CONTROLLING RATS AND GROWING MORE FOOD ON TINGWON ISLAND NEW IRELAND PROVINCE

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INTRODUCTION

Early in March 1980, the councillor for Tingwon island asked the Provincial Government for help in controlling a large increase in the number of rats on the island. These rats were eating food crops and damaging coconuts and it was claimed that food supplies were getting too low. Therefore an emergency supply of money was requested to buy rice, as a short term solution. The action taken by D.P.I. officers and the civil defence representatives in Kavieng was widely reported in a rather sensational way. This article is an account of what was done.

BACKGROUND INFORMATION

Tingwon lies almost directly west of Kavieng, and is made up of three islands. Only one island is inhabited. About 200 people live on this island, growing food in their gardens, together with some crops, which they sell. There are also some food gardens on one of the other two islands, although nobody lives there. The soils are mostly thin, sandy and poor with very little organic matter in them. The diet of the islanders also includes fresh fish, shellfish, and things to eat gathered from the bush.

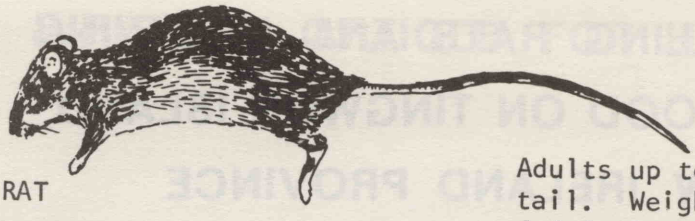
The children of the area were given nutritional assessments, and information was collected by the Provincial Nutritionist. Both sets of information showed that more than half the children were malnourished. This is more than in any other part of New Ireland Province.

This malnutrition causes sickness which is made worse by poor water supply and which makes increased demands on the local aid post.

THE PROGRAMME TO GET RID OF RATS

Most of the rats were roof rats *Rattus rattus*. Two other kinds were found. These were the Polynesian rat *Rattus exulans* and the Norway or brown rat *Rattus norvegicus*. The roof rat is very successful because it can adapt to many different conditions and breeds easily. The young are carried for 21 days before birth and are ready to breed when they are 12 weeks old.

The roof rat arrived on many of the small islands of P.N.G. on ships following trade routes from South East Asia. In the tropics it lives in villages, in the bush and in plantations. The rat is very intelligent and its sense of taste and sense of small are very good, although it cannot see very well. This generally affects the animals' response to poison baits. Rats will reject food that does not

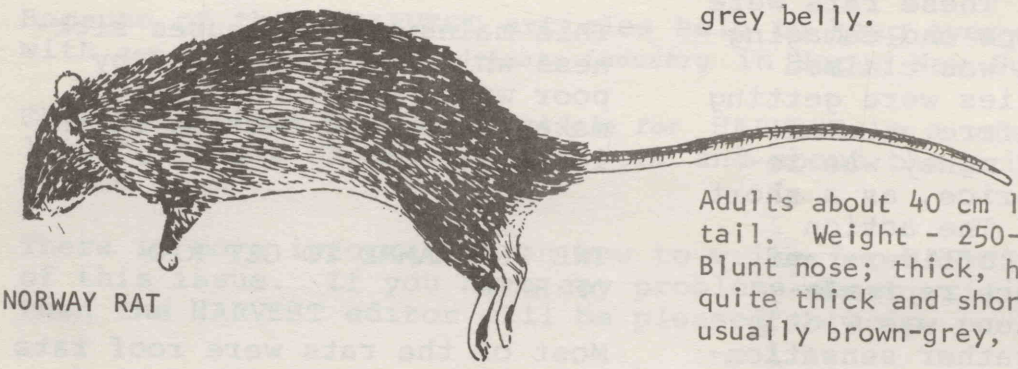


POLYNESIAN RAT

Adults up to 30 cm long, including tail. Weight - 50-80 g. Pointed nose; fairly large, thin ears. Colour - usually brown-grey, with pale belly.

ROOF RAT

Adults about 40 cm long, including tail. Weight - 150-250 g. Pointed nose; large, thin ears. Colour - all black, or brown with white or grey belly.



NORWAY RAT

Adults about 40 cm long, including tail. Weight - 250-500 g or more. Blunt nose; thick, hairy ears; tail quite thick and short. Colour - usually brown-grey, with pale belly.

A comparison of the three types of rat found on Tingwon Island

taste good or that they know will make them feel bad if eaten. This behaviour is called 'bait shyness'.

Rats live where they can easily find food and water. When food and water are not so easy to find, rats do not breed so much. The first part of the programme was to tidy up the village area so that there was no rubbish for them to feed on. However, this was of limited use because most of the rats live in the bush.

The gardens were examined to find the extent of the damage. It was decided to lay poison for the rats. There are two types of poison: acute poison and chronic poison. Acute poison needs only one dose to kill the rat, and chronic poison must be eaten over a period of time. Zinc phosphide is the only acute poison which is much used in the Pacific region.

A chronic poison was chosen. It was an anticoagulant type, which means that the poison works by making the rat bleed inside. This type of poison was chosen because it works well and is safer to humans and domestic animals. If someone is poisoned accidentally with this poison, vitamin K is an effective antidote (medicine used against a poison). In some areas, rats have become used to anticoagulant poisons

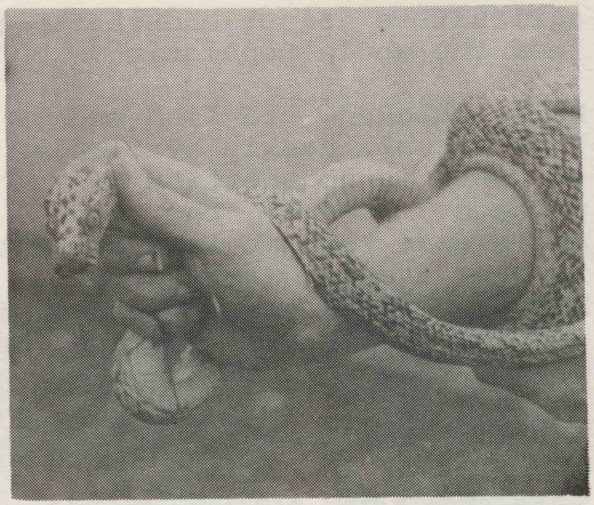
and are no longer affected by them, but so far this has not happened in Papua New Guinea.

The poison used was diphenacourn which is sold as 'Ratak'. It was mixed with fresh coconut meat, placed in pieces of bamboo and coconut shells. One thousand of these baits were distributed throughout the two islands that have food gardens. Freshly-grated coconut was chosen as the bait because it is easily available and rats will eat it. However, it does have the disadvantage of going bad quite quickly when left open to the air. As the bait and poison must be eaten at least three times by the rats when using chronic poisons, fresh baits had to be put down very often.

Two kinds of trap were used as well as the poison. One kind was the treadle type which catches the rat when it treads on a lever. The other kind which was more effective, was the spring-loaded kind. These traps were put around the village and were a useful back-up to the poisoning. The traps used on their own would not have controlled large numbers of rats.

The rats have no natural enemies on the island, and there were very few cats left because the cat population suffered greatly after visits from malarial spray teams. Pythons and cats were introduced to provide a biological control. Like the traps, the snakes and cats should help to keep down the numbers of rats and it is hoped that they will prevent any future population explosions (sudden huge increases) in rat numbers.

An attempt was made to teach the rats to become cannibals, by forcing them to eat each



One of the pythons introduced to Tingwon Island to help control rats

other. These cannibal rats were then let go, to eat the wild rats. This technique is said to have worked well in India during rat outbreaks there, but so far no large-scale monitoring programme has been carried out to find out if the 'cannibal' rats continued to be cannibals after they were released. Further research by wildlife officers is therefore needed, to see if this method can be used successfully in Papua New Guinea.

In order to check on what the rats were eating, some were caught after they had been feeding in the morning. They were killed and their stomachs cut open, to see what was in them. The rats had eaten mainly sweet potato, some cassava and a few fruits. This is what the village people said the rats had been eating and these food crops were the ones which had been damaged in the gardens.

IMPROVING THE DIET

Rat damage and poor soils, together have resulted in increased malnutrition on the island. At present, subsistence

agriculture is not enough to feed the whole population.

Pork, chicken, crayfish and fish are all easily available so there is no shortage of protein. However, the poor soils mean that it is difficult to grow staples (root crops). Kau kau tubers are small and there are only a few tubers on each plant.

The soil needed improving to grow better kau kau, so the village people were shown how to make compost, using grass cuttings from the airstrip. As a short-term measure, some commercial fertiliser was used to put nutrients (plant foods) back in the soil before putting the compost on it. It was also planned to use some varieties of kau kau which can tolerate the poor soil and will produce more nutritious tubers.

Swamp taro has been supplied by L.A.E.S. at Keravat, and legumes were given by D.P.I. at Kavieng, for planting. The swamp taro has been planted in areas which are usually water-logged, have not been gardened before and which contain a good quantity of organic matter. So far, this taro has done well. It could be a long-term answer to the frequent problem of the 'taim hungre'.

EDUCATION IN NUTRITION

Talks were given to the community school children and to the mothers of children in the villages. These talks made three main points:

1. The need to eat three meals a day, especially for school children.
2. The three basic food groups and what we need them for.
3. The signs of malnutrition and why they occur.

Small demonstration gardens were planted. These were to show crops from the three food groups, and the best ways of planting them. They were also to show the best way of putting organic matter into the soil, using the compost made earlier.

CONCLUSION

The people of Tingwon know what their problems are, but need help from government departments to show them how to solve these problems. They are very co-operative with extension officers. Unfortunately, in the past, they have been disappointed with government services, not only from D.P.I. This should not be allowed to happen again. The Departments of Health and Provincial Affairs and D.P.I. have sent follow-up patrols. It is hoped that this interest will continue.

The rats have been brought under control, but a check should be made from time to time to make sure that they do not do more damage. The people of Tingwon must put nutrients back into the soil and make their gardens bigger to prevent any shortages of food in the future, and to prevent the malnutrition that goes along with food shortages.

FURTHER READING

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