



The largest population of brown kiwi in the South Island is in Fiordland, between the Hollyford and Waitutu Rivers. They extend east to the shores of Lakes Manapouri, Monowai, Hauroko and Poteriteri, and the Livingstone Range east of Lake Te Anau. They are also present on Resolution, Secretary and Parrot Islands.

Brown kiwis are also found at Haast and at Okarito on the West Coast, and are spread throughout Stewart Island.

Threats to kiwis

Predators such as rats, stoats and wild cats, dogs and pigs have had a major impact on the kiwi population since the arrival of Europeans. During a six week period in late 1987 a wild dog killed about 50% of the 1000 kiwis living in the Waitangi State Forest in the Bay of Islands. Kiwis have also been victims of gin traps and cyanide poison laid for possums. It is common to find kiwis in lowland areas with missing toes. In part of the Waipoua State Forest in Northland, about 15 kiwis were killed on roads over an eight month period.

Land clearance by both Maori and Europeans eliminated the birds in most

coastal and lowland areas of the North Island, and this continues to be a threat to some populations. Kiwis are very territorial and pairs require areas of between 1.6 hectares and 40 hectares depending on species and locality, so that large areas are required to support self-sustaining populations. In Hawke's Bay, for example, forest remnants as large as 500 hectares lost their kiwis within two decades of becoming isolated. Two populations in that region have declined by about 50% in the past four years.

Even in areas where brown kiwis seem plentiful, such as Northland and Taranaki, recent forest clearance has probably led to a decline in reproduction. The resulting decline in population will be seen over the next two decades if nothing is done in the near future.

Why kiwis are so vulnerable to predators

Before Europeans arrived the only predators of kiwis were large birds such as the extinct eagle. It is thought they were the main reason kiwis became nocturnal and well camouflaged. They have also evolved for some 25 million years in the presence

of wekas, the only natural predator of kiwi eggs and chicks. All species developed defences against wekas, including such elaborate ploys as placing vegetation over the entrance of breeding burrows to hide their entrances.

The vulnerability of kiwis to mammalian predators is therefore not because the birds lack defences, but because the ones they have evolved are ineffective against the new predators. They evolved to foil day-active birds which hunted by sight, not nocturnal animals hunting by sound and scent. Little spotted kiwis were the main victims of the new predators – at half the size of their fellow species, they were simply too small to defend themselves.

The breeding rate factor

All three species of kiwi have long life-spans and low reproductive rates. The average life-span is probably about 10 years, with some adults living to the age of 30 or 35. Male kiwis become sexually mature at 18 months, but females do not lay until they are three to five years old.

The eggs size to body size ratio in kiwis is among the greatest of any bird in the world. It takes a female 30 days to form an egg, which then takes 70 to 80 days to hatch. North Island brown kiwis and little spotted kiwis on Kapiti Island normally lay two eggs a year, 20 to 30 days apart, and some will lay a second clutch if the first one fails.

Great spotted kiwis in northwest Nelson usually lay just one egg a year, and replacement layings are rare. The rate of egg production in birds further south is not known.

About 75% of kiwi eggs fail to hatch. Some are deserted for no apparent reason, some are invaded by microbes, some are chipped or cracked by the incubating male, some are infertile and a few are eaten by



North Island brown kiwi killed by dogs. In 1987, about 500 kiwi were killed in Waitangi Forest, Northland, by a single dog in just six weeks. Forest and Bird wants all kiwi habitat to be zoned as dog-free areas. Photo: P. Morrison, DoC

predators. Wekas account for the greatest loss of eggs of little spotted kiwis on Kapiti Island.

At present, most populations are managing to produce enough chicks to theoretically replace themselves with young every two to eight breeding seasons. This implies that the failure of some populations on the mainland is due to poor adult and/or