

Extension Fact Sheet 35: Rats



Species present: Polynesian rat (*Rattus exulans*), the Ship rat (*Rattus rattus*), and the Brown rat (*Rattus norvegicus*). None of these species are native to Solomon Islands.

Description

Polynesian rat:

- Slender body, pointed snout, large ears; relatively small, delicate feet;
- Red-brown back and white underneath;
- Body weight 40-80 g; up to 15 cm long - tip of the nose to the base of the tail;
- Tail has prominent fine, scaly rings, about the same length as the head and body;
- Females have 8 nipples.

Ship rat:

- Slender body, large hairless ears;
- Grey-brown on the back; either a similar colour or creamish-white underneath or black all over;
- Body weight 120-160 g, but it can exceed 200 g; up to 22 cm;
- Tail is one colour; it is always longer than the head and body length combined;
- Females have 10 nipples.

Brown rat:

- Small ears - which usually do not cover the eyes when pulled forward;
- Brown on the back, pale grey beneath;
- Body weight 150–300 g, but can reach 500 g; up to 39 cm long;
- Tail is shorter than the head-body length;
- Females have 12 nipples.

Damage

All three damage crops, and are a threat to the country's biodiversity. Apart from fruits, gains and other plant material, these rats eat insects, reptiles and young birds. They are pests of agriculture crops, including rice, maize, sugarcane, coconut, cacao, pineapple, peanuts and root crops. They eat stored foods, and spoil them by urinating

and defecating on them. Rats carry a scrub typhus in Santa Cruz, which is transmitted via the fleas that they host.

Note, damage in coconuts is not directly related to the number damaged; it occurs early and palms compensate for about 50% of the loss. In cocoa, this is not the case as damage occurs when pods are near maturity.

Habitat

All three species can be found in grasslands, scrub, forests and urban areas. The Polynesian rat does not burrow, but digs small holes and nests mainly on the ground. The Brown rat makes burrows and nests underground. The Polynesian and Ship rat climb, the Brown rat rarely does. Ship rats often nest in trees. The Brown rat swims well, and favours wet habitats. In Solomon Islands, it is probably more common in ports and towns than village gardens.

Life Cycle

If food is available, rats breed. Females can reproduce several times a year. Sexual maturity is 2-3 months, gestation (period between fertilization and birth) is 21-24 days and average litter size is 6-10. Life expectancy is 12-15 months.

Management

Cultural control:

- Band coconut trunks with an aluminium strip (30 cm wide at least 2.5 m from the ground) to reduce rat damage in plantations.
- DO NOT leave household waste for rats to eat; otherwise, populations will remain high. Good sanitary practices are essential in villages and towns.

Physical control:

Snap-traps are efficient, especially if they are left with food but unset for a few days before being set properly. Bait shyness can be a problem. The traps should be put where children and pets cannot get to them.

Chemical control:

- Use anticoagulants (prevent blood clotting), warfarin and brodifacoum made into baits with coconut, wheat or maize. Warfarin is less toxic.
- Prevent baits from being taken by other animals, cats and dogs in particular, and also by birds. Put baits in pipes or bamboo sections. Ideally, collected baits in the morning and put them out in the evening. Resistance to warfarin is known.
- Make warfarin (0.025-0.05% w/v) into waterproof blocks (80 g) with paraffin wax and bait, and tie to branches of trees. Place 25-30 sites per ha.
- Use brodifacoum (0.005% w/v) as ready-made pellets containing bait. Less is needed per station. Read the label or seek expert advice.

Gliricidia (the shade tree). Pound young leaves and mix with cooked rice, maize or other bait. Bacteria convert chemicals in the leaves to substances similar to brodifacoum. These are less toxic than brodifacoum, so larger amounts must be eaten. Try using the bark. Change the bait daily, and protect from pets.