

Scientists from CSIRO's Australian Animal Health Laboratory (AAHL) and the Division of Wildlife and Ecology are working with a national taskforce to investigate the cause of widespread blindness in kangaroos.

An outbreak of kangaroo blindness was reported in South Australia in late 1993. Subsequently, large numbers of kangaroos were affected in New South Wales and Victoria. The epidemic peaked in July to October 1994, and continued into 1995.

Kangaroos afflicted with the disease look almost normal, can feed and generally maintain body condition. When disturbed, however, they are obviously blind and stumble into obstacles.

From samples of diseased kangaroos, two insect-borne viruses were isolated by CSIRO in collaboration with Victorian and NSW veterinary laboratories. The two viruses, called Warrego and Wallal, are orbiviruses and are transmitted by small, biting midges called *Culicoides*.

Using electron microscopy at AAHL, both viruses were seen in retinas of affected kangaroos. Based on these findings, it was probable that a strain of one of these viruses caused the blindness.

Animal transmission trials conducted by Elizabeth McArthur Agriculture Institute scientists in NSW reproduced the disease in kangaroos. Subsequent tests at AAHL indicated that the lesions in the experimentally infected kangaroos were associated with infection by the Wallal virus and that it had caused the disease.

Samples taken from kangaroos some 20 years ago have been retrospectively analysed at AAHL and shown to contain both viruses. This reinforces a view already held by scientists that kangaroo blindness is not a new disease.

Calicivirus under review

In other virus-related research, CSIRO has been working with Australian and New Zealand agencies to investigate the potential of rabbit calicivirus (pronounced cal-e-see-virus) as an additional control of Australia's worst vertebrate pest: the European rabbit.

Rabbit calicivirus is a naturally occurring virus that only affects the European rabbit. It has spread to more than 40 countries around the world.

different species of animals were inoculated with large doses of rabbit calicivirus. None of those animals became infected or sick. This is one of the largest studies ever undertaken to determine the host range of an animal virus.

In 1994, state and Commonwealth agencies joined to coordinate a field trial designed to test the effectiveness of the virus under more natural conditions. The trial started on Wardang Island early in 1995.

In October 1995, the virus escaped from Wardang Island and subsequently spread to Yunta and the Flinders Ranges in SA. The virus continues to spread in SA and has reached Broken Hill in NSW and Cameron's Corner in Queensland.

Program scientists working in the Flinders Ranges report that rabbit numbers have dropped by more than 95% allowing the regeneration of many native plant species.

Commonwealth ministers for the Environment, Sport and Territories and Primary Industries and Energy, and their state and territory counterparts have agreed to cooperate in assessing rabbit calicivirus. A call for public comment on the virus's formal release was issued in December 1995, with a view to making a recommendation in March 1995.

If rabbit calicivirus is approved for national release, plans will be developed with landowners to maximise the long-term impact on rabbit numbers. Rabbit

calicivirus alone would not be a 'magic bullet'. It would add to rabbit controls currently in use.

The latest information on rabbit calicivirus is available on the World Wide Web at <http://www.csiro.au/communication/rabbits/rabbits.htm> or from the rabbit calicivirus information line, (052) 27 5123.



Kangaroo blindness is caused by a virus transmitted by biting midges known as *Culicoides*. The virus is known to have existed in kangaroos for at least 20 years.

Overseas, rabbit calicivirus has been tested in 15 animal species: none became infected or sick. No evidence has been presented to show that this virus poses any greater risk to humans than other viruses that we come in contact with everyday.

In 1989, the Australian and New Zealand governments commissioned a three-year study by CSIRO, in which 28