

## Epidemiology in the big paddock

With epidemiology you can tell a little thing from a big thing. What's very hard to do is to tell a little thing from nothing at all.

Michael Thun

After the surveillance program was set up under the reorganised rabbit calicivirus program to monitor the initial spread of RHD, an epidemiology program was established to follow details of disease outbreaks from year to year. As I knew South Australia well, and Nevil Amos and Ray Wallis from the team on Wardang Island were there to help, we set up initial sites for epidemiological studies on Manunda and Panaramitee sheep stations near Yunta, and on Gum Creek station near the town of Blinman. These were the two widely separated areas where RHD had almost simultaneously been recognised when it first spread inland.

On each of these sites 50 rabbits were to be collected every 6 weeks or so to obtain information on disease spread. Starting after dark and using a 100 W spotlight to find and dazzle the rabbits, we shot them with a 0.22 rifle from the back of a four-wheel drive vehicle. It was eerie to travel through areas for what seemed like half an hour at times without seeing a single rabbit, even though they had so recently been super-abundant. Numerous rabbit warrens showed up in the bright light; bare of vegetation but equally devoid of rabbits. It often took at least two nights' work to get the full sample, and it was particularly difficult in summer when it did not get dark until late. Shooting started after 9:00 p.m. and on our homeward journey the pale eastern horizon often told us dawn was about to break.

After each rabbit was shot it was retrieved then weighed, sexed and dissected in the headlight beams of the truck. Blood was taken from the heart, and slices of liver, spleen and kidney put into tubes for freezing. Information on reproduction was collected from each rabbit and last of all an eye was collected to be preserved in formalin. The reason for collecting the eye is simple. The eye lens is one organ that grows throughout the life of a mammal, largely unaffected by nutritional changes as seasons come and go. Consequently, it is possible to estimate a rabbit's age tolerably well from the weight of the lens. The lens taken from each preserved eye is dried in an oven at 60°C over a week or so until its weight is constant, then age is estimated from lens weight using a standard formula that allows for the slowing of growth over time. There is an error of about 10% associated with each age estimate but this is of little consequence because a rabbit estimated to be 10 months old will generally fall within an age range of 9–11 months. Even though that error is larger among older rabbits we were still able to sort rabbits into annual age-groups that could sometimes be followed for almost two years before they merged with older groups of rabbits and it became difficult to discern which age-group was which.

One further problem with night shooting is that few very young rabbits are shot. Consequently, to find out how RHD spread among rabbit kittens, we also began to live-trap rabbits