

Benefits of deep forest possum control for Tb purposes: Hauhungaroa Case Study

During the period 1984-87, when funds for undertaking possum control were limited, a 250m wide ground control buffer was established into the forest along parts of the northeastern Hauhungaroa Range, near Whakamaru, in an effort to reduce local herd infection rates. This area was selected as there is a reasonable sized river running along some of the boundary between the forest and the farmland. It was considered that this would add to the effectiveness of the control buffer. The forest buffer was first controlled using ground controlled methods including 1080 baits and then self-feeding bait stations containing 1080 were used to mop up migrating possums. The bait stations were regularly topped-up. Ground control was also undertaken on adjacent farmland. The objective of the buffer was to contain infection to the forest and prevent Tb possums spreading from the forest to adjacent herds. The logic behind this was that Tb possum foci are predominantly located along the bush pasture margin, so intensively controlling possum in this buffer and on adjacent farmland should stop infection spreading to adjacent herds. After three seasons of this regime, the infection rate had in fact increased in the majority of herds that were to be protected by the buffer and it was disestablished as being of little value in preventing Tb possum movement.

(Unfortunately, the detailed herd infection data is not retrospectively available to show these effects because of two major changes in databases since this trial began, along with changes in herd ownership. Thus the information is based on institutional knowledge of those that were involved during that period and are still involved).

A trial to evaluate low possum density buffer widths to contain spread of infection compared the effectiveness of 1km, 3km and 7 km buffers into the forest around the Hauhungaroa Range [AHB Project R10480 contracted to Landcare Research Ltd, *Optimal Buffer Widths for Control of Possums in the Hauhungaroa Range. 1994/95 – 1998/99 Population Recovery of Possums and Wild Deer and Tb Prevalence in Possums, Wild Deer and Cattle*]. These buffers were established using aerial 1080 application. The Landcare report identifies that possums continued to migrate from the uncontrolled area into the low possum density buffers. The least effective buffer was the 1 km wide buffer. Tb possums were identified in both the 3km (prevalence 1.2%) and 7km buffer (prevalence 0.1%) following aerial control. However, the highest prevalence was in the uncontrolled area in the middle of the Hauhungaroa Range where the prevalence was 4.5%.

The conclusions from this report indicated that a 1 km wide buffer into forest is ineffective due to immigration of possums from deeper in the forest. The authors of the report recommend that buffer widths should be 3km wide. The report also identified that Tb possums were still present after the aerial 1080 operation, but prevalence of infection was higher in the 3km wide buffer zone relative to the 7 km wide buffer zone. This is considered to be related to its proximity to the uncontrolled area which was on the same

western side as the 3 km wide buffer. This may have facilitated easier migration of Tb possums into the area from the uncontrolled area.

However, for Tb to be *eradicated* from the wild animal population in an extensive forest area, then possum control is needed over the entire habitat containing the infected wild animal population. Leaving an infected possum population in the middle of the Hauhungaroa Range continued to provide a reservoir of infection for possums and other wild animals as shown in AHB Projects R10479, *Epidemiology of Tb in wild deer*, and R10537 *Are deer an important long term reservoir host*).

Where reliance has been placed on low possum density buffers of 3 km width, then Tb possums continue to migrate into these buffers from the uncontrolled areas of forest behind, and continue to pose threats to adjacent herds.

If these 3 km wide buffers were controlled from the ground rather than via aerial 1080 baits, then control quality will be poorer and there will be a greater chance of leaving uncontrolled possum patches, especially as the contractors move deeper into the forest. The cost of control will be significantly higher than for aerial control when taken over a time scale of 10 years. Finally, if no control has been undertaken further into the forest, then this means that buffer control will be required indefinitely, which will not be acceptable.

As a result AHB has undertaken aerial 1080 control over the whole of the Hauhungaroa Range, as a means of ensuring that all Tb possum foci are eliminated. Research is ongoing to evaluate whether this has been achieved.