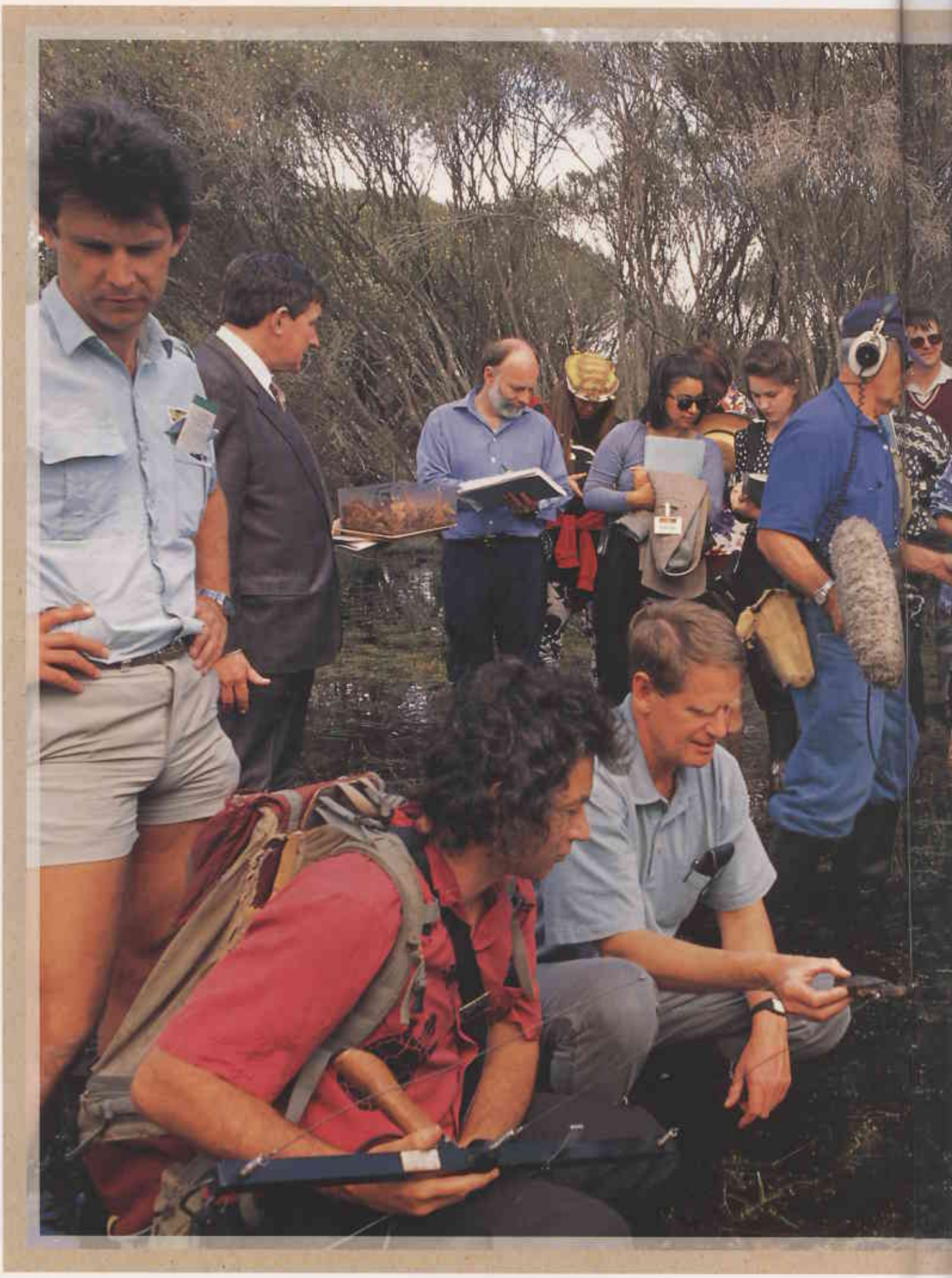
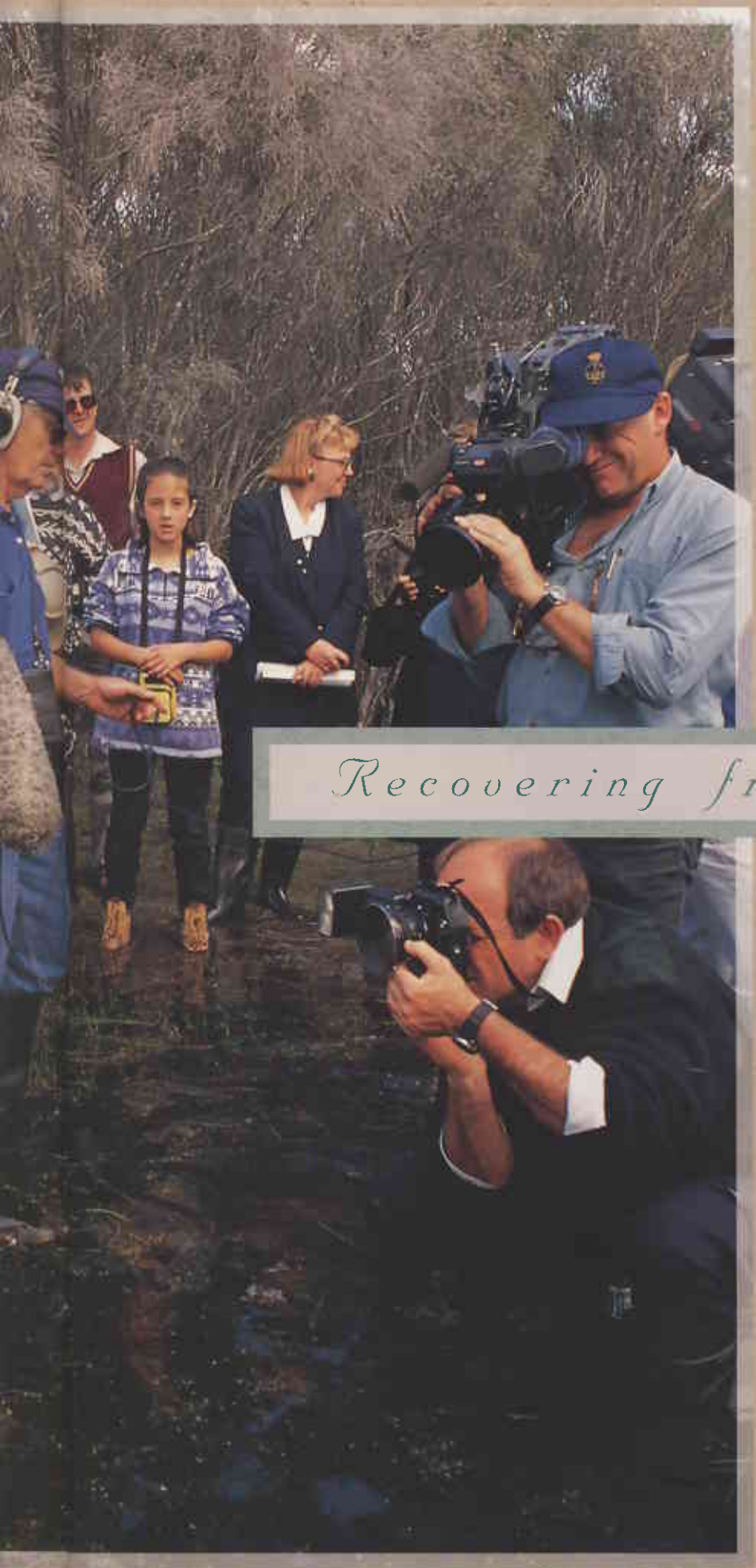




What happens when a plant, animal or ecological community becomes threatened with extinction?

Recovering from the brink

In this article members of CALM's Western Australian Threatened Species and Communities Unit describe the 'recovery process,' a method of addressing priorities and actions, and of bringing together everyone who can help pull threatened species and communities back from the brink.

by
Andrew Burbidge
Andrew Brown
and John Blyth

In Western Australia, there are many threatened species and ecological communities–unfortunately, far too many for all to be managed immediately with the scarce funding that is available for conservation work. So, as is the case with any campaign, conservation becomes a matter of good planning and efficient resource management.

The increasing importance of threatened species and ecological community conservation led the Department of Conservation and Land Management (CALM) to set up, in 1992, the Western Australian Threatened Species and Communities Unit (WATSCU). The unit's task is to coordinate and promote the conservation of all threatened species and communities in the State, and to help find the necessary resources.

In an earlier article ('Threatened with Extinction', *LANDSCOPE*, Spring 1993), we looked at the reasons for conserving threatened species and ecological communities, and outlined the threatening processes that are driving extinctions in Australia. But this is just one stage in understanding and combating species, habitat and community decline. To understand which species and communities are most threatened and to ensure their conservation, we in Western Australia, like many other places in the world, are using the 'recovery process': a logical sequence that aids research, planning and operations work. First, the conservation status of species and communities is reviewed, priority lists are prepared and the necessary research is conducted. Then, recovery plans are costed and produced. And finally, funding is obtained to enable the plans to be implemented, monitored and reviewed.

Previous page
Main: Many of the people who have worked on the recovery of the western swamp tortoise were present at the first release of captive-bred tortoises back into the wild.
Inset: With only about 30 animals of breeding age in existence, methods to ensure successful hatching of eggs in captivity was a major thrust of the recovery plan for the tortoise.
Photos – Jiri Lochman

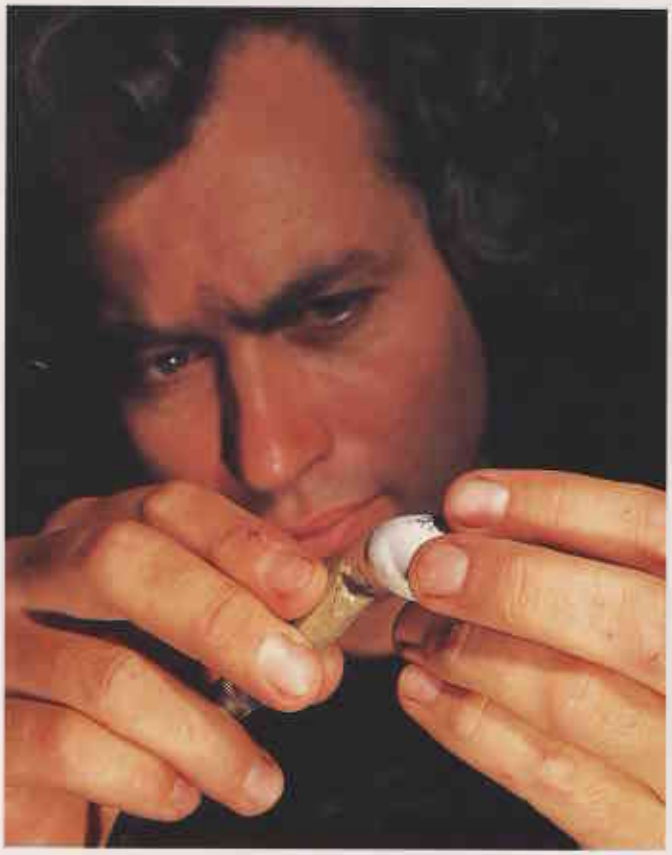
Below left: Pioneering techniques for obtaining and incubating eggs from captive tortoises were developed by Dr Gerald Kuchling. This is a key element in recovering the critically endangered western swamp tortoise.
Photo – Jiri Lochman

Below right: Western swamp tortoises released back into the wild carry small radio transmitters to monitor their movements.
Photo – Jiri Lochman

CONSERVATION STATUS

Information about the conservation status of species comes from many sources, including museum and herbarium collections, biogeographic surveys, scientific research and searches for particular species. This information is collected by a variety of government agencies, natural history clubs and private naturalists.

On an official level, taxa (species, subspecies and varieties) that are deemed in danger of extinction are listed in notices published in the State *Government Gazette*, according to definitions provided in the Wildlife Conservation Act. These taxa are generally known as threatened flora (also known as declared rare flora) and threatened fauna. CALM has set up two committees, one dealing with plants and the other with animals, to regularly review nominations of taxa as threatened. For a taxon to be listed, its threatened status must be clearly proved, and it must meet criteria dealing with the



thoroughness of survey and its acceptance as a distinct taxon. The committees recommend changes to the lists, which are then forwarded to the Minister for the Environment for final approval.

Information about the status of ecological communities, is at present, less easy to come by, mainly because their identification and conservation is a relatively new initiative. To help overcome this, CALM is developing procedures for identification that will result in a database of threatened ecological communities, initially for the South West Botanical Province, which extends inland from the coast to a line running from Shark Bay to Israelite Bay.

DEGREES OF THREAT

Ideally, all species and communities listed would be intensively studied by scientists so that the reasons for their decline were understood, and all species and communities would be managed to prevent their extinction. However, because there are more species listed than there are resources available for conservation work, the species on the lists must be ranked to ensure that the most threatened are allocated resources first. Priorities are set by allocating threatened species to the threat categories laid down by the World Conservation Union, namely, critically endangered, endangered, vulnerable, and conservation dependent (see box). These are the most recent categories adopted by the World Conservation Union (in November 1994), following a review of criteria which took place over a period of several years. The term 'threatened' covers the categories critically endangered, endangered and vulnerable.

Above: The recovery plan for the western swamp tortoise has many elements. These include the management of two Class 'A' nature reserves, including fencing them to protect the tortoises from foxes, detailed ecological research and captive breeding.
Photo – Babs & Bert Wells/CALM

Right: The Ellen Brook Nature Reserve. This was the last place on Earth to harbour a population of the western swamp tortoise until its recent re-establishment at Twin Swamps Nature Reserve.
Photo – Marie Lochman

CALM has set up a scientific panel to allocate all declared threatened taxa to the World Conservation Union categories. To aid the panel's work, WATSCU developed a scoring system in which questions are asked and numerical scores allocated according to the taxon's geographic distribution, abundance, occurrence in conservation reserves, response to environmental threats, status in living collections (zoos, botanic gardens, etc.) and so on. No scoring system can be absolutely definitive for all species, and the scores are used only as a guide. However, they do, to a large degree, allow a dispassionate evaluation of a species' status. A similar scoring system has been developed for ecological communities and is currently being trialled.

SCIENTIFIC RESEARCH

Listing a species or community and allocating it a conservation priority are vital steps in the recovery process. But the species or community must then be conserved. So what needs doing? It could be a waste of time and money controlling foxes or weeds, for example, if they are not the actual cause of a species' impending extinction. This is where scientific research may be necessary. Sometimes, a great deal of intensive research over several years is needed to develop new techniques that managers can apply to the problem.

In CALM, a world-class group of scientists and support staff is studying nature conservation issues, and many threatened species and ecological communities are receiving attention. Scientists in other organisations, such as universities, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), industry, botanic gardens and non-government groups, are also contributing. However, scientific research is never cheap (although it is usually much cheaper than correcting actions taken in the absence of adequate knowledge), and the amount of research conducted is often limited by the amount

of funding available. This has been the case with conservation work, and, increasingly, research has had to be funded from outside sources.

RECOVERY PLANS

Once the causes of a species' or community's decline are understood, and once techniques are available to increase its abundance and geographic range, a recovery plan is prepared.

A recovery plan is like a land management plan or a business plan, but is directed at the conservation of a threatened species or community. It is a document that examines one or more species or communities, describing their history, conservation status and the reasons for them being threatened, and then prescribes and costs actions that will be undertaken to 'recover' them, in terms of numbers and/or distribution. An important aspect of the recovery plan is that the monetary value of every action is carefully calculated—there are no hidden costs. This allows the necessary funds to be raised, either from government or other sources.

Typically, funds for implementing a a recovery plan come from a variety of sources. For example, the recovery plan for the western swamp tortoise (*Pseudemydura umbrina*) is being funded by the Western Australian Government via CALM, Perth Zoo and the Western Australian Water Authority; by the Commonwealth Government via the Australian Nature Conservation Agency (ANCA); and by non-government societies including the World Wide Fund for Nature Australia, the British Chelonia Society and a German herpetological society. Support has also come from several Perth companies including Midland Brick, East West Veterinary Supplies and Unidata.

Not all recovery plans are adequately funded. As is the case for scientific research, funding of recovery work is insufficient to cover all necessary work.

Below left: The varnish bush (*Eremophila viscida*) is a rare species with scattered occurrence between Mullewa and Lake Hope.
Photo – Steve Hopper

Below right: Wongan cactus (*Daviesia euphorbioides*). A recovery plan has been written for this unusual and attractive pea. Funding is being sought this year to implement the plan.
Photo – Steve Hopper

THE TEAM APPROACH

The key to developing and implementing a recovery plan is the recovery team. Recovery teams comprise representatives of all those who have a stake in, or are affected by, the conservation of the species or community. Usually, team members include people who have responsibility for the implementation of the plan, such as local CALM operations staff; people who have conducted, or are conducting, research, such as scientists from CALM or another institution; people on whose land the species or community occurs; people who are providing money or other resources; and people who are contributing their labour.

A recovery team can bring together scientists, land managers, landowners, local government councillors, financiers, conservation society members and volunteers. Recovery team meetings are often the only time that all the people who can influence a species' status will ever meet each other! Recovery teams have been operating in Western Australia for only a few years, but are already being hailed a success.

The western swamp tortoise recovery team has been in existence longer than any other in WA, having first met (as the

Above: The recovery plan for the woylie has been an outstanding success. Numbers have been greatly increased and several new populations established.
Photo – Jiri Lochman

Right: Sandpaper wattle (*Acacia denticulosa*) is confined to a few rocky areas north of Beacon and is being looked after by the Merredin District Threatened Flora Recovery Team.
Photo – Steve Hopper

Western Swamp Tortoise Captive Breeding Management Committee) in 1987. Today, its members come from the University of Western Australia, Curtin University of Technology, ANCA, Perth Zoo, the World Wide Fund for Nature Australia, the Shire of Swan and CALM. Soon, a 'Friends of the Western Swamp Tortoise' group may be started; if this happens, a volunteer representing the group will be invited to join the team.

Recovery plans are proving most effective and practical when the recovery team is appointed first and then asked to oversee the writing of the recovery plan. This gives the team an ownership of the plan that it would not otherwise have if the plan was written without its input.

MANY SPECIES, FEW TEAMS

Currently, there are about 370 taxa of Western Australian plants and animals listed as threatened flora or fauna. In addition, there is inadequate information about the conservation status of many other species, and they have been placed on 'priority' lists. This means that additional searching for, or monitoring of, these species is urgently required. CALM scientists have estimated that, within a decade, there may be as many as 500 or more listed threatened species! As well, there may be up to 100 threatened ecological communities.

Having 500 recovery teams and 500 recovery plans would not be efficient. So, particularly for plants, more and more threatened species are being addressed on a district-by-district basis. Here, a recovery team is set up to deal with all threatened and priority taxa in a geographical area, usually a CALM region or district. Their operation is guided by a district threatened flora management plan, which is constantly updated as more information about species comes in.

One district team that is well established is the Merredin District Threatened Flora Recovery Team. In 1991, with the aid of funds from ANCA, surveys of plants thought to be threatened began in CALM's Merredin District, which encompasses 16 shires. (The plan actually covers 15 shires; the Shire of Wongan-Ballidu still has to be surveyed.) This culminated in the publication, in 1993, of *Declared Rare Flora and Other Plants in Need of Special Protection in the Merredin District*. The district has a small number of staff, so in 1993, CALM sought and obtained financial assistance from ANCA to help implement the plan. In 1994, Clare Welbon, a Murdoch University graduate who studied the diet of the noisy scrub-bird (*Atrichornis clamosus*) for her Honours thesis, started work at Merredin as the district's threatened flora coordinator. Clare's work is guided by the recovery team, which is chaired by CALM's District

Manager, Mike Fitzgerald, and includes representatives of local government authorities.

MORE TO COME

There are now 21 recovery teams operating in Western Australia. Of these, 10 are dealing with threatened animals, five with threatened plants; five are region or district teams; and one is dealing with a threatened ecological community—Toolibin Lake (see 'Recovering Lake Toolibin', *LANDSCOPE*, Spring 1994, and 'The Last Lake', *LANDSCOPE*, Winter 1988). In the years ahead, more recovery teams will be appointed and some will disappear, with their work completed. The recovery team for the woylie (*Bettongia penicillata*) is planning to be the first to achieve this distinction—the current woylie recovery plan anticipates that woylies will no longer need to be listed as threatened by the end of 1995.

Each recovery team looks forward to the time when its target species or community is secure and its own existence as a group is redundant.

Recovery plans for different species have different key actions. The noisy scrub-bird has responded well to fire management and translocation, and is becoming increasingly less threatened. Photo – Babs & Bert Wells/CALM

Andrew Burbidge, Andrew Brown and John Blyth all work in CALM's Western Australian Threatened Species and Communities Unit (WATSCU). Andrew Burbidge, the unit's Director, deals primarily with threatened animals, Andrew Brown with threatened plants and John Blyth with threatened ecological communities. They can be contacted at CALM's Wildlife Research Centre at Woodvale, on (09) 405 5128.

DEFINING THE LEVEL OF THREAT

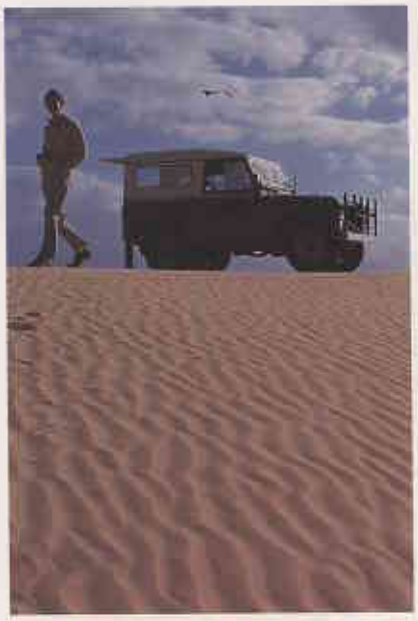
As outlined in 'Coming to Terms with Conservation' (*LANDSCOPE*, Spring 1993, p. 22), the World Conservation Union has been reviewing the categories to which threatened species are allocated, and trying to make the allocation of taxa to categories subject to clear and easily applied criteria. New categories and criteria were adopted by the World Conservation Union on 30 November 1994. The new categories are:

Extinct: there is no reasonable doubt that the taxon's last individual has died.
Extinct in the wild: a taxon that is known to survive in cultivation, in captivity or as a naturalised population well outside the original range, but exhaustive surveys in known and/or expected habitat, at appropriate times throughout its historic range, have failed to record an individual.
Critically endangered: a taxon that is facing extremely high probability of extinction in the wild in the immediate future.
Endangered: a taxon that is not critically endangered, but is facing a very high probability of extinction in the near future.
Vulnerable: a taxon that is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium-term future.
Conservation dependent: a taxon that is not critically endangered, endangered or vulnerable, but which is the focus of a continuing conservation program, the cessation of which would result in the taxon qualifying for one of the threatened categories above.
Threatened: an umbrella term embracing the terms critically endangered, endangered and vulnerable.
Data deficient: a taxon that has been tested against the above criteria, but for which there is inadequate information to make an assessment of risk of extinction.
Low risk: a taxon that has been evaluated, but does not qualify for the categories critically endangered, endangered, vulnerable, conservation dependent or data deficient.

The next stage will be to develop guidelines for the application of the new categories at the national level.

LANDSCOPE

VOLUME TEN NO. 4 WINTER ISSUE 1995



Cooperation between 4WD clubs and CALM is helping to protect WA's special recreation spots through a program of education. See 'Go Lightly' on page 17.

The noisy scrub-bird is one species that is responding well to its recovery plan. 'Recovering from the Brink' (page 10) discusses how such plans are drawn up.

Mt Augustus is the biggest rock in the world; yet few people know it exists. Find out more about this natural wonder on page 28.

There is a great deal written and talked about our forests. But what are the facts? 'Looking Beyond the Obvious' (page 22) dispells some of the myths.

Specially developed computer software is helping speed the identification of plant species in 'The Smart Collection' (page 49).

FEATURES

REGULARS

COVER

The rainbow bee-eater is a common bird found throughout most parts of the State, including Mt Augustus National Park.

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Cartography: Promaco Geodraft
Marketing: Estelle de San Miguel ☎ (09) 334 0296 Fax: 334 0489
Subscription enquiries: ☎ (09) 334 0481
Colour Separation by Prepress Services
Printed in Western Australia by Lamb Print

Published by Dr S Shea, Executive Director
Department of Conservation and Land Management,
50 Hayman Road, Como, Western Australia 6152.