

WORLD WIDE FUND FOR NATURE AUSTRALIA PROGRESS REPORT

A. Project No and Title

P144: Fire and Invertebrate Conservation in Mallee-Heath Remnants.

B. Report Type

Progress Report No. 4, 26 June, 1991.

C. Authors of Report

Dr Gordon R. Friend and Mr Graham P. Hall

D. Collaborators

Australian National Insect Collection, Canberra.
Western Australian Museum, Perth.

E. Objectives of Project

- a) To examine the consequences of instigating deliberate burning for ecological management in remnant semi-arid vegetation by studying components of the fauna which are likely to show a range of responses to fire.
- b) Use these data to develop general principles and policies for predictive fire management in such ecosystems.

F. Research Methodology

- a) Studies are conducted in the Stirling Range National Park.
- b) Three fires were carried out in 1990-1991: a spring burn in 1990 over 20 ha, and two autumn burns in 1991, one over 20 ha and the other over 200 ha.
- c) Regular pre-and post-fire sampling using pitfall traps, sweeping and interception traps over 3 years.
- d) Trap catches of Coleoptera, Arachnida, Hymenoptera, Diptera, Hemiptera and Orthoptera are separated and identified to lowest taxonomic level possible. The remainder of the catches are stored unsorted.

G. Summary of Work to Date

- a) Permanent trapping grids were selected and established in a range of sites with different fire histories during June 1989.
- b) Trapping was conducted in June, August, October and December 1989; February, April, June, September and December 1990; February, April and May 1991.
- c) Sorting and identification of all catches up to September 1990 has been completed. Sorting of the material from September and December 1990 has been deferred to sort post-fire samples from 1991.
- d) Measurement of habitat attributes has been completed on 9 of the 13 study plots, and progress is continuing on the remainder.
- e) Nineteen species of the melolonthine beetle genus *Heteronyx* have been collected, of which thirteen are recognised as new. In addition, eighteen species of *Liparetris* have been collected and ten of these are new species. Also several species of identified melolonthines have been collected which were not previously represented in the Australian National Insect Collection. All of these species are being included in forthcoming reviews on melolonthine scarab taxonomy.

- f) A new genus of spider has been identified from our collections by the Arachnology Department of the Western Australian Museum.
- g) Three new species of *Callipappus* (bird of paradise bugs) have been identified by Dr. P. Gullen of the Australian National University. Preliminary observations suggest these species may be more abundant on the recently burnt sites.
- h) The fire planned for spring 1990 was conducted on 24 November under mild weather conditions, and resulted in a low intensity burn with considerable patchiness. The autumn 1991 burns were carried out on 27 March (20ha) and 17 April (approx. 200ha). Despite difficulties with the weather (lack of strong wind), the fires were of moderate intensity and burnt a significant proportion of each of the target grids.

H. Preliminary Recommendations for Management

This project is part of a multidisciplinary study on fire behaviour and fire effects on the biota, and as such has the potential to provide managers with data on which to formulate ecologically sound fire management policies.

However, more post-fire monitoring needs to be completed before any management recommendations can be made.

I. Work to be Completed

- a) Continue post-fire sampling.
- b) On-going sorting and identification of invertebrates from trapping occasions.
- c) Carry out further habitat analysis on burnt plots to monitor vegetation recovery.

J. Difficulties Encountered

An extensive high intensity prescribed burn was carried out in early April 1991 affecting much of the north-east section of the Park adjacent to our study plots. This presents the opportunity to study the effects of a large fire and enhance our smaller scale work. Such monitoring will necessitate the deferral of trapping on the two unburnt grids west of Chester Pass Road.

After consultation with Dr. Mark Harvey, Curator of Arachnology, Western Australian Museum, it was decided that the taxonomic difficulties with spiders precluded detailed identification of our specimens. In future spiders will only be identified to ordinal level.

K. Budget Report

World Wide Fund for Nature funding for the 24 month period ending 24 June 1991.

	Budget	Expenditure
Salaries	31 950	28 450
Equipment	900	360
Plant	2 250	2 460
Administration & Publication	1 350	900
Total	<u>\$36 450</u>	<u>\$32 170</u>

Resources from Department of Conservation and Land Management for the 24 month period ending 24 June 1991.

	Budget	Expenditure
Salaries and Travel	22 500	21 465
Equipment	2 250	3 125
Plant	5 400	3 120
Administration, Computing & Publication	6 750	4 000
Total	<u>\$36 900</u>	<u>\$31 710</u>

L. Reports or Publications Arising

Hall G. P. and Friend G. R. (in prep) Further notes on the genus *Nickerlea* (Coleoptera : Cicindelinae) in southwestern Australia, including the description of a new species. J. Roy. Soc. W.A.

Proposal for a book entitled "Natural History of the Stirling Range National Park" edited by G. P. Hall and G. R. Friend. Potential authors have now agreed to write chapters for this endeavour, and we have reached agreement in principle with CALM to publish this book.