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Short webinars for environmental policy-makers and practitioners

Delivering cost-effective biodiversity outcomes at landscape scale

The following questions were asked during our live webinar with Dean Anderson but due to time restrictions, we were unable to answer these in the session.

What is the thinking on how many 1080 operations you can get away with before the stoat population learns to avoid poisoned rats to the extent that the strategy becomes ineffective?

A sub-lethal dose of 1080 may put individual stoats off eating a toxic rat. The stoat population would not learn to avoid 1080 as a whole because there will be a constant influx of naive individuals from reproduction or immigration. Stoats don't live more than 4-5 years, so those that could potentially learn will be removed from the population due to natural causes.

How do you determine stoat abundance?

The starting population is guided by existing estimates in this type of ecosystem. The processes of survivorship, reproduction and dispersal are then modelled, which adjusts the population.

Will 1080 be something we always use? Are there other options to consider when predator populations decrease to a more manageable level?

This is an active area of research. I don't know if we will always use 1080, but hopefully better methods will come along.

Do you model stoat declines by secondary poisoning alone, or do you also include declines due to reduction in primary prey?

Answered in the webinar; yes, reduction in primary prey (i.e. rats) will decrease the stoat density.

Are rats vulnerable to inbreeding (will 1080 over time degrade their genetic diversity and ultimately their survival capacity)?

Sorry, but I don't know the answer.

This modelling is based on beech forest ecology, how do you see this applying to mixed podocarp / beech forests. Also, timing would appear to be an important feature, to prevent embryo implantation vs killing lots of juvenile stoats.

We can apply this to a mixed podocarp forest. The forest productivity would generally be higher and not have the masting pulses that we see in the beech forests. Yes, 1080 operations that are trying to

reduce the stoat population should definitely be done before the kits are born, and certainly before they leave the nest.

Great presentation and ideas. Have you thought about applying these concepts to managing pest plant species?

I have not thought about applying this to weeds. However, the concepts presented on identifying important biological processes and their respective spatiotemporal scales and using these to scale up forecasts of abundance and distribution should be possible.

What impact does this have on mice and are stoats likely to swap prey to mice if rats population is low?

I am guessing here, but I think that this is very very likely. How mice fit into these dynamics merits a lot more research.

Can you apply this to farmland areas, as masting is not the resource in this case

Yes, we just need estimates of habitat productivity (e.g. seed production) that will influence rat population dynamics. In a farmland area there will be a real mix of different habitats, but that is ok, we can handle that.

Is there a resource hub where existing research or projects on this topic are accessible to other projects?

Not at the moment, but I am happy to liaise with interested people.

With predator free 2050 shouldn't the goal be eradication (of stoats) rather than suppression?

An area like Fiordland is not yet ready for eradication, or we are not yet ready to attempt eradication in Fiordland. Given the resources available, that is not a realistic objective at this time. Until such time that we are ready, suppressing is critical for maintaining and increasing threatened and vulnerable native fauna.

Should eradication of rats be achieved through 1080, how will stoat management continue without rats as a vector on a large scale?

By the time we are capable of eradicating rats from the mainland, I would hope that we will have better tools for suppressing and eradicating stoats. This is an active area of research.

Why are you looking at timing of 1080 application after mast if the mast trigger was not found to be that effective?

It is correct that we should be monitoring for an increase in rat abundance to trigger a 1080 operation in both mast and non-mast years.

How long do rats live after eating 1080?

2.4 to 36.5 hrs according to JC McIlroy 1982 Australian Wildlife Research 9: 505-517

How many rats are a lethal dosage for stoats?

I have failed to find a clear answer to this question. I think that the amount of 1080 in each rat will be highly variable, but understand from recent ZIP trials that one rat can be enough.

Do stoats eat dead rats or do they prefer live rats? (do they like the chase?)

I don't know about preference, but stoats will eat dead rats yes. They routinely scavenge as well as kill live prey.