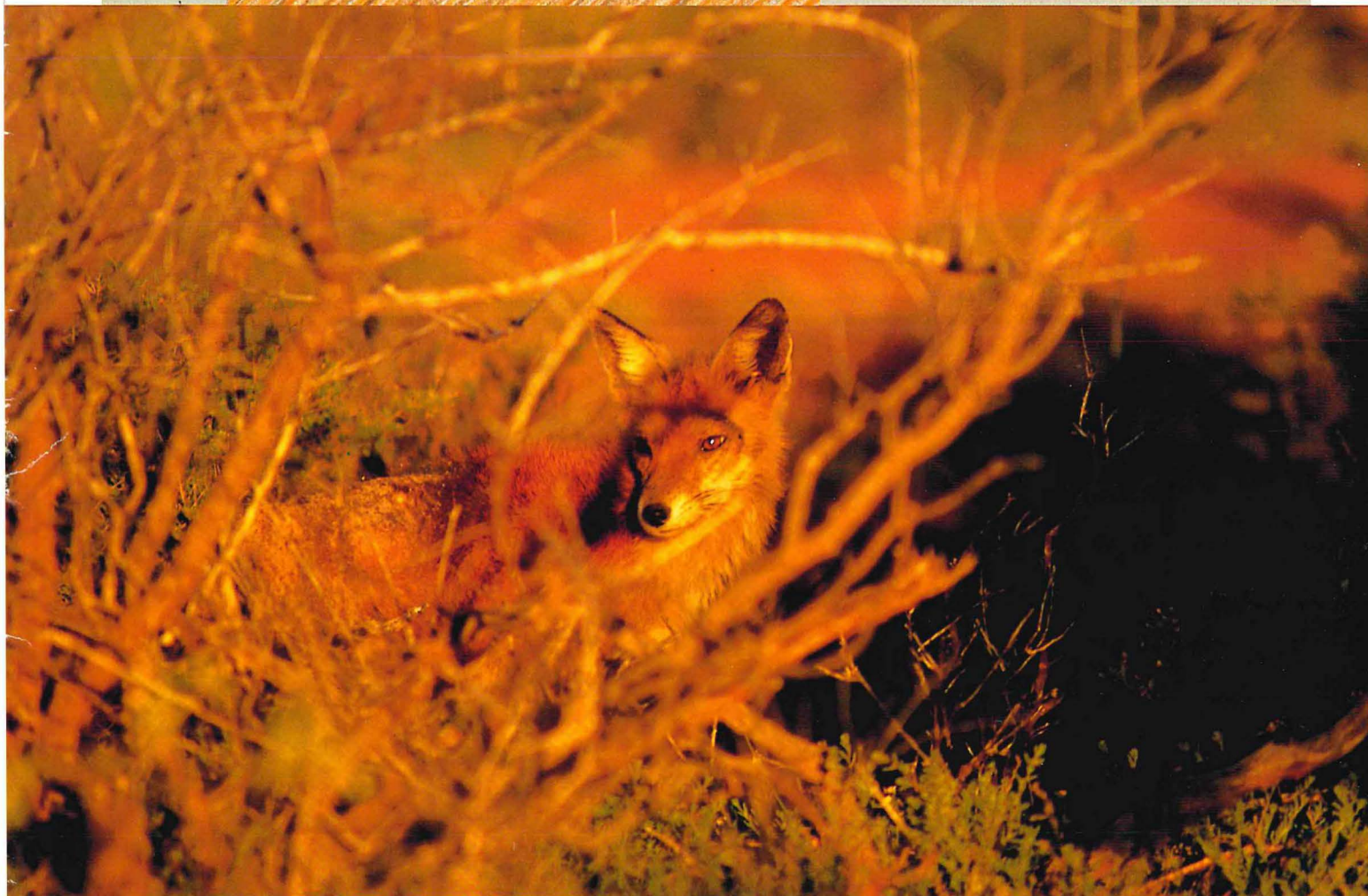

WESTERN SHIELD

**bringing wildlife
back from the brink
of extinction**

By Caris Bailey

Foxes and cats are making a meal of Western Australia's wildlife. These foreign predators have already contributed to the extinction of ten native mammals. Dozens more species are threatened and survive only in low numbers—six of the mammals are restricted to tiny islands. CALM has successfully pioneered programs to control foxes to prevent further extinctions. This work has now been expanded into the world's biggest campaign against feral predators, to save native animals and return them to areas where they once thrived.

The campaign's name:
Western Shield.



Over the past 100 years, more mammals have become extinct in Australia than in any other country. The loss of 18 Australian mammal species is a catastrophe caused predominantly by predators and competitors introduced from overseas. Loss of habitat has also led to extinctions, and changes to other habitats make some of the remaining native animals even more susceptible to predators. Our wildlife may now be facing a new danger from the release of rabbit calicivirus—feral predators also hunt rabbits, so if the virus reduces their numbers significantly, hungry foxes and cats could turn more and more to native animals. While this threat is not expected to be serious, it will be yet another pressure on endangered species.

The native mammals most at risk of being driven to extinction are easy prey—medium-sized animals weighing between 35 grams and eight kilograms. These animals, together with the reptiles and ground-nesting birds also at risk, are found nowhere else in the world.

That's not all. We don't know what effect the loss of particular species will have on our environment, on the natural processes on which plants, animals and humans depend. Any extinction or decline of species is of great concern for a whole range of environmental, moral and aesthetic reasons.

There is strong evidence that further extinctions are inevitable unless we take urgent action to control foxes and feral cats and protect our wildlife. Western Shield is a new project by the Department of Conservation and Land Management (CALM) to do just that.

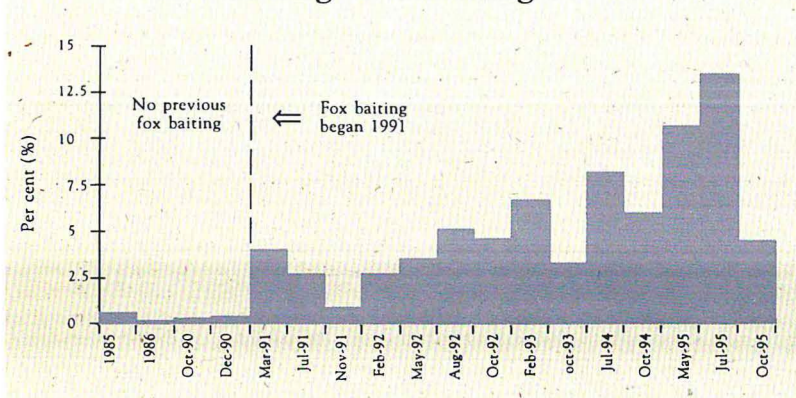


WESTERN SHIELD

Western Shield is the name given to CALM's project to expand predator control and then reintroduce native animals to former habitats, an operation with an annual budget of \$1 million. The program will cover nearly five million hectares—more than half the area of

Tasmania—operating in areas as diverse as Cape Range National Park near Exmouth, Peron Peninsula at Shark Bay, the south-west forests, the south coast, the edge of the Wheatbelt and inland arid regions (see map for key areas). Western Shield has three elements: increasing fox baiting on a scale never before attempted;

Percentage of traps containing chuditch before and after fox baiting in Battalling Forest



Previous page

Native fauna have been devastated by the European fox since it was brought to Australia in the 1860s and 1870s for the sport of fox hunting. Photo – Jiri Lochman/Lochman Transparencies

Top: The Shark Bay mouse is one of six mammals that have disappeared from the mainland and now survive only on tiny islands. Photo – Babs & Bert Wells/CALM

Above: Earlier fox control programs, such as Operation Foxglove, have led to a dramatic increase in the numbers of chuditch, as the graph (left) demonstrates. Photo – Babs & Bert Wells/CALM



Left: Western barred bandicoots are extinct on mainland Australia, but could be reintroduced from their island refuge once foxes and feral cats are controlled in target areas.
Photo – Babs & Bert Wells/ CALM

Below: Feral cats probably came ashore from early trading ships long before foxes arrived. Cats are thought to have caused the greatest damage in arid and semi-arid areas.
Photo – Ray Smith/CALM

substantially increasing research into feral cat control; and, as predators are controlled in target areas, returning native animals to former habitats.

Within a few years, it's expected that up to 30 native fauna species will be significantly more abundant and more widespread than they are today. Most of these animals will be rescued from the brink of extinction.

Pioneering research by CALM scientists has shown that effective fox control leads to a recovery in the number and range of many species of native animals, from mammals such as numbats, woylies, chuditch and rock-wallabies, to ground-nesting birds and some reptiles (see graphs). As a result of Western Shield, people will once more be able to see mammals that are now almost extinct, such as the western barred bandicoot and boodie (or burrowing bettong), without having to travel to remote island nature reserves. Western Australians will be able to enjoy much of the variety and abundance of wildlife that existed before foxes and cats arrived, and new opportunities for nature-based tourism will be created. Stepping up fox control will also benefit farmers by increasing the survival of lambs on adjoining agricultural lands.

Western Shield builds on CALM's existing programs, including Operation Foxglove. With support from Alcoa of Australia, this program is controlling foxes over an area of nearly 700 000 hectares of the northern jarrah forest. CALM also baits another 400 000 hectares of the conservation estate—most of these operations in nature reserves in the Wheatbelt. Western Shield will increase the area covered more than four times, protecting a total of nearly five million

hectares, to make it the biggest wildlife recovery program undertaken anywhere in the world.

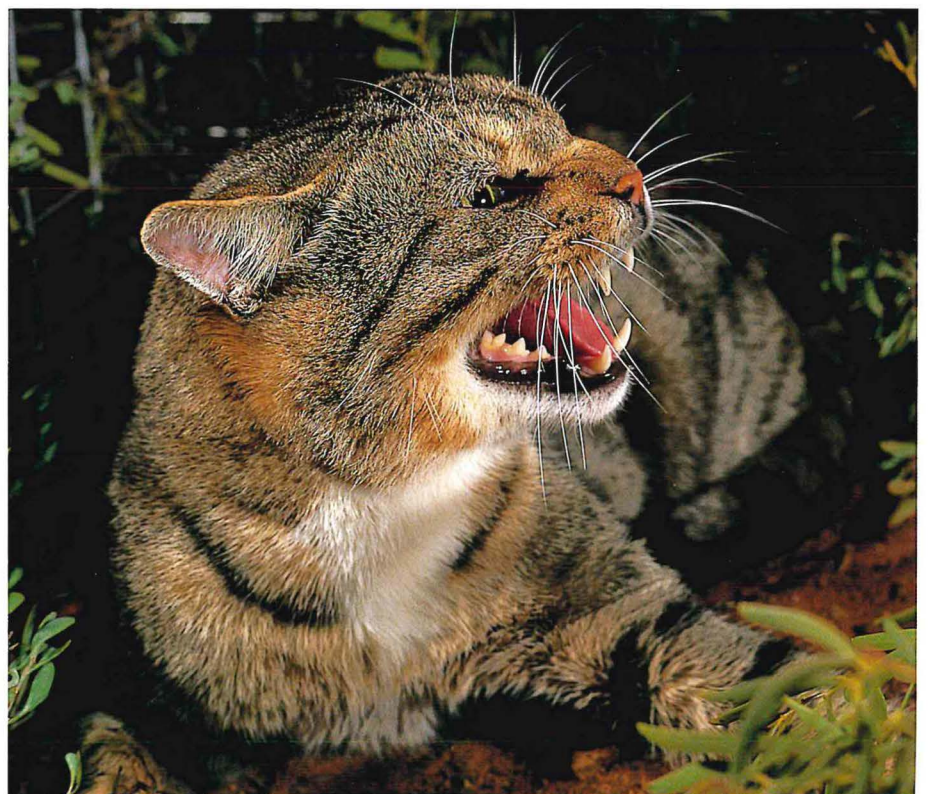
BAITING THE PREDATORS, NOT THE PREY

Western Australia has a natural advantage in controlling introduced predators—a group of plants known as poison peas. These native species contain the poison sodium fluoroacetate, which is manufactured synthetically under the name '1080'(ten-eighty). The native animals that evolved alongside these plants have a natural resistance to the poison, but it's lethal in minute amounts to animals introduced from overseas, including foxes and feral cats.

This was a problem for early settlers, whose sheep and cattle died after grazing on poison peas, but it's a huge advantage in the fight to protect native wildlife from feral predators.

Tough, leathery meat baits carrying small amounts of 1080 will kill foxes (and cats, if they would take the baits) but won't harm native animals. Dogs are also affected by 1080, so prominent signs are erected wherever baiting is carried out to warn owners taking their dogs into a baited area to keep their pets on a leash and muzzle them.

Unlike other toxins currently available, research by then Agriculture Protection Board (APB) and Curtin University has shown that 1080 breaks



WESTERN SHIELD

Karratha
Exmouth

Geraldton

PERTH

Bunbury

Albany

Esperance

INDIVIDUAL PROJECTS UNDER WESTERN SHIELD AND SOME OF THE ANIMALS THAT WILL BE SAVED

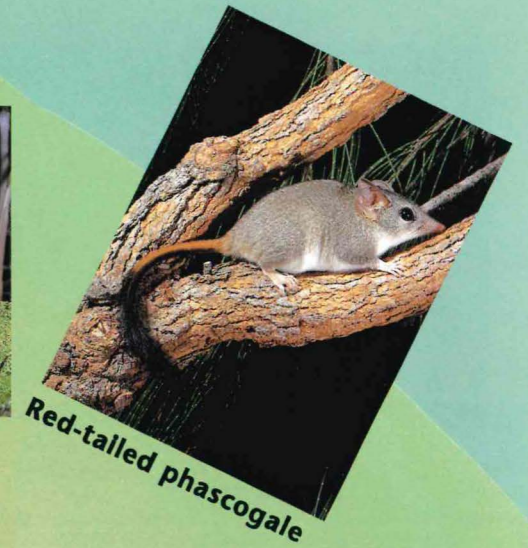
- | | |
|---|--|
|  Operation Foxglove:
northern and southern forests |  Desert Dreaming:
Goldfields rangelands reserves |
|  New Dawning:
central forest and Leeuwin-Naturaliste National Park |  Project Eden:
Peron Peninsula, Shark Bay World Heritage Area |
|  Coastal Storm:
reserves from Augusta to Cape Arid National Park |  Cape Crusade:
Cape Range National Park |
|  Nature Restored:
Stirling Range and Wheatbelt reserves |  Montebello Renewal:
Montebello Islands Conservation Park |



Gilbert's potaroo



Noisy scrub-bird



Red-tailed phascogale



Tammar wallaby



Quokka



Western ground parrot



Malleefowl



Western ringtail possum



Brushtail possum



Bilby



Dibbler



Western swamp tortoise

down quickly in the soil without causing any environmental side-effects. This is demonstrated by the fact that poison peas grow abundantly on the land around Perth's dams and yet do not contaminate the water supply in any way. There is absolutely no possibility of 1080 building up in the soil or finding its way into water supplies as a result of feral predator control measures.

Controlling foxes and feral cats requires very different programs. Although 1080 is lethal to both animals, their food preferences and the way they hunt are quite different.

FOX CONTROL

The European red fox was brought to Australia in the 1860s and 1870s for the sport of fox hunting, and reached Western Australia early this century. Foxes were abundant in the south-west by the 1940s and medium-sized native mammals began disappearing.

In the past few years, fox baiting has been shown to be a very effective method of protecting some threatened native species in the south-west and in some arid areas. Foxes have a keen sense of

smell and readily eat carrion. Under CALM's predator control programs, dried meat baits with 1080 poison are usually spread at the density of five for every square kilometre—that's about one for every 300 suburban house blocks. This baiting is enough to suppress fox numbers and has led to the spectacular recovery of wallabies, numbats, chuditch, possums and carpet pythons.

Research into long-term techniques of fox control is under way through the Cooperative Research Centre for the Control of Vertebrate Pest Populations. CALM and the other partners in this Centre hope to develop biological control methods that will stop foxes (and rabbits) reproducing, but baiting with 1080 will probably be the key weapon against foxes for another decade. If we don't bait in this time, fox numbers will quickly build up again and Western Australia will lose more of its fauna.

CAT CONTROL

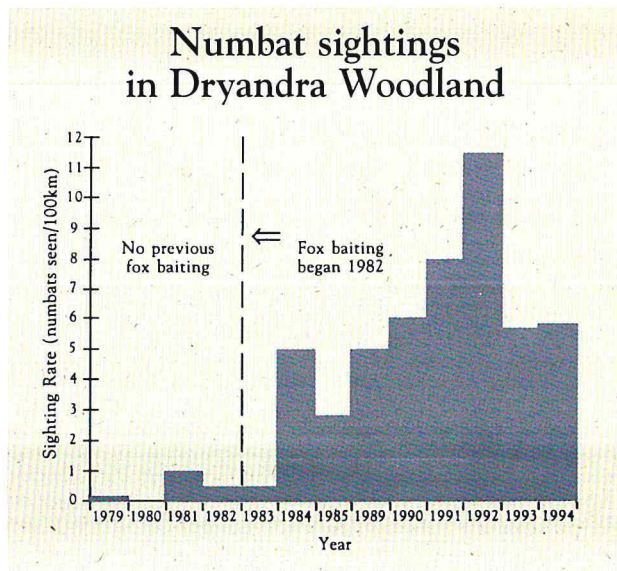
Cats came ashore in Australia long before foxes, probably from early shipwrecks or trading ships. They now roam wild across Western Australia—although they are not as abundant as foxes—and pose the greatest threat to native wildlife in arid and semi-arid areas. Feral cats have not caused the same damage in the wetter south-west, even though they have been there much longer than foxes. However, numbers of some animals haven't increased as much as other species in areas baited for foxes, and cats are the suspected culprits. Unlike foxes, cats prefer live prey and do not readily take dried meat baits. Carrion is not part of their usual diet, which explains why an earlier control program in the Gibson Desert reduced the number of foxes, but left the cats.

Is there a risk that a major fox control program will lead to an increase in cat numbers? Could cats take over as the

Right: Mammals are not the only animals to benefit from predator control—carpet pythons have made a spectacular recovery following fox baiting. Photo – Babs & Bert Wells/CALM



Below: Western Australia's mammal emblem, the numbat, has been brought back from the brink of extinction by fox baiting. If baiting were to stop, however, this trend would be reversed. Photo – Babs & Bert Wells/CALM



primary hunter if the foxes that preyed on them and competed with them for native animals were removed? CALM scientists believe cat numbers could increase in arid areas as a result of fox control, but Western Shield has a strategy to prevent this: the development of a special cat bait, which will significantly reduce numbers of feral cats.

CALM researchers have recently developed a bait that puts a practical method of cat control within reach. The new bait is the result of intensive studies into cats' food preferences and some lateral thinking to make the meat-based baits more appetising. Using baits coated with natural additives, researchers have produced a combination that is much more attractive to cats than the original bait. Studies have also revealed that live prey for feral cats is scarce at certain times of the year and the hunters will take carrion during this period.

The new baits have been used successfully in experiments on the Nullarbor Plain and other trials are planned at Shark Bay and on the Montebello Islands. Further work is continuing to develop an efficient technique to assess and monitor the number of feral cats; determine baiting efficiency in different geographic areas; determine the most effective time to carry out baiting programs; and examine levels of baiting intensity to provide cost effective control.



This research is just one of the elements of Western Shield and will go ahead at the same time as fox baiting in the south-west target areas, where it's known that foxes are the main threat to wildlife.

EXPANDING FERAL PREDATOR CONTROL

Western Australia's wildlife has been devastated by introduced predators this century, but with the help of landholders over the past decade, CALM has shown it's possible to turn the tide. Implementing fox control programs has dramatically improved the position of threatened species. None of this could be achieved without the work done by volunteers

Above: Predator control has allowed woylies to increase in number to the point where they are no longer endangered in Western Australia. Photo – Babs & Bert Wells/CALM

Below left: Still in its early stages, Project Eden has led to increased animal sightings on Peron Peninsula—emus have been seen with up to 20 chicks, well above the average brood. Photo – Babs & Bert Wells/CALM

and farmers, and the valuable help provided by corporate and government sponsors (see boxes on next page).

Coordinated baiting will allow surviving native animals to recover in numbers and be returned to areas they once roamed. By the year 2000, the Department hopes to return 13 native species to more than 40 areas that once formed part of their habitat. These reintroductions will be made with careful timing; for example, it may not be wise to return chuditch to an area where natural prey, such as numbats, are still establishing.

CALM's target is to integrate fox and feral cat control by 1997 and begin to reintroduce native species in areas where feral cats are currently a problem.

MEASURING SUCCESS

Previous predator control programs have shown that the impact of baiting can be monitored and, best of all, that most programs have been highly successful. Western Australia's mammal emblem, the numbat, has been brought back from the brink of extinction by removing foxes. Another threatened species, the woylie, has increased in abundance to the point where it has been decided to take it off the State's list of



threatened animals. This is the first time on mainland Australia that a threatened list has been amended as a result of a recovery plan (see 'It's Back', *LANDSCOPE*, Autumn 1996).

The impact of reducing the number of feral predators is measured by regular trapping and field counts. CALM staff set traps overnight, return early the next morning to record the results and then release the animals. Captured animals are often fitted with tiny radio transmitters before they are released so researchers can track them to monitor their progress.

An example of the dramatic increase in fauna populations following fox control is the recovery of woylies at Batalling. Only one woylie was caught

per 200 traps laid at Batalling, near Collie, in the 1980s. In 1995, just four years after regular fox control began, 24 woylies were caught per 100 traps. At Perup, near Manjimup, it's now common to catch more than 50 woylies per 100 traps.

Measuring the success of Western Shield will obviously be a critical part of the project. This will be done through routine trapping and other procedures, such as radio tracking, and the special monitoring that is set up as recovery plans are put into action.

With the help of sponsors, volunteers, landholders and other members of the community, Western Shield is going to make a massive difference to the recovery of Western Australia's native species.

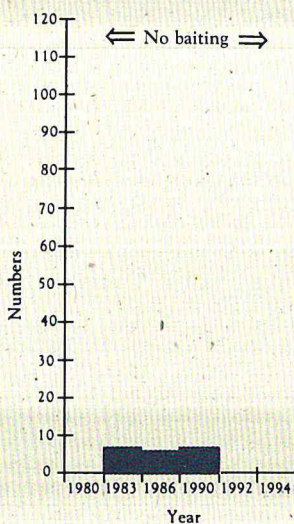
Volunteers and landowners have a vital role to play in predator control. Each autumn, Agriculture WA, working with Land Conservation District Committees (LCDCs), provides farmers with 1080 baits to help control foxes. Dardanup LCDC has been working with the Agriculture WA and CALM to bait State forest around Dardanup and Boyanup since the early 1990s. The volunteer Malleefowl Preservation Group also sets fox baits every three months at Corackerup Nature Reserve, south-west of Jerramungup. This project has been operating since 1994 with financial support from the Shire of Jerramungup, and has led to increased sightings of mature malleefowl.



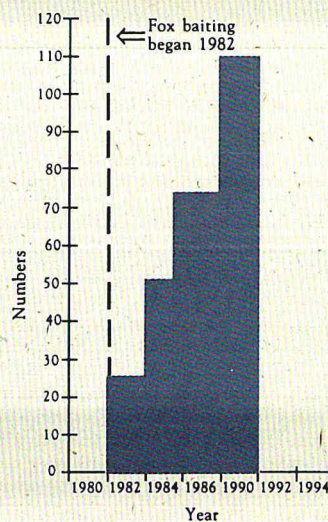
The pattern of increased numbers of native animals after fox baiting was established with black-footed rock-wallabies in the Wheatbelt, as the graphs below demonstrate. Note: data has not been recorded since 1990. Photo – Babs & Bert Wells/CALM

Sponsors to date include: Alcoa of Australia, CRA, WAPET, World Wide Fund for Nature, Australian Nature Conservation Agency and Shark Bay Salt Joint Venture, working with Useless Loop Community Biosphere Project Group Inc and CSIRO Division of Wildlife and Ecology on the Heirisson Prong Project.

**Rock-wallaby sightings
Tutakin (near Kellerberrin)**



**Rock-wallaby sightings
Nangeen Hill (near Kellerberrin)**



Caris Bailey is a Project Officer with CALM and can be contacted on (09) 442 0300. This article has been written with the assistance of Roger Armstrong, Andrew Burbidge, Keith Morris, Tony Start and staff at CALM's Science and Information Division.

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