

# Diversity of backgrounds and world views are crucial for effective conservation outcomes

## New Zealand's Biological Heritage National Science Challenge | Ngā Koiora Tuku Iho

The Options Development Group convened by the Department of Conservation has proposed a set of recommendations that, if enacted, are predicted to improve biodiversity outcomes while moving our conservation system towards one of Treaty partnership. This policy brief provides independent scientific advice pertaining to the context surrounding those recommendations. It is based on research conducted within the Biological Heritage Science Challenge and internationally.

1. The key pieces of legislation that underpin our conservation system (the Conservation Act 1987 and the Wildlife Act 1953) are not fit for purpose, either in terms of protecting our biological heritage or giving effect to the Treaty of Waitangi.
2. Despite having nearly one third of the country in reserves, which is among the highest internationally, the biodiversity of Aotearoa continues to decline. Current legislation has failed to protect wetlands and natural ecosystems on private land, freshwater and marine ecosystems have been degraded, some endemic bird species have become much rarer and many ecosystems and ecological processes have been altered fundamentally in the face of biological invasions, pathogens, and the growing problem of climate change.
3. A large body of peer-reviewed scientific evidence internationally demonstrates that engaging Indigenous Peoples and Local Communities in conservation produces better outcomes, but our current conservation paradigm and legislation do not allow authentic engagement by Māori. This opportunity cost will worsen with time.
4. The scales at which species respond to their environment can make place-based management an effective complement to existing national and regional conservation efforts.
5. Research suggests that, in order to be effective and not generate perverse outcomes, power sharing (as opposed to maintenance of state control) is fundamental to the success of any co-management arrangement.

### Our current approach to conservation isn't working

Aotearoa can point to some notable successes in its protection of biodiversity. The country has led the world in eradicating introduced mammals from islands so that ecosystems have recovered and threatened species on the islands have come back from the brink of extinction<sup>1</sup>. Lessons learned from predator eradication on islands have been the catalyst for building fenced predator-proof areas. These areas provide habitat for species that have been extinct on the main islands for over a century, thereby enhancing ecosystem processes<sup>2</sup>, and have inspired control of predatory mammals at increasingly large scales<sup>3</sup>. However, despite having nearly one third of the country in reserves, which is extremely high by international standards, the biodiversity of Aotearoa generally continues to degrade.

Our legislation has failed to halt the loss of wetlands, now down to a small fraction of their pre-colonial area, and their loss is ongoing<sup>4</sup>. Increasing agricultural intensification, plantation forestry, and urbanisation have reduced water quality in rivers<sup>5</sup>, resulting in degradation of freshwater biodiversity<sup>6</sup>. Our legislation has failed to protect natural ecosystems on private land<sup>7</sup>. While populations of some endangered birds have increased in response to management (e.g., kākāpō), across extensive protected areas, others (e.g., kea, rock wren) have become endangered as their populations have declined and shrunk in range<sup>8</sup>. Some protected ecosystems have been degraded as threats by non-native mammals (e.g., deer

and tahr) have grown in number over the last decade. Other biological invasions, such as by non-native plants in terrestrial, freshwater, and marine environments continue unchecked, where they homogenise ecosystems, alter ecosystem processes, and often reduce abundance and dominance of native species<sup>9</sup>. Invasions by multiple non-native invertebrates degrade multiple trophic levels and can fundamentally alter ecosystem processes in protected ecosystems<sup>10</sup>. New pathogens are affecting keystone species in native ecosystems<sup>11</sup>. Faced with chronic and novel threats, a growing human population and degrading land-use practices, as well as the chronic effects of global climate change, the unique biodiversity of Aotearoa requires new approaches to its conservation.

## Our current over-arching conservation paradigm is based on ideology, not science

The colonial, protectionist conservation movement began in the mid-19th century, in response to the overexploitation of timber resources during colonial expansion<sup>12</sup>. One of its fundamental tenets is that humans are harmful to the environment, and that native species need to be protected against humans. This paradigm is in direct conflict with that of many Indigenous Peoples, including Māori, whereby humans are a part of the environment and sustainable resource use is both the reason and method for studying and conserving nature.

The science of ecology and conservation biology can inform many aspects of conservation practice, such as reserve design, invasive predator control, and softening of agricultural practices. However, the paradigm of protectionism itself is based on ideology rather than scientific evidence. Although direct comparisons are lacking, there is considerable evidence that an Indigenous conservation paradigm can be effective. For example, Indigenous Peoples influence land management across at least 28.1% of the Earth's land area, but this encompasses around 40% of the world's protected areas, because land managed by Indigenous Peoples is on average less impacted and harbours more biodiversity<sup>13</sup>. Indigenous Peoples have sustained and shaped their cultures with harvests of wildlife over centuries<sup>14</sup>, and in so doing have developed strategies to reduce the impact of harvest on wildlife<sup>15</sup>. Together, this evidence suggests that there is nothing inherently unsustainable about Indigenous management of ecosystems involving resource use. Moreover, people that engage regularly with the natural environment are more likely to exhibit ecologically responsible behaviour more generally<sup>16</sup>, again supporting a 'people as part of nature', rather than 'people vs. nature' paradigm. Within Aotearoa New Zealand, research supports mātauranga-based and Māori-led conservation as significantly contributing to, and complementing existing forms of, environmental management<sup>17</sup>, despite numerous barriers<sup>18</sup>.

## Diversity of backgrounds and world views are crucial for effective conservation outcomes

It is well known that the presence of actors with diverse viewpoints results in better decision making<sup>19</sup>, even though there may be initial conflict as tightly-held beliefs are challenged<sup>20</sup>. Diverse cultural knowledge sets and worldviews can also contribute to adaptive management and resilience<sup>21</sup>. This recognition has led to calls from scientists<sup>22</sup> and international bodies, such as the Intergovernmental science policy Platform for Biodiversity and Ecosystem Services and the UN Convention on Biological Diversity<sup>23</sup>, for systems of environmental management that incorporate the knowledge and practices of Indigenous Peoples and Local Communities, and thereby emphasise connecting people with nature. Such approaches can sustain social and cultural wellbeing alongside biodiversity<sup>23</sup>. Because the generation and application of Indigenous knowledge and management are inherently place-based and frequently intergenerational in their outlook, their spatial and temporal scales can also complement existing national or regional scale management bodies<sup>24</sup>.



Because Indigenous knowledge is only meaningful when applied in its cultural context, attempts to extract this knowledge and apply it within a Western conservation framework are typically unsuccessful (e.g. state-run prescribed burning in Australia has produced neither the biodiversity nor fire-reduction outcomes achieved by Aboriginal firestick management<sup>25</sup>). Therefore, to achieve the benefits described above, co-governance arrangements are necessary<sup>26</sup>, and must involve power sharing, otherwise international evidence has shown that they can result in strengthening of state control over resource policy, management, and allocation and further marginalization of communities<sup>27</sup>.

## **Disengaging Indigenous Peoples from conservation can produce feedbacks that harm biodiversity in the long term. New Zealand is no exception to this.**

Despite widespread recognition that Indigenous Peoples and Indigenous and Local knowledge can contribute to positive biodiversity outcomes, many conservation policies (in New Zealand and internationally) indirectly prevent this contribution from being realised<sup>28</sup>. This exclusion of Indigenous Peoples from conservation occurs because Indigenous cultures rely heavily on customary management practices (including harvests) to measure, interpret and respond to environmental feedbacks<sup>29</sup>, as well as to transmit knowledge and adapt to change<sup>30</sup>. Therefore, any policy (e.g. the Wildlife Act 1953) that unilaterally prevents the harvest of wildlife will break these crucial connections between Indigenous Peoples and their environment. It is worth noting that such policies are typically not applied consistently, for example, in New Zealand, whitebait fisheries and game bird sport hunting both involve harvest of native (including threatened) species, whereas the customary harvest of nearly all other birds is illegal. Such inconsistency reflects a lower prioritisation of Māori values and priorities in national conservation legislation.

Importantly, long-term restrictions on how Indigenous Peoples engage with their environment can lead to loss of knowledge and opportunity for knowledge transfer, breakdown of traditional hierarchies and social structures, and generate feedbacks that result in poorer environmental outcomes<sup>31</sup>.

## **The way forward**

Aotearoa needs to move to an inclusive conservation framework, which is not possible within current legislation. National and international research suggests that such a framework would provide better biodiversity outcomes by leveraging our nation's unique Indigenous knowledge and engaging a greater proportion of society in the broader goal of sustaining our biological heritage.

**BioHeritage National Science Challenge**  
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