

ECOLOGICAL CORRIDORS IN AOTEAROA NEW ZEALAND

Frequently Asked Questions

Note these FAQ are relevant as at date of publishing. As this is an ongoing research project, this document will be updated accordingly. Please do not hesitate to email im@mcguinnessinstitute.org with any relevant information or ideas.

WHAT?

What are ecological corridors?

Ecological corridors, also known as wildlife corridors or habitat corridors, are physical connections that link different areas of habitat to facilitate the movement of species between them.

These corridors play a critical role in the conservation of biodiversity by promoting genetic diversity, reducing the risk of extinction of isolated populations, and allowing for the spread of species to new areas. New Zealand has unique flora and fauna, and ecological corridors have been identified as an important tool for conservation efforts.

New Zealand's geographical isolation has resulted in the evolution of distinct flora and fauna, including many endemic species. However, human activities, such as land use change, fragmentation of habitat, and invasive species, have had a significant impact on the country's biodiversity. In response, conservation organisations have identified the need for ecological corridors to connect fragmented habitats, national parks and protected areas by allowing the movement of species and the exchange of genetic material.

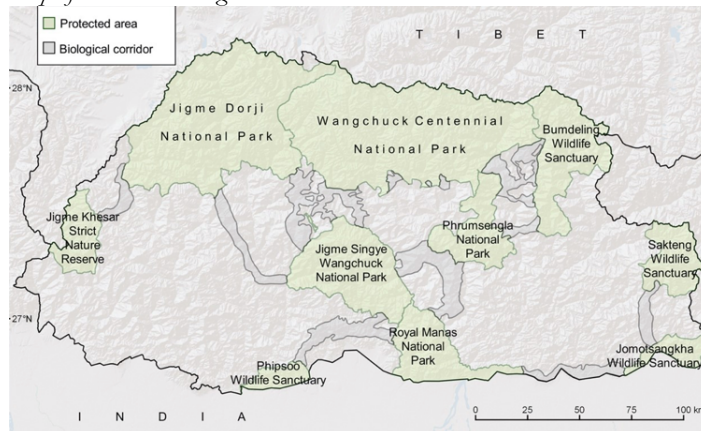
What are some examples of ecological corridors working in practice?

Ecological corridors are a cost-effective, practical and reliable conservation strategy which have been successfully implemented internationally and, on a smaller scale, within New Zealand. Ecological corridors have proven to be successful in creating a connected network of protected areas. Whilst it would be ecologically ideal to protect entire landscapes, ecological corridors present a practical compromise to allow maximum species protection in landscapes that also support human, recreation, agriculture and other uses.

Bhutan – an international case study of large-scale corridors used to connect national parks

- Bhutan has a network of ecological corridors connecting all its protected areas, which enables population intermingling, genetic diversity and greater resilience to current and future stressors for many wildlife species.
- Conservation is constitutionally protected, with a provision in Bhutan's Constitution stipulating that at least 60% of the country must be under forest cover.¹
- Today, forest cover comprises up to 70.46% of the total land area, and an additional 8.60% of the country is now included in biological corridors.² These ecological corridors allow wildlife to move freely in their natural habitats throughout the whole country. These corridors are part of why Bhutan is also a 'global biodiversity hotspot'.³
- Bhutan sets a precedent for conserving land and protecting flora and fauna for future generations. The country's use of ecological corridors is an example of how we can shape our future and protect the environment whilst developing a strong eco-tourism industry.

Map of Bhutan's Ecological Corridors and Protected Areas⁴



What about public and iwi access? Will corridors impact recreation?

- **Public and iwi access to corridors should be optimised and the impact minimised.**
- Each area of the corridor may have a different level of protection depending on what is required. For instance, certain areas with endangered species will require higher protection and pest control than areas that are already used recreationally.
- There is potential to develop walking, hiking and/or cycle tracks along the corridors to encourage recreational, local and tourist use of the corridors. Ecological corridors will improve local and national recreation and amenity by working to educate people and connect them to nature whilst enhancing local utility and tourism value.

What is the policy context in New Zealand?

- A number of recent policy documents include ecological corridors as a goal for environmental protection, conservation, climate change protection and mitigation.
- In 2022, the Ministry for the Environment published the country's first [National Climate Adaptation Plan](#). In the Plan, ecological corridors are specifically defined as 'an area of habitat connecting wildlife populations that have been separated by human activities or structures.'⁵ The Plan also states:
 - ***Reducing human pressures and planning for ecosystem corridors are the best ways to enable coastal ecosystems to respond to climate change.***
 - An objective of the Plan is to have healthy, diverse, resilient ecosystems which respond to climate risks: *'The natural environment has high ecological integrity because human-induced pressure has eased and restoration efforts have been successful. Ecological corridors protect our biodiversity and enable species and ecosystems to move across landscapes as the climate changes. By understanding the impacts of these changes and reducing pressures, we give ecosystems more time to adjust to new climate threats. Nature-based solutions buffer against climate impacts, while also fostering wellbeing, sequestering carbon and increasing biodiversity.'*⁶
 - An action in the Plan is for DOC and MfE to be the lead agencies implementing the proposed National Policy Statement on Indigenous Biodiversity (which includes ecological corridors). *'The regulatory arm of Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020 is the National Policy Statement for Indigenous Biodiversity (NPS-IB), currently under development. The objective of the NPS-IB is to protect, maintain and restore indigenous biodiversity. The NPS-IB plays a part in building the resilience of biodiversity to climate change through its role in protecting, maintaining and restoring biodiversity, including requiring councils and landowners to consider creating ecological corridors. Protections for indigenous biodiversity will be transitioned into the resource management reform in 2023. This will be a new opportunity to bring in specific adaptation policies for biodiversity and ecosystem conservation across Aotearoa.'*⁷
- New Zealand public policy is in the process of responding to challenges posed by climate change and the biodiversity crisis. Recent flooding and extreme weather events have highlighted concerns with ecosystem shifting, managed retreat, forestry and agriculture industries and coastal squeeze.
- Nature-based solutions, ecosystem-based adaptation and green infrastructure such as ecological corridors will help develop policy for carbon sequestration, biodiversity gains and improved habitats.

What is the ultimate goal?

- Ideally ecological corridors could be established along the length of New Zealand to connect national parks.
- Ecological corridors could become a place of research and education, making New Zealand an international leader in the areas of conservation, biodiversity and climate change.
- **Our taonga is preserved for future generations of New Zealanders.**

What are the next steps?

- The Institute is looking forward to continuing our case study of Bhutan and will continue to focus on ecological corridors. Here in New Zealand we are meeting with a number of public officials to discuss both how the corridors work in Bhutan and how the idea could be replicated in New Zealand.
- We are looking to:
 - research Canada as an additional ecological corridor case study, and
 - explore how ecological corridors could become a carbon credit to reduce our Nationally Determined Contribution debt in 2030. See below.

WHY?

The context: why do we need ecological corridors?

- Indigenous ecosystems and species in New Zealand, like most of the world, are in a state of rapid decline due to a combination of factors, including land use, pollution, resource extraction, the increasing presence of invasive pests and diseases, and increasing climate change and extreme weather effects.⁸
- Ecological corridors are designed to make New Zealand and its flora and fauna more resilient to these changes.

Ecological corridors will:

- establish New Zealand as a world leader in conservation, biodiversity protection and climate change mitigation
- enable New Zealand to meet the 30% by 2030 (30x30) global target agreed to at the December 2022 UN Convention on Biological Diversity agreement for the effective conservation and management of land.⁹
 - **New Zealand's Protected Areas Network covers an estimated 32.9% of our land** and includes Department of Conservation Estate; Nature Heritage Fund, Nga Whenua Rahui & QE II National Trust covenants; Regional Parks - Auckland, EBOP, Horizons & Wellington.¹⁰
 - In the marine space, New Zealand has the fifth largest Exclusive Economic Zone (EEZ) globally, which is approximately 430 million hectares and 15 times the size of our land mass.¹¹ Unfortunately, according to a 2019 report by DOC, only **approximately 12.3% of our territorial sea area is protected** (9.8% in marine reserves and 2.6% in type 2 Marine Protected Areas).¹²
- build on the intent of Te Tiriti o Waitangi and Te Tiriti principles
- mitigate the biodiversity crisis by protecting and restoring the environment. Around 4000 of New Zealand's native species are threatened or at risk of extinction¹³
- prevent ecosystem collapse by 'rewilding', protecting native forests and allowing native flora and fauna to thrive
- align restoration policy with carbon sinks. Forests have an important role in reducing greenhouse gas emissions. They are often classified as natural forests (30%) or planted forests (7%); however, not all natural forests are protected¹⁴
- ensure reforestation targets are met. Climate Change Commission recommendations to Government include creating 300,000ha of new native forest between 2021 and 2035¹⁵
- safeguard public and iwi access. Ecological corridors will improve local and national recreation and amenity. They will help connect people to nature whilst enhancing local utility, community connection and local and national tourism value
- protect from and mitigate the impacts of climate change and extreme weather. Climate change means biodiversity will come under growing pressure. Restoring a damaged ecosystem will help make our ecosystems more resilient to climate change in the future. 'Sponge cities' are an example of how ecology can benefit the surrounding environment¹⁶
- maintain and improve soil, air, and water health. A thriving ecosystem is an essential part of protecting New Zealand's food security and food quality. Healthy natural environments will also have positive impacts on human health (both mental and physical) and overall societal wellbeing
- provide carbon sequestration. Ecological corridors will require new forms of protection and restoration. As such, ecological corridors could be designed to provide income from carbon sequestration. This could also be a way of ensuring local councils and government institutions meet their net zero goals for the future
- create jobs, education and skills in regional areas. Examples include education and science, tourism, pest control, horticulture and planting (this is discussed more thoroughly under *n/ho* below).

HOW?

How will ecological corridors be established?

There are a number of different parties involved and coordinating corridors across the country will be a national effort. The following steps will be essential parts of the process:

- **Establish ecological corridors connecting national parks and other conservation areas across the country. Options include:**
 - **Option 1:** Start on the West Coast of the South Island as it already has a significant block of interconnected native forest which is home to a substantial amount of indigenous flora and fauna. That would provide an opportunity to invest and test the idea, explore proof of concept and learn lessons on how best to scale the idea.

The Department of Conservation's (DOC's) current reclassification programme provides a further opportunity for land to be reclassified as ecological corridors. DOC is currently working through a process of reclassifying stewardship land, starting with 504 pieces of land on the West Coast. Stewardship land is a category of conservation land that contained conservation values when it was first assigned to DOC in 1987, but was not classified into a specific category (such as park areas, wildlife and habitat protections or reserves and specially protected areas).

- **Option 2:** Start from Northland and continue all the way to Stewart Island.
- Establish as part of New Zealand's unwritten constitution a commitment to preserve and protect a certain percentage of land.¹⁷ For example, Bhutan's constitution mandates the preservation of 60% of its land under forest cover to be maintained in perpetuity.¹⁸
- Increase funding for DOC.
- Increase funding for the Predator Free NZ 2050 programme.
- Expedite predator-free status for islands such as Rakiura Stewart, Aotea Great Barrier and Resolution Island, which already have head starts and could become models on how to tackle mainland animal pest eradication.
- Explore ways to create 'spongy coastlines' that are designed to absorb and filter water.

How do ecological corridors fit into international and local Carbon Credit and Biodiversity Credit schemes?

Both the carbon credit and biodiversity credit systems are a work in progress in New Zealand and there is the opportunity for ecological corridors to earn credits under both systems as they provide both biodiversity and carbon-absorbing benefits.

Carbon Credit System (New Zealand and international)

The carbon-absorbing properties of ecological corridors would also make them an effective new mechanism for carbon credits based on native rather than exotic forestry. This is an idea the Institute will explore further, with a possible proposal to COP which could include other countries like Canada and Australia. This is a big idea and one that may enable New Zealand to reduce our significant carbon credit deficit in 2030 (this concept is discussed in the Institute's [Discussion Paper 2021/04 – An Accounting Dilemma: Does a commitment to purchase offshore carbon credits create a requirement to disclose that obligation in the financial statements of the New Zealand Government?](#)).

Biodiversity Credit System (New Zealand)

The Ministry for the Environment (MfE) has started looking into a biodiversity credit system in New Zealand in July 2023 and the initial concept is currently open for feedback. More information on this initiative is available on the MfE website at [New Zealand Biodiversity Credit System](#). This system as proposed would enable landowners to earn financial credits for protecting and restoring native wildlife areas, including protecting and restoring ecological corridors. The goal is to encourage landowners to value nature and to avoid the impacts of development on biodiversity.

How will ecological corridors be funded?

- **Visitor tax:** New Zealand could increase the International Visitor Levy (IVL) from \$35¹⁹ to a more significant amount (as Bhutan does). Given the number of tourist arrivals in 2019 was 3.88 million,²⁰ a tourist tax on arrival in the vicinity of NZ\$200 would generate about \$700 million p.a. We propose a one-off entry tax would work better than the per-day model used in Bhutan, as it would incentivise travellers to stay longer, increasing the total tourist dollars spent per visit. The mechanism needs to be well thought out to ensure the levy helps alleviate challenges posed by tourism, such as conservation and destination management. The current IVL has received criticism as it is not clearly allocated for tourism purposes.
- **Carbon credits:** Carbon offsets could be made available to New Zealand and international businesses to provide additional funding. In addition local carbon credits could be made available so New Zealand businesses can avoid purchasing them offshore, helping to build local industry. This is a positive change as a significant part of the NZ Carbon Net Zero plans are reliant on offshore credits. This could become a new international instrument that could serve as an example to other countries (e.g. the UN Convention on Biological Diversity).²¹
- **Biodiversity credits:** The Ministry for the Environment has started looking into a biodiversity credit system in New Zealand in July 2023, with the initial concept currently open for feedback. This system would enable landowners to earn financial credits for protecting and restoring native wildlife areas. The goal is to encourage landowners to value nature and avoid the negative impacts of development on biodiversity. If approved, this scheme would allow for landowners who protect and restore ecological corridors to receive credits.

How will ecological corridors be legally classified?

- There are a range of options. For example, corridor areas could be protected differently from national parks and funded through some form of carbon offset (as discussed above).
- Using a trust-like mechanism and classification for management of land has been successful in New Zealand and internationally. Three local examples of purpose-led management include Bream Head/Te Whara Conservation Trust, the Ipipiri Nature Conservancy Trust and the Maurice White Native Forest Trust.
- Purple Peak Curry Reserve Management includes long-term legal safeguards for reserve status of land, which could be replicated:

25.1 The reserve will be covenanted in perpetuity under a protected land covenant with one of the covenanting agencies, probably with the QEII National Trust as with other Native Forest Restoration Trust reserves, or possibly with the Banks Peninsula Conservation Trust. The wording of the covenant will have to be compatible with the agreements already signed with the Rod Donald Banks Peninsula Trust, the Christchurch City Council, and the Maurice White Native Forest Trust. 25.2 If the Maurice White Native Forest Trust is to play a substantial part in the day-to-day management of Purple Peak Curry Reserve, the wording of the covenant must not significantly limit flexible and knowledgeable decision-making by the people on the ground actually doing the work, within the guidelines of the Management Plan.²²

How will ecological corridors respond to and mitigate risk?

Design and management of corridors must consider how to respond to natural and other possible risks. Some common concerns and risk management responses are below:

- Corridors may allow for spread of diseases, exotics, and other undesirable species into reserves, and throughout the landscape. While this is a possible risk that may occur in some circumstances, the majority of introduced animals and plants, and the diseases they may harbour, are confined to, or more abundant in, human-modified environments. Therefore spread is most likely when corridors are narrow and in environments that are particularly susceptible to invasion by exotic species. Corridors that are wide in shape will be beneficial, as they permit organisms to pass between reserves without coming into contact with the external areas that contain these hostile species.²³
- Corridors may facilitate the spread of abiotic disasters, such as fire. In response to this, it is relevant to consider corridors also provide an escape route for animals when a disaster strikes one reserve in a linked system, and provide a return route after the disaster has passed. For example, the North Island kōkako (one of New Zealand's most endangered bird species) was eradicated from the Ōmahuta forest due to logging. Over time the forest gradually recovered and 40 years later, the kōkako moved back into the Ōmahuta forest from the neighbouring Puketū forest. Thomas noted in his 1991 paper on ecological corridors that 'Kōkako fly so weakly that they would be extremely unlikely to recolonise isolated forest remnants'.²⁴
- Corridors may produce bottlenecks that predators use to trap prey. This concern was shown not to be true in a study by Ford & Clevenger in 2010, which specifically showed that predators do not use bottlenecks in corridors to trap prey.²⁵ To further mitigate and alleviate the potential of predators using corridors to trap protected species, a number of measures can be used, including heterogeneity in structure design and increase in vegetation cover near crossing structures or migration areas.²⁶

WHO?

Who will lead the process?

- DOC, in collaboration with iwi, regional and territorial councils, local communities and NGOs.
- Leadership and new forms of protection will need to be developed for ecological corridors. This could be along the lines of caveats for landowners, such as at Queen Elizabeth Park in the greater Wellington region.²⁷

Who will manage the ecological corridors once they are established?

- There are a range of options for management and each section could follow a different model. Ideas include a purpose-driven trust-like vehicle with day-to-day management by iwi, local communities and/or NGOs. Local community involvement is an essential part of corridor management.

Who will be involved?

The workforce for this project will require range expertise in ecological science, geography, horticulture and geology.

- Management work also requires plants and planting skills, as well as ongoing management and monitoring of the health of the ecosystem.
- The corridors are likely to be in more economically challenged communities in isolated parts of New Zealand. This should provide employment for those currently in need of welfare support, build their skill base for lifetime

careers, and improve mental and physical health. Creating training and meaningful job opportunities in these communities may help encourage people to move to these isolated regions.

- Local employment and business opportunities may also improve with increased tourism around ecological corridor areas. An example of this strong interrelationship was the Jobs for Nature programme, created during COVID-19, which demonstrated a positive connection between conservation work and tourism, especially in seasonal tourism communities such as Franz Josef and Fox Glacier. This allows communities to thrive all year by focusing on tourism during high season and conservation in low season.

WHERE?

Where should we locate ecological corridors?

- Corridors could be designed to connect national parks across New Zealand. It is suggested the corridors could begin connecting national parks on the West Coast of the South Island.
- Design and location will focus on species habitat, with particular emphasis on threatened and endangered species and native forests. Corridors should use natural pathways around wild rivers and connected river systems as a guide, with the aim of ensuring rivers have ‘room to move’ as their flows naturally change over time.
- It is essential corridors are designed to respond and adapt to climate change and extreme weather events.

Why start on the West Coast?

- Along the West Coast 504 pieces of New Zealand’s stewardship land are currently being reclassified by DOC, including a number of ecologically significant areas. Stewardship land is land that was allocated to DOC when it was formed in 1987, but has yet to be given a specific land classification. Submissions on this process closed on 23 August 2022 and there has been no update since then, according to the [DOC consultation page](#).
- Hon Kiri Allan stated: ‘The West Coast is the first region in New Zealand to go through this process, with the National Panel recommendations including reclassifying approximately 77,000 hectares as National Park, 347,000 hectares as Conservation Park and 182,000 hectares as Historic Reserve.’²⁸

Note: National park status provides the maximum level of protection with land having to be maintained in its natural state, conservation park status is primarily for the protection of its natural and historic resources and historic reserve status is to protect historic and cultural sites as well as native flora and fauna.

- The West Coast contains some of New Zealand’s most outstanding ecological landscapes, historical narratives, cultural values and recreational assets.
- The West Coast can become a physical sponge to manage floods and extreme weather, protecting roads and infrastructure from extreme weather whilst acting as a carbon sink.
- The West Coast is a jewel in the global crown (i.e. a UN World Heritage Area, connecting Te Wāhipounamu).
- Increased conservation will improve public access to nature, with recent research establishing the (already long-known) benefits of being in nature on mental health.
- The West Coast community is already working hard to improve the environment and is passionate about improving the local economy and job opportunities.

ENDNOTES

¹ Bhutan Royal Society for Protection of Nature. (2022). National Protected Areas and Biological Corridors of Bhutan. Retrieved 23 August 2022 from www.rspnbhutan.org/protected-areas-of-bhutan/

² Convention on Biological Diversity. (2022). Bhutan – Main Details. Retrieved 23 August 2022 from www.cbd.int/countries/profile/?country=bt

³ Convention on Biological Diversity. (2022). Bhutan – Main Details. Retrieved 23 August 2022 from www.cbd.int/countries/profile/?country=bt

⁴ Map source: Lham, D., Wangchuk, S., Stolton, S., & Dudley, N. (2018). ‘Assessing the effectiveness of a protected area network: A case study of Bhutan.’ Cambridge University Press. Retrieved 31 March 2023 from www.cambridge.org/core/journals/oryx/article/assessing-the-effectiveness-of-a-protected-area-network-a-case-study-of-bhutan/D8A3E495A456BAE88F0375F3E172DC22

⁵ Ministry for the Environment. (2022). National Adaptation Plan. Retrieved 31 July 2023 from <https://environment.govt.nz/assets/publications/climate-change/MFE-AoG-20664-GF-National-Adaptation-Plan-2022-WEB.pdf>

⁶ Ministry for the Environment. (2022). National Adaptation Plan. Retrieved 31 July 2023 from <https://environment.govt.nz/assets/publications/climate-change/MFE-AoG-20664-GF-National-Adaptation-Plan-2022-WEB.pdf>

⁷ Ministry for the Environment. (2022). National Adaptation Plan. Retrieved 31 July 2023 from <https://environment.govt.nz/assets/publications/climate-change/MFE-AoG-20664-GF-National-Adaptation-Plan-2022-WEB.pdf>

⁸ Department of Conservation. (August 2020). *Biodiversity in Aotearoa: An overview of state, trends and pressures 2020*. Retrieved 22 September 2022 from <https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020-biodiversity-report.pdf>

⁹ Convention on Biological Diversity. (19 December 2022). COP15: nations adopt four goals, 23 targets for 2030 in landmark UN biodiversity agreement [press release]. Retrieved 13 February 2023 from <https://www.cbd.int/article/cop15-cbd-press-release-final-19dec2022>

- ¹⁰ Manaaki Whenua Landcare Research. (2023). Our Environment. Retrieved 28 July 2023 from <https://ourenvironment.scinfo.org.nz/>
- ¹¹ Ministry for the Environment. (1 June 2005). Offshore options: Managing environmental effects in New Zealand's Exclusive Economic Zone. Retrieved 28 July 2023 from <https://environment.govt.nz/publications/offshore-options-managing-environmental-effects-in-new-zealands-exclusive-economic-zone/introduction/>
- ¹² Note this number varies across different sources. 12.3% is from Department of Conservation. (2019). New Zealand marine protected areas: Gaps analysis, p. 15. Retrieved 28 July 2023 from <https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-protected-areas/mpa-publications/mpa-gaps-analysis-report-2019.pdf>
- ¹³ Department of Conservation. (August 2020). *Te Mana o Te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020*. Retrieved 22 September 2022 from <https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020.pdf>
- ¹⁴ Ministry for the Environment. (30 April 2021). Measuring forest carbon. Retrieved 7 December 2022 from <https://environment.govt.nz/facts-and-science/climate-change/measuring-greenhousegas-emissions/measuring-forest-carbon>
- ¹⁵ He Pou a Rangī – Climate Change Commission. (31 May 2021). *Inaia tonu nei: a low emissions future for Aotearoa*, p. 120. Retrieved 20 September 2022 from <https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf>
- ¹⁶ Harrisberg, K. (11 April 2022). What are 'sponge cities' and how can they prevent floods? Climate Champions. Retrieved 25 January 2023 from <https://climatechampions.unfccc.int/what-are-spongecities-and-how-can-they-prevent-floods>
- ¹⁷ Ministry of Justice. (n.d.). Constitutional. Retrieved 3 April 2023 from <https://www.justice.govt.nz/justice-sector-policy/regulatory-stewardship/regulatory-systems/constitutional/>
- ¹⁸ National Assembly of Bhutan. (2008). *The Constitution of The Kingdom of Bhutan*, p. 12. Retrieved 3 April 2023 from <https://www.nab.gov.bt/assets/templates/images/constitution-of-bhutan-2008.pdf>
- ¹⁹ Ministry of Business, Innovation and Employment. (5 December 2022). International Visitor Conservation and Tourism Levy. Retrieved 17 December 2023 from <https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-funding/international-visitor-conservation-and-tourism-levy/>
- ²⁰ World Bank Data. International Tourism, Number of Arrivals – New Zealand. Retrieved 12 February 2023 from <https://data.worldbank.org/indicator/ST.INT.ARVL?locations=NZ>
- ²¹ United Nations. (n.d.). Convention on Biological Diversity, key international instrument for sustainable development. Retrieved 27 January 2022 from <https://www.un.org/en/observances/biological-diversity-day/convention>
- ²² Wilson, Hugh. (26 January 2016). *Purple Peak Curry Reserve Management Plan*, p. 18. Rod Donald Banks Peninsula Trust. Retrieved 13 October 2022 from <https://roddonaldtrust.co.nz/wp-content/uploads/2013/03/Purple-Peak-Curry-Reserve-Management-PlanDraft-V1-6.pdf>
- ²³ Thomas, C. D. (1991). *Ecological Corridors: An Assessment*. Science & Research Series no. 34, p. 21. Department of Conservation. Retrieved 13 October 2022 from www.doc.govt.nz/globalassets/documents/science-and-technical/sr34.pdf
- ²⁴ Thomas, C. D. (1991). *Ecological Corridors: An Assessment*. Science & Research Series no. 34, p. 21. Department of Conservation. Retrieved 13 October 2022 from www.doc.govt.nz/globalassets/documents/science-and-technical/sr34.pdf
- ²⁵ Ford, T. & Clevenger, A. (2010). Validity of the Prey-Trap Hypothesis for Carnivore-Ungulate Interactions at Wildlife-Crossing Structures. *Conservation Biology*, 24(6), 1679–1685. Retrieved 18 October 2022 from www.jstor.org/stable/40925336
- ²⁶ Saxena, A. & Habib, B. (2022). Safe Passage or Hunting Ground? A Test of the Prey-Trap Hypothesis at Wildlife Crossing Structures on NH 44, Pench Tiger Reserve, Maharashtra, India. *Diversity*, 14 (5). Retrieved 18 October 2022 from <https://doi.org/10.3390/d14050312>
- ²⁷ Greater Wellington Regional Council. (1 June 2020). *Key Native Ecosystem Operational Plan for Queen Elizabeth Park 2017-2020*. Retrieved 27 January 2022 from <https://www.gw.govt.nz/assets/Documents/2020/06/Key-Native-Ecosystem-Operational-Plan-for-Queen-Elizabeth-Park-2017-2020.pdf>
- ²⁸ Allan, K. (27 May 2022). Public feedback sought on proposed land classifications for the West Coast. Retrieved 13 October 2022 from www.beehive.govt.nz/release/public-feedback-sought-proposed-land-classifications-west-coast