

CASE-STUDY ON ALIEN SPECIES

The following case study is on the eradication of introduced mammals from New Zealand islands.

Background

Alien invasive species have caused severe impacts on New Zealand's native flora and fauna and are the most significant remaining threat to New Zealand's biodiversity. Over 30 species of mammals have been introduced to New Zealand since Europeans arrived in 1769, including four species of rodents, three mustelids, six marsupials and seven deer.

Predatory mammals (e.g., Polynesian Rats *Rattus exulans*, Ship Rats *R. rattus*, Stoats *Mustela erminea*, and Cats *Felis catus*) have caused extinctions of at least 45 bird species and threaten several more. Herbivorous mammals (e.g., Brushtail Possums *Trichosurus vulpecula*, Red deer *Cervus elaphus*, and Goats *Capre hircus*) have altered the structure and composition of native plant communities through their selective browsing. At least three endemic plants have become extinct since 1840 and a further 45 are highly threatened.

Almost all of the introduced mammals in New Zealand were brought here intentionally to provide for farming or hunting, or in the case of mustelids, in an unsuccessful attempt to control rabbits that had been introduced earlier and reached plague proportions in some areas.

Management response

The response of New Zealand wildlife managers, faced with a series of critically endangered species, has been to take advantage of the presence of over 700 islands within the New Zealand archipelago, firstly by translocating endangered species to islands free of threatening mammals, and more recently by creating mammal-free islands through eradication programmes.

Eradication of mammals from islands has been a major advance in New Zealand conservation practice in recent years. In the past decade in particular, there has been a series of successful eradications of introduced mammals from New Zealand islands. Successes on large islands include eradication of cattle and sheep from Campbell Island (11 400 ha), goats from Raoul Island (2 941 ha), possums and rats from Kapiti Island (1 978 ha), Norway Rats from Whale Island (173 ha) and mice from Mana Island (217 ha).

These and other successes have resulted from the synergy of technical developments and increasing confidence in their use. Of particular significance have been the availability of single-dose anticoagulant poisons such as brodifacoum in special bait formulations, and the development of bait stations and aerial application methods for eradicating rodents from islands. The rate of progress in the technical capacity for rodent eradications has led to a rapid recent rise not only in the number of

eradication, but also in the size of islands now being cleared of introduced mammalian pests.

Conclusions

Only 20 years ago the eradication of rodents from islands was thought to be impossible. Now their removal from islands of up to 250 ha is routine, and the New Zealand Department of Conservation plans to eradicate rodents from a series of islands up to 3 000 ha, creating a network of more than 10 000 ha of mammal-free island reserves.

The lessons learned in undertaking these eradication will have great significance not only for New Zealand conservation, but also for other islands that have been invaded by alien species elsewhere in the world.

Additional References (to be provided as hard copies)

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