

Learning from Conservation Efforts in New Zealand Questions and Answers

What do Hawai‘i and New Zealand have in common from a conservation perspective?

New Zealand and Hawai‘i have similar biological and cultural histories characterized by geographic isolation and an abundance of rare plant and animal species. However, New Zealand differs from Hawai‘i because its biota also include ancient relics from the time it was part of the supercontinent Gondwana, while Hawai‘i was always geographically isolated.

After splitting off from other continents 80 million years ago, the New Zealand landmass became the stage for the evolution of plants and animals so distinctive that it has been described as the closest scientists will get to studying life on another planet. A high percentage of plants and animals found in New Zealand are endemic – that is, they are found nowhere else on earth. In contrast, Great Britain, an island which separated from continental Europe only 10,000 years ago, has only two endemic species.

Humans and their accompanying pests and invasive species have caused many extinctions in New Zealand:

- 32% of indigenous land and freshwater bird species;
- 18% of sea bird species;
- at least 12 invertebrate species such as snails and insects;
- one fish, one bat, perhaps three reptile species and three frogs;
- at least 11 species of plants.

Today, 1,000 additional native animal, plant, and fungi species are listed as threatened or endangered. New Zealand is known to have the highest number of introduced mammals of any country in the world, and the second highest number of introduced birds. In addition, the country now has more introduced plant species in the wild than native ones.

Hawaii’s native biodiversity faces similar circumstances. More than 90% of the 10,000 unique plants, animals and fish species found in Hawai‘i are endemic. More than half of Hawaii’s native forests have been lost; half of Hawaii’s birds are extinct, and dozens more birds and hundreds of plants and animals are on the endangered species list.

How has New Zealand improved its conservation efforts?

Over the last three decades New Zealand has experienced changes in local attitudes toward the natural environment and an increase in active conservation management. This shift in perspective has spurred new long-term environmental planning, government legislation, and capacity building aimed at protecting and restoring the island’s unique biodiversity. These recent advances have resulted in New Zealand’s reputation as a world leader in conservation.

For example, the following once common actions have largely stopped:

- widespread clearing of native vegetation, once done under subsidy,
- wetlands drainage,
- conversion of coastal habitats (marshes, mudflats, mangroves),
- unrestricted fishing.

New Zealand has achieved breakthroughs in endangered species management, including broad scale sustained control of pests (such as non-native mammals) on their mainland, restoration of offshore island sanctuaries, and extension of land and marine protected areas.

The skills gained from eradication efforts on offshore islands are now being applied on their mainland to achieve near-zero densities of pests in intensively managed “mainland islands.” The New Zealand Department of Conservation currently manages six formal mainland island sites where it has tested systems and techniques to intensively manage pests and restore biodiversity.

An alternative strategy used by many private groups is to eliminate pests and protect the area from reinvasion by fencing with predator-proof fences. The first of these efforts was Karori sanctuary on the outskirts of Wellington, New Zealand’s capital (www.sanctuary.org.nz). Karori is 623 acres. Rats, possums, mustelids, hedgehogs, rabbits and hares, and ungulates (hoofed animals) were eliminated in 1999-2000. A 5.3 mile pest-proof fence stops these species from re-invading the sanctuary. Twelve species of native birds, tuatara, and giant weta (a mega-invertebrate) have been successfully re-established. A more recent project at Mount Maungatautri in the upper North Island established a 24.9 mile pest-proof fence to stop the reinvasion of 8,402 acres of upland forest (www.maungatrust.org). There are at least 40 similar mainland island projects throughout New Zealand.

How does the New Zealand government support conservation?

New Zealand’s environmental protection legislation and administrative structures were substantially reformed in the 1980s and 1990s. Contemporary environmental legislation and management now address three broad areas:

1. Resource management

New Zealand’s Resource Management Act ensures the sustainable management of utilized resources on land, freshwater and coastal ecosystems, and harvested biodiversity, including forestry and fisheries management. The Act’s framework regulates the process that New Zealand citizens must go through when planning activities that effect the environment.

2. Conservation management

New Zealand’s Conservation Act empowers the Department of Conservation (DOC) with a mandate to protect and manage natural areas and protected species (National parks, reserves, conservation areas, and marine reserves cover 35% of New Zealand). The department spends US \$200 million per year of taxpayers’ dollars, with about 50% being spent on biodiversity and pest management (See DOC’s Annual report at www.doc.govt.nz).

3. Biosecurity management

In New Zealand pests and weeds “go with the land.” Landowners or managers are obliged under the Conservation Act (for DOC land) or the Biosecurity Act (for private land) to manage pests. Regional governments have some regulatory roles to ensure private landowners do control key pests.

In the last few years the New Zealand Government decided that this “biosecurity” system needed better coordination – a few high cost border breakdowns was the initial motivation. Two new agencies were setup to manage the pest/weed risk process. The Environmental Risk Management Authority is a quasi-judicial body that approves or bans importation of new organisms. Biosecurity New Zealand is set up to coordinate the pest management system from pre-border, to border, to management of established pests.

On an international level, New Zealand attended the Rio Earth Summit in 1992 and signed, along with 150 other nation states, the Convention on Biological Diversity (CBD). In 2000, as part of the CBD, public and private stakeholders in New Zealand drafted the “New Zealand Biodiversity Strategy.” This 20-year plan integrates governmental, private, and community interests into a set of goals and action steps geared towards halting the decline of biodiversity in New Zealand.

What is the relationship between the Maori and the New Zealand government’s conservation efforts?

One of the four major goals of the New Zealand Biodiversity Strategy is to actively protect *iwi* (tribe) and *hapu* (family) interests in indigenous biodiversity, and build and strengthen partnerships between governmental agencies and *iwi* and *hapu* in conserving and sustainably using natural resources. The New Zealand Biodiversity Strategy firmly recognizes that a central component of this protection is the recognition of the Maori right to their land and resources as established in the 1840 Treaty of Waitangi.

The Maori are developing their own *iwi* management plans, addressing natural resource issues, including biodiversity. Sometimes these are independent of government agencies, and sometimes they are partnerships between DOC and individual *iwi* and *hapu* to include shared management of particular conservation areas and access to biological resources for customary use. *Taiapure* (coastal) and *mataitai* (fishing) reserves provide opportunities for Maori to participate in the management of customary fisheries and preserve marine biodiversity.

What is the Maori world view and how does it relate to conservation?

Maori have a holistic view of the environment that derives from a cosmogony (belief system) that links people and all living and non-living things. Descended from the union of *Ranginui* (the sky father) and *Papatuanuku* (the earth mother), and their offspring, the *atua kaitiaki* (spiritual guardians) – *Tane* (*atua* of the forests), *Tumatauenga* (*atua* god of ceremony), *Rongo* (*atua* of cultivation), *Tangaroa* (*atua* of seas), *Tawhirmatea* (*atua* of wind and storms) and *Haumietiketike* (*atua* of land and forest foods) – humans share a common *whakapapa* (ancestry) with other animals and plants. People are therefore part of nature and biodiversity.

All components of ecosystems, both living and non-living, possess the spiritual qualities of *tapu*, *mauri*, *mana*, and *wairua*. Maori, as *tangata whenua* (people of the land), are the *kaitiaki*

(guardians) of these ecosystems and have a responsibility to protect and enhance them. This responsibility of people to other living things is expressed in the concept of *kaitiakitanga* – or guardianship.

Do Maori have a tradition of conservation?

As with all human colonizations of islands, Maori caused the first wave of extinctions in New Zealand. Maori had to adapt their tropical gardening systems to the New Zealand environment where many of their staple crops could not survive, and as they over-exploited the New Zealand protein sources (moa and seals) they had to develop conservation practices that governed their use of natural resources. This included the use of *tikanga* (protocols), *tapu* (sacred prohibitions) and *rahui* (temporary restrictions) to control the areas, seasons or species harvested. At the heart of Maori environmental management is the sustainable use of biological resources.

What conservation lessons can Hawai‘i learn from New Zealand?

Some areas where New Zealand may be further advanced than Hawai‘i include:

1. Unified planning

New Zealand is a unified country rather than a state in a federation of states. This makes some unified legislative planning easier, but the conservation principles can still apply in Hawai‘i. The New Zealand Biodiversity Strategy integrates conservation interests from all sectors of the community and recognizes the contribution of native plants and animals for quality of life, cultural significance, and economic value. It provides a shared vision for country-wide planning backed by strong legislation. It places the health of New Zealand’s natural environment as a chief factor in future growth decisions, thus avoiding the need for reactionary conservation measures.

2. Managing mixed goals

Despite a common overarching goal of native species conservation, not everyone in New Zealand agrees on how to manage exotic species. There are different views on pest status and different views on how to manage pests. These differences are persistent, so government has the option to ignore some views and impose management, or to take all or most views into account by doing different things on different lands.

In New Zealand, the pragmatic solution has been to accommodate differences by applying customized management plans on different lands. The national Himalayan thar control plan is an example of this multi-stakeholder approach (the Himalayan thar is a large goat-like mammal). The guiding premises in the Ministerial Policy and subsequent plan state:

- If thar were not already in New Zealand import would not be permitted.
- Eradication is the ideal outcome.
- Thar cannot be eradicated nationally.
- However, the technical ability exists to manage numbers to near zero densities if required.
- Some see thar as a resource and wish to retain some areas for hunting.
- It is optimal to stop thar from spreading and reduce them to near-zero density within National Parks.

- Outside these areas on both conservation estate and private lands that should not exceed densities of about 10% of maximum.
- Hunters should be given first opportunity to harvest the annual crop to keep that below these densities, and control agencies will intervene if this level is not achieved.

3. Incentives for community-based and private conservation management

In the last several decades New Zealand has seen a groundswell of initiatives by private landowners and communities to protect and restore natural areas, assisted by mechanisms such as the Queen Elizabeth II National Trust, Nature Heritage Fund, and *Nga Whenua Rau*. These funding sources support the protection of native forests and associated ecosystems on private and Maori land.

4. Integrated use of cutting edge technology

Pest control requires both the technology to achieve the goals and the knowledge to know where, when, and how often to apply it. New Zealand invests in both the tactics and strategies to improve pest control.

Abundant public and private funding for conservation work in New Zealand has given rise to a private invasive species control industry. The competition between companies has sparked innovation in control technologies and methods. Many New Zealand companies work directly with equipment manufacturers to improve existing equipment. New tools in combination with extensive field testing have led to dramatic gains in control efficiency. Examples of recent advancements in control tools include:

- New fence designs to keep out all mammals, including: mice, rats, and cats (www.xcluder.co.nz)
- New, more humane traps (<http://possumdss.landcareresearch.co.nz>)

5. Rigorous scientific review of conservation techniques

Landcare Research, one of the leading conservation science organizations in the world, is a government-owned research institution with responsibility for providing the science basis for conservation management in New Zealand. Landcare Research works in partnership with key government agencies responsible for protecting and enhancing New Zealand's biodiversity and with the increasing number of private organisations involved in conservation activities. Landcare Research currently has over 200 science and technical staff undertaking research related to biodiversity conservation, with outcomes ranging from maintenance of adaptive genetic variation, to understanding factors that increase the resilience of whole ecosystems. A strong focus on invasive species as threats across this range of biodiversity outcomes means that research to improve the efficient management of these species is a strong feature of the work undertaken by Landcare Research.

New Zealand and Hawai'i share similar ecological and cultural histories. These similarities, rare in the world for Hawai'i due to its geographic isolation and uniqueness, provide the opportunity to learn from and potentially, to apply, New Zealand's successful strategies to its own conservation challenges. The development and application of new tools is central to the preservation of Hawaii's remaining native biodiversity.

Sources

The information presented here was compiled from the following sources. Further information on conservation efforts in New Zealand can be found through these sources and at the following websites:

- <http://www.biodiversity.govt.nz/>
- <http://www.landcareresearch.co.nz>

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