Rakiura white-tailed deer study

The results are available from a study to learn more about the impact of 1080 bait on Rakiura white-tailed deer and the effectiveness of deer repellent.

Overview of the study

Last year, a study was done by the Bioeconomy Science Institute (BSI) (formerly Manaaki Whenua – Landcare Research) to assess the impact of 1080 bait on Rakiura white-tailed deer and the effectiveness of Prodeer repellent bait.

The study was commissioned by Predator Free Rakiura to help inform future operations targeting feral cats, rats and possums on the island.

It was done alongside the aerial 1080 operation by DOC in August to protect pukunui/southern New Zealand dotterel from extinction.

The operation covered 40,000 hectares of public conservation land. Standard 1080 bait was used across 32,000 ha and deer repellent bait was used across 8,400 ha.

242 movement-activated cameras were used across three monitoring grids. One camera grid was set up in the standard 1080 bait area and another in the deer repellent area. A third grid was set up outside the 1080 operational area to provide a comparison and to account for any seasonal changes in activity *(see the map on page 2)*.

The cameras were active for three-to-six weeks before the operation and remained in place for between seven and nine weeks after it.

By comparing the number of camera detections before and after the operation, researchers were able to measure changes to the relative abundance of white-tailed deer over the duration of the trial.

The study was not designed to do a deer population count, as some individual animals may have been detected multiple times.

This study is only applicable for white-tailed deer on Rakiura; the results do not reflect what is happening with other types of deer in predator control areas elsewhere in the country.

The results

118,202 photos were analysed, and they showed 6,059 detections of various species. The most common were possums (2,081 visits), followed by kiwi (1,626 visits), then white-tailed deer (1,292 visits). Deer were photographed at 175 of the 230 camera sites (76%).

Kiwi activity was high in all three areas, and the rate of kiwi detection didn't change after the operation. There was an estimated decrease in possum activity by 98.0%, rat activity by 96.7%, and feral cat activity by 98.4%.

On average, there was a 75% reduction in deer activity in the operational area where deer repellent was used in contrast with a 97% reduction in the operational area where standard 1080 bait pellets were used *(see the map on page 4)*. Deer detections remained relatively constant in the non-treatment area before and after the operation.

Other insights

The large majority of the Rakiura white-tailed deer population was unaffected. The operation covered four out of 35 hunting blocks on the island, and some remote open hunting areas.

Outside the operational area, Rakiura still has a large and widely distributed population of white-tailed deer, as shown by the monitoring results in the non-treatment area.

Deer are still present in the coastal area at the edge of the operational boundary, and they will gradually re-enter and re-populate the wider operational area.

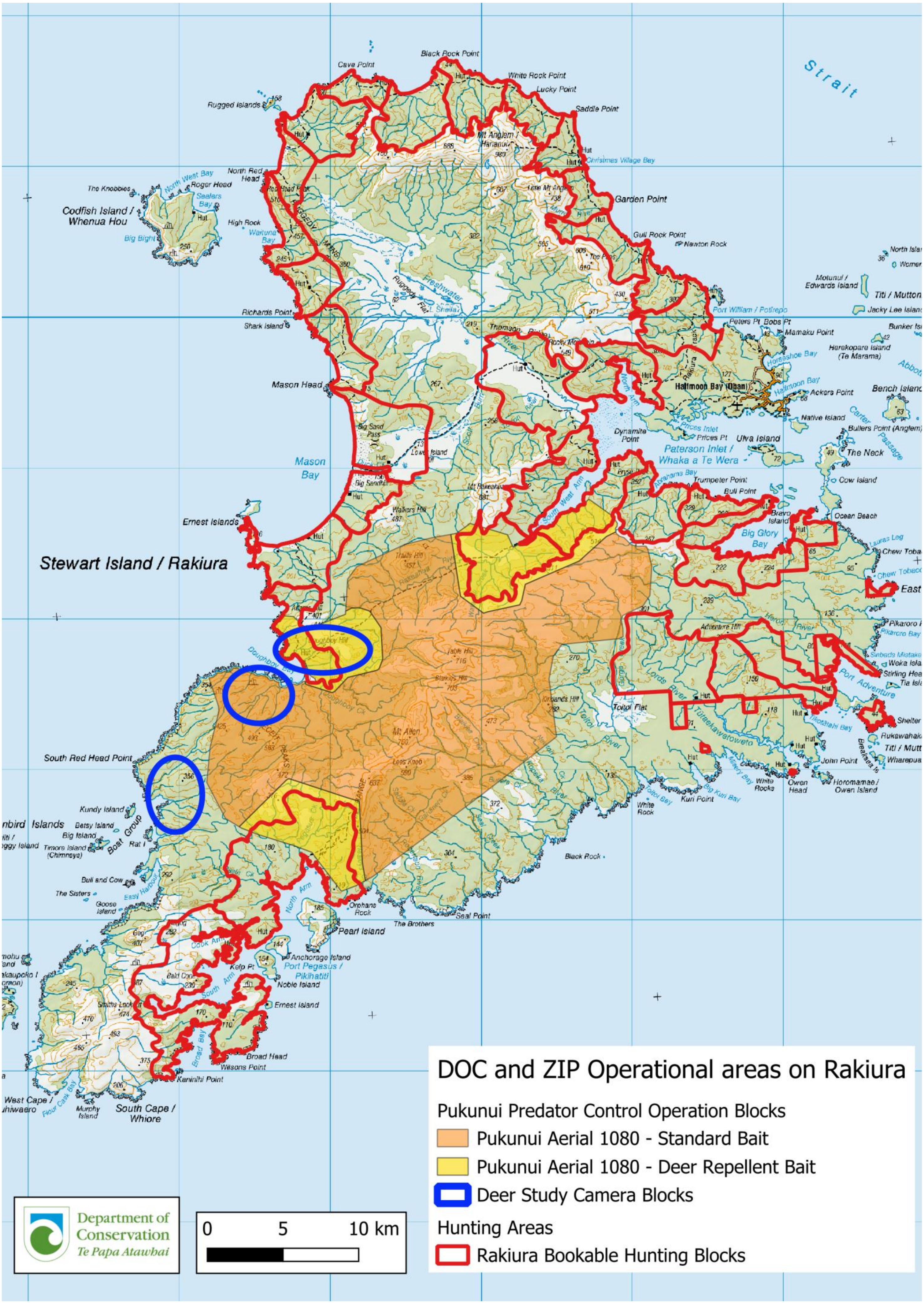
The lowered deer density in the operational area is expected to increase the forage available for surviving deer, leading to better-condition deer with a higher reproductive output, which could accelerate population recovery.

It is estimated that white-tailed deer will be widespread throughout the operational area, but in low numbers, within one year, and back to pre-operational levels in three-four years. This is based on other studies of population recovery for white-tailed deer and red deer.

Department of Conservation
Te Papa Atawhai

PREDATOR FREE
RAKIURA

Map showing camera grid locations and the operational area in relation to hunting blocks across the island



Comparing the results to other deer studies in New Zealand

The reduction in deer activity was higher than has been observed in some other deer monitoring studies elsewhere in New Zealand.

The report outlines some likely causes, including low natural food availability, meaning the deer were hungry and more likely to eat the bait pellets, and the small size of white-tailed deer making them more susceptible to eating a lethal dose of 1080.

Another probable factor is a lack of herd exposure to 1080 bait pellets previously, meaning the Rakiura white-tailed deer were less cautious of the baits than in areas where there have been multiple 1080 predator control operations.

The latest pukunui and feral cat monitoring information

DOC is continuing to monitor feral cats in the operational area. Numbers have remained low, with none spotted by trail cameras since the operation, and only three caught in traps, two of which were on the boundary of the operational area.

This has given vulnerable pukunui chicks a greater chance of successfully fledging and adult birds a better chance of surviving through the breeding season.

Pukunui appear to have had a successful breeding season following the aerial 1080 predator control operation, with 37 chicks and 80 eggs counted across 36 nests.

We will know the total pukunui population change in April when the Rakiura DOC team does the annual flock count. The results will be shared once they are available.

A banded Pukunui/Southern NZ dotterel. DOC will begin banding juvenile pukunui in March once most of the birds have journeyed down to the coast to flock.

Next steps

As recommended in the report, DOC will monitor the movement of white-tailed deer back into the operational area and share the results as they become available. DOC will use its existing trail camera network which is also monitoring feral cats.

There are no aerial 1080 operations planned on Rakiura in 2026 following the successful pukunui predator control operation, and while Predator Free Rakiura considers the next steps for the project following the eradication trial last year.

There will be further engagement to come with the project partners and local and national stakeholders on these next steps.

Other updates

The caution period for hunting for meat in the operational area is expected to be lifted by the end of February as predator carcasses have nearly degraded to a safe level.

For more information

If you have any unanswered questions, please email: **info@predatorfreerakiura.org.nz**

Learn more about Predator Free Rakiura: www.predatorfreerakiura.org.nz/

Get Rakiura hunting updates:

www.doc.govt.nz/parks-and-recreation/things-to-do/hunting/where-to-hunt/southland/stewart-island-rakiura-hunting/

Trail camera image of a Rakiura white-tailed deer

Maps showing the trail camera monitoring results for white-tailed deer before and after the operation