

This is the fifth and final update from the field team delivering the Palmerston Island Rat Eradication in the Cook Islands. The project is funded by the New Zealand Ministry of Foreign Affairs and Trade through the MISCCAP programme. The planning and operational delivery of the eradication project is led by the New Zealand Department of Conservation, in collaboration with the Cook Island's National Environment Service, Ministry of Agriculture, the NGO – Te Ipukarea Society, and the Palmerston Island community. The project has been in planning stages for 18 months and the operational delivery is being carried out by the field team and community over August/September period.

Kia Orana from Rarotonga,

This will be our last update on the project from the field. Today the field team disbanded after 6 weeks of work together. Apologies for the gap in communications in the past two weeks as a lot has been happening!

Since our previous update, we completed a 2nd and 3rd baiting application on both Home and Cooks motu. The day of completing our last bait application on Home Island – the traditional Polynesian voyaging Vaka – Marumarua Atua, arrived to pick us up and we began our voyage back to Rarotonga with the Cook Island Voyaging Society at first light the next morning.

We originally anticipated only two bait applications on the broadcast grid – spaced ten days apart, with the goal of having bait available on the ground and in reasonable condition to be attractive to rats for approximately 20 days. The rationale for the length of this period is based off the theoretical risk of young rats that have not emerged from the nest during the first application, to still have access to bait once they do emerge. Based on rats we caught and profiled at the beginning of the field trip – we knew rats were still breeding on Palmerston – even in the ‘cooler’ and less productive months.



Above left: Bait on its way out to Cooks motu for the 2nd application; **top center:** first application bait compared with freshly applied 2nd application bait; **right:** doing the island rubbish collection to consolidate and minimise potential alternative food sources; **left:** part of the team coming back from a successful day applying bait on Cooks motu

Weather forecasting has been challenging here. With many forecast models watched, none seem to align with what eventuates. 2mm of forecast rain can become 82mm, and rain forecast can come to nothing. We ideally want very little rain (less than 20mm) prior and 4 days post bait application – in order to prevent bait moulding and dissolving to mush on the ground. We had a great run of weather for our ten days following the first application, but unfortunately we had enough rainfall in the few days following the second application that bait in some habitats was rapidly moulding after day 4 or 5. Given the rate of moulding of the 2nd application and the theoretical risks of young rats could still emerging, we decided that given we had contingency bait and some days up our sleeve –to do a 3rd application of both islands to give the project the best chance of success. The 3rd application was done at a reduced application rate, but gives us confidence that bait will be present and in reasonable condition to be attractive to rats for a full twenty days.



Above left: James and Mia constructing biosecurity monitoring tunnels for layout; left: Em and Julianna run through baiting chew cards for long term biosecurity monitoring; right: extreme examples of bait moulding after 15 days in humid and damp areas

In between the 1st and 3rd bait applications, we constructed and installed biosecurity infrastructure (detection devices and kill traps) that will help guide a detection and response system for rodents if they ever make it to Palmerston via cargo from Rarotonga. Prevention by far is the best biosecurity tool, so we have also taken the time to work with Island Administration, the community, and the Island's biosecurity officer to form an agreed process of checking high risk cargo being transferred between cargo vessels and small boats before landing it on Home Island. It is now in the community's hands to support this process and ensure it happens.

After much work and not much play, the team enjoyed an overnight camping trip to Karakarake, a rat free islet/motu across the lagoon on the eastern side of the Atoll. Hosted by Eddie and John Marsters, the team enjoyed some night

time fishing on the reef (via machete), traditional cooking, camping out in hammocks under the stars, and enjoying the density and abundance of birdlife that was present on this rat-free motu.



Above: The team during an R&R trip to Karakarake and Primrose motu

Checking and refilling of bait trays in buildings has been a continuous task – with trays being checked every 3 to 5 days. In some instances where we have found continuous high bait take from a tray or trays within buildings, we have established trial cameras running on time lapse to determine what the culprit is. To date we have not determined any more bait take by rats – but hermit crabs, crickets, giant cockroaches (carrying whole baits away) have been culprits of bait take, and geckos are notorious for falling from above and spilling bait off trays. The odd ‘dozy’ rat showing signs of poisoning have been seen as late as the last week – and some running for cover up trees or down a hole. Our bait coverage is excellent and bait condition is good across the island; and our bait availability transects show us that even in habitats with the most non-target bait consumers – we have enough bait to ensure rats have access to bait. So now we rely on rats consuming the bait to do the job, and the Palmerston community to continue their side of the job in managing potential alternate food for rats over the next month – such as food scraps, ripening fruit, and keeping livestock off the Islands under management.

Another highlight of the fortnight was having all the students and teachers from Palmerston Lucky School come out to Cooks motu with us to complete our last measurement of bait availability plots, and to understand how and why we run them. We finished the day off with a great game of cricket on the sand channel between the islets.



Left: Classroom session on stratification and habitats with lucky school students; right: post bait-availability plot measurement cricket match with the students

Our departure from Palmerston on the Vaka was more sudden than expected – with the need to depart the Atoll for Rarotonga before a significant front of weather was due to come through. The journey against the prevailing winds to Rarotonga was expected to be five days. We had one last kaikai with the community before saying our farewells to the community on the beach of Palmerston as the sun rose at dawn, before small boats ferried us to the outside of the reef to board the vaka which had been anchored outside overnight.



Above: Various shots from the trip on the Marumaru Atua sailing vaka

It was a privilege to experience traditional voyaging on the Marumaru Atua, and meet and be part of a new community while making the return voyage to Rarotonga. Including the field team, we had a crew of 16 people on the vaka, and were split into 3 crewing teams which took 3 hour rotational shifts to crew the canoe. Crewing involved manning the oi (rudder) and sails, meal preparation and cleaning, plotting the shifts course, and being on watch. After two days of sailing and good progress it was obvious the boat was not going to beat the front coming from the south – and a decision was made to cut east for shelter at Aitutaki, where the field team would fly back to Rarotonga and the rest of the vaka crew would wait for the front to past before resuming to Rarotonga. The three day experience on the canoe was memorable – especially voyaging and navigating by the stars at night, while the vaka cut through swells and bio-luminescence in the water at night.

I'd like to say a big thank you to all the collaborating individuals and organisation's which have helped with the project along the way. Particularly to the Palmerston community for hosting the field team, and to the field team who have worked hard and who have made the commitment to be away from family and friends for such a period of time.

From here, the Palmerston community will continue to maintain bait tray checks, and further advice can be provided from New Zealand based on monitoring over the next month. After a month, bait trays will be disestablished – and the monitoring of bait and carcass degradation will continue until it is declared safe to bring livestock back to Home Island. Ongoing biosecurity is the responsibility of the community, to ensure rodents do not arrive again through incoming cargo, and the processes and infrastructure to achieve this are now in place. Validation of the eradication outcomes will be formally monitored in 6 months' time - I'm sure everyone's fingers will be crossed for a successful outcome.

Meitaki and aere ra

Em and RAT team



Above: The complete population of Palmerston Atoll and the RAT eradication field team, September 2023.