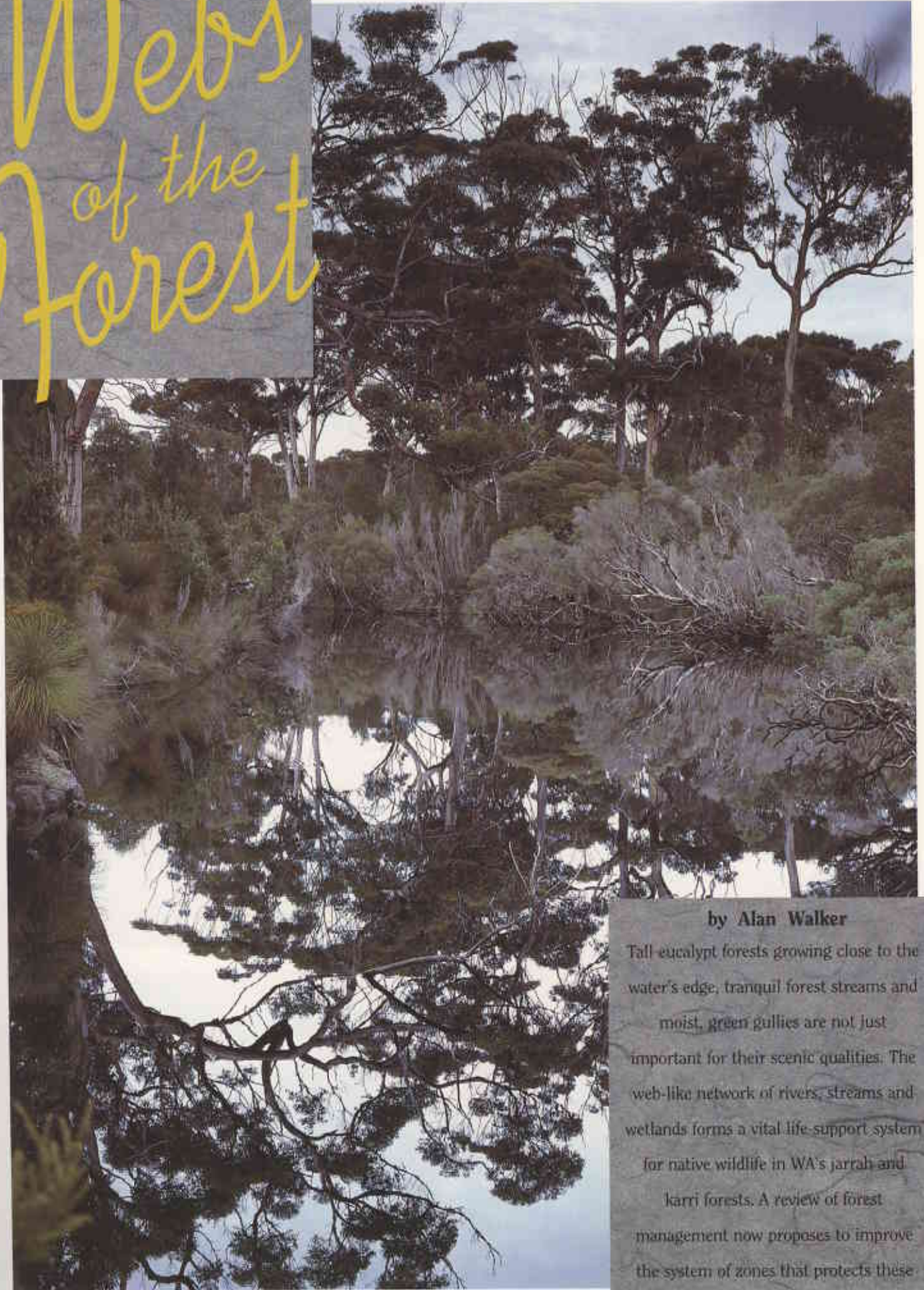


Webs of the Forest



by Alan Walker

Fall eucalypt forests growing close to the water's edge, tranquil forest streams and moist, green gullies are not just important for their scenic qualities. The web-like network of rivers, streams and wetlands forms a vital life-support system for native wildlife in WA's jarrah and karri forests. A review of forest management now proposes to improve the system of zones that protects these watery areas.

As well as having great scenic beauty, areas that fringe forest streams and rivers are important for protecting water quality. Undisturbed vegetation along streams protects rivers and streams from salination, sedimentation, changes in water temperature and erosion.

Above all, they are important sites for wildlife. River and stream zones are a small but critical source of diversity within the forest ecosystem. Because of their high nutrient and moisture status these areas are exceptionally rich in species. For example, the streams of the karri forest are home to nine species of fish, several species of freshwater crustaceans and several hundred species of other invertebrates. Many of these water-dwelling invertebrate species have yet to be named.

River and stream zones are also rich sites for birds. The greatest spectrum of bird species are found close to rivers and streams and these areas also support greater numbers of individuals than upland sites. Small mammals are found

in the greatest numbers (species and individuals) in sites lowest in the landscape. The water rat and quokka are most common in these sites. Stream terraces in the south-west forests have been found to be critical habitat for the quokka. Several species of frogs and reptiles are also most common in and near rivers and streams. Some frogs,

Previous page:
Shannon River.
Photo - Robert Garvey

This river in the jarrah forest will be protected by formal river and stream zones for the first time, if recommendations of a new report are accepted.
Photo - Marie Lochman

The quokka will be favoured by the protection of stream zones.
Photo - Jiri Lochman

Rivers and streams in south-west forests are very important habitat for several hundred species of invertebrates, including this water spider.
Photo - Jiri Lochman

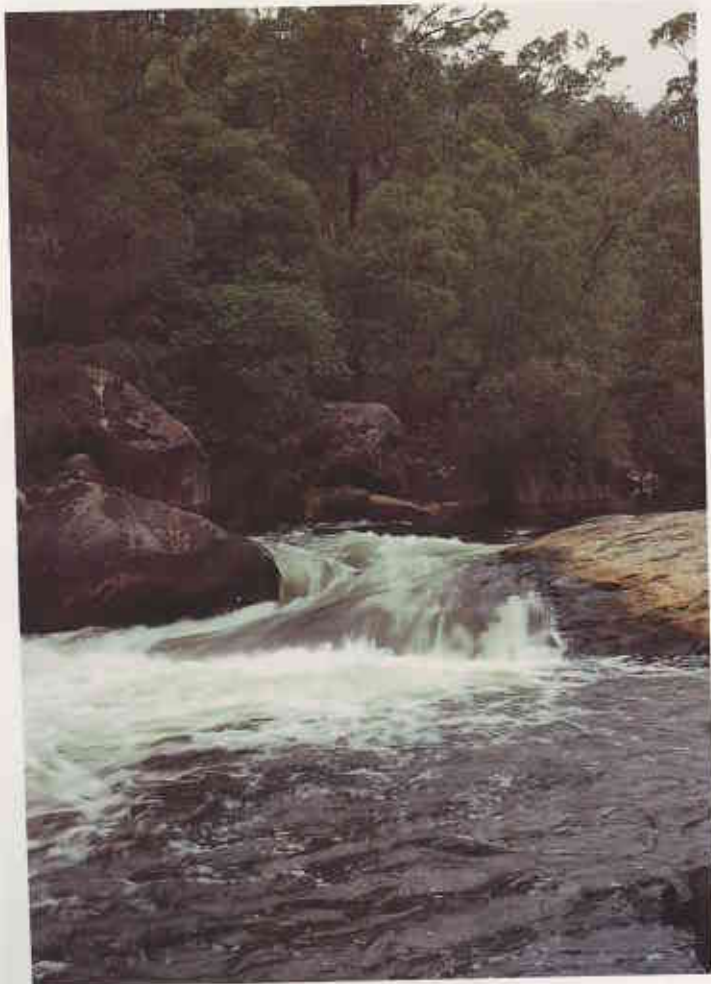
such as the yellow-bellied frog (*Geocrinia lutea*) and red bellied frog (*G. rosea*), are largely restricted to the karri forest. All reptiles known in the karri forest occur in stream zones, including two that are most common there - the long-necked tortoise (*Chelodina oblonga*) and mourning skink (*Egernia luctuosa*).

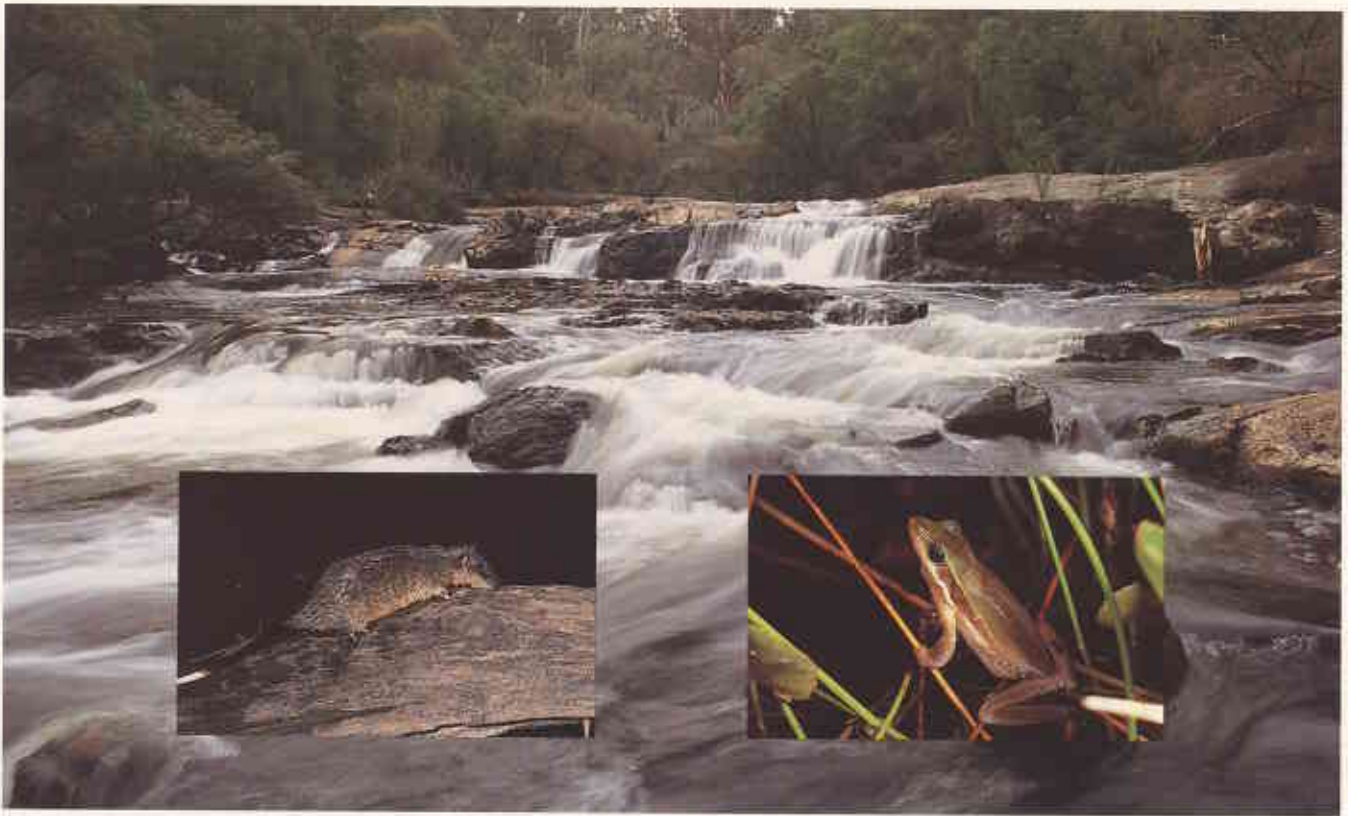
However, river and stream zones are highly sensitive to disturbance, particularly soil compaction, erosion and sedimentation.

PAST TO PRESENT

Until the late 1960s, there were no restrictions on timber harvesting in State forest. Operators could harvest timber right up to the edge of streams and roads. This was widely by the community.

But community attitudes began to change, and the forest became increasingly valued for its scenic beauty and as wildlife habitat. No longer was the forest seen only as an economic resource. At the same time, overseas research





findings on the importance of streamside areas had come to the attention of forest managers and research scientists in WA.

The importance of areas along rivers and streams was formally recognised in 1973 in the Environmental Impact Statement for the proposed woodchip licence - the first environmental impact statement to be produced in WA. A network of road, river and stream reserves was recommended, and these were formally established in 1974. No timber harvesting could be carried out in these areas. Reserves were situated along the major permanent streams in the forest. There had been no specific research into the optimum width. However, along selected streams 100 metres of forest either side of the stream was protected; this width increased to 200 metres on either side of rivers. This was based in part on the height of a karri tree (up to 87 metres) and the impact it would have if it was felled towards a stream.

It was also decided to leave substantial strips along major roads to provide vistas of undisturbed vegetation for tourists travelling on major roads. The Impact Statement required that 200 metres on either side of these roads be left unharvested. This was subsequently doubled to 400 metres by the Forests Department, partly to improve fire management in the forest.

A network of road, river and stream reserves, which were protected from timber harvesting, was formally established in 1974.

Photo - Marie Lochman

Inset:

Wildlife is richest in these zones, including species such as the water rat and the slender tree frog.

Photo - Jiri Lochman

STREAMING AHEAD

Since 1974, an increasing amount of research was conducted into hydrological and wildlife values within river and stream zones. For instance, CALM scientist Grant Wardell-Johnson has reviewed the importance of streamside zones and other areas of retained native vegetation in forest areas of Australia, established a study of bird populations in the karri forest and examined the ecology of rare and restricted frogs confined to stream zone habitat in the south-west. The WA Water Authority has examined the hydrology of streams in the karri and jarrah forests and Murdoch University and the University of WA has studied freshwater fish. With this research came the realisation that the system of stream zones designed in the 1970s was inadequate to protect these sensitive areas properly. For one thing, the

reserves were confined to the Southern Forest region. And, for another, they did not protect minor streams or wetlands.

As a result of the EPA report on the 1987 Forest Region Management Plan and the WA Chip and Pulp Environment Review, the Minister for the Environment asked Department of Conservation and Land Management (CALM) to review road, river and stream reserves in the southern forest.

Because of this and other requirements, and because this presented a great opportunity to apply increased knowledge about the forest ecosystem and improvements in technology, CALM decided to conduct a major review of native forest management in Western Australia. The draft review was released in February this year.

Besides looking at river and stream zones, the review has proposed 18 new national parks and other conservation reserves, recommended more sensitive timber harvesting techniques, and established sustainable levels of wood yield from native forests (see Bush Telegraph).

In addition, it proposes to extend river and stream zones through the whole forest, including the northern jarrah forest, for the first time. In fact, it says that every single forest stream and wetland, including valley head-waters and seepage areas should be protected in

river and stream zones. If the recommendations are accepted, 63 100 hectares in the Southern Forest and 91 400 hectares in the Central Forest and Swan regions will be allocated to river and stream zones - a hefty total of 154 500 hectares. This compares with the 30 800 hectares currently protected in stream and river zones in the Southern Forest.

The review recommends that the width of river and stream zones should vary according to soil type, slope, type of harvesting, rainfall zone and, of course, the width and importance of streams. The width of the zones themselves would vary from 30 metres on either side of minor streams to 200 metres on either side of major streams or rivers. Natural features would be used to select river and stream zone boundaries.

MOSAIC OF CORRIDORS

The forest management review also recognises the significance of the mosaic of heath, sedge, herb and woodland formations, rock outcrops, swamps and wetlands throughout the forest (diverse ecotype zones).

River and stream zones provide corridors for the movement of animals, and because of their web-like pattern they automatically provide diversity in forest structure, which promotes wildlife and aesthetic values. Under the proposals,

3 200 hectares of mature karri forest will be allocated as linkage corridors. This will ensure that the maximum distance between patches of retained forest in areas harvested for timber is about 400 metres.

To make river and stream zones even more valuable to wildlife, additional movement corridors and patches of mature forests will be set aside to link them with aesthetic zones and diverse ecotype zones, resulting in a mosaic of interconnected strips and patches.

The map of Jane Block, in the Pemberton District, shows the extent of the various reserves that will be kept free of timber harvesting and the typical pattern they create across the forest.

Like the current system, roads, trails and tramways through the forest are earmarked for special protection. A 200-metre zone on either side of major travel routes and a 100-metre zone on either side of minor travel routes will be left undisturbed in the southern forest region. A total of 63 roads, trails and tramways in this region will have zones on either side of them, compared with 38 roads under the current system. However, the total area of road zones will be reduced from 41 000 to 18 000 hectares. This reduction has been made to allow increases in stream and river zones and allocation of retained patches of mature forest distributed throughout

the multiple purpose forest. However, the redistribution has been made without compromising the region's aesthetic values.

The new system of river and stream reserves, if accepted, should provide lasting benefits to the forest system and its water and wildlife for a long time to come. However, taken together with other recommendations of the Forest Strategy, they will be even more effective. The road, river and stream reserve system will ensure habitat trees and wildlife corridors are left intact and water remains pure; other initiatives such as Operation Foxglove will considerably reduce predation pressure on our unique wildlife. □

Alan Walker was Regional Manager of CALM's southern forest region for 5 years and helped to prepare the review of native forest management in WA. Submissions on the review should be forwarded to Forest Strategy Submissions, c/o CALM, PO Box 104, Como, 6152. Viewing copies are available at public libraries and all CALM offices. Copies can be purchased for \$10 each from most CALM offices.

Below:

In the past, clearing for agriculture occurred to the edge of streams resulting in problems of erosion and salination.

Photo - Jiri Lochman

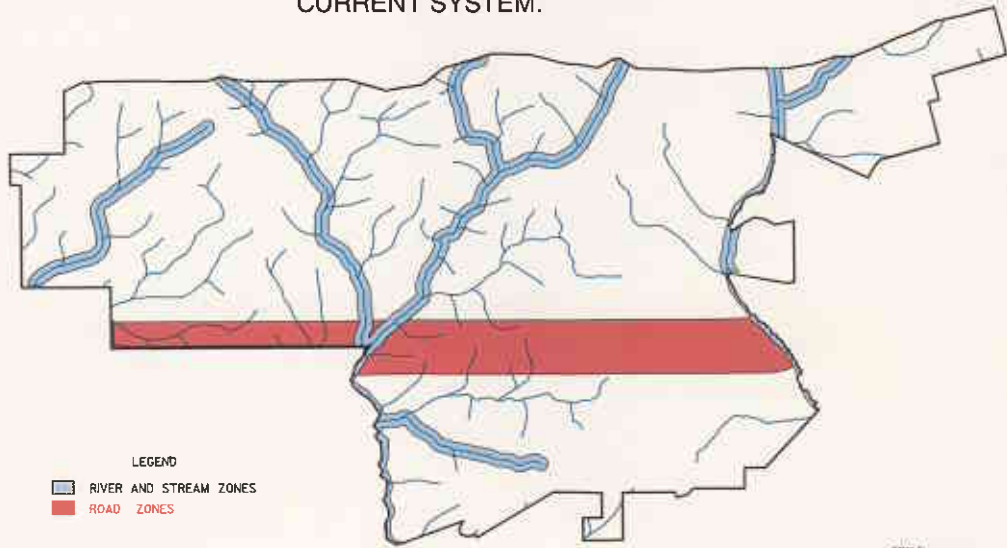
Right:

River and stream zones in the State forest will be increased from 30 800 to 154 500 hectares.

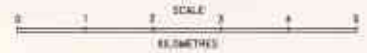
Photo - Jiri Lochman



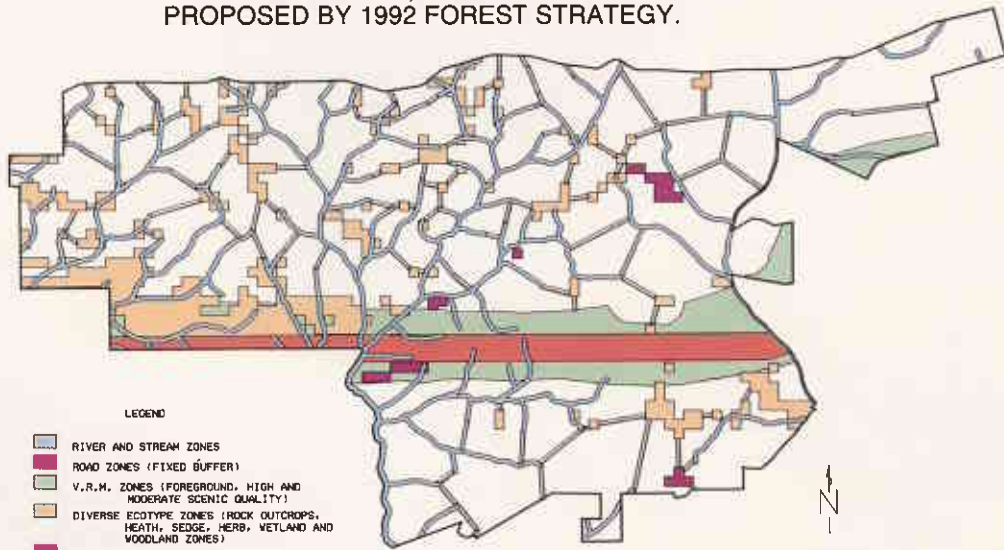
DISTRIBUTION OF ROAD, RIVER & STREAM ZONES
 JANE FOREST BLOCK, PEMBERTON DISTRICT
 CURRENT SYSTEM.



- LEGEND
- RIVER AND STREAM ZONES
 - ROAD ZONES



DISTRIBUTION OF ROAD, RIVER, STREAM & OTHER ZONES
 JANE FOREST BLOCK, PEMBERTON DISTRICT
 PROPOSED BY 1992 FOREST STRATEGY.



- LEGEND
- RIVER AND STREAM ZONES
 - ROAD ZONES (FIXED BUFFER)
 - V.R.M. ZONES (FOREGROUND, HIGH AND MODERATE SCENIC QUALITY)
 - DIVERSE ECOTYPE ZONES (ROCK OUTCROPS, HEATH, SEDGE, HERB, WETLAND AND WOODLAND ZONES)
 - PURE KARRI
 - LINKAGE ZONES (NOTIONAL ALLOCATION)

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LANDSCOPE

VOLUME SEVEN NO. 3 AUTUMN ISSUE 1992



Each year more people seek wilderness experiences, but many are unprepared for the difficulties they might encounter. Learn about the basics of outback safety and bushcraft on page 35.



Will the honey possum become a secondary victim of dieback disease? See page 22.



Australia is a land of lizards - tough competitors evolving amid spinifex and wildfires in the Great Victoria Desert. Turn to page 10.



Botanists search for a eucalypt last seen by Giles in his expedition across WA deserts 115 years ago. See page 28.



Straight and vigorous pines don't grow by accident. Years of research and breeding have gone into producing the perfect pine. See page 49.

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COVER

The tiny honey possum (*Tarsipes rostratus*), seen in our cover illustration by Philippa Nikulinsky, feeds almost exclusively on nectar and pollen. However, most of its important food plants are threatened by dieback disease caused by the *Phytophthora* fungi. The endangered scarlet banksia (*Banksia coccinea*) is one plant species used by the possums that is highly susceptible to the dieback disease. See story on page 22.



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