



# ENDANGERED!



## BIODIVERSITY IN MINIATURE: THE THREATENED WILDLIFE OF CAVES

Threatened ecological communities occur in a variety of unusual habitats. Caves are a good example—normally few animals can live there permanently due to the lack of reliable food supply. In four caves on the Leeuwin-Naturaliste Ridge (between Margaret River and Augusta), faunal communities were identified as critically endangered by CALM's WA Threatened Species and Communities Unit (WATSCU) in a pioneering project funded by Environment Australia (LANDSCOPE, Autumn and Spring 1996, and Spring 1997).

Growing in the permanent waters of these four caves are intricate systems of fine tree roots (root mats). The roots live in association with fungi and bacteria, which together provide a reliable food source for the subterranean animals. Compared with cave waters elsewhere in the world, the Leeuwin-Naturaliste communities rank among the most species-rich. The root-mats drive an ecosystem that

contains a complete food web with grazers, predators, parasites and scavengers.

Each of the four caves has a different suite of animals comprising mites, microscopic worms, insects, and crustaceans—including a subterranean form of the koonac. Also, the species found in Leeuwin-Naturaliste caves are different from those in the cave waters containing root mats at Yanchep National Park.

At least half of the 37 species of invertebrates occurring in the four Leeuwin-Naturaliste caves are new to science, and some are confined to only one cave. Some of the newly discovered creatures belong to ancient lineages restricted to permanent freshwaters since Australia was part of the Gondwana, southern supercontinent (55–160

million years ago), or even the preceding Pangea period, when all the continents formed one landmass. Indeed, these miniature ecosystems appear to be totally dependent on a permanent supply of water for survival. However, groundwater levels in the area have been falling, and although the south-west has experienced lower rainfall in recent years, there is little doubt that human activities are involved in the loss of groundwater in this area.

Unfortunately, little is known about the water catchments for the cave streams, so investigation and management of these areas is the focus of an Interim Recovery Plan that is currently being completed. Prevention of damage to the root mats and managing the health of the trees, which provide the roots in caves, are also discussed in the plan. This document will help guide future cooperative management of these Lilliputian hot-spots of biodiversity.

**Val English and Edyta Jasinska**

Photos – Edyta Jasinska

# LANDSCOPE

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'Conserving the western ringtail possum' tells a story of rehabilitation, release and repopulation.



Discover the fascinating world of 'Starfish, Urchins and their Relatives' on page 10.



'The Art of Interpretation' on page 36 discusses how interpreters use a variety of techniques to enrich our experiences.



What have rabbits done to our land and what have we done about them? Find out in 'Run, Rabbit' on page 49.



Learn about a study of life in the tropical mudflats of Roebuck Bay on page 16.

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Computers and the Internet are putting CALM's Western Australian Herbarium within easy reach of researchers, students and wildflower enthusiasts. See 'From Here to Eternity' on page 40.

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