna - community study	B. Wykes	W.A.I.T.	Obtain ecological information for use in rehabilitation design.	Two-year strip transect censuses, observational data, vegetation and general habitat analysis.	C
Avifauna - community study	O. Nichols	Alcoa	Assess suitability of rehabilitation by comparing with dieback affected and healthy unmined forest.	Strip transect censuses mist netting and banding.	C
Several species of Cockatoo, Wandoo & Salmon Gum	D. Saunders I. Rowley & G. Smith	C.S.I.R.O.	To provide fundamental biological information for the management of bird populations.	Marking of individuals and monitoring their breeding success, feeding, movements and social interactions.	O
Red-winged Wren (<u>Malurus elegans</u>)	I. Rowley	C.S.I.R.O.	Co-operative breeding species.	Marked individuals.	O
Silvereyes (<u>Zosterops lateralis</u>)		A.P.B.	The biology of Silvereyes and the investigation of their damage to wine grapes in the south-west.	Techniques including netting, acoustic jamming, chemical repulsion and diversionary feeding.	C
Water Birds	J.A.K. Lane	Fisheries & Wildlife	Management and monitoring of water birds.	Several projects using a variety of methods.	O
Western Rosella (Platycercus icterotis) <u>Port Lincoln Ringneck</u> (Barnardius zonarius) Regent Parrot (Polytelis anthopepulis) Red-capped Parrot (Purpureicephalus spurius)		A.P.B.	Biology of the Western Rosella, Port Lincoln Ringneck, Regent Parrot and Red-capped Parrot relating to damage to orchard and grain crops.		O

REPTILES

Reptiles - community study	O. Nichols	Alcoa	Assess suitability of rehabilitation by comparing with dieback affected and healthy unmined forest.	Grid trapping, observation, mark and re-capture, morphometrical study.	C
Reptiles - community study	C. Davidge	Murdoch Uni.	Diet, reproduction and population dynamics of a herpetofaunal community.	Pitfall and box trapping, mark - recapture, gut contents, gonads.	C
Reptiles and Amphibians		Worsley Alumina	Habitat and feeding preferences, reproductive biology and behaviour and seasonal trends in abundance within represented vegetation communities.	Data collected in conjunction with mammal studies referred to earlier.	O
Carpet Snake (<u>Phython spilotes</u>)	O. Nichols	Alcoa	Determine species status, impact of mining and habitat requirements.	Statewide mail and contact survey, collect road kills, radio-tracking, W.A. Museum data.	O
Short-necked tortoise (<u>Pseudomydura umbrina</u>)	A.A. Burbidge	Fisheries & Wildlife	Monitor populations and develop techniques for capture breeding.	Hand capture. Establishment of captive populations.	O
AMPHIBIANS/FISH					
Aquatic invertebrates	S. Burn	U.W.A.	Assess effects of land use, especially mining on stream invertebrates.	Various survey techniques.	O
<u>Geocrinia rosea</u> <u>Geocrinia tutea</u> and an undescribed species	J.D. Roberts G. Wardell-Johnson W. Barendse	U.W.A./ Forestry	Call structure, morphology and genetic divergence in <u>Geocrinia rosea</u> complex.	Recording calls, electrophoresis.	O

INVERTEBRATES

Invertebrates	C. Carati	U.W.A.	Jarrahdale	Dynamics of invertebrate orders. Numbers and calorific value of various orders through seasons and habitat esp. w.r.t. use of logs etc. as refuges.	Pit-trap, suction sampling, hand collection.	C
Invertebrates	J. Majer	W.A.I.T.	Worsley	To produce inventories of various taxa in areas which are about to be mined.	Pitfall trapping, shrub sweeping and tree beating.	C
Orthoptera	J. Dolva	U.W.A.	Jarrahdale	Reproductive strategies in response to long term burn programmes.	Hand collection.	O
Crustacea	B. Knott C. Austin	U.W.A.	Jarrah & Karri forest streams	Biology, taxonomy and biogeography.	Netting, hand collecting.	O
Soil and litter invertebrates Dieback Research Foundation Finding	A. Postle & J. Majer	W.A.I.T.	Dwellingup	Determination of seasonality and influence of site type on invertebrates and their role in jarrah litter decomposition and nutrient cycling.	Berlese and Tullgren funnel extraction, pitfall trapping, litter bag deposition monitoring, micro-climatic measurement, nutrient analyses.	O
Soil and litter invertebrates	J. Majer	W.A.I.T.	Kojoonup, Dwellingup, Karragullen	Succession following cool and medium intensity spring and autumn burns in jarrah.	Berlese and Tullgren funnel extraction of fauna.	C
Predatory invertebrates	O. Nichols	Alcoa		Determine utilisation of rehabilitated areas.	Transect pit traps, various insect collecting techniques.	C

Ants	J. Majer	W.A.I.T.	Karragullen, Queensland & Darwin	To determine species richness and biomass of ants foraging or nesting in trees canopies throughout Australia.	Sticky trapping and chemical knockdown of tree canopy fauna.	0
Ants	J. Majer	W.A.I.T.		Long-term ant succession in rehabilitated sites.	Grid pit trapping seasonal in rehabilitated site and forest control.	0
Ants	J. Majer	W.A.I.T.	Karragullen, Dwellingup	Succession following cool and medium intensity autumn and spring burns in Jarrah.	Pitfall trapping and visual observations in burn and control plots.	C
Ants	J. Majer	W.A.I.T.	Statewide	To produce maps and computer generated catalogues of the W.A. ant fauna.	All available survey methods.	0
Ants, birds and reptiles	J. Majer J. Fox	W.A.I.T.	Dryandra	Provide baseline data on influence of fire on these groups. Subsequently to assess impact of fire.	Pitfall trapping, hand collecting and observations.	0
Termites and ants	S. Bunn & J. Majer	U.W.A. & W.A.I.T.		Pre-mining surveys to assess likely effects.	Pit trapping and hand collecting at various unmined sites.	0
Termites	K. Maisey	Forest Dept.	Perup	Seasonal variations in numbers and effect of fire.	Estimates made on transects and collections.	0
Termites	O. Nichols	Alcoa		Return to rehabilitated areas.	Hand collecting.	C

MISCELLANEOUS

Various fauna	0. Nichols	Alcoa	Develop new techniques e.g. Woodchip, long addition to increase utilisation of rehabilitated sites by fauna.	Surveys in log and woodchip areas, study of particular species biology.	0
Feral cat, Mouse	0. Nichols	Alcoa	Monitoring, control if necessary.	Trapping, sightings.	0
Vertebrates	0. Nichols	Alcoa	Surveys to obtain data for input into mine plans.	Trapping, bird censuses, reptile hand collecting.	0
Vertebrate Succession - broad community study	P. Christensen, K. Maisey, & T. Leftwich	Forests Dept.	To determine vertebrate succession following intense fire in dry sclerophyll.	Annual surveys. 1 - 2 months.	0
Vertebrate surveys	P. Christensen & G. Wardell-Johnson	Forests Dept.	To determine species presence and distribution all over state forest, including pine plantations.	1 - 2 week surveys during spring of autumn months.	0
Community study <u>Trichosurus vulpecula.</u> Wylie, Tamar and selected bird species.	P. Christensen, K. Maisey T. Leftwich &	Forests Dept.	Effect of intense fire in dry sclerophyll.	Radio tracking. Grid trapping - capture - mark - release. Digging activity, Line transects, etc.	0
Amphibians, reptiles small mammals	M.J. Barford	Murdoch Uni.	The effect of fire on small invertebrates, particularly reptiles.	Pitfall and box trapping, mark - recapture studies, removal sampling for diet and reproduction, insect sampling.	0