

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. 3., 13 December, 1990.

**C. Authors of Report**

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**D. Collaborators**

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#### **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 are planned in 1990-1991: a spring burn in 1990 over 20 ha, and two autumn burns in 1991, one over 20 ha and the other a routine operational burn over 400 ha.
- c) Regular pre-and post-fire sampling using pitfall traps, sweeping and beating 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, and February, April, June, September and December 1990.
- c) Sorting and identification of the 1989 catches, and the February and April 1990 samples has been completed. Sorting of the material caught in June 1990 is progressing.
- d) Measurement of habitat attributes has been completed on 40% of the 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, 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) Progress in being made in the preliminary identification of spiders caught in pitfall traps during the critical autumn and spring periods. This work is in conjunction with the Arachnology Department of the Western Australian Museum.
- g) 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.

#### 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, it is too early in the project to make management recommendations.

#### I. Work to be Completed

- a) Continue pre and post-fire sampling.
- b) On-going sorting and identification of invertebrates from trapping occasions.
- c) Complete habitat analysis in accordance with burning schedule.

#### J. Difficulties Encountered

Wildfires in the Fitzgerald River National Park delayed routine autumn burning in the Stirling Ranges this year. Therefore the operational burn over 400 ha of the Two Mile Lake area which was planned for autumn 1990 has been postponed until autumn 1991.

Budgetary constraints affecting CALM Research Division, and quarantine restrictions for plant pathogens (e.g. *Phytophthora cinnamomi*) have necessitated a reduction in sampling frequency. Sampling will now be conducted during the periods of maximum diversity, with two samplings in each of spring and autumn.

#### K. Budget Report

World Wide Fund for Nature funding for the 18 month period ending 12 December 1990.

	Budget	Expenditure
Salaries	24 850	22 530
Equipment	700	361
Plant	1 750	1 738
Administration & Publication	1 050	900
Total	<u>\$28 350</u>	<u>\$25 529</u>

Resources from Department of Conservation and Land Management for the 18 month period ending 31 December 1990.

	Budget	Expenditure
Salaries and Travel	17 500	19 250
Equipment	1 750	2 570
Plant	4 200	2 380
Administration, Computing & Publication	5 250	3 150
Total	<u>\$28 700</u>	<u>\$27 350</u>

#### L. Reports or Publications Arising

Hall G. P. and Friend G. R. (in prep) A new species of *Nickerlea* (Coleoptera : Cicindelinae) from the Stirling Range National Park, Western Australia. 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 are negotiating with several publishers.