



Brad Collis finds a successful battleground in Australia's halfhearted war with the rabbit.

# Mulga rebirth begs a fair-dinku m crack at the rabbit

**T**he young mulga sapling, a filigree of delicate green against pink sand and a washed-out sky, bends shakily under a press of wind.

The sapling is a miracle. It has survived long enough to actually resemble the skeletal remains of its forebears, the stark mulga trees so characteristic of the continent's southern arid-zone.

Although thinly spread and not easy to find, the wonder of these new, young trees is that they are the first to be seen in 100 years.

The southern mulga lands have reached the brink of oblivion. Most of the old trees are nearing the end of their 200 to 300-year lives, and in the southern mulga no new ones have grown for the best part of a century. The reason is rabbits: devouring every new seedling pushed up after rain, destroying native ecosystems and driving an estimated 30 native animal species to extinction.

The mulga saplings now surviving are the result of rabbits, in these parts, being temporarily beaten. For biologists such as

Dr Brian Cooke, it's a measure of how devastating the damage has been, and also of the hope that comes with the first regrowth.

'With rabbits gone we are starting to see the landscape the way it always used to be,' he says.

'We used to think depressions out in the sandhill country were naturally bare, because no one in living memory has seen it any different. It now turns out they are productive Mitchell grass ecosystems.'

The return of mulgas, native grasses and other shrubs are giving wildlife researchers some hope that numerous animals on the endangered species list may yet be saved if their ecosystems can be restored.

Cooke's recent field trips into the southern mulga to measure this rebirth have an added poignancy because his efforts to destroy the rabbit have been mired in controversy. It's his science that is the rabbit's nemesis. Cooke, a biologist with CSIRO Sustainable Ecosystems, was the first person to suggest using the fatal Rabbit Calicivirus Disease (RCD) in Australia.

Cooke was in Europe in 1988 examining the possible use of a rabbit flea to improve the spread of myxomatosis when he saw the effects of the first calicivirus outbreaks among wild rabbits in Spain. Almost every animal species has its own caliciviruses, but the rabbit calicivirus is the only one that kills its target species. Because of exploding rabbit numbers in Australia, Cooke was enthusiastic about the virus's potential to help rid the landscape of this destructive alien.

At the time, rabbits were said to be costing the country more than \$600 million a year in lost agricultural production and a further \$300-\$400 million a year in environmental damage.

But his enthusiasm, and an exhaustive research program to measure the virus under Australian conditions, crash-landed seven years later when the virus escaped the quarantined research facility on Wardang Island off the South Australian coast.

Previous research in Europe had discounted insects as being RCD carriers, but European researchers hadn't encountered the Australian bushfly, which is now

thought to have been the vehicle on which the virus hitched a ride to the mainland in October 1995.

Even though the virus escaped near the end of the research period, when scientists were anticipating its official release, the accidental nature of the escape triggered public alarm and condemnation. Forty-five years earlier, the release of myxomatosis had coincided with Victoria's first encephalitis outbreak and the two were mistakenly connected.

The calicivirus escape was discovered when sentinel rabbits outside the main research pens were infected. Days later, dead rabbits were being reported on the mainland and within a month the virus was identified as the cause of rabbit deaths 300 kilometres away. At the time, the rapid spread was blamed on two Sydney journalists who had visited the research area, further inflaming the row.

By March 1996 the virus had reached western Victoria and was a *fait accompli* on the Australian landscape – to the great pleasure of farmers and conservationists, and to the great displeasure of some

animal welfare groups and rabbit product industries. A law suit brought by furriers and meat processors remains unresolved.

One animal welfare group was created specifically to campaign against the use of the virus. The Defense Coalition Against Rabbit Calicivirus Disease, an action group headed by Eric Ball, president of the RSPCA in Western Australia, objected to 'the prospect of a plague being unleashed with the aim of exterminating an entire species'.

Opposition also came from two American scientists, Dr Alvin Smith and Dr David Matson, who claimed there was a risk of cross-species infection.

In a joint open letter published in Australian newspapers in December 1995 the scientists said: 'Australians have a massive, extremely dangerous situation on their hands and it looks like the future of your livestock industries and perhaps other disease-related concerns are in the hands of God, not CSIRO scientists and officials'.

The claims were refuted by other international scientists, although public confusion remained high because there are

Above left: Dr Brian Cooke monitors the recovery of vegetation in the wake of Rabbit Calicivirus Disease.

Above centre: The return of mulgas, native grasses and other shrubs offers hope that numerous animals on the endangered species list may be saved.

Above: Without further research, and the integration of RCD with other control methods such as the destruction of warrens, rabbit numbers will inevitably recover.

caliciviruses that affect all animals, including humans. Human caliciviruses, for example, are a cause of severe infant diarrhea in Third World countries.

The debate dragged through 1996, during which time the Federal Government ordered more species testing and another independent human health study.

But the main opposition to calicivirus, then and today, stemmed from public sympathy for rabbits combined with a general lack of awareness of native animals and their plight.

Professor Rob Morrison of Flinders University in South Australia, a former chairman of the Anti-Rabbit Research Foundation (now called the Foundation for Rabbit-Free Australia), still feels that



because many Australians can't imagine how the country might be without rabbits and other feral animals, they can be indifferent, even hostile, to attempts to remove them.

'These un-Australian sympathies seem to be rooted in our European background and Americanised culture. Many who were reared on English stories or American cartoons, know and relate less to Australian animals than to exotic ones including the rabbit, which is loved variously as Peter Rabbit, Bugs Bunny or the symbol of Easter,' he says.

'The ethics of eradicating millions of creatures are to be argued seriously, but some arguments have been based on sympathy for the rabbit . . . misplaced when it really means a corresponding lack of sympathy for native Australian animals. They are just as attractive, and as the rabbits' victims, at least as deserving of popular support. Perversely, they don't receive it.'

Calicivirus kills a rabbit in about 48 hours, during which time the animal behaves normally for about 12 hours before lapsing into a state of stupor. By contrast a rabbit with myxomatosis takes about two weeks to die.

The Federal Government formally approved the release of RCD in October 1996, a year after the virus had already begun killing rabbits in their millions.

**Brian Cooke believes complacency is the biggest hurdle to overcome if the initial impact of calicivirus is to be sustained.**

For Cooke it was a frustrating and sometimes puzzling period, but he says that at the end of the day the virus did the job it was intended to do, and in the way the original research showed it would. His sympathy lies clearly with Australian wildlife. 'In areas where rainfall is less than 250 mm a year, rabbit numbers have been cut by 97-98%,' he says.

Overall, calicivirus is believed to have halved Australia's rabbit population, which before October 1995 was estimated at 300 million. The main concern for scientists and wildlife authorities now is to find a way to make the virus more effective in wetter, coastal areas where rabbits continue to undermine fragile landscapes and sustain increasing numbers of foxes and feral cats, which also prey on native wildlife.

'In the 500mm rainfall zone - central Victoria, the New South Wales tablelands, south-western Western Australia, and the high rainfall areas of Queensland - the impact of RCD has been patchy,' Cooke says. 'But this was anticipated because our work in Spain told us at the start that the greatest impact would be in drier areas.'

Part of the problem is that despite an insect carrier having helped the virus escape Wardang Island it is not a reliable means of transmission. At the moment the virus is being spread by rabbits that are captured and manually inoculated - a slow, labour-intensive process. Baits for spreading RCD are used in New Zealand, but in Australia the National Registration Authority has been reluctant to approve their use while calicivirus remains contentious.

To complement calicivirus and to keep a step ahead of the inevitable build-up of rabbits' resistance, ongoing research is seeking new strains of RCD suited to wetter regions, as well as more potent strains of myxomatosis. There are also hopes for a new technology called immuno-contraception (See *Domesticus interruptus*, *Ecos* 104).

The Canberra-based Pest Animal Control Cooperative Research Centre is examining ways to biologically sterilise rabbits, foxes and the introduced 'house' mice using a virus or bacteria as the carrier for a sterilizing 'agent'.

Researchers have identified sperm and egg proteins which can be inserted into a species-specific virus or bacterium. When the pathogen multiplies in its host during an infection, the host's immune system is tricked not only into attacking the infection, but also the sperm or egg protein. The result is infertility.

Cooke says complacency is now the biggest hurdle to overcome if the initial impact of calicivirus is to be sustained. He says that without more research, and the integration of RCD with other control methods such as the destruction of warrens, rabbit numbers will inevitably build up again.

'Even where RCD achieves a 90% kill rate, there are enough survivors to breed quickly,' he says.

'The success of calicivirus in central Australia is a major battle won, but the rabbit still has the potential to win the war.'



**Abstract:** Rabbit Calicivirus Disease is believed to have halved Australia's rabbit population, which before October 1995 was some 300 million. The subsequent return of mulgas, native grasses and other shrubs in the southern mulga lands are giving wildlife researchers some hope that numerous animals on the endangered species list may yet be saved. The main concern now is to find a way to make the virus more effective in wetter, coastal areas where rabbits continue to undermine fragile landscapes. At the moment the virus is being spread by rabbits that are captured and manually inoculated - a slow, labour-intensive process. Ongoing research is seeking new strains of RCD for wetter regions, as well as more potent strains of myxomatosis. There are also hopes for a new technology called immuno-contraception.

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