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Field Trial: Rope to assist Ship Rat access into Philproof Bait Stations (revised)

Dave Edwards

Background

This field trial is a continuation of the work to find cheap and simple methods to improve how we carry out Possum and ship rat control. Previous trials have concentrated on reducing bait interference by non target species, Possums eating rat baits and ship rat interference with Feratox. Copies of those reports are available on request.

Given their numbers and the rapid rate at which they breed, ship rats are arguably the greatest threat to our native biodiversity. A commonly used method for large scale ship rat control is toxins in bait stations.

Philproof bait stations are the industry standard and were originally developed primarily for Possum control but are widely used for possum and ship rat control operations. During previous trials using the large Philproof stations it was noted that occasionally ship rats show some difficulty entering a bait station, mostly they fell off the side while trying to swing their body in from the top. After discussions with Philproof they have adopted the suggestion to put three lips on the outside of the bait station. This will be a worthwhile addition as it gives ship rats more to grip as they swing into the bait station, but of course it does nothing for the several hundred thousand bait stations already in service around the country.

Further to my own observations, it should be noted that when comparing ship rat interaction with different types of bait stations, the discussion section in a DOC pen trial paper says.

Philproof bait stations had the longest time to entry by rats, lowest proportion of rats entering, lowest number of repeat entries, equal lowest duration of entry, lowest proportion of rats eating bait, and lowest amount of bait eaten. This bait station type was the only one of the four tested that was raised above ground and also had only one entrance.

In years gone by when we would tie wire Ditrac blocks to the rear of bait stations, it was common practice to prop a stick from the ground to the floor for rats to run up. Pest control Colleague David Brown suggested why don't we try a permanently fixed piece of rope in place of the stick

This field trial will look at if attaching a length of 320 mm long 12mm Diameter rope to the Large Philproof bait station will make it easier for a ship rat to access the bait.

Field Trial

A field trial was carried out at four locations in a native forest block that gets No animal pest control and has good numbers of possums and ship rats.

Large Philproof bait stations were fixed to suitable trees at the standard height for Possum and ship rat control of 280–300 mm from the ground to the bait station floor.

A 320mm length of stiff 12mm diam rope was fixed to the side of the bait station floor. To replicate what would happen during a normal bait station operation the first exposure ship rats had to the bait stations was with the ropes fitted.

No toxins were used during the trial, Cinnamon prefeed pellets were used in each bait station to attract both possums and rats to the bait stations.

Trail cameras were used to observe ship rat and possum behaviour.

The bait stations were checked after four days and refilled with prefeed pellets.

At the end of the rope trial on the Large Philproofs I carried out some trials on the Mini Philproof bait stations. No groups I work with use the Mini stations but I had been requested to developed a possum excluder baffle for them so included them in a separate trial. The results were so different I will cover the Minis separately.



Ship Rat using the rope to gain access to the bait station

Results

During this trial with the ropes fitted we got video clips of 270 ship rat entries into the bait stations, many of which would have been the same rats making multiple visits. For 15 of those visits it is unknown how the rat got there as it was already too far inside the bait station before the camera started recording. To keep the data the same as my previous No rope trials, I have deleted the 15 unknowns from my totals.

A breakdown of the data shows that 82% of ship rats went from the ground and up the rope to gain entry into the bait station, and 18% entered from from the top of the bait station. Of the 18% that entered from the top of the bait station more than half used the top 60mm of rope to aid their entry as they swung into the bait station.

This a complete reversal to my previous NO rope trials where with Large bait stations set at the same 280-300 mm 15% of ship rats jumped in from the ground and 85% entered from the top of the bait station.

Except for one possum that lay on the ground for ten minutes just chewing the end of the rope, generally possums did not pay much attention to the rope.

How Ship Rats Entered the Bait Stations

	Entry from top	Used Rope	Jumped In from Ground
No rope Fitted	85%	N/A	15%
Rope Fitted	18%	82%	0

Discussion

The results showed that when ship rats were presented with the easier option of a rope, they were happy to change what I had previously seen to be normal behaviour and use the rope. This is hardly a surprise as you would have to consider that running up something like a rope was normal rat behaviour anyway.

Why do some rats still enter from the top. From the Thousands of rats I have watched enter bait stations some rats like to sit on top of the bait station, look around and scent the air before entering. So if you are already up on top it's the quickest entry point. Less caution is shown when they get into feeding mode.

The question which I was never going to be able to answer is. "Just because you make it easier for a ship rat to access the bait, will this actually give a better kill rate on ship rats during a control operation, or were the rats going to get a lethal dose anyway, even if it takes a bit more effort."

It's worth keeping in mind that when using anti coagulant toxins ship rats generally must make multiple visits into the bait station in order to get a lethal dose, so if by using a rope you make it easier are they more likely to make those visits, when there are other food sources around. I don't know the answer but could a cautious neophobic ship rat be more inclined to take a quick and easy path and shoot up a rope, than take a longer path to get a feed, or is he just not going to go in regardless of how easy we make it.

Only you can make a judgement call to if a 50 cent piece of rope is worth while or not. I used cheap stiff 12mm rope UV stabilised from the local discount store at \$1.50 per metre. The ends were burnt to stop fraying then I poked a piece of tie wire through the rope and gave it a couple of twists around the rope. It could be worthwhile putting a short piece of tie wire around the other end as well to stop it fraying. The hot wire cutter I made is well worthwhile when cutting larger quantities of ropes. A hand hole punch like you would use on a leather belt is idea for making a small hole on the front of the floor to attach the rope.

As with my previous trials I have no backing so can only run smaller trials, they are more about taking ideas and seeing if they show promise. If groups think they are worthwhile then they have the option of taking the ideas further.

Any questions or comment let me know djedwards@xtra.co.nz 07 5440885
If you do use the rope I'm interested to hear how it went.

Dave Edwards

references

Spurr, E ; 2007. Bait Station preferences for ship rats
Edwards, D ; 2018. Ship Rat control using Modified Philproof Bait Stations

Mini Philproof bait stations

No groups I work with use the Mini Philproofs but I had been requested to develop a Possum Excluder Baffle for them so carried out a rope trial while doing the field work for the Baffle. I do however caution that for the rope part of the trial this was only a two bait station trial with 114 ship rat entries into bait stations, so has limited data. If you run an operation with the Minis and this is of interest to you, please do your own field trial.

I ran the Mini Bait Stations in standard mode to get data, then with ropes, then with possum baffles and again with Baffles and ropes. They were mounted at the same 280-300mm from the ground. I used Cinnamon prefeed pellets as the lure.

My first observation of the bait station in standard mode was that significantly more ship rats fell off the side of the bait stations while trying to gain entry than I have previously seen with the Large Philproofs, a few fell off three times and then jumped in from the ground.

The Second observation was that only around 10% of ship rats entered the bait station from the top and the rest jumped in from the ground, which is a complete reversal from what I normally see with the Large bait stations.

After fitting the ropes the results switched around and were much the same as those for the Large Philproof. 87% of ship rats gained entry to the bait station by using the rope to go from the ground to inside the bait station. Most of the 13% entering from the top used the top section of the rope to aid entry.

The revised Mini bait station I had with the lips on the outside defiantly gave the rats more to grip and you could see them using the lips, but some still looked to be stranded on the outside and couldn't get inside.

If you compare the floors of the Mini and the Large, the Mini does not have the half round ledge extending out from the front of the floor. It's hard to pick up but in some frame by frame video on the Large stations you can see rats using that ledge as they enter the bait station. Which is only logical it's there why not use it.

To determine if the lack of the ledge on the Mini bait station is a real issue would take a larger trial to clarify. If it is then fitting a rope might be an easy option.



Mini and Large Philproof Floors

The Possum Excluders are screwed to the underside of the Bait Station floor so the Floor is reversed during rat only control. What I did notice with the floor reversed was that the hump in the floor which retains bait then becomes a hollow. With NO rope fitted rats were using the lip on the edge of the hollow as a point to grip as they entered the bait station from the top.