



U.S. Fish & Wildlife Service

The Facts about Rats


















*Rat eating a native snail in the Hawaiian forest.
Photo © Jack Jeffrey*






Introduction





Hawai`i is home to more than 10,000 native Hawaiian plants and animals (more than 390 are listed as threatened or endangered) due to the islands' unique environments and isolation over millions of years. Many of these plants and animals evolved without predators found in continental areas, and are poorly equipped to compete or defend themselves against some of the nonnative species brought by people. Out of all of the nonnative species that have been accidentally or intentionally introduced, the rat has, and continues to be, one of the most damaging invasive species in Hawai`i.

General Facts

-  The black rat (*Rattus rattus*) is the species of rat that carried fleas infected with the bubonic plague. Bubonic plague killed 75 million people worldwide from the 1300s to the 18th century.
-  Rats carry more than 40 harmful human diseases such as murine typhus, the plague, rat-bite fever, Weil's disease, Chaga's disease, rickettsial pox, tularemia, Lassa fever, leptospirosis, salmonellosis, lymphocytic choriomeningitis, and rabies.
-  Rat-borne diseases are thought to have taken more human lives in the last 10 centuries than all the casualties of all the wars and revolutions combined.

-  The Hamakua coast area on the Big Island and Makawao district on Maui were former plague epidemic areas, but the last human case appeared in Hamakua in 1949.
-  Each year, rats destroy approximately 20% of all the agricultural products in the world.
-  Rats cause great damage to agricultural crops such as sugarcane, macadamia nuts, pineapple, coconuts, coffee, and other fruit and vegetable crops.
-  Rats climb trees, eat eggs, and prey on nestlings and adult birds. They are considered a leading cause of the accelerated decline and extirpation of endemic Hawaiian forest birds and a major factor limiting present populations of endangered birds.
-  Rats are known to prey on ground nesting seabirds and sea turtle hatchlings.
-  Rats played a major role in preventing trees on Rapa Nui (Easter Island) from re-growing, and are believed to have promoted the loss of native lowland palm forests in areas like Ewa on Oahu.
-  When rats were removed from the tiny island of Mokoli'i (Chinaman's Hat) in Kaneohe Bay, wedgetailed shearwater chicks went from 0 to 126 the following year.
-  Of the three rat species found in Hawaii, the black rat, because of its size and arboreal behavior is considered the greatest threat to native Hawaiian forest birds.
-  Rats also compete with forest birds for food items such as native snails, insects, fruits, and seeds.
-  Polynesian rats first arrived in Hawai`i with the Polynesians (approx. 400A.D.) and black and Norway rats arrived with Westerners in the 1780s.
-  Some species of rats can swim over a mile in open water, and can tread water for up to three days.
-  Some species of rats can travel through sewer pipes and dive through water plumbing traps.

-  Rats can climb brick walls, trees, and telephone poles, and walk across telephone lines.
-  Rats can fall from a height of 50 feet without getting hurt.
-  Rats can jump three feet in the air from a flat surface and leap more than four feet horizontally.
-  Rats can scamper through openings as small as a quarter. General rule: If a rat's head fits into the hole then the body will follow.
-  Rats can chew through lead, cinder block, and aluminum sheeting. Rats' teeth grow about four inches a year, and they have to gnaw on things to keep their teeth from pushing through their skulls.

-  Rats cannot go without food for more than 4 days.
-  Rats are prolific. Mother rats can have as many as 8-12 offspring about every 30 days as long as there is enough food, shelter, and water. The young rat is sexually mature at 3-4 months of age.
-  Rats are nocturnal (active at night), so when you see rats during the day this may signify a rat population out of control, or you may be seeing weaker, less competitive rats that are forced out into the daylight by stronger more dominant rats.
-  In the U.S., about 14,000 people annually report direct attacks from rats - occasionally inflicting mortal wounds.

Rat Species Present In Hawai`i



Black or roof rat (*Rattus rattus*) is a medium to large rat (5-7 inches long). The tail is slender and usually longer than the head and body combined. The black rat, primarily an arboreal species, is an expert climber and wire scaler, and moderately susceptible to plague infection. This rat is found in agricultural areas, wooded gulches, kiawe forests, and both wet and dry forests. The black rat has now displaced the Norway rat as the most common rat found close to human habitations and especially in wet areas such as streambeds, drainage canals, and sewers.

Norway rat, also known as the cellar rat, brown rat, wharf rat and sewer rat (*Rattus norvegicus*) is the largest of the rats found in Hawai`i (8-10 inches long) and weighs 10 to 18 ounces. The tail is stout, and usually shorter than the head and body combined. The Norway rat is a species that burrows in the ground, rubbish piles, garbage dumps and under walks and docks. The Norway rat has a high degree of resistance to plague infection.



Polynesian rat or Pacific rat (*Rattus exulans*) is comparatively small in size (4-5 inches long) and weighs 2-3 ounces. The tail is usually as long as or slightly longer than head and body combined; bristles along tail give the appearance of faint, narrow rings. The nose is roundly pointed, ears rather short, and eyes are medium size. This species is a field rat and rarely found near buildings in Hawai`i. It nests in burrows, gulches, rock piles, rock walls, wastelands, fields, and embankments. It is very susceptible to plague infection.

Photos courtesy of Peter Dunlevy
USDA – APHIS – Wildlife Services



Norway rat attacking a chick in its nest.
Photo by David Mudge

Resources

- Brorson, Carol, January 21, 2000. **Real Life Rat Tales**. Austin Chronicle
- Brennan, Barry, November 1980. **Rodents and Rodent Control in Hawaii** (Internet). University of Hawaii at Manoa. Hawaii Institute of Tropical Agriculture and Human Resources.
- Hendrickson, Robert, **More Cunning Than Man: A Social History of Rats and Men**.