



Windy Hill Sanctuary Citizen Science Series #11

For more than ten years the Windy Hill Sanctuary has been trialling methods to find the most effective, most cost effective, and most socially acceptable long-term method of suppressing rats and mice. This included the addition of toxins after it was found that trapping only over a landscape scale area did not reduce rats sufficiently to achieve good conservation gains.

The Citizen Science Series article # 9 described our prudent introduction to toxins, after 6 years of trapping only, with the use of Vitamin D3- cholecalciferol (Feracol) between 2005 and 2008. With still fluctuating levels of rats the Trust, with the agreement of landowners, started using brodifacoum (Pest-Off) as the sole tool in 2009. As has been reported recently in the Bulletin, brodifacoum is a potent second-generation anticoagulant that requires only a single feed for a rat or mouse to ingest a fatal dose. It's down side is that anything that eats that rat or mouse also ingests levels of the active bait as it persists in tissue, particularly the liver. It takes over 100 days to break down to non-detectable levels in soil.

The Sanctuary is divided into 5 pest managed areas which have been formed as the Sanctuary has expanded. Brodifacoum was used in 4 of these areas for two years and 1 area for four years. While the rat tracking tunnel results were a big improvement on trapping, and a moderate improvement on the Feracol, the concerns about this toxins persistence meant its use was discontinued completely after 2012 in the Sanctuary.

Pigs are the main foragers of dead rats in the forest so in 2012 three pigs liver and muscle samples were sent off to Landcare Research Toxicology for testing for both brodifacoum and diphacenone (RatAbate). Diphacenone had replaced brodifacoum in four pest managed areas from 2011. None of the samples showed detectable levels of diphacenone but all three pigs measured detectable levels of brodifacoum in their liver, and one in its muscle tissue meaning it had eaten a lot of dead rats. By the time we got the results back a bunch of us had already eaten those pork roasts, but not the livers. Minute levels of brodifacoum, such as may have been ingested, in my opinion, would have had no more effect than commonly used blood thinners like warfarin, aspirin, and concentrated fish oil.

Since that time the Sanctuary has been trialling diphacenone in varying amounts to find the least possible amount that can be used alongside trapping. 50, 100, and 150-gram bags of paste are used for a year at a time and then the results assessed against each other. So far, we have found 100 or 150 grams of this low potency multi-feed bait are more effective at suppressing rats than just 50 grams. To ingest a lethal dose the rat must have 4 nights of feeding – this is why there are so few side-effects because anything eating the rat will only get the active ingredient from the small amount in the stomach content.

The results over the last four years have been encouraging with many of our pest managed areas having an annual rat tracking tunnel average of between 2-10% which relates strongly to the increases in bird numbers we have recorded in our annual bird count.

In choosing to use toxins the Trust accepts the risks and mitigates in the following ways –

Choosing a low potency bait with very limited side effects

Encasing bait in a plastic bag reducing slug and snail impact and preserving the quality of the bait (as pictured)

Placing the bagged bait inside a wooden station with a small entry opening and fixed with a trap inside the station limiting the access and availability to target species.

Old bait is disposed of on site in worm farms mixed with cardboard and organic matter which completely breaks down the bait into useable compost.

We also trial any new trapping tool that comes on to the market and the long-term goal is to find ourselves in the position where toxins can be phased out. In the meantime, if we want to have kereru, tuis and fantails, lizards, and weta for our mokopuna to enjoy they must remain as part of the tool box for suppressing pests.



In wrapping up this series of articles, I would like to thank the Bulletin for printing each one, and also the people who have phoned or emailed to thank me for sharing the information. Encouragement and support are key to maintaining a pest management programme over the nearly 20 years we have been doing this work. The enquiry is stimulating, the results always interesting, and having locally gained knowledge a bonus to share.

Judy Gilbert
Sanctuary Manager