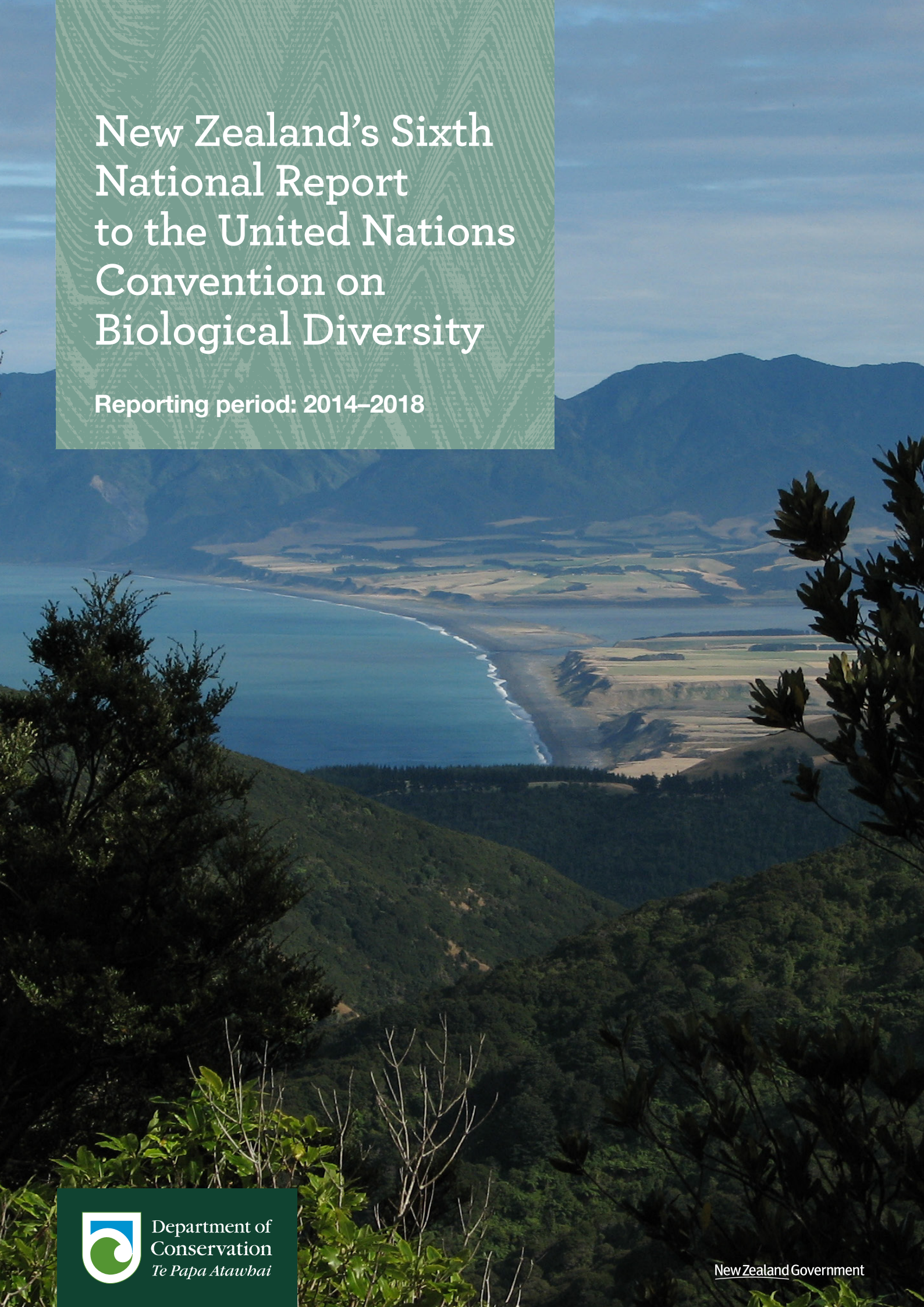
New Zealand's Sixth National Report to the United Nations Convention on Biological Diversity

Reporting period: 2014–2018



Department of Conservation
Te Papa Atawhai

New Zealand Government

Cover: View of Palliser Bay, looking west from Mt Surf, Aorangi Mountains, southern North Island, New Zealand. *Photo: Joe Hansen*.

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INTRODUCTION TO THE 6TH NATIONAL REPORT

The 6th National Report provides a 4-yearly update on New Zealand's progress against biodiversity targets, as required under the Convention on Biological Diversity (CBD). It covers the period 2014–2018, and captures progress against:

- New Zealand's national targets established under the *New Zealand Biodiversity Action Plan 2016–2020*; and
- the global Aichi targets set under the *Strategic Plan for Biodiversity 2010–2020*, which were agreed by the Parties to the CBD in 2010.

The New Zealand Biodiversity Action Plan 2016–2020 outlines the contribution New Zealand will make towards stemming the global loss of biodiversity before 2020. It provides an update to New Zealand's original Biodiversity Strategy, which was established in 2000. The national targets represent New Zealand's work towards achieving the global biodiversity Aichi targets, while reflecting New Zealand's unique context. The targets are grouped under the five strategic goals of the Convention on Biological Diversity:

- Goal A: Mainstreaming biodiversity across government and society;
- Goal B: Reducing pressures on biodiversity and promoting sustainable use;
- Goal C: Safeguarding ecosystems, species, and genetic diversity;
- Goal D: Enhancing the benefits to all; and
- Goal E: Enhancing implementation.

To ensure clarity on New Zealand's progress against international obligations, the 6th National Report also describes New Zealand's progress against the 20 global Aichi targets.

This report captures multiple initiatives taken at the national level and a selection taken at the local level, including by local government, non-governmental organisations and business. Compiling the report has revealed the wealth of initiatives and significant amount of work being undertaken outside of central government, and New Zealand is exploring how better to capture this for future reporting rounds.

The 6th National Report shows that New Zealand has made good progress over the reporting period in several areas. The report shows improvements to how biodiversity is integrated into planning processes, an increased area of private land protected under covenant, and progress in awareness-building, including increased awareness of biodiversity, increased numbers of people taking action for nature, and improved understanding of climate change impacts on biodiversity.

However, the 6th National Report makes it clear that more work needs to be done and confirms the huge challenge of conserving native biodiversity and ecosystems in New Zealand.

New Zealand's terrestrial and aquatic environments continue to face significant pressures, and restoration programmes have not yet delivered significant improvements. How we use and collectively manage these environments is at the heart of this challenge and must play a critical role if we are to move quickly to stop further loss of biodiversity, as well as reverse the damage previously done to New Zealand's environment.

There are, however, positive signs to build from, including progress on several important initiatives to address the challenges of biodiversity loss in 2019. This includes the development of a new Biodiversity Strategy which will set a vision and guide our biodiversity management work for the next 20 years, and the development of a new National Policy Statement on Indigenous Biodiversity, which will set out objectives and policies to improve how regional councils and territorial authorities manage and protect indigenous biodiversity on both public and private land.

This 6th National Report improves on previous reports by providing more transparent and specific information on how we are progressing towards New Zealand's national and international targets and includes improved benchmarks to evaluate the effectiveness of our actions.

The report also showcases some of the significant national actions being undertaken through the combined efforts of central and local government, whānau, hapū, iwi, resource managers, communities, private landowners and businesses.

These initiatives and actions are vital as halting the decline of biodiversity poses a significant challenge and needs a sustained collaborative effort across New Zealand.

In these ways, the 6th National Report raises awareness around New Zealand's progress towards our national targets and the five strategic goals of the Convention's Strategic Plan for Biodiversity 2011–2020, and is an important national benchmark for more urgent, effective and scaled-up action in the future.

Goal A: Mainstreaming biodiversity across government and society

1. PEOPLE'S LIVES ARE ENRICHED THROUGH CONNECTION TO NATURE

I. General information

i. Rationale for the national target

One of the changes sought by the *New Zealand Biodiversity Strategy 2000* is to move from limited community understanding and involvement in conservation work to widespread, informed community action. The Biodiversity Strategy recognises that positive actions by people are the real powerhouse of change and to achieve widespread and lasting gains for biodiversity it is essential that biodiversity becomes a 'mainstream' issue across society. For Māori, kaitiakitanga (guardianship) between Māori and the environment is central to the expression of Māori culture and identity, and confers obligations on whānau (family), hapū (sub-tribe) and iwi (tribe) (collectively tangata whenua) to care for environmental taonga (treasures), including species of indigenous flora and fauna. Target 1 aims to achieve better connections through connecting people directly with nature, so that they can appreciate the biodiversity and cultural values of their natural heritage.

Mainly related to Aichi target 1.

Not indirectly related to any other Targets.

II. Implementation measures

a) Measure 1 – Environmental Education Strategy and Action Plan

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *Environmental Education for Sustainability Strategy and Action Plan* (2017–2021) sets out focus areas for the New Zealand Government to use to help achieve the goal of all New Zealanders valuing a connection to their environment by actively working together for a sustainable future. The Education Strategy and Action Plan sets out how the New Zealand Government will build on previous collaborations to support delivery of high-quality environmental education for sustainability across New Zealand. The Government is looking to support and enhance the work already happening and encourage more people to engage in environmental education for sustainability.

The Education Strategy and Action Plan sets three priority areas:

- Enable coordination of environmental education for sustainability
- Grow capability and capacity in environmental education for sustainability delivery
- Strengthen sustainable practice pathways

The Action Plan sets the following objectives for the period 2017–2021:

- Celebrate success to raise awareness and demonstrate value
- Strengthen networks to foster collaborative action
- Build capability and capacity to engage people
- Ensure progress of the Action Plan and measure its impact

Work to achieve the objectives of the Education Strategy and Action Plan since 2014 has focused on:

- Celebrating success to raise awareness and demonstrate the value of environmental education for sustainability.
- A systems-based approach which provides tools, resources and inspiring stories targeted at key audiences, with the goal of increasing the quantity and quality of environmental education for sustainability.
- Strengthening networks to foster collaborative action.
- The New Zealand Association of Environmental Education Conference provided a space for delegates to create new networks and discuss ways to improve collaboration.
- Work with Auckland and Christchurch Councils to examine how councils can align their activities with the Education Strategy and develop local environmental education for sustainability networks.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Environmental Education for Sustainability Strategy and Action Plan was finalised in 2017 and implementation work has commenced.

iv. Other relevant information (include websites, web links and files for added information – optional)

Information about the Environmental Education for Sustainability Strategy and Action Plan:

https://www.doc.govt.nz/eefs

Information about the New Zealand Society for Environmental Education:

http://nzaee.org.nz/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Challenges for the implementation of the Environmental Education Strategy and Action Plan include working across different government agencies with conflicting objectives and securing resources from multiple sources.

b) Measure 2 – Department of Conservation recreation programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The lives of New Zealanders and their visitors are enriched through outdoor experiences. Providing opportunities for recreation on public conservation lands and waters is part of the legislative mandate of the Department of Conservation. This recognises that recreation and associated interpretation programmes are valuable tools for connecting people to the country's biodiversity. Through positive first-hand nature experiences people gain knowledge and develop an appreciation for biodiversity. Increasing the number of visitors to New Zealand conservation land and waters and the quality of the visitor experiences could potentially lead to increased biodiversity conservation.

The Department of Conservation provides for and manages the largest recreation network in New Zealand (over 14,000 km of walking and biking tracks, 330 campsites and 950 backcountry huts). A work programme encourages recreation on public conservation land (for example, maintaining and upgrading visitor facilities, tracks and campsites). It also includes activities to raise public awareness of recreation experiences.

In addition, New Zealand regional and local councils also contribute to New Zealand's recreation network. For example, Auckland Council manages 26 regional parks covering 42,000 ha, over 40 campgrounds and approximately 500 km of walking tracks and has an active interpretation programme.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Between 2012 and 2016 the number of New Zealanders participating in recreation on public conservation lands at least once a year increased, reaching 80% of people surveyed in 2016. This upward trend is continuing, and more people are using public conservation land and waters for a wider range of activities.

iv. Other relevant information (include websites, web links and files for added information – optional)

Information on public conservation land visitor statistics and research in New Zealand:

https://www.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-statistics-and-research/

Information on public conservation land parks and recreation in New Zealand:

https://www.doc.govt.nz/parks-and-recreation/

https://www.doc.govt.nz/parks-and-recreation/things-to-do/walking-and-tramping/short-walks/

https://www.doc.govt.nz/parks-and-recreation/things-to-do/walking-and-tramping/day-hikes/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

Where there are gaps in New Zealanders' participation in recreation on public conservation lands, a better understanding of the barriers to participation and how to offer quality visitor experiences must be gained to enable these to be reduced.

The Department of Conservation has commissioned research on customer segmentation to better understand barriers to participation in outdoor recreation from groups in our communities that are presently underrepresented in these activities. Connecting people to nature in urban areas is an ongoing challenge. Increasing development pressures on urban parkland and tree cover can reduce opportunities for urban dwellers to be enriched by nature experiences.

c) Measure 3 – Children involved in natural environment programmes through the Toyota Kiwi Guardians outreach programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan

Global research tells us that if children connect to nature early in their life, they will maintain that connection into adulthood. Across New Zealand, a wide range of conservation programmes are available to children and their families. These include school-based programmes such as EnviroSchools and Kids Greening Taupo, NGO Forest & Bird's Kiwi Conservation Club, and outreach programmes managed by zoos, sanctuaries and others.

The Enviroschools programme supports children and young people to plan, design and implement sustainability actions that are important to them and their communities. A third of all New Zealand schools are now part of the network.

Kids Greening Taupo is a conservation project that aims to inspire Taupo's young people, from preschool through to college, to develop values, knowledge and skills so that they can be confident, connected and actively involved in caring for their environment now and in the future. With the commitment of 12 local education providers (four early childhood centres and eight primary and intermediate schools), students are involved in many aspects of the project, such as:

- Building connections with their environment,
- Establishing knowledge and skills,
- Carrying out restoration work including activities such as marketing,

- Celebrating milestones, reflecting and making changes.

For 30 years, Forest & Bird's Kiwi Conservation Club/Hakuturi Toa (KCC) has been connecting Kiwi children to New Zealand's wildlife and wild places. KCC now has over 5000 members throughout Aotearoa New Zealand.

A relatively new initiative is Toyota Kiwi Guardians, an outreach programme set up in 2016 as a partnership between the Department of Conservation and Toyota New Zealand to encourage New Zealand families to connect with nature. It particularly targets 6–10-year-old children.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The response provides examples of New Zealand programmes that help children connect with the natural environment, including published statistics. These give an indication of the types of programmes available and their reach.

iv. Other relevant information (include websites, web links and files for added information – optional)

Enviroschools participation: http://www.enviroschools.org.nz/about-us/participation-stats

Kiwi Conservation Club: http://kcc.org.nz/about/

Kids Greening Taupo: https://www.kidsgreeningtaupo.org.nz/

The Toyota Kiwi Guardians website: https://www.doc.govt.nz/parks-and-recreation/places-to-go/toyota-kiwi-guardians/

The website for claiming a Kiwi Guardians medal: https://www.doc.govt.nz/parks-and-recreation/places-to-go/toyota-kiwi-guardians/claim-your-kiwi-guardians-medal/activity-medal/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

There is a lack of integrated evaluation of impact across the various programmes provided by New Zealand organisations.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

ii. Summary of evidence used

Progress toward Target 1 'people's lives are enriched through connection to nature' is measured in a variety of ways. Across key indicators, higher levels of engagement between New Zealanders and nature have been demonstrated, including through increased visitor numbers to public conservation lands (reaching 80% of people surveyed in 2016); involvement in outreach and education initiatives; and increased web traffic and engagement with nature-focused social media content.

Conservation is synonymous with protection and preservation. The top personal benefits in people surveyed in 2016 were found to be: *protecting plants and animals* (33% of respondents) and *protecting the natural environment for my children* (33%). Most of the New Zealanders surveyed (98%) were able to identify with at least one personal benefit of conservation.

iii. Indicators used in this assessment

- Proportion of New Zealanders participating in recreation on public conservation lands and waters (taken from the Department of Conservation Survey of New Zealanders 2016):

https://www.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-statistics-and-research/survey-of-new-zealanders/

- Connection to nature index.
- Web traffic and social media metrics relating to nature-focused content, including awareness campaigns (such as the Royalcam albatross web cam (https://www.doc.govt.nz/royalcam) and the *Nature* section of the Department of Conservation website). Website traffic statistics are provided via Google analytics and social media engagement is tracked using Meltwater Social Media monitoring tool.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

The number of huts/tracks/campsites managed by the Department of Conservation is held in the Department of Conservation Asset Management Information System (AMIS).

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

For some measures, outputs can be measured more readily than outcomes. It is easier to measure participation rather than enrichment and social outcomes resulting from contact with nature.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (for example, only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

Progress toward the target is monitored in a variety of ways across contributing projects and initiatives, including through the indicators outlined above. Further, there are many actions undertaken (for example, routine work to engage with and support community group efforts) which also contribute to the National Target, but for which comprehensive monitoring is not currently in place and which is likely to be impractical to implement.

Utilisation of DOC assets

To ensure visitors continue to enjoy outstanding experiences on public conservation lands, the Department of Conservation monitors use of its extensive and growing portfolio of visitor assets to help guide investment and operational planning.

Visitor experience: Satisfaction with DOC's 'Great Walks'

Understanding visitors' experiences through their eyes is essential if the Department of Conservation is to continue to provide outstanding visitor experiences on its world-renowned 'Great Walks'.

Visitor experience: Safety on DOC's 'Great Walks'

Visitors' perceptions and experiences regarding their own safety and wellbeing on 'Great Walks' helps ensure the effectiveness of the Department of Conservation safety-related efforts.

DOC assets are spread across public conservation lands and waters

The Department of Conservation invests heavily in the construction and maintenance of an extensive portfolio of visitor assets across Aotearoa/New Zealand to support recreational opportunities on public conservation lands.

DOC assets are up to standard

Each year, the Department of Conservation's extensive portfolio of visitor assets is subject to continual inspection and maintenance to ensure continued compliance with relevant internal and external standards.

2. PEOPLE ARE TAKING GREATER ACTION FOR NATURE

I. General information

i. Rationale for the national target

One of the changes sought by the New Zealand Biodiversity Strategy is to move from limited community understanding and involvement in conservation work to widespread, informed and effective community action to achieve biodiversity outcomes. Mana whenua, government agencies, community organisations and individuals all have a critical role to play. National Target 2 contributes specifically to the first goal of the New Zealand Biodiversity Strategy Action Plan: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Mainly related to Aichi targets 1 and 18.

Not indirectly related to any other Aichi targets.

II. Implementation measures

a) Measure 1 – Department of Conservation Community Fund

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department of Conservation Community Fund (the Fund) has operated during the reporting period. The purpose of the Fund is to enable community-led conservation. The Fund is directed at practical, on-the-ground projects which maintain and restore the diversity of our natural heritage, enable more people to participate in recreation and conservation to enjoy and learn from our historic places, and engage with and value the benefits of biodiversity.

The Fund was announced in March 2014 with approximately NZD $26 million to distribute to community groups for priority conservation work over four funding rounds. With the completion of the fourth round in 2017, the annual allocation was approximately NZD $4.6 million.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Fund presently supports over 100 community groups and private landowners across New Zealand who are undertaking conservation projects. There have been four annual funding rounds since the Fund was established in 2014, and approximately NZD $26 million has been awarded to over 400 applicants during that time. It is expected that most or all currently funded projects will be completed by 2020.

The fund is aimed at supporting on-the-ground community conservation projects. Its primary focus is to help groups achieve biodiversity outcomes. In the most recent funding round (2017), 112 applications were approved for funding totalling NZD $4.5 million – 49 predator control (trapping) projects and 27 weed eradication projects. The remaining 49 projects support a range of other conservation outcomes, including for animal species protection, conservation education, ecosystem protection or enhancement, tree planting, historic or cultural heritage and recreation.

A list of projects funded by the Fund can be found here:
https://www.doc.govt.nz/get-involved/funding/doc-community-fund/successful-applications/

Standardised reporting measures for funded projects were introduced in 2017 and all funded projects are required to report on specified measures before the final funding payment is issued. Such measures include:

- Populations of target species included in the project area
- Hectares (ha) treated for possums, rats, mustelids, goats, deer and/or possums

- Hectares (ha) treated for weeds
- Hectares planted (ha)
- Number of volunteers involved
- Number of workday equivalents contributed by volunteers

iv. Other relevant information
(include websites, web links and files for added information – optional)

Information about the Fund can be found here:

https://www.doc.govt.nz/doc-community-fund

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information as needed)

Key needs related to this measure include how to ensure the Fund achieves the best possible gains for conservation, and how to effectively and efficiently administer the Fund. The Fund is currently undergoing a review to ensure its future effective operation and targeting of conservation priorities. There are ongoing challenges in ensuring the long-term sustainability of community conservation projects.

b) Measure 2 – Voluntary contributions to conservation

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The New Zealand Government has set an ambitious goal of conserving native biota through the eradication of introduced mammalian predators by 2050. Target species are rats, stoats, and possums. This goal was announced mid-2016 and since that time government agencies (including the Department of Conservation), iwi, communities, businesses, non-government organisations (NGOs) and individuals have proactively joined the movement. A total of 1179 community groups have registered on www.trap.nz, where they record their trapping effort, but there are many more individuals and groups trapping on public and private land (https://predatorfreenz.org/get-started/find-a-group/).

Seven landscape-scale eradication projects involving the Department of Conservation, regional and local councils, iwi, communities and others have received a total NZD $24 million from the government for predator control work over the next 3–7 years. Smaller community or neighbourhood trapping efforts are receiving funding through businesses and not-for-profit agencies, and technical support from the Department of Conservation Predator Free Rangers. The following online resources have been made available by the Department of Conservation:

- The Predator Free 2050 Toolkit – www.doc.govt.nz/nature/pests-and-threats/predator-free-2050/toolkit-predator-free-2050/
- Information and guidance how to run a community conservation project – www.doc.govt.nz/get-involved/run-a-project/

See also the tools and resources made available by the Predator Free Trust – https://predatorfreenz.org/tools-resources/trapping-best-practice/

Central and local government agencies have undertaken work during the reporting period to better enable volunteers to undertake conservation activities and projects. This includes working towards the development of a National Volunteering System, including the potential for subsystems focused on volunteering organised and overseen directly by the Department of Conservation, enabling Community-led Volunteering (i.e. work organised and overseen by community groups and others external to the Department of Conservation) and Connecting Volunteers with volunteering opportunities (i.e. enabling the Department of Conservation and other conservation organisations to connect their volunteering opportunities with volunteers who have the appropriate skills). A pilot of the Connecting Volunteers subsystem has been co-designed by the Department of Conservation and Auckland Council and is currently being piloted.

Support for voluntary conservation effort has also been provided to communities at place by regional councils and Department of Conservation staff. This includes general support to increase capability as well as specific bespoke support for individual groups and/or projects.

The Department of Conservation is working actively with community groups, businesses and individual volunteers to increase their gains for conservation. Community groups are undertaking practical conservation tasks such as weed eradication or biodiversity monitoring, as well as education and advocacy roles. Over 700 groups are presently working independently, with support from the Department of Conservation, on public conservation lands (Table 1). On top of that effort there are more than 16,000 individuals volunteering on Department of Conservation-led priority work (Table 1), achieving the same amount of work as 120 fulltime rangers – a significant contribution to conservation work across New Zealand.

Table 1: Numbers of people voluntarily contributing to priority Department of Conservation work.

Measure	2015/16	2016/17	2017/18
Number of volunteers in DOC programmes	16,135	16,935	16,737
Number of workdays by volunteers	44,294	36,018	41,882
Number of partnerships	749	890	761
Number of partnerships involving DOC	231	262	235

To continue growing volunteer contributions, the Department of Conservation, regional councils and NGOs (among others) provide a variety of support to raise volunteers' capability levels and enable delivery of work which contributes to both the environmental needs of New Zealand and the personal aspirations of the volunteers and groups involved.

It is also important to recognise mahi aroha, the enactment of the principle of kaitiakitanga. Whānau, hapū and iwi throughout New Zealand recognise their responsibilities as kaitiaki of their taonga species and habitats and take action to protect the natural and cultural values of their heritage.

The New Zealand Government has set an ambitious goal: to have all New Zealanders help conserve our native biota through the eradication of introduced mammalian predators by 2050 (*Predator Free 2050* or PF2050). The Department of Conservation is actively supporting the groundswell of New Zealanders joining this movement through the provision of tools and resources. Presently, 1179 community groups are registered on www.trap.nz and there are many more individuals trapping on public and private land.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

Support for voluntary conservation effort is provided in a variety of ways by several agencies and organisations in New Zealand. A collaborative national approach to supporting community conservation has yet to be developed.

iv. Other relevant information
(include websites, web links and files for added information – optional)

Information on volunteering for conservation activities in New Zealand can be found at the links below:

https://www.doc.govt.nz/get-involved/volunteer/

https://www.doc.govt.nz/get-involved/volunteer/groups/

Information provided by the Department of Conservation on how to start, improve or evaluate a conservation project can be found here:

https://www.doc.govt.nz/get-involved/run-a-project/

https://www.doc.govt.nz/get-involved/run-a-project/community-project-guidelines/

Inspiring stories from around New Zealand on volunteering for conservation can be found here:

https://www.doc.govt.nz/get-involved/volunteer/stories/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

There is an ongoing need to understand the interactions between new and/or potential pest control tools and systems and existing approaches and to determine the best possible future investment options. Much of the Predator Free 2050 work involves collaboration between agencies, councils, non-governmental organisations, community groups and others; all of whom may have differing priorities.

Work is being undertaken to examine new opportunities for centralising provision of local support to voluntary conservation efforts.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

April – August 2018

ii. Summary of evidence used

The assessment above is based on evidence of progress as provided in previous sections.

iii. Indicators used in this assessment

The following standardised measures were adopted for the Fund in 2017. All successful funding recipients have been required to include these as part of their final project report:

- Populations of target species included in their project area
- Hectares (ha) treated for possums, rats, mustelids, goats, deer and/or possums
- Hectares (ha) treated for weeds
- Hectares planted (ha)
- Number of volunteers involved
- Number of workday equivalents contributed by volunteers.

iv. Level of confidence of the above assessment

☒ Based on partial evidence.

v. Explanation for the level of confidence

As a number of these implementation measures have been achieved, the New Zealand Government has confidence that New Zealand is on track to achieve the national target. Further, we note that there are many actions undertaken (for example, routine work to engage with and support community group efforts) which also contribute to the National Target, but for which comprehensive monitoring is not currently in place and is likely to be impractical to implement.

vi. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (for example, only covering part of the area or issue).

vii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

A monitoring system does not exist for the national target as a whole. As noted in section iv above progress and outcomes of implementation measures are accounted for by observing the completion and outcomes of these measures.

3. BIODIVERSITY IS INTEGRATED INTO NATIONAL AND LOCAL STRATEGIES, POLICIES, PLANS AND REPORTING

I. General information

i. Rationale for the national target

Integrating biodiversity into national and local strategies, policies, plans and reporting is an important element in ensuring that the diverse values of biodiversity and the opportunities derived from its conservation are recognised in decision making.

Mainly related to Aichi target 2.

Not related to any other Aichi targets.

II. Implementation measures

a) Measure 1 – A national environmental reporting series

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

A new national environmental reporting series was established in 2015. Biodiversity is a cross-cutting theme in the reporting series. The reporting provides a fair, accurate and independent representation of the state of the New Zealand environment, the pressures on it, and the impacts on biodiversity and ecosystem processes. Reports present information which enable us to understand environmental issues that are significant to New Zealand. This may reflect national, regional or local data collections that are of national significance and provides (where appropriate) benchmarks for international comparisons.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

A national environmental reporting series was established in New Zealand under the *Environmental Reporting Act 2015*. The Environmental Reporting Act requires the Ministry for the Environment and Statistics New Zealand (with input from the Department of Conservation, Crown Research Institutes and local government) to publish a domain report (air, atmosphere and climate, freshwater, land, marine) every 6 months and a synthesis report every 3 years. Biodiversity is a cross-cutting theme in every report. Since the programme commenced in 2015, the following reports have been published: marine 2016, freshwater 2017, atmosphere and climate 2017, and land 2018. Air 2018 will be published in October 2018, and the next synthesis report is due in 2019.

iv. Other relevant information (include websites, web links and files for added information – optional)

Homepage of the Environmental Reporting programme:

http://www.mfe.govt.nz/more/environmental-reporting

Environmental Reporting framework document:

https://www.mfe.govt.nz/sites/default/files/media/Environmental%20reporting/framework-for-environmental-reporting-final.pdf

Indicators used in the Environmental Reporting programme:

http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home.aspx

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

Implementation of the environmental reporting system is resource intensive and efforts are underway to increase investment to make it more sustainable. Changes to biodiversity have not always been properly understood and documented, but progress has been made on improving biodiversity indicators to collect better information (see implementation measure 2).

b) Measure 2 – Biodiversity considered in resource management plans and policies

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The government is developing a *National Policy Statement on Indigenous Biodiversity*. The National Policy Statement is a regulatory tool under the *Resource Management Act 1991*. It will provide an enforceable policy framework guiding biodiversity management in New Zealand, through regional and district plans. The Resource Management Act already requires councils to maintain biodiversity. How they do this at present, however, is highly variable and has resulted in uncertainty, and costly litigation. Meanwhile, indigenous biodiversity continues to decline. A more settled and agreed regime to address the serious environmental problem of biodiversity decline is needed, particularly for rare and threatened ecosystems outside of public conservation land. An agreed National Policy Statement will do this.

Despite this, regional councils have taken steps to improve biodiversity considerations in resource management plans and policies. The *Review of the effect of the New Zealand Coastal Policy Statement 2010 on RMA decision-making* was released in June 2017. The report included content on the biodiversity policy. The New Zealand Coastal Policy Statement (NZCPS) effectiveness review found that:

- Policy 11 on biodiversity has lifted the profile of biodiversity decision making under The Resource Management Act 1991 (RMA). Many new policy statements and plans identify significant ecological areas in the coastal environment, to the extent these have been surveyed by councils. Policy 11 implementation has been very limited for offshore and remote areas in terms of mapping due to the cost and difficulty.
- A lack of information is a major challenge in giving effect to Policy 11. The information gaps include the abundance and distribution of species, the effects of activities on them, and workable limits. Knowledge of offshore and remote areas is also limited.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Regional councils in New Zealand have a mandate under the Resource Management Act 1991 (RMA) to protect and maintain biodiversity, and also have mechanisms to deliver biodiversity management under the Local Government Act 2002 and the *New Zealand Coastal Policy Statement 2010* (Policy 11) for the coastal environment. Non-regulatory methods such as biodiversity strategies have also been used by regional councils to complement the rules-based approaches in the plan. Of the 16 regional councils in New Zealand, 11 have biodiversity strategies. Some of the strategies are collaborative and multiagency, while others are only internal agency documents. Biodiversity strategies have helped facilitate better coordination and collaboration, promoted efficiency through prioritising combined effort, and have highlighted the importance of biodiversity. Biodiversity strategies have been important tools in bringing together actions at a local level.

Protecting biodiversity can be expensive for landowners. Restoration activities and weed/pest control come with significant costs, which tend to be ongoing. One way the protection of indigenous ecosystems has been incentivised is by the direct provision of council resources. Many councils have offered resource incentives by buying in bulk or by using local suppliers to achieve cost efficiency.

In addition to biodiversity strategies, central and local government have worked together to support improvements to environmental reporting systems, including biodiversity indicators. Examples of progress during the reporting period to include biodiversity indicators in local government planning documents are:

- Ten terrestrial biodiversity indicators have been adopted by regional councils via the local government Environmental Monitoring and Reporting Initiative. Through this initiative regional data have contributed to, and aligned with, central government agency monitoring and reporting. Two regions (Auckland and Wellington) have used the measures for region-wide, plot-based biodiversity monitoring.
- In 2017 Local Government New Zealand (the association representing local government) published Addressing New Zealand's Biodiversity Challenge: a regional council think piece on the future of biodiversity management in New Zealand. This publication provided a comprehensive commentary of regional views on role and effectiveness, including five recommendations to encourage a shift towards improved biodiversity management.

iv. Other relevant information
(include websites, web links and files for added information – optional)

Improving environmental data information:

http://www.mfe.govt.nz/more/environmental-reporting/data-improvement/data-improvement-initiatives

Local government publication:

https://www.trc.govt.nz/assets/Documents/Research-reviews/Biodiversity/AddressingBiodiversityChallenge-web2.pdf

Examples of regional council biodiversity strategies:

Auckland:

https://www.aucklandcouncil.govt.nz/environment/what-we-do-to-help-environment/Documents/indigenous-biodiversity-strategy.pdf

Taranaki:

https://www.trc.govt.nz/assets/Documents/Plans-policies/BioStrategy/BiodiversityStrategy2017-web.pdf
https://www.trc.govt.nz/council/plans-and-reports/strategy-policy-and-plans/biodiversity-strategy-and-accord/

Hawkes Bay:

https://www.hbrc.govt.nz/hawkes-bay/biodiversity/biodiversity-strategy/

Greater Wellington:

http://www.gw.govt.nz/assets/Our-Services/Biodiversity/Biodiversity-Strategy-2011-22.pdf

Canterbury:

https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-biodiversity-strategy

Otago:

https://www.orc.govt.nz/plans-policies-reports/strategies/biodiversity-strategy

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

As required under the RMA, regional councils have included objectives, policies and methods for maintaining indigenous biodiversity in regional policy statements and regional planning documents. The nature and extent of methods for maintaining indigenous biodiversity (including regulatory, non-regulatory or both) has, however, been inconsistent across New Zealand, resulting in variable progress towards maintaining biodiversity at the regional level. Further information on the national direction New Zealand has taken can be found under National Target 7, implementation measure 1.

The link between environmental accounts and the Aichi targets has only recently been explored by statisticians worldwide, so further international guidance is needed on how to effectively integrate biodiversity into national accounts.

c) Measure 3 – National Policy Statement for Freshwater Management

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *New Zealand National Policy Statement for Freshwater Management* (NPS-FM) was amended in 2017 to require regional plans to monitor progress towards freshwater objectives and values using macroinvertebrates, indigenous flora and fauna, and mātauranga Māori (traditional ecological knowledge). Other changes were directed at improving water quality for recreation and considering Te Mana o te Wai in freshwater management).

The NPS-FM provides direction from central government to local government on how regional councils should carry out their responsibilities for managing freshwater resources under the RMA. It directs councils to safeguard the life-supporting capacity, ecosystem process and indigenous species including their associated ecosystems. The NPS-FM requires councils to set limits on resource use to achieve freshwater objectives for freshwater ecosystems and their biodiversity. Limit-setting will help manage the pressures of cumulative demands on water and signals that the resource is finite.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The NPS-FM was introduced in 2014 and amended in 2017 with guidance documents released by the New Zealand Government to support local councils. The NPS-FM must be fully implemented by most regional councils no later than December 2025 (2030 in some cases). Progressive implementation plans have also been published by regional councils, demonstrating their progress in changing regional plans to give effect to the updated NPS-FM. Guidance documents for implementing the NPS-FM are also available.

iv. Other relevant information (include websites, web links and files for added information – optional)

National Policy Statement for Freshwater Management:

http://www.mfe.govt.nz/fresh-water/regulations/national-policy-statement-freshwater-management

National Policy Statement for Freshwater Management regional council implementation programmes:

http://www.mfe.govt.nz/fresh-water/national-policy-statement/regional-councils-implementation-programmes

Guidance on National Policy Statement for Freshwater Management:

http://www.mfe.govt.nz/fresh-water/nps/implementing-national-policy-statement-freshwater-management-8

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

During the reporting period there has been a large spotlight on the state of New Zealand's freshwater. Agriculture, land-use changes and urban development have all contributed to degrading waterways. Freshwater resources also have significant cultural importance to tangata whenua. Because of the state of New Zealand's waterways, and the importance of freshwater resources to New Zealanders, the implementation of the NPS-FM is directed at improving freshwater management in a broader sense with biodiversity considered as one element within this broader context. The extent to which regional plans include information on biodiversity will vary, however, improvements made to freshwater management in other areas will potentially improve freshwater biodiversity even if biodiversity is not the main goal of actions. Further strengthening of the National Policy Statement for Freshwater Management is planned.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

April 2018

ii. Summary of evidence used

Recognition of the threats to biodiversity and the need for action is clear. Biodiversity has been integrated into many strategies, policies, plans and reporting in New Zealand at both the local and national level. Progress made in this area by the New Zealand Government has complemented local government projects (such as the NPS-FM). There is now widespread acknowledgement of the value and importance of preserving New Zealand's biodiversity.

In addition to the establishment of a national environmental reporting series (measure 1) and the 2017 update to the NPS-FM (measure 2), other key achievements during the reporting period include:

- The importance of natural resources (including biodiversity) to New Zealand's living standards was recognised in the Treasury's 2016 statement on the country's long-term fiscal position (He Tirohanga Mokopuna).
- The Biodiversity Collaborative Group submitted their draft *National Policy Statement for Indigenous Biodiversity* (NPS IB) to Government in October 2018. This was the completion of the first stage of the NPS IB, which will focus on biodiversity management on all land tenures, particularly on private land.
- The New Zealand Government published *He Puna Hao Pātiki: 2018 Investment Stat*ement with a section on natural capital, indicating the importance of considering the natural environment in government balance sheets and investments.

There is good local coordination in some areas of New Zealand, for example, significant biodiversity strategies include the Cape to City project, Reconnecting Northland and Wild for Taranaki. These initiatives involve regional councils, community groups, land owners, tangata whenua and the public and are empowering locals to be involved with ecological restoration, biodiversity management, predator control and monitoring.

iii. Indicators used in this assessment

The assessment above is based on evidence of progress provided in previous sections.

Indicators for the Statutory Management Planning System and Increased tangata whenua involvement in Statutory Planning Processes include:

- The number of statutory planning processes with related redress being implemented under Treaty settlements
- The number of statutory planning submissions received and the tone of comments
- The survey results from relevant South Island Conservation Management Strategy processes
- The examination of lessons learnt and debrief documentations
- The length of approval phases.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Publications and online resources are available for current or completed implementation measures relevant to the national target. Such resources are official information from New Zealand central and local governments and there is high confidence in their validity.

New Zealand Treasury's 2016 statement on the long-term fiscal position:

https://treasury.govt.nz/publications/ltfp/he-tirohanga-mokopuna-2016-statement-new-zealands-long-term-fiscal-position

2018 Investment Statement:

https://treasury.govt.nz/publications/investment-statement/2018-investment-statement

National Policy Statement for Freshwater Management (NPS-FM):

http://www.mfe.govt.nz/fresh-water/regulations/national-policy-statement-freshwater-management/2017-changes

http://www.mfe.govt.nz/fresh-water/technical-guidance-and-guidelines/implementing-national-policy-statement-freshwater

Environmental Reporting programme environmental indicators:

http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home.aspx

Local Government New Zealand's publication Addressing New Zealand's biodiversity challenge: five recommendations for change:

http://www.lgnz.co.nz/assets/Uploads/44744-LGNZ-Biodiversity-wraparound-7-FINAL.pdf

Regional initiatives:

https://www.capetocity.co.nz/

https://reconnectingnorthland.org.nz/

http://www.wildfortaranaki.nz/

v. Level of confidence of the above assessment

☒ Based on comprehensive evidence.

vi. Explanation for the level of confidence

As a number of these implementation measures have already been achieved, the New Zealand Government has confidence that New Zealand is on track to achieve the national target. Evidence used to assess progress towards the target is mainly in the form of official documents, therefore there is high confidence in the validity and accuracy of the evidence provided.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring is not needed.

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information – optional)

A monitoring system does not exist for the national target as a whole. As noted in section iv above, progress and outcomes of implementation measures are accounted for in publications and online resources.

GOAL B: REDUCE PRESSURES ON BIODIVERSITY AND PROMOTE SUSTAINABLE USE

4. MORE OF NEW ZEALAND'S NATURAL ECOSYSTEMS ARE BENEFITING FROM PEST MANAGEMENT.

I. General information

i. Rationale for the national target

Introduced pests affect all of New Zealand's ecosystems and place significant pressure on the indigenous biodiversity of our island nation. The costs of pests are not only borne environmentally, but also economically, through impacts on ecosystem services, and socially through a negative influence on New Zealanders' sense of place.

Introduced invasive weeds, pest animals and diseases are a significant challenge to the health and survival of New Zealand's indigenous biodiversity and the ecosystems that create New Zealand's prosperity. New Zealand is facing a biodiversity crisis due to threats including introduced pests, particularly introduced mammalian predators (including rats and stoats). Introduced exotic species, such as wilding conifers, are also environmentally transformative in some parts of New Zealand.

The Government takes this challenge seriously. In Budget 2018, the New Zealand Government agreed to increase funding for Conservation by NZ$181.6 million over 4 years, the largest increase since 2002. This funding includes NZ$81.3 million to boost landscape-scale predator control, which is vital for protecting threatened species and habitats.

Directly related to Aichi Targets 5, 9, 12, 14 and 19.

Indirectly related to Aichi Target 17.

II. Implementation measures

a) Measure 1 – 'Battle for Our Birds': landscape-scale control of mammalian predators

This measure is also discussed in National Target 9, as a contribution to Measure 2 of that Target.

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department of Conservation 'Battle for Our Birds' programme commenced in 2014 and has operated throughout the reporting period. It is the monitoring and subsequent response programme for major beech forest seed-masting events. Seed-masting is the production of unusually high quantities of seed that occurs in beech forest in masting years. The large flower and seed crops lead to large increases in numbers of introduced rodents (mice and rats) and consequent increases in predators of rodents (particularly stoats). When numbers of introduced rodents and other mammalian predators in New Zealand ecosystems increase, native birds, lizards, and invertebrates are at a high risk of predation.

Seed-masting events occur in response to temperatures during the previous summer and can be predicted These predictions are used to plan for future predator control operations. The 'Battle for our Birds' programme has focussed on preventing local extinctions of highly threatened species resulting from the predator irruptions that follow beech mast events.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The tools/methods for deriving this assessment for 'Battle for our Birds' programme comes from:

- Indicator monitoring, which informs where pest control is most needed.
- Output monitoring, including GIS maps of treated areas, which records actual hectares treated with great accuracy.
- Outcome monitoring, which provides statistical evidence of benefits to indigenous species for survival and nesting success.

'Battle for our Birds' has increased Department of Conservation annual predator control efforts from an average of approximately 200,000 ha to 800,000 ha since 2014. Prior to 2014, approximately 200,000 ha of public conservation land in New Zealand was treated every year using aerially applied highly water-soluble vertebrate pesticide (sodium monofluoroacetate or compound 1080). Improved predator modelling and operational responses mean that the Department of Conservation has been able to dramatically increase the scale of responses to seed-masting events to protect indigenous species.

In 2014, a widespread seed-masting event (a mega-mast) took place. The Department of Conservation, in collaboration with partners, treated approximately 694,000 ha of New Zealand land with aerially distributed biodegradable compound 1080 baits. This action successfully reduced rat and stoat indices of abundance at most treated sites. A similar operation was carried out over more than 800,000 ha in 2016.

Various studies have shown improved survival and recruitment for a range of vulnerable indigenous New Zealand birds and bat species following aerial application of baits containing compound 1080 under the 'Battle for our Birds' programme. Examples of this include:

- Long- and short-tailed bats/pekapeka: short-tailed bats were tracked following 1080 treatment in 2014. The following summer the annual survival rate for the bats was found to be 91%, higher than the prior average survival rate of 83%.
- Rifleman/titipounamu (a forest bird): monitoring in the Marlborough Sounds found that in the first summer following aerial 1080 treatment, riflemen produced two to three times more chicks than those monitored in an area without pest control.
- New Zealand Robin/toutouwai: monitoring in the Marlborough Sounds found that nesting success following aerial 1080 treatment was nine times higher than in the comparison area, resulting in seven times more chicks.
- Rock wren/tuke: in 1080-treated areas three times more chicks were recorded than in a non-treatment area. The benefits continued when the birds bred again a year later. That season, rock wrens in the treated areas were found to have produced five times more offspring than those in the comparison area.
- Kākā (a forest parrot): on average 55% of kākā nests successfully produced chicks up to a year after aerial 1080 treatment but less than 2% of nests produced chicks in the comparison area. This result meant that 30 times as many kākā chicks were produced in the area after 1080 treatment as the area where no 1080 was used. Adult birds were also found to have a higher survival rate in the area where predators were controlled with aerial 1080. Only 3% of adult kākā died in the 1080-treated area, whereas 20% died in the area without pest control.
- Mohua/yellowhead (a forest bird): monitoring in the Mount Aspiring National Park in 2014 found nesting success on average to be twice as high after 1080 treatment than without it. In summer 2015, 89% of mohua/yellowhead nests produced chicks in the Dart and Routeburn valleys, with a 97% adult survival rate.

iv. Relevant websites, web links and files

Information on relating to the 'Battle for our Birds' project can be found here:

https://www.doc.govt.nz/our-work/battle-for-our-birds/battle-for-our-birds-monitoring-results/

https://www.doc.govt.nz/our-work/battle-for-our-birds/

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017

https://www.doc.govt.nz/our-work/battle-for-our-birds/pest-control/

https://www.doc.govt.nz/Documents/conservation/threats-and-impacts/battle-for-our-birds-2017/battle-for-our-birds-brochure-2017.pdf

https://www.doc.govt.nz/nature/pests-and-threats/predator-free-2050/

https://www.doc.govt.nz/news/media-releases/2018/native-bird-numbers-double-after-long-term-predator-control/

https://predatorfreenz.org/

http://pf2050.co.nz/

https://predatorfreenz.org/category/profiles/volunteers/

https://www.doc.govt.nz/our-work/battle-for-our-birds/cameras-capture-the-battle-for-our-birds/

https://www.doc.govt.nz/our-work/battle-for-our-birds/landsborough-valley-bird-numbers-double/

https://blog.doc.govt.nz/2017/09/26/photo-of-the-week-frog-blog/

Elliott, G.; Kemp, J. 2016: Large-scale pest control in New Zealand beech forests. *Ecological Management & Restoration 17*: 200–209.

v. Other relevant information

Case study: the benefits of predator control for kea

Monitoring has shown that predator control with well-timed aerial 1080 treatment and/or traps produces a kea nest success rate of approximately 70% (i.e. at least one chick is produced). Without pest control, approximately 60% of kea nests fail to produce one or more chicks due to predation by stoats or possums. Nest failure is found to increase to over 90% in a stoat plague (in a year following a beech or rimu mast-seeding event).

The Department of Conservation has monitored kea nesting success in Kahurangi National Park since 2009. In the 2015 and 2016 breeding seasons (following aerial 1080 predator control in 2014 and 2016) on average 50% of monitored nests were found to have produced young kea. In previous years (between 2009 and 2014) in the absence of predator control, 2% of nests were successful (Fig. 1). Kea are susceptible to ingesting 1080 and several measures to protect kea are undertaken when 1080 is used in their habitat. Because of this, operations must comply with the Code of practice for aerial 1080 in kea habitat.

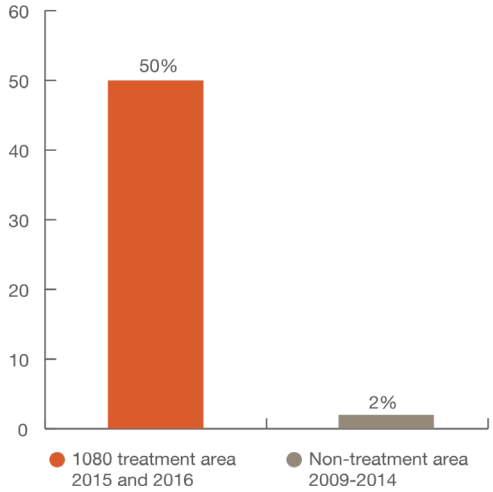

Figure 1. Kea nesting success in Kahurangi National Park with and without predator control.

vi. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

There are large tracts of land in New Zealand that currently have no predator control.

There is a need for further research in many areas related to the control of introduced pest species in New Zealand, including:

- Social science research to better understand people's attitudes to pest control, and to ensure social license for the use of control tools.
- Particular species and what tools and methods would be effective means of control (including mice and hares).
- The effects of climate change, including pathway spread through disturbance and new species introductions via changing weather patterns.

b) Measure 2 – National Wilding Conifer Control Programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *National Wilding Conifer Control Programme* is a renewed effort to remove wilding conifers (introduced conifer species now freely self-seeding) from New Zealand's landscape. When growing in the wrong place, conifer trees are a major threat to New Zealand's ecosystems, landscapes and farms. Wildling conifers out-compete indigenous plants and animals and can remove up to 40% of water from a catchment. They also limit productive land use options on high country farms and severely alter natural landscapes.

In May 2016, the New Zealand Government pledged NZD $16 million over 4 years (2016–2019) for the first phase of the National Wilding Conifer Control Programme. The Programme is based on recommendations in the *New Zealand Wilding Conifer Management Strategy*. It focuses on containing and removing scattered wilding conifers to prevent further spread and to protect farmland, biodiversity, iconic landscapes and sensitive water catchments.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used

The programme to date has been a success. In the first year (2016–2017), the National Programme supported wilding conifer control work across 14 areas at a cost of NZD $7.7 million. Operations exceeded the first-year target for the Programme with infestations controlled over more than 1.2 million hectares of iconic landscapes, conservation areas, high country farms and important water catchments.

In year two it is estimated that 400,000 ha will be treated. More areas of dense infestations are being treated, which costs more per hectare. This removes seed sources and will make long-term control more sustainable. As a result of such success, operations have been accelerated, and Phase I targets may be achieved sooner than 2019.

To support assessment of the work, a new GIS information and mapping system has been developed, led by Land Information New Zealand (LINZ), which allows infestations across New Zealand to be mapped, as well as progress towards controlling them. This *Wilding Conifer Information System* allows wilding conifer infestations to be mapped by field workers using GPS devices, and the information uploaded and shared, including information on infestation density and method of treatment. As a result, wilding conifer data are being measured consistently and at a national level. The new mapping tool is well-suited for larger landholders and stakeholders involved in control efforts. It is used to:

- Map extent and nature of wilding conifer infestations.
- Record control activities carried out.
- Analyse and report on success of the programme by measuring infestation change over time.

iv. Relevant websites, web links and files

http://wildingconifers.org.nz/assets/Uploads/NWCCP-Annual-Report-201618.pdf

http://www.wildingconifers.org.nz/about-us/programme-2/

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017

http://www.wildingconifers.org.nz/

https://www.mpi.govt.nz/protection-and-response/long-term-pest-management/wilding-conifers/

http://www.wildingconifers.org.nz/about-us/land-holders/monitoring-and-mapping/

http://www.wildingconifers.org.nz/about-us/community-groups/

v. Other relevant information

Other achievements of the programme include:

- Collaborative efforts to refine good practice in wilding conifer control and management – starting with the Aerial Basal Bark Application method of control.
- Involvement in a range of policy and regulatory developments that help prevent wilding conifer establishment and spread and allow their efficient control.
- Working with key stakeholders, including Federated Farmers and forest owners, to develop guidance for regional councils in New Zealand on an approach that works for all parties. Regional council pest management plans will require occupiers to keep land clear of wilding conifers following control carried out under the programme.
- The National Environment Standard for Plantation Forestry will require those people planting or replanting forests to assess the risk of spread using the Wilding Conifer Risk Calculator. District council consent will be required for high-risk activities.
- The 'Winning against Wildings' research programme has been funded for 5 years by the Ministry of Business, Innovation and Employment and will provide integrated research.
- The 'Wilding conifer control and beyond' project is co-funded by the New Zealand Wilding Conifer Management Group through the Ministry for Primary Industries' Sustainable Farming Fund. In the second year (2017–2018), a further 371,000 ha was added to the programme.

vi. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

There is a need to retain effective social licence for herbicides. Further research is also needed on the effects of climate change (including pathway spread through disturbance and new species introductions facilitated by different weather patterns).

A long-term programme is needed to successfully achieve long-term control of wilding conifers.

There is ongoing work underway to ensure the *New Zealand Emissions Trading Scheme* (ETS) does not dis-incentivise the removal of wilding conifer forests or significant seed sources, including through the Tree Weed Exemption process.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

ii. Date of assessment

June 2018

iii. Summary of evidence used

There are numerous other pest control programmes underway in New Zealand in addition to 'Battle for our Birds' and wilding conifer control. Pests also include a wider range than introduced predatory pests and exotic weed species (including disease events).

All measures against pests, including but not limited to those wider than Measure 1 and 2 above, have made progress in addressing pest management and the tools used are working. In particular, see Aichi Target 9 for more information about New Zealand's *Predator Free 2050* goal and recent investment announcements.

However, the scale of control needs to be increased significantly to effectively protect New Zealand's indigenous biodiversity and ecosystems. All types of native ecosystems in New Zealand are susceptible to pest invasion and degradation. Despite efforts, many indigenous species remain at risk or threatened (see reporting for Aichi Target 12). Although progress has been made, more needs to be done to protect the risks to New Zealand's indigenous and endemic biodiversity from introduced predatory pest species, herbivores and disease. Recognition of disease events and the development and implementation of effective measures to mitigate or eliminate disease is an area of constant change and growing awareness. More monitoring and research could be done in this area.

All measures are multi-year and as such benefits will continue to accrue over time. In addition, some measures are relatively new and therefore benefits are not expected to be evident for several years.

iv. Indicators used in this assessment

For predator control and wilding control: hectares controlled (for example, 1.3.2.1 Abundance and distribution of invasive pests and weeds).

For predator control: bird breeding and nesting success (for example, 1.4.2.2 Current and predicted trends in the demographics of threatened and at-risk taxa under active management).

More information on the Department of Conservation outcomes monitoring framework indicators can be found here:

https://www.doc.govt.nz/globalassets/documents/our-work/monitoring/omf-intemediate-outcome-1-overview.pdf

v. Description of any other tools or means used for assessing progress

The assessment of progress is based on monitoring data, papers published in scientific journals and conference proceedings, published reports (digital and print) and the social commitment to both causes from numerous sectors. For example, the Predator Free New Zealand Trust provides a map of voluntary work underway:

https://pfnz-geoform.azurewebsites.net/

vi. Relevant websites, web links and files

National situation:

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/

Department of Conservation Annual reports and status and trend reports:

https://www.doc.govt.nz/about-us/our-role/corporate-publications/annual-reports-archive/

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/

National Policy Direction on pest management:

https://www.mpi.govt.nz/dmsdocument/9464/loggedIn

Other:

http://www.biologicalheritage.nz/programmes/risks/public-perceptions

https://www.mpi.govt.nz/protection-and-response/biosecurity/biosecurity-2025/

http://www.mpi.govt.nz/protection-and-response/long-term-pest-management/

http://www.biologicalheritage.nz/programmes/risks

http://www.nextfoundation.org.nz/investment-environment

http://zip.org.nz/

vii. Level of confidence of the above assessment

☒ Based on comprehensive evidence.

viii. Explanation for the level of confidence

Scientific journals and conference proceedings, published reports (digital and print) and the social commitment to both causes from numerous sectors.

ix. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is adequate.

x. Description of the monitoring system for the target (if one exists)

The Department of Conservation's *Biodiversity Monitoring and Reporting System* ensures consistency in data and reporting in relation to biodiversity across public conservation lands. The System takes a comprehensive approach to measuring New Zealand's native biodiversity, with three layers of information ('tiers') operating at different scales, and with varying levels of detail and coverage. The three tiers together build a picture of New Zealand's ecological health. They are:

- Tier 1: Broad-scale monitoring for national context.
- Tier 2: Nationally-consistent monitoring of managed places and species on land, in freshwater and in the ocean to report on management effectiveness.
- Tier 3: Intensive, targeted monitoring for research and evaluation.

5. BIODIVERSITY IS INTEGRATED INTO NEW ZEALAND'S FISHERIES MANAGEMENT SYSTEM

I. General information

i. Rationale for the national target

Taking an ecosystem-based approach to fisheries management integrates sustainable harvesting and wider biodiversity considerations into New Zealand's fisheries management system. This is an important part of achieving conservation of the natural value of marine habitats and biodiversity.

Directly related to Aichi Targets 6 and 7.

II. Implementation Measures

a) Measure 1 – Fisheries Change Programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Following consultation in 2015 and 2016, the New Zealand Government launched a major programme of work to identify and implement improvements to the management of New Zealand fisheries. The *Fisheries Change Work Programme* is considering strategies and options to improve New Zealand's fisheries management system, including proposals to ensure that we have accurate and up-to-date information about commercial fishing activity to inform how fish stocks are managed, how they interact with their broader environment and to ensure the value that all New Zealanders get from fisheries is sustainable.

During the reporting period, Fisheries New Zealand has continued to lead research programmes on Marine Biodiversity and Aquatic Environment issues related to fisheries. Both contribute to integrating components of biodiversity into New Zealand's fisheries management system. Research has progressed on benthic impacts and seabed habitat protection, fish bycatch, protected species captures, abundance, distribution and risk, biological indicators, genetic connectivity, identification guides and a range of topics related to climate change.

The *National Plan of Action for Sharks* directs actions to ensure the conservation, management and sustainable utilisation of sharks caught by New Zealand vessels and in New Zealand waters. The *National Plan of Action for Seabirds* sets practical, biological risk and research and development objectives. In addition, the *New Zealand sea lion/rāpoka Threat Management Plan* has been developed for New Zealand sea lions and the plan already in place for Hector's and Māui dolphins is currently being reviewed. All such plans include monitoring of bycatch and management actions to ensure fishing-related impacts are sustainable, reducing as required and consistent with the objectives in the plans and other policy documents.

Biodiversity continues to be considered in the development of fisheries management measures. For example, robust data are collected, analysed and made publicly available on commercial fisheries interactions with non-fish protected species. These data also underpin risk assessments which allow impacts of fisheries on species of concern to be explicitly considered in management decisions. Protected species bycatch in commercial fisheries has been trending down over time.

Estimated captures of seabirds and of marine mammals including pinnipeds (mostly fur seals) and cetaceans (mostly common dolphins) are provided in Table 2 for the main commercial fishing methods. Where capture rates are too low to allow estimation using statistical models (i.e. cetacean captures in longline fisheries), these numbers represent observed rather than estimated captures. Setnet data are all observed data and the percentage of net observed every year is also provided.

Table 2: Estimated and observed captures of seabirds, pinnipeds, and cetaceans for the most recent five years where estimates are available (data from https://www.dragonfly.co.nz/data/)

Estimated captures					Observed	
					Setnet*	
Year	Trawl	Surface longline	Bottom longline	Total estimated	Observed captures	% setnet observed
Seabirds						
2012/13	2141	728	1878	4747	4	3.5
2013/14	1936	624	2163	4723	2	1.6
2014/15	2033	530	1865	4428	2	3.0
2015/16	1752	773	1935	4460	16	2.6
2016/17	1761	579	1846	4186	3	5.3
Pinnepeds						
2011/12	464	174	0	638	1	0.3
2012/13	632	130	0	762	11	3.5
2013/14	389	204	0	593	4	1.6
2014/15	491	151	0	642	11	3.0
2015/16	379	24	0	403	1	2.6
2016/17	–**	–	–	–	5	5.3
Cetaceans***						
2010/11	167	0	0	167	2	0.8
2011/12	108	0	0	108	0	0.3
2012/13	124	0	0	124	4	3.5
2013/14	119	0	0	119	3	1.6
2014/15	107	0	0	107	1	3.0
2015/16	–	–	–	–	2.6	16.0
2016/17	–	–	–	–	5.3	3.0

* Setnet data are all observed data, with the percentage of metres of setnet observed provided.
** A dash indicates data are not yet available.
*** Cetacean estimates are almost entirely common dolphins.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

The first major implementation step in the *Fisheries Change Work Programme* has been the development of integrated digital systems for reporting, monitoring and verifying commercial fishing activity and catch. Another key step has been changes to regulations allowing for the use of innovative new trawl technologies. These regulatory changes came into effect on 1 October 2017.

iv. Other relevant information
(include websites, web links and files for added information – optional)

More information about the *Fisheries Change Work Programme* can be found here:

https://www.mpi.govt.nz/protection-and-response/sustainable-fisheries/strengthening-fisheries-management/future-of-our-fisheries/

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

No information available.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

June 2018

ii. Summary of evidence used

Implementation of the recommendations identified through the Fisheries Operational review began in 2016. New Zealand's fisheries management has continued to evolve along the continuum of ecosystem-based approaches. In addition, other ongoing work is integrating biodiversity into fisheries management systems:

- Continuing work towards digital monitoring of commercial fishing and catch, including discards.
- A comprehensive Threat Management Plan for New Zealand sea lions was released in 2017.
- A new spatially-explicit risk assessment for Hector's and Maui dolphins has been developed and is currently subject to scientific review.
- 5-year updates to the *National Plans of Action* for seabirds and sharks are currently being prepared.
- The *Sustainable Seas National Science Challenge* commenced in 2015 and is hosted by the National Institute of Water and Atmosphere (NIWA). The Challenge has been tasked with enhancing the utilisation of marine resources within environmental and biological constraints. Its research is developing knowledge and tools to underpin ecosystem-based management. This will provide decision makers with up-to-date information about marine ecosystems, improving decision making and the health of our seas. More information on *National Science Challenges* can be found in information about measure 2 (National Science Challenges) for National Target 18.
- Operational research to better understand the effects of fishing on the aquatic environment. Sophisticated risk assessments (periodically updated) have also been used by multiple agencies and stakeholders to identify priorities for research and management.
- The Aquatic Environment and Biodiversity Annual Review 2017: a summary of environmental interactions between the seafood sector and the aquatic environment. This review summarises environmental interactions between the seafood sector and the aquatic environment. More information can be found here: https://www.mpi.govt.nz/dmsdocument/27471/loggedIn
- Refreshed identification guides have been commissioned for use by the public, industry, researchers, and fisheries observers. The most recent commission for a refreshed identification guide is for fish (commissioned in late 2016).

iii. Indicators used in this assessment

☒ No indicator used.

The assessment above is based on evidence of progress as provided in previous sections.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Publications and online resources are available for implementation measures relevant to the national target. Such resources are official information from New Zealand's central and local governments and there is high confidence in their validity. A summary of information used in this assessment is available in the *Aquatic Environment and Biodiversity Annual Review 2017: a summary of environmental interactions between the seafood sector and the aquatic environment* available at:

https://www.mpi.govt.nz/dmsdocument/27471-aquatic-environment-and-biodiversity-annual-review-aebar-2017-a-summary-of-environmental-interactions-between-the-seafood-sector-and-the-aquatic-environment

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

The data collected, analysed and made publicly available on commercial fisheries interactions with non-fish protected species are used to underpin risk assessments which allow impacts of fisheries on species of concern to be explicitly considered in management decisions.

Where capture rates are too low to allow estimation using statistical models (i.e. cetacean captures in longline fisheries), these numbers represent observed rather than estimated captures. These data show that protected species bycatch in commercial fisheries has been trending down over time.

Nonetheless, continued measurement effort to verify that these observed downward trends in bycatch are accurate and sustained over time is needed, especially given the observed variability and scale of interactions.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring is not needed.

viii. Description of the monitoring system for the target (if one exists)
Include websites, web links and files for added information – optional)

A monitoring system does not exist for the national target as a whole. As noted in section iv above, progress and outcomes of implementation measures are accounted for in publications and online resources.

6. IMPROVED UNDERSTANDING OF THE IMPACTS OF CLIMATE CHANGE ON BIODIVERSITY INFORMS BETTER MANAGEMENT OF VULNERABLE ECOSYSTEMS AND INDIGENOUS SPECIES

I. General information

i. Rationale for the national target

National Target 6 encourages the development of active linkages between climate change research and on-the-ground biodiversity management. It takes an integrated approach to climate change impacts, rather than focusing only on existing threats.

Mainly related to Aichi target 10.

Also related to Aichi targets 2, 6, 9, 11, 12, 14, 15, 17, 19.

II. Implementation measures

a) Measure 1 – Coastal risk assessment

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department of Conservation has focussed on acquiring knowledge about which ecosystems and species are most climate sensitive and therefore at particular risk from climatic change. Information from the Department of Conservation long-term biodiversity monitoring programme as well as specific research programmes has been used to inform this work.

One specific measure taken to advance the National Target is a national risk screening assessment of Department of Conservation assets vulnerable to coastal inundation and sea-level rise, including ecosystem and species management units. The assessment prepared by the Department of Conservation in August 2018 includes recommendations on how to prioritise planning and response to these risks.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The coastal risk assessment utilises a Geographic Information System (GIS) analysis to identify Department of Conservation assets, features and classifications, including priority areas for biodiversity management, lying within a 'potential coastal inundation risk zone'. This zone represents low-lying coastal land (less than 3 m above mean sea level) that is currently at risk of inundation from the sea during high tides and storm events. The analysis relies on a national elevation contour dataset produced by NIWA.

iv. Other relevant information (Include websites, web links and files for added information – optional)

Department of Conservation operational managers are already addressing climate change risks to specific native species and sites. Example case studies demonstrating this work are:

- A management plan has been prepared for the Nationally Critical Australasian bittern/matuku (*Botaurus poiciloptilus*) at Lake Wairarapa, a low-lying, near-coastal lake-wetland complex in the lower North Island of New Zealand. The lake is a stronghold for the bittern but is vulnerable to climate-related changes in flooding, water levels and salinity which could affect its value as bittern habitat. The lake is also the centrepiece of a landscape-scale ecological restoration programme, and the species management plan will inform restoration planning to ensure planting and other activities anticipate climate-related changes so that bittern habitat is maintained and increased. The species management plan is currently in draft and restoration work is ongoing. More information can be found at: http://www.waiwetlands.org.nz
- The need for a planned response is illustrated by the effects of recent storm events at two important sites on the West Coast of the South Island of New Zealand. In 2016 severe coastal erosion caused by a winter storm destroyed the remaining habitat of the Nationally Critical cobble skink (*Oligosoma* aff. *infrapunctatum* "cobble") at Granity and the species is now extinct in the wild. During 2018, cyclones Fehi and Gita caused sea surges over the remaining habitat of the Nationally Critical Chesterfield skink (*Oligosoma* aff. *infrapunctatum* "Chesterfield") prompting the establishment of a captive insurance population.

Case studies from the *Climate Changes, Impacts and Implications for New Zealand project* can be found at: http://ccii.org.nz/

- Alpine http://ccii.org.nz/research-aims/ra2/alpine/
- Uplands http://ccii.org.nz/research-aims/ra2/uplands/
- Lowlands http://ccii.org.nz/research-aims/ra2/lowlands/
- Coastal http://ccii.org.nz/research-aims/ra2/coastal/
- Marine http://ccii.org.nz/research-aims/ra2/marine/

Relevant Department of Conservation topics and publications can be found here: https://www.doc.govt.nz/our-work/climate-change-and-biodiversity/

Impacts on native biodiversity: https://www.doc.govt.nz/our-work/climate-change-and-biodiversity/impacts-on-native-biodiversity/

Adapting to climate change: https://www.doc.govt.nz/our-work/climate-change-and-biodiversity/adapting-to-climate-change/

Freshwater conservation and climate change: https://www.doc.govt.nz/our-work/climate-change-and-biodiversity/freshwater-conservation-and-climate-change/

Climate change adaptation and mitigation by other sectors: https://www.doc.govt.nz/our-work/climate-change-and-biodiversity/climate-change-adaptation-and-mitigation-by-other-sectors/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

The coastal risk assessment highlights the complexity of one aspect of climate change and how it will affect biodiversity. Although it shows how much can be achieved with existing information, it also highlights the need for further assessment of high-risk sites and the desirability of carrying out similar assessments in other environments. Ongoing organisational support and commitment to implementation are required to work towards the National Target.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

October 2018

ii. Summary of evidence used

Understanding the impacts of climate change on biodiversity in New Zealand has improved during the reporting period, but more could be done. See reporting at National Target 7 (Measure 1) on the development of a National Policy Statement for Indigenous Biodiversity. The draft Statement includes a requirement that councils use the growing evidence base for understanding climate change impacts to plan biodiversity management actions more effectively. The draft Statement does not yet have legal status and will be finalised after public consultation occurs in 2019.

New Zealand has commenced work to better understand the sensitivity and risk of native biodiversity to climate change. Research has taken place to understand the effects of coastal inundation on biodiversity at Waituna Lagoon in Southland; the effects of temperature on physiology; breeding of hibernating species including long-tailed bats and rockwren; and potential changes in pest distribution (including rodents in beech forest and the distribution of myrtle rust). The Department of Conservation will use this improved knowledge to inform better management of vulnerable ecosystems and species, including by using a new national risk screening assessment to identify areas, ecosystems and species that are vulnerable to coastal inundation.

The wide range of agencies whose roles include elements of biodiversity management means that a variety of approaches and stages is evident. There is an overall trend towards increased awareness and focus on the effects of climate change.

Some regional councils have undertaken significant recent work to better understand the impacts of climate change in their regions. Five councils have contracted NIWA to produce regional-scale high-resolution maps and detailed reports that include predictions of the potential impacts of climate change on local biodiversity.

Councils are also undertaking local research and monitoring projects to help determine how ecosystems are responding to climate changes. For example, Greater Wellington have developed a protocol for monitoring changes in local coastal dune areas, ecosystems that are predicted to be particularly susceptible to the effects of climate change. This is illustrated by documentation including the Climate Changes, Impacts and Implications for New Zealand project case studies referred to above, the Stocktake Report by the Climate Change Adaptation Technical Working Group (CCATWG), the Climate Change Commission proposals and Guidance for Local Government on Coastal Hazards.

During the reporting period, the *Fisheries New Zealand Marine Biodiversity Research Programme* has invested in identifying climate change and ocean acidification risks to deepsea corals and other calcareous habitats, and a range of commonly-taken fish and shellfish in New Zealand.

Another initiative has been the *Deep South* / *Te kōmata o te tonga* National Science Challenge. This is undertaking research to enable New Zealanders to adapt, manage and thrive in a changing climate, and has been working with Māori in coastal communities potentially impacted by sea-level rise. Deep South research aims to understand the role of the Antarctic and Southern Ocean in determining New Zealand's future climate.

iii. Indicators used in this assessment

☒ No indicator used.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Progress towards this National Target has been assessed through technical publications, legislation and policy development, resource management planning and other documentation.

An overview of adaptation requirements was produced during 2017–2018 by a specialist New Zealand-Government-appointed panel. The panel's final report fed into the government's planning for a new institutional framework. More information can be found here:

http://www.mfe.govt.nz/sites/default/files/media/adapting-to-climate-change-stocktake-tag-report-final.pdf

Central government guidance for local coastal management including how to plan for biodiversity can be found here:

http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-guide-final.pdf

For information on regional climate change projections and impacts, see here:

https://www.niwa.co.nz/climate/research-projects/providing-climate-change-advice-to-new-zealands-regions

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

A monitoring system does not exist for the national target as a whole. National Target 6 is an aspirational and qualitative target with two components. As noted above assessment can be based on expert knowledge because an improved understanding of the impacts of climate change on biodiversity has been gained, and this is being used to inform better management in various domains of management including national climate change response, coastal management and threatened species management.

vii. Adequacy of monitoring information to support assessment

☒ No monitoring system in place.

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

No information available as not applicable.

7. SUSTAINABLE USE AND PROTECTION OF BIODIVERSITY IS PROMOTED THROUGH IMPROVED NATIONAL GUIDANCE, INFORMATION AND INDUSTRY PRACTICES.

I. General information

i. Rationale for the national target

Greater national direction, information and industry action is expected to lead to improved outcomes for the sustainable use and management of biodiversity in New Zealand.

Directly related to Aichi targets 4, 7 and 8.

Not indirectly related to any Aichi targets.

II. Implementation measures

a) Measure 1 – A national policy statement on biodiversity developed by stakeholders

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

In August 2016 a stakeholder-led Biodiversity Collaborative Group (BCG) was announced by the New Zealand Government. The purpose of the BCG is to develop a *National Policy Statement on Indigenous Biodiversity* (NPS-IB). The NPS-IB will provide national direction to councils on managing biodiversity under the Resource Management Act 1991 (RMA). The NPS-IB will set out the objective and policies for managing natural resources to maintain indigenous biodiversity and provide clear direction to local authorities on their responsibilities for managing indigenous biodiversity.

The BCG includes representatives from tangata whenua, landholders, infrastructure providers, environmental groups and others. This is to ensure it has a robust, evidence-based approach to policy with outcomes that are inclusive, effective and enduring. Government officials have supported the BCG's work and participated in discussions since its establishment in 2016.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The collaborative group provided its draft statement and recommendations for complementary measures to the New Zealand Government in October 2018. Government will now develop a statement based on the draft provided by the collaborative group. The national policy statement on indigenous biodiversity will be finalised through a process that includes public consultation.

https://www.mfe.govt.nz/news-events/indigenous-biodiversity-report-released

iv. Other relevant information (include websites, web links and files for added information – optional)

Information on the stakeholder-led group leading the development of the NPS-IB can be found here:

https://www.biodiversitynz.org/

Information on how unitary, district and regional councils are managing biodiversity through planning documents under the RMA can be found here:

http://www.mfe.govt.nz/publications/biodiversity/biodiversity-planning-and-management-research.

This research supports the work of the biodiversity collaborative group to develop a *National Policy Statement for Indigenous Biodiversity* and recommendations for supporting measures.

v. *Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)*

No information available.

b) Measure 2 – Improved decision-making on agricultural land use to maintain soil and water health

i. *Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.*

During the reporting period work has taken place to increase the efficiency of agricultural production systems by improving decisions around land use, maintaining soil and water health and enhancing flexibility in land management and farming practices.

The Ministry for Primary Industries (MPI) and Ministry for the Environment (MFE) have worked with regional councils and industry bodies to encourage the uptake of farm environment plans. Farm environment plans outline a tailored management option for individual locations and farm systems. They were introduced in 2018 and are increasingly being recognised as an important tool for improving water quality.

The Good Farming Practice: Action Plan for Water Quality was released in June 2018 by farming sector leaders in New Zealand and New Zealand local and central government. This Action Plan commits to every farmer and grower having a farm environment plan to address the key water quality risks associated with their business. Work has also been undertaken to develop a national certification scheme for advisors preparing farm environment plans. Farm environment plans also help provide farmers and councils with confidence in the competency of advisors' expertise in identifying good management practices, contaminant loss risks, and associated mitigation strategies.

ii. *Effectiveness of measure in achieving desired outcomes*

☒ Measure taken has been partially effective.

iii. *Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)*

The Good Farming Practice: Action Plan for Water Quality 2018 is an industry-led voluntary approach to accelerate the uptake of good farming practices for improving water quality, to measure and promote adoption of better practices by industry, to assess the impact and benefit of those farming practices, and to communicate progress to the wider public. While the Action Plan is focussed on water quality, it encourages taking a holistic approach that considers climate change, biodiversity and land use outcomes when looking at measures to improve water quality.

Manaaki Whenua Landcare Research Enhancing Biodiversity portfolio website:

https://www.landcareresearch.co.nz/science/portfolios/enhancing-biodiversity

Ministry for the Environment's *It's everybody's business: Whole Farm Plans – A vehicle for implementing policy* publication:

http://www.mfe.govt.nz/publications/fresh-water/it%E2%80%99s-everybody%E2%80%99s-business-whole-farm-plans-vehicle-implementing-policy

Website for Federated Farmers' *Good Farming Practice: Action Plan for Water Quality 2018*:

http://www.fedfarm.org.nz/FFPublic/Policy2/National/Good_Farming_Practice-Action_Plan_for_Water_Quality_2018.aspx

iv. *Other relevant information (include websites, web links and files for added information – optional)*

Improved nutrient management on agricultural land has been supported by the *Clearview Innovations Primary Growth Partnership programme* during the reporting period. This programme has aided development of new products that help to increase on-farm productivity and reduce nutrient losses to the environment. A main focus of the programme has been on products that help improve water quality by reducing pollution. The *Nutrient Management Adviser Certification Programme* (NMACP) is an industry-wide

certification programme that has operated through the reporting period. The NMACP has been targeted at those people and agencies that provide nutrient management advice to New Zealand farmers, with over 200 certifications awarded since 2013.

A number of industry bodies in New Zealand have also released environmental strategies or targeted support for their sectors to improve biodiversity management during the reporting period. For example, 'thriving biodiversity' is one of the four pillars in *Beef and Lamb New Zealand's Environment Strategy and Implementation Plan 2018–2022* (released in May 2018).

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

The New Zealand Government has been considering further clarity and direction on objectives and policy and regulatory support to further assist a strong implementation uptake of farm environment plans.

c) Measure 3 – A national environmental standard for plantation forestry

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *National Environmental Standards for Plantation Forestry* (NES-PF) came into effect in May 2018. The NES-PF provides nationally consistent regulations to manage the environmental effects of forestry. The NES-PF is being implemented to improve consistency and reduce negative impacts in the management of plantation forestry. It comprises a comprehensive set of regulations to manage core plantation forestry activities at a national level and marks a significant change in the way forestry activities are managed in New Zealand under the Resource Management Act 1991 (RMA). Some local rules also remain in place to continue the protection and management of unique and sensitive environments.

Although the NES-PF does not regulate for vegetation clearance prior to afforestation, it does contain rules relating to bird nesting, instream activities and native vegetation clearance within plantation forests (for example, native vegetation that grows up under exotic trees). Activities which risk disturbing native fish spawning in waterways must comply with regulations relating to spawning times using a national database.

Prior to the NES-PF coming into effect, the environmental effects of forestry activities were managed through local government plans. As a result, the rules varied within and between regions and have been problematic for forest owners managing forests in two or more regions in New Zealand, or those that had forests straddling council boundaries. The NES-PF covers eight core plantation forestry activities. These core activities can be carried out as permitted activities subject to conditions which seek to manage potential environmental effects. Conditions are based on good forestry practices, such as:

- Setbacks when planting next to rivers, lakes, wetlands and coastal areas. These unplanted strips protect against erosion and sedimentation resulting from forestry activities.
- Management plans for earthworks, forest quarrying and harvesting activities to identify environmental risks and how they will be managed.
- Identification and maintenance of stormwater and sediment control measures for forestry activities.

Councils and foresters are supported in their planning and management by tools such as the erosion susceptibility classification, the fish spawning index, and the wilding tree risk calculator.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Significant planning and consultation took place in New Zealand before the NES-PF came into effect on 1 May 2018. After the NES-PF was launched, Te Uru Rākau (Forestry New Zealand) hosted a nationwide series of introductory workshops to help foresters and councils better understand the NES-PF.

National Environmental Standards Plantation Forestry regulation overview:

http://www.mfe.govt.nz/publications/rma/national-environmental-standards-plantation-forestry-overview-of-regulations

National Environmental Standards for Plantation Forestry:

http://www.mpi.govt.nz/growing-and-harvesting/forestry/national-environmental-standards-for-plantation-forestry

iv. Other relevant information
(include websites, web links and files for added information – optional)

Information on the National Environmental Standards for Forestry:

https://www.mpi.govt.nz/growing-and-harvesting/forestry/national-environmental-standards-for-plantation-forestry/

http://www.mfe.govt.nz/land/regulations/national-environmental-standards-plantation-forestry/about-standards

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

No information available.

III. Assessment of Progress

i. Category of progress and date of assessment

☒ On track to achieve target.

April 2018

ii. Summary of evidence used

Greater national direction, information and industry action is improving outcomes for the sustainable use and management of biodiversity in New Zealand. Evidence of progress towards meeting the target during the reporting period includes:

- The stakeholder-led collaborative group delivered recommendations to the New Zealand Government in September 2018 for a *National Policy Statement on Indigenous Biodiversity* (NPS-IB). The group is currently tracking towards delivery of the draft National Policy Statement and its recommendations on complementary measures, as per the agreed milestones in its project plan (see measure 1 in section II, above).
- New Zealand Government, regional councils, industry bodies and landowners are working to increase the uptake of farm environment plans as a tool for improving water quality on farms. Industry groups in New Zealand have been involved with encouraging the uptake of farm environment plans. Dairy New Zealand and Beef and Lamb New Zealand have supported their members in the development of plans, which include some biodiversity aspects (see measure 2 in section II, above).
- The *Freshwater Improvement Fund* is a major New Zealand Government fund with a committed NZD $100 million over 10 years to improve the quality and availability of New Zealand's water (lakes, rivers, streams, groundwater and wetlands). The Fund has helped communities manage freshwater within environmental limits and, since its launch in 2017, NZD $47 million has been allocated. The fund has supported major projects in vulnerable catchments that are showing signs of stress but have not yet reached a 'tipping point' as it is more cost-effective to prioritise such catchments to achieve better environmental outcomes. Increased biodiversity is one of several possible co-benefits that projects have needed to demonstrate to be eligible for assistance.
- Through the *National Policy Statement for Freshwater Management* (NPS-FM) and the Land Air Water Aotearoa website (LAWA, https://www.lawa.org.nz/), the Ministry for the Environment and regional authorities in New Zealand have accounted for water taken out of lakes, rivers, wetlands, groundwater

and aquifers, along with the sources and amounts of contaminants going into them. Under the NPS-FM *Accounting Requirements and Resource Management Regulations (2010)*, consent holders for water takes are required to install a verified water measuring device and provide data to regional councils each year for water takes of 5 litres per second or larger. Regional councils monitor and enforce the regulations, which override existing consent conditions (unless they are more stringent).

- The LAWA database provides an interactive map of New Zealand's regional council environmental data, and information on metrics like water quality and land cover. The LAWA website is operational and publicly available. It contains viewable regional data in interactive maps and allows for the investigation of environmental trends and specific topics. The project has been limited by human and financial resources; however, work during the reporting period has improved the quality, timeliness and usefulness of the accounting statistics available.
- The *Our Land and Water National Science Challenge* (OLAW) has been established with the goal of enhancing primary sector production and productivity while maintaining and improving our land and water quality for future generations. The Challenge brings together research and industry partners to deliver new research, data and information to improve land and freshwater ecosystems in production areas. This approach has leveraged the considerable experience New Zealand has in collaborative processes (as exemplified by the *Land and Water Forum*). The wide scope of OLAW will help make sure the way New Zealanders use and manage land and water will help to sustain vulnerable ecosystems.
- A number of projects in the tourism sector to identify and pursue outcomes that promote sustainable use of New Zealand's natural resources by tourists have made progress during the reporting period. Increased recognition of the impact that tourism has on New Zealand's environment has led to New Zealand's Parliamentary Commissioner for the Environment investigating tourism's effect on the natural environment. One thousand New Zealand tourism operators signed up to the Tourism Industry Aotearoa (New Zealand's tourism association) *New Zealand Tourism Sustainability Commitment* (released in November 2017). The Commitment aims to ensure economic, environmental and social sustainability underpin New Zealand's tourism industry and establishes eight industry-level sustainability goals and 14 commitments that individual businesses can achieve to help the industry reach the goals.
- The Ministry for Primary Industries has funded a number of programmes promoting afforestation and erosion and sedimentation reduction. These include the *Hill Country Erosion programme*, *Afforestation Grant Scheme* (AGS), *Erosion Control Funding programme* and *Sustainable Farming Fund*. The Hill Country Erosion programme has funded six completed projects to date (NZD $16,702,997 in funding) and has six projects in progress (NZD $8,770,904 in funding).
- Afforestation is also being supported and encouraged through the *Billion Trees programme*. Increased afforestation will have flow-on impacts on reducing erosion, contributing to carbon stocks and providing habitat for native species.
- The *National Environmental Standards for Plantation Forestry* (NES-PF) were published on 3 August 2017 and came into force on 1 May 2018. The NES-PF provides nationally consistent regulations to manage the environmental effects of forestry and marks a significant change in the way forestry activities are managed under the RMA (see measure 3 in Section II, above).
- Industry groups have worked alongside government during the reporting period to encourage the uptake of farm environment plans for good environmental management and improving water quality.
- Ngāi Tahu Farming have worked with the Department of Conservation to apply agricultural 'best practice' approaches in North Canterbury. This has included retiring riparian strips and planting over one million native trees.

iii. Indicators used in this assessment

☒ No indicator used. The assessment above is based on evidence of progress as contained in this report (including in section II).

iv. Description of any other tools or means used for assessing progress
(Include websites, web links and files for added information – optional)

Publications and online resources are available for current or completed implementation measures relevant to the national target. Such resources are official information from the local and central government agencies in New Zealand and there is high confidence in their validity.

Additional information that has contributed to this assessment includes:

- The Our Land and Water National Science Challenge is undergoing a mid-way review.
- The *Pioneering to Precision – Application of Fertiliser in Hill Country programme* was established in 2013 and has run throughout the reporting period (and is due to conclude in October 2020). This programme has improved fertiliser practices via remote sensing of farm nutrient status and precision application of fertiliser. The programme has NZD $5.17 million in funding.

More information on the *Pioneering to Precision – Application of Fertiliser in Hill Country programme* can be found here:

https://www.mpi.govt.nz/funding-and-programmes/primary-growth-partnership/primary-growth-partnership-programmes/pioneering-to-precision-application-of-fertiliser-in-hill-country/

Biodiversity Collaborative Group (BCG) website:

https://www.biodiversitynz.org/

Ministry for the Environment report to the BCG on how regional, unitary and district councils are managing biodiversity through planning documents under the RMA:

http://www.mfe.govt.nz/publications/biodiversity/biodiversity-planning-and-management-research

Our Land and Water National Science Challenge website and recent newsletter:

www.ourlandandwater.nz

https://mailchi.mp/0ff6dc213e76/latest-news-update-may-2018?e=a86fb44a82

Parliamentary Commissioner for the Environment work on water and land management:

http://www.pce.parliament.nz/our-work/current-investigations

National Policy Statement for Freshwater Management:

http://www.mfe.govt.nz/fresh-water/regulations/national-policy-statement-freshwater-management

Nutrient Management Adviser Certification Programme:

http://www.nmacertification.org.nz/site/nutrient_management/

Links to Ministry for Primary Industries erosion funds:

http://www.mpi.govt.nz/funding-and-programmes/environment-and-natural-resources/hill-country-erosion-programme/funded-hill-country-erosion-programmes/

https://www.mpi.govt.nz/funding-and-programmes/forestry/afforestation-grant-scheme/

Land Air Water Aotearoa interactive website displaying regional council data:

https://www.lawa.org.nz/

The Marine Stewardship Council are certifying fisheries and supporting and monitoring protection of sea bird species. See Southern Sea Bird Solutions for more details: https://southernseabirds.org/

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

As above. Publications and online resources are available for current or completed implementation measures relevant to the national target. Such resources are official information from regional and central government agencies in New Zealand central and there is high confidence in their validity.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information – optional)

Monitoring exists for some of the projects and initiatives under this target (for example, reviews of the *Our Land and Water National Science Challenge*), however, there is no single monitoring scheme for the target itself.

8. INVASIVE ALIEN SPECIES AND PATHWAYS ARE IDENTIFIED AND PRIORITISED, PRIORITY SPECIES ARE CONTROLLED OR ERADICATED, AND MEASURES ARE IN PLACE TO MANAGE PATHWAYS TO MINIMISE LIKELIHOOD OF THEIR INTRODUCTION AND ESTABLISHMENT

I. General information

i. Rationale for the national target

New Zealand has a strong focus on managing high risk pathways and biosecurity risks before and at the border due to the risk posed to our unique environmental biomes and natural resource-based economy. Marine, freshwater and terrestrial pests pose significant risks to our native species, our environment and ability to trade primary goods. For these reasons controlling and eradicating introduced pests and preventing further incursions is a high priority for New Zealand.

Mainly related to Aichi target 9

Not indirectly related to any other targets

II. Implementation measures

a) Measure 1 – Review of pest management plans

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Pest management plans form an important part of New Zealand's management of established pests and diseases under the Biosecurity Act 1993. These plans are developed by regional councils and pest management agencies in New Zealand. The *National Policy Direction for Pest Management* (NPD) provides guidance for creating or reviewing pest management plans in New Zealand and ensuring they remain fit-for-purpose. Several regional pest management plans in New Zealand are currently being reviewed and will be assessed to ensure alignment and consistency with the NPD.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

Six regional pest management plan reviews (out of 16 regional plans) have been finalised since the NPD was released in August 2015 and at least five regional pest plans are currently undergoing review. Two new regional pathway plans have also been developed under the Biosecurity Act. A national pest management plan for kauri dieback is currently under development. To date, all pest plan review proposals and new pathway plans have broadly reflected the requirements of the NPD.

iv. Other relevant information
(include websites, web links and files for added information – optional)

http://www.mpi.govt.nz/protection-and-response/biosecurity/national-policy-direction-for-pest-management/

Industry engagement and contribution:

http://www.mpi.govt.nz/protection-and-response/biosecurity/government-industry-agreement/

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

Reviewing pest management plans is subject to resourcing constraints of regional councils and pest management agencies.

A lack of data sharing between regions means that pest management plans may not be 'future proofed' against pests that may not currently be present but could extend their range and become a risk.

b) Measure 2 – Development and implementation of the Biosecurity 2025 programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *Biosecurity 2025* programme is a partnership between communities, organisations, tangata whenua and local, regional and central government. The aim of the *Biosecurity 2025* programme is to make New Zealand's biosecurity system more resilient and future-focused to protect our taonga (sacred species) and industry from pests and diseases.

Biosecurity 2025 sets out goals and outcomes and will identify the areas of the biosecurity system most in need of resources and reviews. This will include comprehensive reviews of the governance structure of the biosecurity system as well as discussing the development of potential pathways and new pest management plans.

The Biosecurity 2025 Direction Statement and Implementation Plan was developed during the reporting period to deliver a more resilient and agile biosecurity system. The Plan establishes a framework for on-going programmes of work across the biosecurity system by Māori, central and local government, industry and community groups.

Biosecurity 2025 is also pushing development and investment in resilience through Strategic Direction 2: 'A Toolbox for Tomorrow'. This direction has a focus on science and research needs. Other key Strategic Directions include 'Smart, Free-flowing Information' (standardising and sharing data) and 'Effective Leadership and Governance'.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

Good progress has been made in the *Biosecurity 2025* programme. It is currently on schedule to meet the target of full implementation by 2025. Increased biosecurity awareness has already led to increased biosecurity activities at the Port of Tauranga and in the 'Crofton Downs Predator Free' zone. An engagement plan for Strategic Direction 1: 'A biosecurity team of 4.7 million' was written in 2018.

Information on Biosecurity 2025 can be found here:
http://www.mpi.govt.nz/protection-and-response/biosecurity/biosecurity-2025/

iv. Other relevant information
(include websites, web links and files for added information – optional)

No information available.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

There is currently a lack of tools on certain aspects of biosecurity, which effects the capacity of the biosecurity system to detect and prevent unwanted organisms entering New Zealand. Marine biosecurity, in particular, currently suffers from a lack of tools and science to combat the wide array of marine pests that pose risks to New Zealand's marine environment. Increasing pressures on the biosecurity system through increased trade and travel means the biosecurity system needs to be capable of handling increased risk factors.

Biosecurity 2025 Strategic Direction 2: 'A Toolbox for Tomorrow' has identified this risk. Actions have been set out to address these concerns, by first taking stock of all current science and tools and then aiming to prioritise the sectors most in need.

c) Measure 3 – Development of craft risk management standards

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Ministry for Primary Industries has taken proactive actions to ensure New Zealand is as prepared as possible for potential pest incursions. This is by the preparation of response programmes and the management of responses to biosecurity incidents. For example, the *Craft Risk Management Standard for Biofouling* has made the biofouling requirements stricter for vessels entering New Zealand waters in order to further decrease the risk of marine pests arriving and establishing.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Craft Risk Management Standard for Biofouling came into force in New Zealand in May 2018.

iv. Other relevant information (include websites, web links and files for added information – optional)

More information on biofouling management can be found here:

https://www.mpi.govt.nz/importing/border-clearance/vessels/arrival-process-steps/biofouling/biofouling-management/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Monitoring compliance of the *Craft Risk Management Standard for Biofouling* presents challenges. Further investment in developing improved tools and means of ensuring compliance is required.

d) Measure 4 – Priority invasive species are controlled or eradicated

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Ministry for Primary Industries, Department of Conservation, tāngata whenua and other organisations have undertaken significant management programmes against pests and diseases that threaten New Zealand's biodiversity. These include efforts to combat the soil-borne oomycete, *Phytophthora agathidicida* causing kauri (*Agathis australis*) dieback, myrtle rust (*Austropuccinia psidii*) which threatens native plants in the Myrtaceae family, and the great white butterfly (*Pieris brassicae*) which put at risk native and highly threatened plant species in the Brassicaceae family.

In 2016, the New Zealand Government adopted a vision of a Predator Free New Zealand. The *Predator Free 2050* goal has been set as eradicating possums, rats, and stoats in New Zealand by 2050. In 2018, the New Zealand Government announced additional funding of NZD $81.28 million for the next 4 years to suppress species that predate on indigenous and endemic biodiversity in priority ecosystems, to protect and

increase biodiversity on offshore islands, and to develop more effective and efficient predator control methods.

Management programmes typically involve science, public engagement, regulation and operational work to directly control the invasive species, manage spread pathways and conduct surveillance.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Disease surveillance work indicates that kauri dieback and myrtle rust continue to spread, albeit at likely a slower rate than would have occurred in the absence of management. Locally important sites, individual trees and species have been protected through a range of treatments and pathogen vector management, and considerable stores of germplasm have been made to safeguard genetic variation.

Surveillance has indicated that the great white butterfly has been eradicated from New Zealand. The area of New Zealand that is free of introduced predators or where they are under sustained control has increased significantly.

iv. Other relevant information (include websites, web links and files for added information – optional)

https://www.kauridieback.co.nz/

https://www.mpi.govt.nz/protection-and-response/responding/alerts/myrtle-rust/

https://www.doc.govt.nz/nature/pests-and-threats/animal-pests/great-white-butterfly/

https://www.doc.govt.nz/nature/pests-and-threats/predator-free-2050/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Public participation and compliance are major challenges for most management programmes. Behaviour change to reduce the risk of spreading pests and pathogens and to report observations has proven difficult and requires further social science involvement. Tools to manage diseases and pests over large scales in natural environments are often limited. The outcomes of interactions between new invasive species and native species are very difficult to predict and require improvement in our risk assessment tools. Programmes involving multiple agencies and jurisdictions presents challenges for effective collaboration and delivery.

The Biosecurity 2025 Programme launched a significant awareness campaign in 2018 – Ko Tātou. Resources are available for central and local government and community groups to use for increasing participation and promoting behaviour change.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

April 2018

ii. Summary of evidence used

The evidence for this assessment draws on invasive species surveillance and monitoring, submissions from practitioners and confirmation of regulations or monitoring of the regulatory process for pest management plans.

iii. Indicators used in this assessment

Review of pest management plans and control and eradication of priority invasive species – as an indicator of effective management of priority pests and diseases.

Biosecurity 2025 Direction Statement implementation – as an indicator of overall improvements in New Zealand's biosecurity system.

Craft Risk Management Standard implementation – as an indicator of managing priority pathways, in this case marine bio-fouling.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

http://www.mpi.govt.nz/biosecuritynz

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

New Zealand has a comprehensive approach for managing risks posed by invasive alien species. While the above indicators provide context for particular parts of the biosecurity system, the range of activities for managing risks are diverse and extensive. Confidence in robustness of measures is high.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is adequate.

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

Performance of the biosecurity system is monitored by Biosecurity New Zealand, who are part of the Ministry for Primary Industries. This is achieved through individual business unit monitoring and reporting, collective monitoring and analysis internally by the Biosecurity Board, and through the monitoring of the external Biosecurity Ministerial Advisory Committee.

http://www.mpi.govt.nz/about-us/our-structure/advisory-committees/biosecurity-ministerial-advisory-committee

GOAL C: SAFEGUARDING ECOSYSTEMS. SPECIES AND GENETIC DIVERSITY

9. IMPROVED TERRESTRIAL AND FRESHWATER ECOSYSTEM PROTECTION AND INTEGRITY

I. General information

i. Rationale for the national target

Like many islands, New Zealand has high levels of endemism, and is highly vulnerable to modification from pressures associated with changing land use and introduced mammalian predators and herbivores, weeds and exotic (pest) fish. The diversity of ecological systems and the resources they hold are important to tangata whenua. National Target 9 aims to improve ecosystem protection and integrity in New Zealand in the face of these pressures.

Mainly related to Aichi Targets 11.

Indirectly related to Aichi Targets 1, 5 and 6.

II. Implementation measures

a) Measure 1 – Priority sites are managed to have high levels of ecological integrity

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department of Conservation has managed a set of priority sites (including some pest-free islands) to a high level of ecosystem integrity. The Department has also worked through the reporting period to manage as much public conservation land as possible through broadscale interventions which seek to maintain essential elements of structure and composition.

Site prioritisation undertaken by the Department uses a spatial conservation planning programme called *Zonation*. This programme ranks a pre-defined set of candidate Ecosystem Management Units (EMUs) chosen as the best places to conserve the full range of New Zealand's terrestrial, wetland and lake ecosystems. Ecosystem Management Units currently cover 3.4 million hectares and are on New Zealand lands of all tenure. The ranking considers current ecosystem integrity, the potential to gain or lose ecosystem integrity where management is implemented or discontinued and the cost of management. It also represents river and coastal ecosystems that are above low water (e.g. mangrove forest) but does not take into account flows / upstream and downstream connections outside management units; a specific target and prioritisation has been developed for whole catchments (see National Target 11).

The current top-ranked management units (which represent the full range of ecosystems) cover about 1.5 million ha. This intensive management is supported by a broader programme of work to reduce transforming pressures (for example, wilding conifers) across extensive areas of public conservation land.

Regional and unitary councils have statutory functions related to biodiversity and a strong history of implementing operational management programmes, for example, targeting agricultural pests. Much of Councils' work relies on engaging with landowners, iwi and community groups. Their influence beyond public conservation lands has great potential to address biodiversity decline across New Zealand. Several councils are also using spatial conservation planning tools to identify priority areas for protection.

Regional and unitary councils think piece on Addressing New Zealand's biodiversity challenge:

http://www.lgnz.co.nz/our-work/our-policy-priorities/3-environment/biodiversity/

Example of a regional council (Waikato Regional Council) biodiversity prioritisation analysis (June 2016):

https://www.waikatoregion.govt.nz/services/publications/technical-reports/tr/tr201612/

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information as needed)

Assessment drew on measures and case studies referred to in synthesis reports by central government agencies responsible for biodiversity conservation (Department of Conservation) and environmental reporting (Ministry for the Environment). It was also informed by submissions from Regional and Unitary Councils. Greater depth would be given by a more comprehensive review of available information including regional council reports, scientific publications and stakeholder views.

The Department first ranked priority sites for protection in 2012. Five hundred and thirteen EMUs (over 2.4 million ha) are now managed, to some extent, by the Department and partners. Ecosystem Management Units selected for management do not exactly match the priorities identified with *Zonation* and so this does not achieve target levels of representation for all terrestrial, lake and wetland ecosystems.

At many EMUs some of the management actions considered necessary (and practical) to improve ecosystem integrity are not done. This means that potential gain in ecosystem integrity at those sites is not fully realised. This difference is larger in some ecosystem types. In addition, because EMUs do not often cover whole catchments, riverine ecosystems may not be adequately managed.

The method used for this assessment relates spatial data describing the extent and composition of ecosystems in EMUs to data about management proposed and funded at each EMU from the Department of Conservation business planning database. A simple, deterministic model is used to predict the ecosystem integrity of each ecosystem in each EMU at two levels of management: (i) full implementation of the complete set of management activities proposed for the site and (ii) funded implementation (the activities allocated resources in the Department of Conservation budget).

Case studies have shown positive changes in ecosystem structure, composition (indigenous dominance, species richness and abundance) and function where management is applied (see below). The Department does not yet have processes to track whether funded activities at each EMU are delivered to standard, or to measure outcomes for biodiversity at all EMUs. Management by councils or community organisations is not consistently recorded or collated into national summaries.

Department of Conservation 2016 Annual Report Factsheet Representation of managed ecosystems:

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-20152016/ecosystem-representation-of-managed-ecosystems/

Department of Conservation 2017 Annual Report Factsheet Representation of managed ecosystems:

https://www.doc.govt.nz/2017-annual-report-factsheets/?report=DifferenceMade_2016_17

Most prioritisation work is relatively young and has focussed on identifying places to manage and/or support and incentivise landowners to manage, rather than to target for legal protection. So far, there is little evidence whether increased land protection (see National Target 10 and Aichi Target 11) has focussed on priority ecosystems. Increases in protection from 2002 – 2012 were highest in parts of New Zealand that were already relatively well protected (Cieraad et al. 2015).

Cieraad, E.; Walker, S.; Price, R.; Barringer, J. 2015: An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. *New Zealand Journal of Ecology 39(2)*: 309–315.

iv. Other relevant information (include websites, web links and files for added information as needed)

Many case studies from managed sites in New Zealand illustrate gains in ecosystem integrity after successful management. Some examples are summarised below.

Case study 1: Endemic bird species

The South Island robin is an endemic species found in forests with dense canopies and thick ground cover and leaf litter. It is under threat from habitat loss and predation. Populations have been intensively studied at two sites in the Eglinton Valley (Fiordland). Since 2005 numbers have increased at one site where effective and ongoing mammalian predator (rat and mustelid) control has occurred. This is in contrast to declining robin numbers at the second site where mammalian predator control has not occurred.

Similar population increases in response to predator control undertaken by the Department of Conservation and others have recently been reported for an alpine wren (Weston et al. 2018) and two (but not all) common forest birds (Ruffle & Didham 2017). Auckland Council monitored birds from 2009 to 2013 at 330 sites across the region as part of its terrestrial biodiversity monitoring programme. Highest richness of indigenous species was recorded on islands and two large mainland parks; area with extensive indigenous vegetation and including intensively managed sites with very low pest indices (for example, Ark in the Park, Windy Hill). A national meta-analysis of biodiversity outcomes for possum control operations (either to protect indigenous biodiversity or to reduce risks to the agricultural sector) supports the premise that birds' reproductive success and overall abundance is improved by such operations, but benefits may not persist for species that are also vulnerable to rats, stoats and other predators unless those pests are also targeted (Byrom et al. 2016).

https://www.doc.govt.nz/2017-annual-report-factsheets/?report=AbundanceOfCommonAndWidespreadTaxa_Robins

https://www.aucklandcouncil.govt.nz/environment/state-of-auckland-research-report-cards/Documents/stateofenvironmentreport2015.pdf

Byrom, A.E.; Innes, J.; Binny, R.N. 2016: A review of biodiversity outcomes from possum-focused pest control in New Zealand. *Wildlife Research 43(3)*: 228–253.

Ruffell, J.; Didham, R.K. 2017: Conserving biodiversity in New Zealand's lowland landscapes: does forest cover or pest control have a greater effect on native birds? *New Zealand Journal of Ecology 41(1)*: 23–33.

Weston, K.A.; O'Donnell, C.F.J.; van Dam-Bates, P.; Monks, J.M. 2018: Control of invasive predators improves breeding success of an endangered alpine passerine. *Ibis 160*: 892–899.

Case study 2: Willow management at O tu Wharekai

O tu Wharekai is a mosaic of alpine lakes and braided river bed wetlands which are experiencing a transformation in ecosystem structure through the establishment of exotic willow (*Salix* spp.). *Salix* spp. Prevent incoming solar radiation from reaching the understory through the establishment of a canopy. This alters vegetation community composition by outcompeting indigenous vegetation and instream fauna through changes to trophic cascades. *Salix* spp. also alter ecosystem function through increasing sedimentation in waterways and extracting more water than native vegetation.

The Department of Conservation has been controlling *Salix* spp. using aerial and ground-based control methods which has resulted in *Carex maorica*, a native sedge, becoming more abundant where *Salix* has been removed.

https://www.doc.govt.nz/Documents/conservation/land-and-freshwater/wetlands/arawai-kakariki-report-card-o-tu-wharekai-habitat-2016.pdf

Case study 3: Awarua Waituna water flow management

Waituna Lagoon is a coastal lagoon that would naturally be open to the sea occasionally and closed for long periods. For years, artificial lagoon opening was used to manage water quality and improve farmland drainage in the upstream catchment. This process also results in increased water salinity which changes aquatic ecosystem composition. The Department of Conservation is now working with others to carefully time lagoon opening to maximise ecological integrity.

Ruppia is an important aquatic plant that provides habitat and food for fish, birds and invertebrates while improving water quality by trapping sediments, taking up nutrients, and releasing oxygen. Its abundance is directly related to the lagoon opening.

https://www.doc.govt.nz/Documents/conservation/land-and-freshwater/wetlands/arawai-kakariki-report-card-awarua-waituna-water.pdf

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

The ability to describe ecosystems and change in ecosystem integrity across the total range of ecosystems is limited by the lack of comprehensive data. For example, the Department of Conservation has detailed ecosystem maps for EMUs but nationwide analyses of extent of ecosystems and their protection status is based on broad classes of land cover. This is being addressed through the New Zealand Government's *National Science Challenges* (see National Target 18).

There is no national programme for tracking the results of ecosystem management by all parties including the Department, regional councils, non-governmental organisations and tangata whenua. More needs to be done to evaluate cultural indicators.

Case studies show improvement in some aspects of ecosystem integrity at some managed sites but often these focus on one or two indicators and do not describe overall ecosystem structure, function and composition. Monitoring efforts across different organisations or agencies is rarely coordinated, as such there are few national-scale analyses.

Biological heritage science challenge website: Assessing our heritage:

http://www.biologicalheritage.nz/programmes/assessment

Biological heritage science challenge website: Sustaining ecosystems:

http://www.biologicalheritage.nz/programmes/sustaining-ecosystems

Norton, D.A.; Young, L.M., Byrom, A.E.; Clarkson, B.D.; Lyver, P.O.B.; McGlone, M.S.; Waipara, N.W.2016: How do we restore New Zealand's biological heritage by 2050? *Ecological Management & Restoration 17(3)*: 170–179.

Ewers, R.M.; Kliskey, A.D.; Walker, S.; Rutledge, D.; Harding, J.S.; Didham, R.K. 2006: Past and future trajectories of forest loss in New Zealand. *Biological Conservation 133(3)*: 312–325.

Millar, T.R.; Heenan, P.B.; Wilton, A.D.; Smissen, R.D.; Breitwieser, I. 2017: Spatial distribution of species, genus and phylogenetic endemism in the vascular flora of New Zealand, and implications for conservation. *Australian Systematic Botany 30(2)*: 134–147.

MFE 2018 Environmental Indicator Indigenous cover and land protection:

http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Land/indigenous-cover/indigenous-cover-archived-19-04-2018.aspx

b) Measure 2 – Public conservation land is managed to maintain ecosystem structure and composition

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department of Conservation has run programmes throughout the reporting period to maintain ecosystem composition and structure and function through broadscale interventions across as much public conservation land as possible. This work includes programmes using aerial toxins to control mammalian predators (see also National Target 4), programmes to control wilding conifers and weeds, and programmes to limit the feral range of various invasive species. Where possible, this work has been located to ensure buffering and connectivity of important ecosystems.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information as needed)

Assessment drew mostly on measures summarised by central government agencies responsible for public conservation lands (Department of Conservation) or environmental reporting (Ministry for the Environment) and an independent authority (Parliamentary Commissioner for the Environment). Greater depth would be given by a more comprehensive review of available information including scientific publications and stakeholder views.

In 2016–2017 the Department reported these hectares of land managed as a 'performance indicator'; other parties also manage these pressures, but those data are not shown (Table 3).

Table 3: Output (hectares managed) of large-scale pest control programmes by the Department of Conservation in 2016–2017

Pressure	Hectares managed in 2016–2017	Hectares under sustained management
Rats and/or mustelids	1,045,291	Not reported
Possums	205,037	800,168
Goats	1,049,453	1,952,627
Deer	415,808	645,115
Weeds	380,187	1,378,570
Wilding conifers	1,168,037	Not reported

National performance indicators are the sum of estimated areas of land managed at each site provided by local Department of Conservation operational staff and are audited by the New Zealand Office of the Auditor General.

Note that the areas managed to maintain ecological integrity have often contained those managed to a higher standard (see above).

The Department has recently reported on the following indicators of ecosystem integrity across public conservation land:

- Indigenous bird species richness – generally found to be higher than exotic bird species richness. There is no discernible trend in bird abundance at a national scale.
- Invasive possums – a pest species that is widespread across public conservation land. There has been no discernible trend in abundance.
- Invasive ungulates (deer and goats) – these species are widespread across public conservation land. Occupancy appears to have increased over the past 4 years.
- Non-woody weeds – these are widespread across public conservation land. Woody weeds are concentrated in the northern and central North Island, and the eastern South Island of New Zealand. These include hotspots of plant endemism (Millar et al. 2017).
- Indigenous trees that are palatable to possums and goats – these trees have shown an imbalance in their populations, with higher mortality than recruitment. Trees that goats and possums tend to avoid eating showed the opposite trend.

These reports draw on field data collected in the *Department of Conservation National Biodiversity Monitoring and Reporting system*. This includes an 8 km grid of approximately 1400 sites across New Zealand. Sites are revisited every 5 years to provide national estimates of status and trend in ecological integrity. Regional councils, non-government organisations and others also undertake monitoring; results are not shown.

In addition, the Department reported on some indicators from other data collection programmes, for example species occupancy – this is the expected range of species are present in an ecosystem. A specific example for species occupancy includes the range of Australasian bittern, a wetland bird that occurs throughout New Zealand, which has declined over the last century. Recent monitoring has not yet shown if this decline has stabilised.

Various studies show the benefits of landscape-scale predator control on forest bird abundance and richness in New Zealand forests. National monitoring shows no strong trends over the short term. This response maybe because control areas are still small relative to the extent of public conservation land, and/or because national monitoring uses imprecise indices and expansion of predator control areas is recent.

More information on the topics mentioned above:

https://www.doc.govt.nz/contentassets/ebf6dc3ecb554b7a8b8cd3d223501a5f/factual/trees-consumed.pdf

https://www.doc.govt.nz/contentassets/ebf6dc3ecb554b7a8b8cd3d223501a5f/factual/climatic-range.pdf

https://www.doc.govt.nz/contentassets/ebf6dc3ecb554b7a8b8cd3d223501a5f/factual/woody-weeds.pdf

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/?report=How_well_are_threatened_ecosystems_protected

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/?report=NationalBirdFactsheetWeb

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/?report=NationalPossumFactsheetWeb

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2016-2017/?report=NationalUngulatesFactsheetWeb

https://www.doc.govt.nz/Documents/about-doc/annual-report-2016/annual-report-2017.pdf

https://www.doc.govt.nz/our-work/monitoring-and-reporting-system/

Elliott, G.P.; Wilson, P.R.; Taylor, R.H.; Beggs, J. R.2010: Declines in common, widespread native birds in a mature temperate forest. *Biological Conservation 143(9):* 2119–2126.

MFE 2015 Environmental Indicator Land pests:

http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Land/land-pests.aspx

MFE 2015 Environmental Indicator Pest impacts on indigenous trees:

http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Land/pest-impacts-indigenous-trees.aspx

O'Donnell, C.F.; Hoare, J.M. 2012: Quantifying the benefits of long-term integrated pest control for forest bird populations in a New Zealand temperate rainforest. *New Zealand Journal of Ecology 36*: 131–140.

PCE 2018 Report Taonga of an island nation: saving New Zealand's birds:

https://www.pce.parliament.nz/publications/taonga-of-an-island-nation-saving-new-zealands-birds

Van Vianen, J.; Burge, O.R.; MacFarlane, A.T.; Kelly, D. 2018: The effects of single aerial 1080 possum-control operations on common forest birds in the South Island, New Zealand. *New Zealand Journal of Ecology 42(2)*: 169–178.

iv. Other relevant information
(include websites, web links and files for added information as needed)

Case study. Ecosystem benefits of landscape-scale mammalian predator control

Beech trees are a dominant component of many New Zealand forests. Every few years most of the beech trees in an area produce large amounts of seeds ('masting'). The extra food means rodent populations increase and the rodents are more food for mustelids which also increase. As the seed rots away, the high

numbers of predators shift to eating birds and other fauna. In other years, numbers of predators tend to be low, so these forests retain populations of species which are very rare.

This beech tree masting is related to temperature in the preceding year and can be predicted. In 2014, a widespread beech mast took place. The Department of Conservation and partners treated nearly 694,000 ha of forest with an aerially distributed toxic bait. This successfully reduced rat and stoat indices at most treated sites. A similar operation was carried out over more than 800,000 ha in 2016. Various studies have shown improved survival and recruitment for a range of vulnerable birds and bats in these areas following pest control. Monitoring and responding to mast events at this scale is becoming a regular part of ecosystem conservation in New Zealand.

Further information:

https://www.doc.govt.nz/our-work/battle-for-our-birds/battle-for-our-birds-monitoring-results/

Elliott, G.; Kemp, J. 2016: Large-scale pest control in New Zealand beech forests. *Ecological Management & Restoration 17(3)*: 200–209

v. *Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)*

As reported in National Target 18, New Zealand has developed a series of National Science Challenges to lead a more strategic approach to the Government's science investment. The *New Zealand's Biological Heritage* Challenge will include research on the following:

- Better understanding biosecurity risks and pathways, and how technology can be used to improve biosecurity surveillance.
- More efficient and effective tools to control established pest mammals and insects.
- Incorporating mātauranga Māori into biosecurity risk assessment and response.

Further information:

Biological heritage science challenge website: reducing risks and threats

c) Measure 3 – A multi-year programme to re-categorise the protection status of stewardship lands with high conservation values

i. *Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.*

Stewardship land is public conservation land in New Zealand not held for a specific conservation purpose, that is not a marginal strip or watercourse, and must be managed so that its natural and historic resources are protected. In 2013, nearly one third of public conservation land was stewardship land and included areas containing naturally uncommon or threatened ecosystems. In 2015, the Parliamentary Commissioner for the Environment updated her report on stewardship land, reiterating the importance of reviewing its status. Reviewing the values of stewardship land and assigning a suitable legal status will ensure that places which make a large contribution to biodiversity or ecosystem services are managed appropriately.

ii. *Effectiveness of measure in achieving desired outcomes*

☒ Measure taken has been partially effective.

iii. *Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information as needed)*

Work has taken place during the reporting period to establish a work programme, the project team and workplan has been confirmed. The work programme aims to review all stewardship land and ensure areas that should be considered for additional protection are assessed and reclassified appropriately. With over 3000 discrete areas of stewardship land across New Zealand, the initial focus has been on an assessment strategy to increase efficiencies through centralised coordination and support for site-specific consultation.

Since January 2014, 2171 discrete areas of stewardship land larger than 1 ha have been reclassified, covering a total of 80,000 ha. The areas of land classified in each stewardship category in 2018 is provided in Table 4.

Table 4: Land classified as stewardship land in 2018

2018 classification	Area in hectares	Number of discrete land areas
Stewardship Areas (s25)	2,437,193.83	3675
S7_CONSERVATION_PURPOSES	45,520.46	6
S19_CONSERVATION_PARK	16,397.11	57
S4_NATIONAL_PARK	3,018.72	53
S21_ECOLOGICAL_AREA	2,316.36	13
S9_2_LAND_HELD_FOR_NATIONAL_PARK_PURPOSES	405.13	2
S22_SANCTUARY_AREA	401.57	3
S19_1_A_SCENIC_RESERVE	273.64	67
S24_1_2_MOVEABLE_MARGINAL_STRIP	147.70	110
S24_3_FIXED_MARGINAL_STRIP	130.62	348
S22_GOVERNMENT_PURPOSE_RESERVE	3.04	26
S23_LOCAL_PURPOSE_RESERVE	2.97	18
S21_SCIENTIFIC_RESERVE	2.79	8
(blank) (no conservation designation)	11,715.94	1434

Change in stewardship land status has been measured by reference to the *National Property and Land Information System database*. The status of land classified as stewardship land in 2014 was compared with its status in 2018. Some small changes could be due to re-surveyed boundaries overlapping another land area.

Further information:

PCE 2013 Report Investigating the future of conservation: the case of stewardship land

https://www.pce.parliament.nz/publications/investigating-the-future-of-conservation-the-case-of-stewardship-land

https://www.doc.govt.nz/about-us/our-role/managing-conservation/stewardship-land/

LINZ Data Service Protected Areas:

https://data.linz.govt.nz/layer/53564-protected-areas/data/

iv. Other relevant information
(include websites, web links and files for added information as needed)

No further information required.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information as needed)

No information available.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

June 2018

ii. Summary of evidence used

The Department has run a programme where intensive management has been applied to a suite of sites that represent the full range of ecosystems. The programme has been partially implemented and more work is to be done.

Other programmes to manage the wider landscape, providing buffering and connectivity to priority ecosystems, have expanded in recent years, particularly for wilding conifers and for mammalian predators. The amount of area under management for mammalian herbivores (for example deer and goats) has increased very little, and these animals have become more common.

An extensive field-based data collection programme shows no improvement at the national scale. While there is evidence of improved ecosystem integrity in managed sites, there are also downward trends in some indicators, for example the maintenance of tree species favoured by introduced herbivores.

iii. Indicators used in this assessment

The indicators and measures used in the Department of Conservation Indicator Framework are provided in Table 5.

Table 5: Indicators and measures from the Department of Conservation Indicator Framework.

Indicator	Measure
1.1.2 Ecosystem function	1.1.2.4 Flowering & fruit production
1.1.4 Ecosystem structure	1.1.4.2 Habitat suitability
	1.1.4.1 Ecosystem fragmentation
1.3.1 Naturalisation of new pest species	1.3.1.1 Occurrence of self-maintaining populations of exotic species
	1.3.1.2 Occurrence of exotic species
1.3.2 Invasive species dominance	1.3.2.1 Abundance & distribution of invasive pests
	1.3.2.2 Degree to which systems are free from impacts of invasive species
1.4.2 Security of threatened & at risk taxa	1.4.2.1 Current & predicted trends in the abundance & distribution of threatened & at risk taxa
	1.4.2.2 Current & predicted trends in the demographics of populations of threatened & at risk taxa
1.5.1 Species composition & diversity	1.5.1.1 Structure of functional groups
	1.5.1.2 Abundance of common & widespread taxa
	1.5.1.4 Change in species diversity
1.5.2 Species occupancy of natural range	1.5.2.1 Natural range occupied
1.6.1 Ecosystem representation & protection status	1.6.1.1 Proportions of ecosystems under indigenous cover
	1.6.1.2 Proportion of ecosystems protected
	1.6.1.3 Change in extent of naturally uncommon & reduced ecosystems
	1.6.1.4 Proportion of ecosystems remaining relative to natural extent

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information as needed)

The National Property and Land Information System database, the Department of Conservation annual reporting programme, and the National Biodiversity Monitoring and Reporting System provide quantitative measures for some indicators.

Assessment of other indicators relies on narrow case studies.

https://www.doc.govt.nz/Documents/our-work/doc-outcome-monitoring-framework-overview-report.pdf

Lee, W.; McGlone, M.; Wright, E.2005: Biodiversity inventory and monitoring: a review of national and international systems and a proposed framework for future biodiversity monitoring by the Department of Conservation. *Landcare Research contract report LC0405/122*.

McGlone, M.; Dalley, J. 2015: A framework for Department of Conservation inventory and monitoring: Intermediate outcomes 1–5. *Landcare Research Contract Report LC2427* (unpublished) for the Department of Conservation, Wellington.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

The Department is responsible for managing public conservation land, however, the largest proportion of threatened ecosystems are in the lowlands, on privately owned land. Fully representing the range of New Zealand's ecosystems therefore requires conservation action on private land as well as public conservation land.

Further, there are many actions undertaken (for example, by tangata whenua, regional councils, non-governmental organisations, and individual landowners) which also contribute to the National Target, but for which comprehensive monitoring is not currently in place and is likely to be impractical to implement.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information as needed)

The Department of Conservation National Biodiversity Monitoring and Reporting System captures and communicates performance for delivering a diverse range of conservation outcomes for New Zealand. Implementation of this system is underway, but incomplete. For example, it does not currently cover freshwater or marine ecosystems.

Some regional councils have implemented similar monitoring programmes and various other non-governmental organisations, whānau, hapū and iwi and local groups have also implemented monitoring programmes targeted to their management goals. We were unable to include the results of these programmes in this assessment.

Further information on the monitoring and reporting system can be found here:

https://www.doc.govt.nz/our-work/monitoring-and-reporting-system/

10. LANDOWNERS ARE SUPPORTED TO PROTECT MORE RARE AND THREATENED HABITATS AND ECOSYSTEMS.

I. General information

i. Rationale for the national target

This target aims to support the protection of indigenous ecosystems and native species on Māori-owned and private land while honouring the rights guaranteed to landowners and under Te Tiriti o Waitangi.

Mainly relevant for Targets 1, 5 and 11.

Not indirectly relevant to any other Targets.

II. Implementation measures

a) Measure 1 – A network of kawenata over Māori land

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Expanding partnerships with tangata whenua by continuing to grow the network of kawenata (covenants) over Māori land to secure and support the stewardship of naturally rare and uncommon and formerly widespread, but now significantly reduced, ecosystems and habitats.

The *Ngā Whenua Rāhui Fund* has been active over the reporting period. The Ngā Whenua Rāhui Fund has provided funding and support to protect indigenous biodiversity on privately owned Māori land. It also supports legal protection of such land by way of kawenata that are subject to 25 yearly reviews.

The Ngā Whenua Rāhui Fund has worked with Māori landowners over the reporting period to achieve four pest management objectives:

1. Promoting healthy ecosystems and enhancing indigenous biodiversity on Māori-owned land
2. Promoting pest management activities on Māori-owned land
3. Helping Māori landowners gain spiritual, cultural and environmental benefits from healthy functioning ecosystems on their land
4. Protecting cultural values when pest management achieves specific indigenous biodiversity outcomes

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

173,000 ha of land has been protected through the Ngā Whenua Rāhui Fund in New Zealand.

During the reporting period (since January 2014), 2464.9 ha of land has been subject to new protections, through 36 Agreements (6 Conservation Covenants; 3 Management Agreements; and 27 kawenata).

Since January 2014, on an annual basis, the Ngā Whenua Rāhui Fund has worked with Māori landowners to achieve pest management operations for goat and deer over 135,149 ha and for possums, mustelids, and rodents over 58,487 ha.

At the time of reporting, 28 landowners are contracted annually by Ngā Whenua Rāhui to deliver pest control activities on lands covered by kawenata.

iv. Other relevant information (include websites, web links and files for added information – optional)

https://www.doc.govt.nz/get-involved/funding/nga-whenua-rahui/nga-whenua-rahui-fund/

v. *Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)*

No major obstacles have been identified in meeting the measure.

b) Measure 2 – Work with private landowners to expand the network of Queen Elizabeth II Trust (QEII Trust) environmental protection covenants

i. *Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.*

The *Queen Elizabeth II Trust (QEII Trust)* is an independent charitable organisation that partners with private landowners in New Zealand to protect environmentally important sites on their land with legally binding covenants- an agreement between the Trust and a landowner to protect land forever. The landowner continues to own and manage the protected land as the covenant and protection remains on the land title even when the property is sold to a new owner. All new QEII Trust covenants are registered on land title with Land Information New Zealand (LINZ) and notified to local government authorities. When property ownership is transferred the covenant remains on the land title, new owners are subject to the restrictions in the covenant deed. QEII National Trust contacts the new landowners of those properties to make them aware of the covenant.

These QEII covenants, called 'Open Space' covenants, secure and support the private stewardship of native ecosystems and habitats that have been significantly reduced by human action. Since the QEII Trust was formed in 1977 a growing network of over 4400 protected areas has been created, protecting more than 170,000 ha of private land. These include some of New Zealand's rarest biodiversity and ecosystems.

ii. *Effectiveness of measure in achieving desired outcomes*

☒ Measure taken has been partially effective.

iii. *Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)*

As at 1 January 2018 there were a total of 4416 registered covenants protecting 170,751 ha. This is an increase of 607 covenants (16%) and 69,896 ha (69%) over the 5-year period 2013–2018.

In addition, as at 1 January 2018 there were 382 approved covenants progressing toward registration, covering an estimated 12,558 ha.

Close to 60% of all registered covenants meet National Priority 1 of the National Priorities for protection of biodiversity on private land. The covenants protect indigenous vegetation associated with land environments, (defined by Land Environments of New Zealand at Level IV), that have 20% or less remaining in indigenous cover. A total of 4300 ha (approximately 6%) of the newly registered covenant area for the period 2013–2018 is in land classified as either Acutely Threatened (< 10% indigenous cover remaining) or Chronically Threatened (10–20% indigenous cover remaining).

Further information:

https://www.doc.govt.nz/pagefiles/49652/protecting-our-places-brochure.pdf

https://www.doc.govt.nz/Documents/getting-involved/volunteer-or-start-project/funding/biodiversity-funds/protecting-our-places-priorities-detail.pdf)

Over half of the land protected by covenants is forest and shrublands, and other areas include grass and tussock lands, wetlands, coastal areas such as dunes, and places of special archaeological and geological significance.

Many of New Zealand's rare and endangered species are found within National Trust covenants, including kōkako, kākāriki, the New Zealand falcon kārearea, fairy tern, Hutton's shearwater, Hochstetter's frog, jewelled gecko, and bats. Many rare plants are found on covenants, including mistletoe, orchids, weeping tree broom, tree daisies and dactylanthus (wood rose).

All new registrations are recorded and held in a QEII Trust database and include a set of datum (including land type and area). The information used for this assessment is taken from this database:

https://qeiinationaltrust.org.nz/publications-and-resources/annual-reports/

There remain further opportunities for long term private land protection across all regions of New Zealand. QEII National Trust acknowledge that more could be done to accelerate progress toward this target. Regional Councils play a role in supporting landowners to protect rare and threatened habitats and ecosystems. The support from some Regional Councils is in the form of direct funding for establishment costs (for example, fencing or weed control), management advice and direct weed and pest management services.

iv. Other relevant information
(include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

One obstacle is ensuring private landowners adhere to the conditions of their covenants and maintain the agreed level of environmental protection. The QEII Trust regularly monitors covenants so it can keep track of trends in the condition of the protected land and help landowners to identify and manage threats to the protected values. Between 1 January 2013 and 1 January 2018 QEII completed more than 9000 monitoring visits to covenants.

Non-compliance is on the spectrum of issues that negatively impact on the effectiveness of covenants. Fortunately, non-compliance tends to make up a small proportion of all covenants. The monitoring visits undertaken by QEII prove to be an effective measure in identifying issues early and also in a proactive sense as a preventative mechanism.

Ongoing management and 'stewardship' of the covenants is the most significant ongoing challenge. QEII is working actively in this space directly with landowners and also with other interest groups, central and regional government, and environment-focussed NGOs. Limited resourcing, primarily but not exclusively around funding, are a critical constraining factor. In private land conservation the largest share of the burden is often borne by landowners. The stewardship needs of protected areas have to compete with the full range of other needs and requirements of a property owner.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target.

July 2018

ii. Summary of evidence used

As described above, the number of covenant registrations supported by both Ngā Whenua Rāhui Fund and the QEII Trust has increased during the reporting period. This means partnerships with tangata whenua and private landowners have continued to grow the network of kawenata over private and Māori land.

iii. Indicators used in this assessment

Number of new QEII Trust Open Space covenant registrations and the land area of these covenants.

iv. Description of any other tools or means used for assessing progress
(include websites, web links and files for added information – optional)

No further information required.

v. Level of confidence of the above assessment

☒ Based on comprehensive evidence.

vi. Explanation for the level of confidence

All covenant registrations are recorded and held in a QEII Trust database and include a set of datum (including land type and area). This database is managed by the QEII Trust who maintain the quality and currency of the information.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is adequate.

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information – optional)

All registrations of new covenants are recorded and held in a QEII Trust database. All landowner information is stored strictly in accordance with our privacy policy. Personal information is not disclosed without consent.

QEII publishes aggregated data each year in an Annual Report. These data include the number and area of new covenant approvals and registrations and the total number and area protected.

11. PRIORITY FRESHWATER ECOSYSTEMS ARE RESTORED FROM 'MOUNTAINS TO THE SEA'

I. General information

i. Rationale for the national target

There has been an increased focus on ecological restoration of freshwater ecosystems within New Zealand. This growth has, however, been inadequate to keep pace with the increased pressures upon freshwater environments, and rate of decline. The target aims to increase restoration efforts, and to encourage a holistic 'Ki uta ki tai' or 'mountains to sea' catchment approach. It also aims to focus efforts on priority sites, rather than have restoration sites chosen in an ad-hoc manner driven by ecological priority.

Mainly related to Aichi targets 1, 5 and 11.

Not indirectly related to any other Aichi targets.

II. Implementation measures

a) Measure 1 – Identification of priority freshwater ecosystems in New Zealand

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Development of systems to support the identification and prioritisation of freshwater ecosystems for restoration on the basis of their biodiversity values.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(Include websites, web links, and files for added information – optional)

Freshwater ecosystems have been identified and prioritised for restoration by the Department of Conservation, the Ministry for the Environment, and by tangata whenua, regional councils and industry during the reporting period.

The most recent analyses have used *Zonation* as a biodiversity prioritisation tool which produces a hierarchical prioritisation of the landscape based on the occurrence levels of biodiversity features in sites.

Zonation identifies areas important for retaining habitat quality and connectivity for multiple species, indirectly aiming at species' long-term persistence. These analyses are being used to support the development of regional and national biodiversity strategies and action plans.

iv. Other relevant information
(Include websites, web links, and files for added information – optional)

Key projects to identify priority freshwater ecosystems in New Zealand during the reporting period include (but are not limited to):

The Department has developed a national prioritisation system for identifying and prioritising freshwater ecosystems for restoration.

https://www.doc.govt.nz/nature/habitats/freshwater/how-doc-manages-freshwaters/

The Ministry for the Environment to identify and map vulnerable freshwater catchments nationally.

http://www.mfe.govt.nz/more/funding/funding-fresh-water/freshwater-improvement-fund/about-freshwater-improvement-fund

Fonterra (New Zealand's largest dairy cooperative) to identify 50 catchments across New Zealand for restoration activities.

https://www.livingwater.net.nz/about-living-water/

A partnership between DairyNZ, the Waikato River Authority and the Waikato Regional Council to develop the Waikato River and Waipa River Restoration Strategy. The Strategy identifies sites and specific restoration projects that contribute to the restoration of the Waikato River and its catchment.

https://www.waikatoriver.org.nz/projects-and-tools/waikato-river-and-waipa-river-restoration-strategy/

https://www.waikatoregion.govt.nz/assets/PageFiles/Waikato%20Biodiversity%20Ranking%202016%20Formatted%20Report_FNL_.pdf

v. Obstacles and scientific / technical needs related to the measure
(Include websites, web links, and files for added information – optional)

Freshwater ecosystems have been identified and prioritised on the basis of a range of different values and objectives, however, there is no clear agreed national list of prioritised freshwater ecosystems in New Zealand for restoration purposes. Identifying priority freshwater ecosystems is undertaken by different agencies for different purposes at different scales. This is because each organisation has a different mandate and area of focus (for example, water quality, water quantity, aquatic habitats, freshwater fisheries etc.) and/or works at different (local/regional/national) scales. The role of agencies also differs with respect to land tenure.

Recent and consistent national information/data to support the identification of freshwater restoration priorities is a key gap. Therefore, prioritisation is heavily dependent on modelling and extrapolation of accessible data.

Resource constraints (time, information, financial and staffing) to undertake the prioritisation have also been identified as a key challenge.

Technical systems have been developed to identify and prioritise freshwater ecosystems for restoration nationally and regionally. However, these systems have not yet been fully socialised and/or implemented within New Zealand. There is no formal agreement between central and local government about respective priorities and how these are best advanced. A recent report (Willis 2017) on addressing New Zealand's biodiversity challenge made several recommendations:

- The need for strong leadership and clarity of roles and responsibilities
- The need for agreement on where to focus our efforts at national, regional and local levels. The importance of a plan and delivering joined-up action across all players
- The need to understand what success looks like, and how to measure it
- The need for modern, fit for purpose frameworks, including legislation, to help achieve our goals.

b) Measure 2 – Activities undertaken throughout New Zealand to restore priority freshwater ecosystems

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Significant freshwater restoration programmes have been initiated at some important freshwater sites in New Zealand, leading to measurable improvements in some attributes. These programmes have a range of objectives that are generally consistent with the protection and restoration of freshwater biodiversity values. However, these programmes have not yet delivered significant improvement in ecosystem health for New Zealand's largest and internationally significant (Ramsar) wetland sites such as Waituna Lagoon.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Coordinating restoration of freshwater ecosystems (including estuaries) in New Zealand is challenging and has become a major focus for government, non-government agencies, and other stakeholders in New Zealand. There are numerous relevant projects underway across New Zealand involving central government, regional authorities, tangata whenua, and local communities that are occurring at a range of scales.

The rapid decline in the condition of New Zealand's freshwater environments and their ongoing deterioration has led to a shift in Government funding from 'clean up' projects (to rehabilitate degraded waterbodies) to the prevention of further decline of valued and vulnerable freshwater ecosystems that are beginning to show signs of stress. This approach recognises the efficiency of preventing decline in preference to the magnitude of cost associated with restoring degraded systems.

iv. Other relevant information (include websites, web links and files for added information – optional)

More information on the projects underway across New Zealand can be found on the Department of Conservation (www.doc.govt.nz) and Ministry for the Environment (www.mfe.govt.nz) websites. There are too many examples to list, but some notable project examples follow:

- In 2017, funding of NZD $47 million was provided to 34 projects from the NZD $100 million Freshwater Improvement Fund, which aims to improve the management of New Zealand's lakes, rivers, streams, groundwater and wetlands over a 10-year period. See: http://www.mfe.govt.nz/more/funding/funding-fresh-water/freshwater-improvement-fund
- In 2016 the Ministry for the Environment funded 16 community projects over 3 years at a cost of NZD $1.56 million through the Community Environment Fund. These projects involve local freshwater stream and wetland restoration projects and catchment management. See: http://www.mfe.govt.nz/more/funding/community-environment-fund
- In 2014 regional councils were funded to undertake nine freshwater management projects to assist with the implementation of the NPS for Freshwater Management. See: http://www.mfe.govt.nz/more/funding/community-environment-fund/projects-funded-date/freshwater-management-projects-%E2%80%93-may
- In 2015, the Ministry for Environment provided NZD $5 million over 2 years to assist Māori to improve the water quality of culturally important freshwater bodies. Nine programmes were funded under this programme. See: http://www.mfe.govt.nz/more/funding/te-mana-o-te-wai-fund
- Between 2011–2014, NZD $14.5 million was allocated to seven large projects to restore waterways affected by historical pollution. See: http://www.mfe.govt.nz/more/funding/funding-fresh-water/fresh-start-fresh-water-clean-fund
- The Arawai Kākāriki Wetland Restoration Programme aims to enhance the ecological restoration of three of New Zealand's most significant wetland/freshwater sites. See: https://www.doc.govt.nz/our-work/arawai-kakariki-wetland-restoration/

- The *Living Water* programme (a Department of Conservation partnership with Fonterra Co-operative Group Limited (New Zealand's largest dairy co-operative)) is working to improve biodiversity and water quality in five sensitive catchments (Figure 2). See: https://www.livingwater.net.nz/about-living-water/
- In 2015 the Department established a series of new 10-year targets (known as Stretch Goals), one of these relates to the restoration of 50 freshwater ecosystems from 'mountains to the sea'.
- The Rotorua Te Arawa Lakes programme is a partnership between Rotorua Lakes Council, Te Arawa Lakes Trust and Bay of Plenty Regional Council, with funding from the Ministry for the Environment. The programme is working to protect and restore water quality in 4 Rotorua lakes. The project timeframe is 2008–2032 and has a total cost of NZD $144 million (of which half is being provided by the New Zealand Government). See: http://www.mfe.govt.nz/fresh-water/clean-projects/rotorua-te-arawa-lakes
- The Lake Taupo Protection Partnership Project is a NZD $79 million project that seeks to prevent the further deterioration of water quality in the lake by reducing nitrogen losses to the lake by 20%. The project term is 2007–2019 and involves NZD $35.6 million of New Zealand Government funding. See: http://www.mfe.govt.nz/fresh-water/clean-projects/lake-taup%C5%8D
- Whakaora Te Waihora is an operational programme to restore and rejuvenate the mauri and ecosystem health of Te Waihora, which is co-governed by Te Rūnanga o Ngāi Tahu, Environment Canterbury, Selwyn District Council and Christchurch City Council.
- The Waikato River Authority is a New Zealand Governmment/tangata whenua organisation established in 2010 to oversee a vision and strategy for the improved health and wellbeing of the Waikato and Waipa Rivers and their associated wetlands and tributaries. To date more than 200 projects have been funded by the Waikato River Authority, to the value of over NZD $31 million. See: https://www.waikatoriver.org.nz/projects-and-tools/

Figure 2: Living water progress after 5 years (2018).

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

The differing mandates and priorities of agencies and stakeholders that are proposing or undertaking restoration projects is a major factor in determining the nature of freshwater restoration projects that are being undertaken. There are also a range of biodiversity co-benefits resulting from freshwater restoration work that targets non-biodiversity outcomes, i.e. improving water quality.

A number of restoration programmes are underway at priority freshwater ecosystems to achieve water quality and biodiversity outcomes at a range of scales, but it is a challenge to 'scale up' to work at a landscape or catchment scale (from 'mountains to the sea'). Restoration programmes are generally undertaken at regional and community levels for a range of different values. For this reason, there may be issues of consistency in the restoration methods, actions and outcomes across New Zealand. It is difficult to ensure that there is a good representative spread for restoration activities across New Zealand. This is because such activities are primarily locally or regionally driven.

There is also no consistent national database of information about restoration projects that are currently underway or have been undertaken in the past. In addition, there is no national system for collating the results of restoration or tangible progress towards restoration. This has resulted in reliance on project reporting that better reflects the resources allocated to them (in the list above) rather than their achievements to date.

Scientific/technical needs that would assist with addressing these obstacles include:

1. An agreed national prioritisation system.
2. National funding directed at freshwater ecosystem restoration (with a biodiversity, ecosystem functioning focus).
3. Proven restoration methodologies within a changing climate.
4. Systems to track and report on restoration efforts and achievements.
5. Acknowledging and measuring the biodiversity benefits that result from non-biodiversity focused freshwater restoration work.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

June 2018

ii. Summary of evidence used

Most freshwater systems in New Zealand outside of public conservation land continue to be under increasing stress. Overall, it is clear that water quality and quantity is continuing to decline as a result of changes in land use and diffuse contamination from pastoral farming and urbanisation.

Analysis of national-scale relationships between river and lake water quality and catchment land cover have linked nitrogen and phosphorus concentrations with increasing proportions of intensive agricultural and urban land cover in their catchments.

Overall, there is a mix of both positive and negative trends in national water quality measures, and there is some evidence that restoration activities are having positive effects at a localised scale. There is a recent prevalence of improving trends in urban and pastoral areas with regard to phosphate and ammonia, but degrading trends for nitrate and total nitrogen. There are also improvements in visual clarity and median *E. coli* concentrations in some areas, yet others show progressive deterioration.

Whilst almost a third of New Zealand's land area is protected for conservation purposes, public lands do not represent the full range of freshwater ecosystems and habitats. Lowland freshwater ecosystems (including lowland lakes and rivers, floodplains, wetlands, and geothermal ecosystems) are under-represented within

protected public lands and have undergone significant changes associated with intensive land use and development.

Wetlands are affected by multiple pressures including habitat loss, habitat degradation and species loss. Less than 10% of original wetland extent remains today and wetland habitats continue to be lost. It is estimated that 214 wetlands (1250 ha) were lost between 2001–2016 and a further 746 wetlands declined in size, placing further pressure on vulnerable lowland freshwater species.

Few rivers are protected for their entire length, and many streams and rivers have structures installed on them (for example, culverts, weirs, pump stations). These barriers can significantly affect the composition of fish communities above and below barriers as many of New Zealand's native fish require access to and from the sea to complete their lifecycles.

Of New Zealand's known 78 native fish taxa, 22 are classified as being threatened, and 17 are considered to be at risk. Between ranking assessments undertaken in 2014 and 2017, the conservation status improved for three species and worsened for two species, mostly as a result of new information. Conservation measures resulted in an improvement for one species. Longfin eel numbers are stabilising, and commercial pressure is likely to reduce further in the South Island; however, the species retains its status of 'At Risk – Declining' due to continued habitat degradation and migratory barriers.

The conservation status of New Zealand's known 633 and 675 freshwater invertebrate taxa were assessed in 2014 for the first time and updated in 2018, respectively. The conservation status of 17 taxa changed, but only one of these was due to an observed population decline. Of the 675 taxa assessed in 2018, 177 were classified as being threatened or at risk, with a similar proportion (26%) unable to be assessed due to a lack of information.

iii. Indicators used in this assessment

No further information required.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Scientific reports, publications and reviews include:

- http://www.pmcsa.org.nz/wp-content/uploads/PMCSA-Freshwater-Report.pdf
- https://www.doc.govt.nz/documents/science-and-technical/nztcs7entire.pdf
- http://www.mfe.govt.nz/publications/environmental-reporting/our-fresh-water-2017
- http://www.mfe.govt.nz/publications/environmental-reporting/our-land-2018
- http://www.mfe.govt.nz/publications/fresh-water-environmental-reporting/lake-water-quality-new-zealand-2010-status-and-2
- http://www.lgnz.co.nz/our-work/publications/addressing-new-zealands-biodiversity-challenge-five-recommendations-for-change/
- https://conbio.org/images/content_groups/Oceania/Scientific_Statement_1_.pdf
- https://www.doc.govt.nz/Documents/science-and-technical/nztcs24entire.pdf
- https://www.doc.govt.nz/documents/science-and-technical/nztcs8entire.pdf
- Willis, G. 2017: Addressing New Zealand's Biodiversity Challenge: a regional council think piece of the future of biodiversity management in New Zealand.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

While there is a monitoring and reporting system for terrestrial ecosystems and biodiversity on public conservation land, there is a lack of systematic monitoring of freshwater ecosystems and biodiversity. Gaps in monitoring have been identified for river and lake fish, wetland ecology and water quality, groundwater macro-fauna, and no overall nationally integrated water quality monitoring programme that deals with the need for representativeness and other design criteria.

More information can be found here: http://www.pmcsa.org.nz/wp-content/uploads/PMCSA-Freshwater-Report.pdf

There is no national system for identifying and compiling a national picture of the wide range of freshwater restoration projects that are underway. Because most projects are initiated locally, there is poor national visibility of these.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information – optional)

Monitoring of biodiversity of freshwater ecosystems is complex and still relatively undeveloped in New Zealand. Regional councils are required to manage and monitor water quality and quantity under the National Policy Statement for Freshwater Management, and some are also monitoring riparian management and fencing. Regional councils do not generally monitor the condition of freshwater species found in the rivers they monitor.

A 2016 stocktake of freshwater fish monitoring by New Zealand organisations found that multiple agencies and organisations monitor fish populations to some degree. The focus of these agencies is almost exclusively on a limited number of sites in wadeable rivers. The majority of fish monitoring is not part of a representative regional network, it largely appears to be undertaken as part of resource consent processes or other one-off investigations. The stocktake identifies uncertainties around whether the responsibility for this type of information should rest with the Department of Conservation, regional councils or other agencies in New Zealand.

Further work is needed on dedicated and systematic freshwater biodiversity monitoring systems.

12. MORE THREATENED, AT RISK, OR DECLINING SPECIES ARE MANAGED TO THE EXTENT NECESSARY TO MINIMISE EXTINCTION RISK AND ENSURE GENETIC DIVERSITY IS MAINTAINED

I. General information

i. Rationale for the national target

New Zealand is committed to provide demonstrable progress in managing key threats to the most at-risk terrestrial, freshwater and marine species. The Department has the statutory duty to protect certain marine species as defined in the Wildlife Act 1953 and the Marine Mammals Protection Act 1978.

Mainly related to Aichi target 12.

Indirectly related to Aichi target 9.

II. Implementation measures

a) Measure 1 – Managing terrestrial and freshwater species to minimise extinction risk

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Native New Zealand species classified as Threatened, At Risk or Declining are being managed by the Department of Conservation and others to minimise their risk of extinction. In addition, selected populations of a subset of threatened species known to be not at current risk of decline are being monitored nationally.

Central and regional government agencies, tangata whenua, charitable organisations, community groups and individual New Zealanders undertake significant pest control, ecosystem restoration work, and species-specific conservation programmes in terrestrial and freshwater environments to support New Zealand's goal to manage 407 Threatened species to the degree necessary to minimise extinction risk by 2020.

Progress is monitored and adapted through species recovery and restoration plans, and ultimately measured through changes in the assessed conservation status of species at 5-yearly intervals.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Department of Conservation has collated expert advice about site-based conservation management needs of 481 Threatened, At Risk or Conservation Dependent taxa. This excludes marine species where management often entails national or international policy negotiation. Migratory fish, freshwater invertebrates, fungi and most lichens, mosses, liverworts and hornworts have not yet been integrated into the system. Small and cryptic taxa are expected to benefit from management to protect the full range of ecosystems but are unlikely to be the subject of specific management plans.

A total of 525 Threatened, At Risk or Conservation Dependent taxa are likely to benefit from management in at least one site (Table 6). This management is not always specifically targeted to the species requirements, but generally aims to maintain ecosystem health and function. Of these 525 taxa, 248 receive management that meets the specific standards required for the species in at least one management unit. 290 taxa receive management that meets the approximate standards required for the species in at least one management unit. 83 taxa receive management that meets the specific standards required for the species at nearly all (90%) of the sites recommended by experts to ensure species long-term persistence. And 99 taxa receive management that meets the approximate standards required for the species at nearly all (90%) of the sites recommended by experts to ensure species long-term persistence.

Table 6: Number of Threatened, At Risk or Conservation Dependent (CD) taxa managed by the Department of Conservation, July 2018.

Threat status	Any management at any site	Management to standard at any site	Management to approximate standard at any site	Management to standard at all required sites	Management to approximate standard at all required sites
Threatened	352	148	178	45	55
At Risk/CD	173	100	112	38	44
Total	525	248	290	83	99

Note that long-term persistence means secured from extinction, but also buffered against loss of genetic diversity, stochastic events and long-term environmental impacts such as climate change – a 'step up' from basic secure from extinction. 'Other' taxa may include a small number of Not Threatened, Conservation Dependent species. There are six Not Threatened, Conservation Dependent species streamed for management.

More detail on indigenous species currently under management can be found at:

https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2017-2018/?report=Taxon_under_management_2017_18

More detail on management units can be found at:

https://www.doc.govt.nz/about-us/our-role/managing-conservation/natural-heritage-management/identifying-conservation-priorities/

The summary of changes to the conservation status of taxa in the 2008–2011 New Zealand Threat Classification System listing cycle is available at:

https://www.doc.govt.nz/Documents/science-and-technical/nztcs1entire.pdf

The status of species is reported on a rolling 5-year cycle for taxonomic groups. The most recent reports for each taxonomic group are publicly available at:

https://www.doc.govt.nz/about-us/science-publications/series/new-zealand-threat-classification-series/

iv. Other relevant information
(include websites, web links and files for added information – optional)

Case study 1: Rowi (*Apteryx rowi*)

In the mid-1990s, there were c. 160 Rowi left in a single population occupying about 10,000 ha on the West Coast of the South Island. They were suffering recruitment failure, mainly due to stoat predation of their chicks. Since 1995, an integrated programme of management has been implemented. This included in situ trapping and poisoning pests, and an ex situ head-starting programme (removing eggs from the wild, raising resultant chicks on predator-free island 'creches', and then returning them to the wild as subadults when large enough to cope with the presence of stoats) and establishing secondary breeding populations on two pest-free islands. Population growth has been strong, reaching 600 birds in 2018. In 2016, their New Zealand threat status was reduced from Nationally Critical to Nationally Vulnerable and, in 2017, their global threat status was lowered from Endangered to Vulnerable.

See: Robertson, H.A.; Baird, K.; Dowding, J.E.; Elliott, G.P.; Hitchmough, R.A.; Miskelly, C.M.; McArthur, N.; O'Donnell, C.F.J.; Sagar, P.M.; Scofield; R.P.; Taylor, G.A. 2017: Conservation status of New Zealand birds, 2016. *New Zealand Threat Classification Series 19. 27* p.

https://www.doc.govt.nz/Documents/science-and-technical/nztcs19entire.pdf

Case study 2: Lowland longjaw galaxias "Waitaki" (*Galaxias affinis cobitinis* "Waitaki")

Lowland longjaw galaxias "Waitaki" provides an example of how implantation of effective management actions has resulted in improvement of the threat status of a taxa from Nationally Critical in 2013 to Nationally Endangered in 2017.

This indeterminate taxa is known from 19 populations, restricted to 7 ha of wetland and spring-fed habitat within the Waitaki River catchment. Conservation management for populations of this species resulted from the prioritisation of 163 populations for 20 non-migratory galaxiid species across eastern and southern South Island. Management of Lowland longjaw galaxias "Waitaki" focused on removal of predatory salmonids, with concomitant installation of seven built barriers and regular monitoring of fish community composition and abundance. The effectiveness of these measures resulted in the improvement of the threat status.

Further measures with the intent to increase protection of freshwater fish and/or their habitats have or are being implemented at a national and regional planning levels. These include management of current and future forestry activities (National Environmental Standard – Plantation Forestry) in known fish spawning locations, management of water quality and quantity (National Policy Statement – Freshwater Management), and development of guidelines relating to instream structures affecting fish passage. A Fisheries Bill is also in process, which seeks to improve the management of indigenous freshwater fisheries. The objectives of the work will include reducing the risk of extinction of threatened fish species, improving the productivity of fisheries, and supporting management by Māori of their customary fisheries and taonga species. The work will include amendments to legislation and regulations to improve the toolbox for fisheries management."

Case study 3: Project River Recovery

Project River Recovery is a longstanding restoration programme which seeks to maintain and restore braided river and wetland habitat in the South Island's upper Waitaki Basin for the benefit of native plants and animals, some of which are only found (or breed in) this area.

Project River Recovery was established in 1990, through a compensatory funding agreement with New Zealand's two major hydro-electricity generation companies (Meridian Energy Ltd and Genesis Energy), to recognise the impacts of hydroelectric development on braided rivers and wetlands. The programme includes intensive weed control, predator control, construction of wetlands, and research and monitoring programmes. See http://www.doc.govt.nz/our-work/project-river-recovery/ for further information.

Case study 4: Arawai Kākāriki heading towards 2025.

In the 10 years since Arawai Kākāriki began, our three nationally significant wetlands (Awarua-Waituna, Ō Tū Wharekai, and Whangamarino) have seen major benefits from increased investment in freshwater conservation. Over 27,000 ha is now in weed management, 7000 ha is under predator control, and some of our most threatened species are being actively managed, such as the nationally critical matuku/bittern and nationally vulnerable ngutu pare/wrybill.

During the reporting period, the New Zealand Government has worked with research providers, educators, community groups, and Tangata whenua in New Zealand through the Arawai Kākāriki programme. Through these collaborations we are co-funding and gaining in-kind support for freshwater biodiversity. We will continue to work closely with others into the future, building capacity for conserving wetland ecosystems.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Significant knowledge gaps impede our ability to manage species to minimise extinction risk. These fall into three broad categories: gaps in taxonomic knowledge which mean we are unable to adequately characterise biota; poor distributional and trend data which limit our ability to understand where priorities should lie and to identify optimal sites for management of species; and gaps in understanding of the causes of decline of many species and the solutions for improving their status.

b) Measure 2 – Managing commercial fisheries bycatch – Conservation Services Programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The Department and Fisheries New Zealand manage threats to marine species, with a focus on protected and threatened species. The sustainable management of fishery resources is the statutory responsibility of the Minister of Fisheries (Fisheries Act 1996), and the protection and conservation of seabirds, marine mammals and other protected species is the responsibility of the Minister of Conservation. Some of the programmes/projects/actions to meet these purposes are detailed in Measure 2, 3 and 4. These measures all contribute towards the National action to make demonstrable progress in managing key threats to the most at-risk marine species.

The *Conservation Services Programme* (CSP) focuses exclusively on elements of work defined as Conservation Services in the Fisheries Act. This programme is the Department of Conservation's primary mechanism to understand and address commercial-fishing-related threats to protected species and follows a vision that commercial fishing is undertaken in a manner that does not compromise the protection and recovery of protected species in New Zealand fisheries waters.

The CSP undertakes projects on all groups of protected species – marine mammals, seabirds, fish, marine reptiles and corals – with the ultimate aim of avoiding, remedying or mitigating the adverse effects of commercial fisheries on protected species. It relies, in part, on data collected by fisheries observers to ascertain the adverse effects of commercial fishing on protected species.

Each year an annual plan which outlines the conservation services to be delivered that year is developed in collaboration with CSP stakeholders. The projects within each plan fall into three areas:

1) interaction projects that examine the interactions between protected species and commercial fisheries
2) population studies that examine the population dynamics of protected species where there is concern due to their propensity for bycatch
3) Bycatch mitigation projects that apply science or other information to develop and implement measures to reduce the adverse impacts of commercial fishing on protected species.

The work delivered by CSP in 2016/17 represented an investment of NZD $2.23 million in understanding and mitigating the effects of commercial fisheries. For example, work undertaken in 2016/17 included seabird population research projects in both the Chatham Islands and Auckland Islands, New Zealand sea lion pup count, post-release survival of white-pointer sharks caught in New Zealand setnet fisheries and yellow-eyed penguin foraging and indirect effects.

The work undertaken as a part of the 2017/18 annual plan represented an investment of NZD $2.17 million and included interactions projects such as the identification of seabird, cold-water coral, marine mammal, protected fish and marine reptile species that have been observed interacting with commercial fisheries. The consistently largest interaction project of the programme is the Observer Programme, organised jointly with Fisheries New Zealand each year. Coverage is still under way for 2017/18, and observers are continuing to monitor protected species interactions in both inshore and offshore fisheries. In 2016/17, 9950 days of observer coverage was achieved across a range of fisheries.

Population projects in 2017/18 involved examining the population dynamics of protected species such as age and growth of protected corals at high risk, indirect effects on yellow-eyed penguin and seabirds in the northeast North Island region, Auckland and Chatham islands seabird research, flesh-footed shearwater population research and research on New Zealand sea lions. Such projects monitor the trends and demographics of key species as well as undertaking tracking work to understand distribution and foraging ranges to inform where they may be at risk from fisheries both within our exclusive economic zone and overseas.

To ensure continued progress in reducing the scale of bycatch, a range of mitigation projects are undertaken each year. In 2017/18, these projects focused on inshore and offshore bottom longline and surface longline fisheries, as well as an investigation into offal management techniques and other mitigation techniques in inshore trawl fisheries. Protected species liaison roles continued and expanded to help fishers reduce their risk of bycatch in a range of fisheries around the country. Commercial fleets undertake risk analyses and implement protected species mitigation plans, with the intent to implement plans for every commercial finfish fishing vessel by 2020. These initiatives are led by both industry and the New Zealand Government.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information –optional)

The Department of Conservation works towards recovering threatened marine species to safe levels and mitigating the threats affecting them. The projects and programmes mentioned include research actions to gather information regarding marine species and threats (such as population data, species distribution, potential displacement, fisheries interaction)

The Conservation Service Programme is the Department primary mechanism to understand and address commercial-fishing-related threats to protected species.

The species targeted in these initiatives are diverse and scientific programmes are specifically designed for each project. The programme intents to increase the scientific knowledge of these species or test potential mitigation measures.

Case study: Fisheries observer programme

Fisheries observers act as the Department eyes and ears at sea. The Conservation Services Programme relies, in part, on data collected by observers to ascertain the adverse effects of commercial fishing on protected species.

Observers provide information on the types of interactions that are occurring between the various fisheries and different protected species. Data on the numbers of different species being caught on observed vessels are used to determine the level of incidental take across the whole fishery.

Conservation Service Programme information can be found here:

http://www.doc.govt.nz/our-work/conservationservices-programme/

iv. Other relevant information (include websites, web links and files for added information – optional)

No further information required.

c) Measure 3 – Threat Management Plans for marine species

Threat Management Plans (TMPs) are designed in partnership with the Department of Conservation, Fisheries New Zealand, tangata whenua, and other relevant stakeholders to assess, manage and mitigate identified threats on particularly at risk or endangered species.

The *New Zealand Sea Lion Threat Management Plan* is a 5-year plan where the main known threats affecting the population are described and research and mitigation measures are proposed. A combination of specific research projects and actions and public engagement are planned and undertaken every year, for example research on diseases affecting New Zealand sea lion pup mortality and the squid trawl fisheries operational plan.

Currently, there is one TMP for Rāpoka (New Zealand sea lions, *Phocarctos hookeri*), another one (which is currently under review) for Māui and Hector's dolphins (*Cephalorhynchus hectori*, *C. hectori maui*); and consideration is being given to the development of a plan for hoiho (yellow-eyed penguin, *Megadyptes antipodes*).

The main anthropogenic threats for the Māui and Hector's dolphins TMP are being defined in a multi-threat spatially explicit risk assessment. The first Hector's and Māui dolphin TMP was undertaken 11 years ago in 2007 to evaluate and manage the risks from threats such as fishing, tourism, vessel strike, pollution, climate change, and disease. Under the TMP, fisheries restrictions, including set net and trawl bans, have been implemented in parts of the North and South Island, and six marine mammal sanctuaries have been established which include more stringent controls over petroleum and mineral prospecting and seabed mining.

i. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

ii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Department of Conservation works towards recovering threatened marine species to safe levels and mitigating the threats affecting them. The projects and programmes mentioned above include research actions to gather information regarding marine species and threats (such as population data, species distribution, potential displacement, fisheries interaction). The species targeted in these initiatives are diverse and scientific programs are specifically designed for each project.

The management plans develop measures to recover some of the most threatened species, and also undertake research projects to better understand the target species and the threats affecting them. They are created under 5-year cycles and propose actions and measures on an annual basis.

The species targeted in these initiatives are diverse and scientific programs are specifically designed for each project. Whether there is an intention to increase the scientific knowledge of these species or test potential mitigation measures.

New Zealand Sea Lion Threat Management Plan site:

https://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/new-zealand-sea-lion/new-zealand-sea-lion-rapoka-threat-management-plan/

Hector and Maui dolphin Threat Management Plan site:

https://www.doc.govt.nz/our-work/our-work-with-maui-dolphin/hectors-and-maui-dolphin-threat-management-plan/

Each year, a workplan that ties into these streams will be developed based on the previous year's work and with input from the newly established New Zealand sea lion/rāpoka Forum and Advisory Group.

d) Measure 4 – National Plan of Action (NPOA) sharks and seabirds

National Plans of Action (NPOAs) for sharks and seabirds were developed by Fisheries New Zealand in collaboration with the Department of Conservation to maintain the biodiversity and long-term viability of all New Zealand shark populations and reduce the number of seabird deaths from fishing. These NPOAs were designed as 5-year plans, but some of the objectives and actions are expected to be still relevant after 5 years. The NPOA for seabirds is currently under review, and a review for the NPOA for sharks has been scheduled.

The NPOA-Sharks set directions for the period 2013–2018 to ensure the conservation, management, and sustainable utilisation of sharks caught by New Zealand vessels and in New Zealand waters.

NPOA-Seabirds set practical, biological risk and research and development objectives for the period 2013–2018. A current implementation indicates partial success to date. A new NPOA is under development for the next 5 years.

Additionally, other measures have been put in place to contribute to protecting New Zealand marine species and the recovery of the most threatened marine species.

i. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

ii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Department of Conservation works towards the recovery of threatened marine species to safe levels and to mitigate the threats affecting them. The projects and programmes mentioned above include research actions to gather information regarding marine species and threats (such as population data, species distribution, potential displacement, fisheries interaction). The species targeted in these initiatives are diverse and scientific programs are specifically designed for each project.

National Plan of Action – Sharks:

https://www.mpi.govt.nz/news-and-resources/consultations/npoa-sharks-2013/

National Plan of Action – seabirds: Department of Conservation role:

http://www.doc.govt.nz/about-us/our-role/managingconservation/resource-management/resourcemanagement-act/

iii. Other relevant information
(include websites, web links and files for added information – optional)

No further information required.

iv. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

Obstacles in marine management and conservation:

The lack of data for many marine species directly hinders additional progress on identifying threats and developing management and conservation solutions for those marine species.

This includes, but is not limited to, population status and distribution, and limited data outlining dietary requirements, energy value of prey species, foodweb interactions, and spatial distributions.

Technical needs:

Reinforcing the following areas would contribute to the New Zealand purposes and support further achievement towards this goal:

- Additional marine species monitoring and collection of information in relation to indirect impacts on marine species such as climate change, pollution, etc.
- Increased observer coverage of fishing activities to further our understanding of protected species interactions and the implementation of management measures to reduce those interactions.
- Regulation and compliance effort to support management measures.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

July 2018

ii. Summary of evidence used

The *New Zealand Threat Classification System* (NZTCS) assesses the conservation status of groups of plants, animals and fungi, and is administered by the Department of Conservation. The NZTCS's long-term goal is to list all extant species that exist according to their threat of extinction. The system is made up of manuals and corresponding taxa status lists.

The Department of Conservation works towards the recovery of threatened marine species to safe levels and to mitigate the threats affecting them. The projects and programmes mentioned above include research actions to gather information regarding marine species and threats (such as population data, species distribution, potential displacement, fisheries interaction). The species targeted in these initiatives are diverse and scientific programmes are specifically designed for each project.

The Conservation Service Programme is the Department of Conservation's primary mechanism to understand and address commercial-fishing-related threats to protected species.

The management plans develop measures to recover some of the most threatened species, and also undertake research projects to better understand these species and the threats affecting them. They are created under 5-year cycles and propose actions and measures on a yearly basis.

Central and regional government agencies, tangata whenua, charitable organisations, community groups and individual New Zealanders undertake significant pest control, ecosystem restoration work, and species-

specific conservation programmes in terrestrial and freshwater environments to support New Zealand's goal to manage 407 Threatened species to the degree necessary to minimise extinction risk by 2020.

Particular progress has been made in the marine fisheries space through implementation of protected species risk mitigation process. Commercial fleets undertake risk analyses and implement protected species mitigation plans. The intent is to implement plans for every commercial finfish fishing vessel by 2020.

iii. Indicators used in this assessment

For most groups (for example, birds, lichens, and beetles) a panel of species experts meets to assess the status of species in their group. These experts are drawn from a wide range of organisations and backgrounds. Where species have been divided into subspecies, forms etc., it is those that are assessed.

The experts use information from databases, scientific publications and information from the public as well as their own knowledge to determine the threat classification for species (https://www.nztcs.org.nz). Prior to 2014, species groups were reassessed on a 3–4-year cycle but are now usually reassessed every 5 years.

The results of the expert panels' assessments are stored in the NZTCS database. Once an assessment is published, it becomes available here and in PDF format and as Excel spreadsheets on the Department of Conservation website (http://www.doc.govt.nz/publications/conservation/nz-threat-classification-system/).

Endangered species and threatened species are, to many people, just different ways of describing the same thing – an at-risk plant or animal. In the NZTCS these terms mean two different things.

In this system, a threatened species is an umbrella term used to describe a range of risk categories, whereas an endangered species is one specific category.

The New Zealand Threat Classification System also applies to marine mammals and sharks. For marine species there are several other indicators for estimated population size, distribution and trend for at-risk species. These references will vary by species but aim to make species populations improve regarding the baseline measurement.

Case study 1: New Zealand sea lions

The New Zealand Sea Lion TMP aims to ensure the number of new pups born each year is maintained above 1575 in the Auckland Islands. It further aims to grow this baseline above the 1965 number recorded in January 2017.

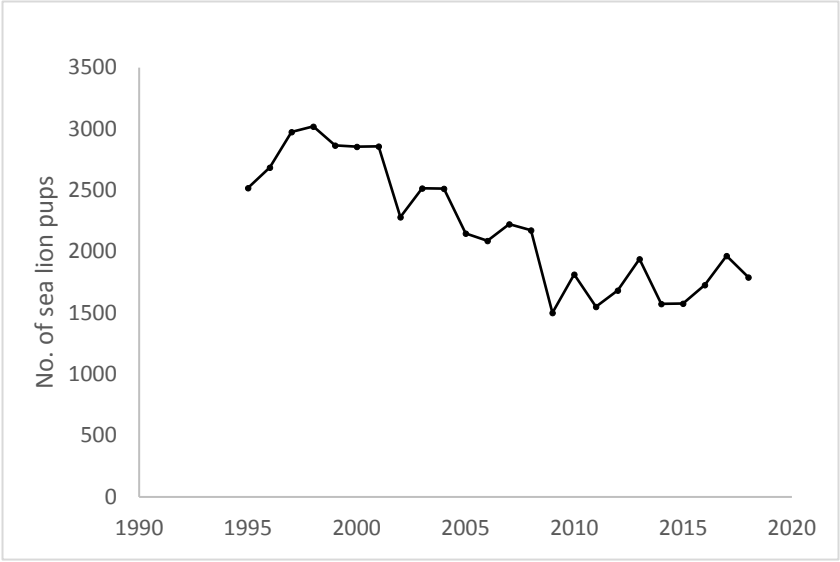

Figure 3: New Zealand sea lion pup count 1995–2018.

Case study 2: Interaction rates of protected species in commercial fisheries

The ultimate goal is that commercial fisheries are undertaken in a manner that does not compromise the protection and recovery of protected species in New Zealand fisheries waters. Measurements include the tracking of trends because baseline measurements for protected species interactions with commercial

fisheries are not available. Measurements of interaction rates are dependent on the effort and spatial distribution of fishing activities at any given time. Trends can be found on: https://psc.dragonfly.co.nz/2017v1/released/explore/

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

No further information required.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

There is a differing level of confidence for the assessment of progress between terrestrial/freshwater species and marine species. The assessment of marine is based on partial evidence while terrestrial/freshwater has comprehensive evidence to support the assessment.

Terrestrial/freshwater species

Confidence in the Threat Classification System assessment of each species is declared for both the population size and the forecast trend. If confidence in either of these attributes is low, a qualifier 'Data Poor' is attached to the assessment. Of 8,024 species assessed as either threatened or at risk as of August 2018, 1456 were qualified 'Data Poor'. An additional 4245 taxa were reported as Data Deficient, meaning an assessment could not be made for lack of information (data extracted from www.nztcs.org.nz, 27 August 2018).

Marine species

The implementation of methods to manage threats to at-risk marine species depends on the data available for those species, the threats affecting them, and the resources available. The gaps of information of marine species are significant and developing specific conservation measures for all marine species is currently unachievable due to the data deficiency.

- Data on demographic parameters, distribution and population size of most deep-sea corals, elasmobranches, non-commercial marine fishes, several marine mammal and seabird species are insufficient to determent the conservation status of these species and main threats affecting them.
- Increased information on the level of risk posed by both commercial and recreational fishing activities on protected species requires further investment, including higher independent verification levels to obtain a more accurate estimate of levels of risk.
- Engaging with international partnerships and agreements to protect our marine species when on migration outside of New Zealand.
- Additional data collection and mitigation measures for pollution, seismic activities, deep-sea mining and other activities potentially affecting at-risk marine species.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

Monitoring of actions to reduce the bycatch of seabirds, marine mammals and reptiles in commercial fisheries include annual estimates of bycatch by fishing fleet, reported through the Protected Species Bycatch website: https://psc.dragonfly.co.nz/. Regular fisheries bycatch risk is also reported, the most recent publications being Richard et al. (2017) for seabirds and Abraham et al. (2017) for marine mammals.[1] See under Target 5 for a table of estimated and actual bycatch data from the Dragonfly monitoring system.

[1] Abraham, E.R.; Neubauer, P.; Berkenbusch, K.; Richard, Y. 2017: Assessment of the risk to New Zealand marine mammals from commercial fisheries. New Zealand Aquatic Environment and Biodiversity Report No. 189. 123 p.

Terrestrial/freshwater species

The Department of Conservation also conducts monitoring of species, the number of species monitored in the year to June 2018 are show in table 7.

Table 7: Number of species receiving monitoring in the year to June 2018.

Threat status	Managed taxa that receive monitoring	Non-managed taxa that receive monitoring
Threatened	108	5
Other	34	12
Total	142	17

Data are then extracted from the Department of Conservation Business Planning Software that collates monitoring activities for species. This is cross-referenced with information on streaming outcomes for species and their threat status.

Marine species

The CSP states that adequate information on population level and susceptibility to fisheries effects exists for protected species populations identified as at medium or higher risk from fisheries.

The CSP undertakes research projects every year, under one of the following categories: *interaction projects, population projects* and *mitigations projects.* Those research projects under the *population projects* category are focused on gathering information about the population status of protected species (i.e. 2018/19 projects include research on several seabird species, corals and the yellow-eyed penguin).

2018/19 CSP Annual Plan

https://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/plans/csp-annual-plan-2018-19.pdf

Strategic Statement CSP

https://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/reports/csp-strat-statement2015.pdf

One of the four Workstreams of the New Zealand Sea Lion Threat Management Plan is *Evaluation.* The Department of Conservation has the commitment of undertaking annual pup count at all known New Zealand sea lion breeding locations: Auckland Islands, Campbell Island, Stewart Island and the South Island. This information is used to assess the status of the New Zealand sea lion population.

Research reports

https://www.doc.govt.nz/nature/native-animals/marine-mammals/seals/new-zealand-sea-lion/research-and-fieldwork/

Richard, Y.; Abraham, E.; Berkenbusch, K. (2017). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2014–15. New Zealand Aquatic Environment and Biodiversity Report 191. 104 p.

13. A GROWING NATIONWIDE NETWORK OF MARINE PROTECTED AREAS, REPRESENTING MORE OF NEW ZEALAND'S MARINE ENVIRONMENT

I. General information

i. Rationale for the national target

New Zealand is committed to developing a representative network of marine protected areas. Coastal and marine ecosystems and species in New Zealand are highly diverse, due to a combination of our geological history and isolation, the range and complexity of habitats, and the influence of some major ocean currents. The result is a wide variety and patchy distribution of coastal and marine plants and animals.

Marine reserves in New Zealand do not yet cover the full range of our distinctive coastal and marine habitats and ecosystems. A growing network of marine protected areas that represents more of New Zealand's marine environment will have benefits for marine biodiversity conservation and be an important scientific resource.

Directly related to Aichi target 11.

Not indirectly related to any other Aichi targets.

II. Implementation measures

a) Measure 1 – By 2020, a wider range of marine ecosystems will be in protected areas

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Several regional marine protected area planning processes have occurred since the last report, but significant gaps in habitat representation remain across marine ecosystems in New Zealand.

The New Zealand Government has been working to address this. Work over the reporting period has included identifying under-represented habitats and ecologically important areas, developing guidance on a national marine protected are network and improving habitat mapping and classification.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Ten new marine reserves and five new Type 2 marine protected areas have been established within the New Zealand territorial sea since 2013, which has resulted in:

- All coastal habitats in the Subantarctic Islands Biogeographic Region are now encompassed in marine protected areas.
- Half of the coastal habitats on the West Coast of the South Island now have some representation in marine protected areas.
- More habitats are now represented in marine protected areas on the East Coast of the South Island of New Zealand.

Further work needs to be done to achieve a network of marine protected areas and reserves that are representative of all the ecosystems. Activities are underway to provide background, analysis and recommendations for expanding marine protection in New Zealand.

The Classification, protection standard and implementation guidelines for the Marine Protected Areas: policy and implementation plan (2008) can be found here:

https://www.doc.govt.nz/about-us/science-publications/conservation-publications/marine-and-coastal/marine-protected-areas/marine-protected-areas-classification-protection-standard-and-implementation-guidelines/

iv. Other relevant information
(include websites, web links and files for added information – optional)

Case study 1: South-East Marine Protection Forum

In February 2018 the New Zealand Government-appointed South-East Marine Protection Forum delivered recommendations to the Minister of Conservation and Minister of Fisheries outlining marine protection along the east coast of the South Island. The Forum recommended two alternative networks for consideration, covering 14.2% or 4.2% of the South-East South Island marine coastal area.

https://south-eastmarine.org.nz/

Case study 2: Sea Change – Tai Timu Tai Pari

Sea Change – Tai Timu Tai Pari is New Zealand's first marine spatial plan. It has 181 proposals developed over 4 years by a Stakeholder Working Group with representatives from mana whenua, recreational and commercial fishing, farming, aquaculture, infrastructure, the community and environmentalists. The proposals are interlinked and intended to be implemented as a package and cover a wide range of issues: marine protection, habitat restoration, biodiversity, commercial fishing, environmental and cultural issues. Implementing the proposals will require the New Zealand Government to work with a wide range of stakeholders including councils and mana whenua.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

More could be done to increase efforts to achieve the target. Work is required to improve national coordination, the integration of protected areas into broader ecosystem management, and to improve information on the social, cultural, economic and ecological values associated with the marine environment. Implementation of methods to better understand species and habitat distributions would assist with ensuring representation within protected areas.

b) Measure 2 – New Zealand will work towards establishing the Kermadec/Rangitāhua Ocean Sanctuary

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The New Zealand Government is committed to working alongside Māori on the Kermadec/Rangitāhua Ocean Sanctuary proposal, which could be larger than the combined area of New Zealand's existing 44 marine reserves. A legislative Bill is currently awaiting a second reading in the House, the aim is to establish a new marine protected area in New Zealand's exclusive economic zone around the Kermadec Islands and to preserve it in its natural state. A Cabinet paper has been prepared for the Government to consider and the Bill is awaiting its second reading.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

Kermadec Ocean Sanctuary bill progress:

https://www.parliament.nz/en/pb/bills-and-laws/bills-proposed-laws/document/00DBHOH_BILL68514_1/kermadec-ocean-sanctuary-bill

Proposed Kermadec Ocean Sanctuary documents:

http://www.mfe.govt.nz/marine/kermadec-ocean-sanctuary

Kermadec Ocean Sanctuary Cabinet paper:

http://www.mfe.govt.nz/node/21204/

iv. Other relevant information
(include websites, web links and files for added information – optional)

No information available.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information as needed)

Further work is required to engage with tangata whenua and ensure the sanctuary supports their rights under the Treaty of Waitangi.

c) Measure 3 – By 2020, New Zealand will have new marine protection legislation that provides a framework for the establishment of a representative network of marine protected areas

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

In January 2016, the New Zealand Government issued a public consultation document on proposed reforms to the management of Marine Protected Areas. The Government is determining an approach to this and other marine protection priorities.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

New marine protection legislation has not been introduced. However, preparatory work has been completed and public consultation was undertaken. This provides a solid foundation to build off once an approach to the work is established.

Consultation document for a new Marine Protected Areas Act:

http://www.mfe.govt.nz/node/21496

iv. Other relevant information
(include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

No further information required.

III. Assessment of progress

i. Category of progress and date of assessment

☒ Progress towards target but at an insufficient rate.

April 2018

ii. Summary of evidence used

All measures have been partially effective and the rate of progress has been slow.

Despite the establishment of new marine protected areas and planning processes, significant habitat gaps remain in the Territorial Sea and there have been no new protection established in the exclusive economic zone.

iii. Indicators used in this assessment

☒ No indicator used.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

No further information required.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

Some of the evidence and information related to the progress towards this target is still being developed, therefore comprehensive evidence has not been published. Confidence in the assessment of progress towards the national target is based on official government publications and documents, and therefore has high validity.

vii. Adequacy of monitoring information to support assessment

☒ No monitoring system in place.

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information – optional)

No further information required.

GOAL D: ENHANCE THE BENEFITS TO ALL

14. BENEFITS OF BIODIVERSITY AND ECOSYSTEMS FOR PEOPLE'S HEALTH AND ECONOMIC, SOCIAL AND CULTURAL WELLBEING ARE BETTER UNDERSTOOD AND RECEIVED.

I. General information

i. Rationale for the national target

Ecosystem services are the benefits humans get from nature, they enable our existence and increase our wellbeing. Obvious examples are food, freshwater and opportunities for outdoor activities, but many more enhance human prosperity. National Target 14 also recognises that having a strong sense of identity – of ourselves as individuals and in the sense of belonging to a particular culture, society, or place – is a key contributor to wellbeing (Roberts et al. 2015). Opportunities to spend time in green and blue spaces contributes to physical and psychological human health. An increasingly sedentary indoor lifestyle has been linked with issues such as obesity in both adults and children.

The Treaty of Waitangi – Te Tiriti o Waitangi provides for the enduring relationship of mana whenua (indigenous authority) with the lands, waters and taonga (treasured resources). The Treaty principles are recognised in environmental management legislation and guide the partnerships between mana whenua and New Zealand government agencies in engagement for the sustainable management and protection of indigenous biodiversity and natural resources. Engagement with mana whenua is essential to evaluate matters of cultural wellbeing, and the connection and relationships of mana whenua with biodiversity and ecosystems. Central and local government agencies will need to work in partnership with mana whenua to recognise and provide for the full range of rights, interests and values (including those associated with customary, non-commercial and commercial fishing), and to support mana whenua as kaitiaki (guardians) of these taonga. This includes the government's policies and initiatives towards achieving the targets of the CBD.

Directly related to Aichi targets 1 and 14.

Indirectly related to Aichi target 17.

II. Implementation measures

a) Measure 1 – Healthy Nature Healthy People

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Healthy Nature Healthy People aims to connect New Zealanders with nature – the land, water, sky or sea – to maintain and improve their health and wellbeing. Healthy Nature Healthy People is part of an international movement that started in Victoria, Australia in 2000 as Healthy Parks Healthy People, and was later adopted by the Department in 2015 as Healthy Nature Healthy People. Parks Victoria has been highly successful in demonstrating the important interconnection between human and environmental health. Many countries have since adopted similar programmes such as the United States, Canada, England, South Africa and South Korea.

For New Zealand, 'Nature' is considered a better fit for our unique context. People can experience nature everywhere, not only in our conservation land but in all green and blue spaces – such as our urban parks, backyards, beaches, oceans, lakes and rivers. The inextricable connection between people and the environment has been understood by Māori for centuries.

Principles of Healthy Nature Healthy People:

- Contact with nature is essential for improving emotional, physical and spiritual health and wellbeing.
- Community wellbeing depends on healthy ecosystems.
- Protected areas nurture healthy eco-systems.
- Protected areas are fundamental to economic growth and thriving communities.

Research tells us that people are becoming increasingly disconnected from nature, both physically and psychologically. Urbanisation and modern lifestyles have led to people in wealthy, industrialised nations like New Zealand spending very little time in nature each day. At the same time, chronic disease such as heart disease, diabetes and mental illnesses are on the rise.

- Spending time in nature makes us happier and decreases feelings of depression and anxiety.
- Our wellbeing depends on the way ecosystems work.
- Direct exposure to nature is essential for healthy childhood development, and for the physical and emotional health of children and adults.
- Green and blue spaces influence health and wellbeing by providing opportunities to partake in physical activity, facilitating the development of social capital and through direct restorative effects, including recovery from stress and 'mental recharging'.
- 85% of New Zealanders believe that their connection with our nature improves their lives. (Department of Conservation 2016 Survey of New Zealanders)

Access to nature for its health benefits is important. It is recognised that 50% of New Zealander's will experience a mental health issue in their lifetime and depression is set to overtake heart disease as the largest global health burden by 2020. Half of all New Zealanders are insufficiently active, with an estimated cost to our economy of NZD $1.3billion in 2010 alone. As little as 30 minutes in nature each week can help reduce depression and high blood pressure.

A recent study by MacKerron & Mourato (2013) used a smartphone app that signalled participants at random moments, presenting them with a brief questionnaire while using satellite positioning to determine their geographical location. Over a million responses from more than 20,000 participants were collected, and the study found that, on average, participants were significantly and substantially happier outdoors in all green or natural habitat types than they were in urban environments.

The Department of Conservation's Healthy Nature Healthy People Strategy 2018–2021 sets out the purpose and goals of the initiative. The Department of Conservation is working with other organisations to promote the principles of Healthy Nature Healthy People in different contexts. A key partnership, formed in 2015, is with the Mental Health Foundation. There are many more partner organisations for this programme including the Halberg Disability Sports Foundation, Healthy Families (Ministry of Health), and Taranaki Mounga.

Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa is being developed by Statistics New Zealand as a resource of measures for New Zealand's wellbeing. The set of indicators go beyond economic measures, such as gross domestic product, to include wellbeing and sustainable development. The wellbeing indicators build on international best practice. These indicators are being tailored for New Zealand by incorporating cultural and te ao Māori perspectives. The New Zealand Government is working to ensure Indicators Aotearoa New Zealand is aligned with the New Zealand Treasury Living Standards Framework (For more information see Aichi Target 2).

More information relating to Healthy Nature Healthy People:

https://www.mentalhealth.org.nz/home/news/article/191/its-mental-health-awareness-week

https://www.doc.govt.nz/Documents/about-doc/role/visitor-research/survey-of-new-zealanders-2016.pdf

https://www.doc.govt.nz/Documents/about-doc/role/visitor-research/survey-of-new-zealanders-2016.pdf

https://www.mentalhealth.org.nz/home/news/article/141/lock-your-staff-out-on-world-mental-health-day

http://www.gw.govt.nz/assets/About-GW-the-region/News-and-media-releases/Physical-inactivity-costs-report.pdf

MacKerron, G.; Mourato, S. 2013: Happiness is greater in natural environments. *Global Environmental Change*. 24 p. LSE Research Online http://eprints.lse.ac.uk/49376/

Roberts et al. 2015: The Nature of wellbeing: how nature's ecosystem services contribute to the wellbeing of New Zealand and New Zealanders. 145 p.: https://www.doc.govt.nz/Documents/science-and-technical/sap258entire.pdf

More information relating to Indicators Aotearoa New Zealand – Ngā Tūtohu Aotearoa:

https://www.stats.govt.nz/tereo/indicators-and-snapshots/indicators-aotearoa-new-zealand-nga-tutohu-aotearoa/

More information relating to the New Zealand Treasury Living Standards Framework:

https://treasury.govt.nz/information-and-services/nz-economy/living-standards/our-living-standards-framework

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Considerable work has been done under the *Healthy Nature Healthy People* initiative, working towards the goals set out under Healthy Nature Healthy People strategy. Under this strategy the Department of Conservation is working towards key goals such as embedding Healthy Nature Healthy People principles into Department of Conservation work, as demonstrated within the Department's Health and Safety Strategy. The Department of Conservation is also working with key influencers to mainstream the Healthy Nature Healthy People approach. This includes the partnerships with the Mental Health Foundation, Halberg Disability Sports Foundation, Healthy Families (Ministry of Health), and Taranaki Mounga. All of this work contributes to the success of Target 14, and more specifically actions 14.1 and 14.4 of the New Zealand Biodiversity Action Plan. Other key actions of the Healthy Nature Healthy People initiative include:

- A memorandum of understanding with Mental Health Foundation to work together under the Healthy Nature Healthy People initiative. One of the key things both organisations have in common is the importance of nature and its health for its own benefit and for the health of people.
- In 2017 (9–15 Oct), the Mental Health Foundation ran their Mental Health Awareness week campaign. This was about people connecting to nature for good mental health and wellbeing, with the theme message 'Nature is Key'. This is the second year in a row that nature has been a theme for this week and the campaign continues to growth in strength. Conservation Week occurred a week later (14–22 October), so marketing and awareness was amplified even further. During the 6-week period leading up to and proceeding Mental Health Awareness Week (17 September – 31 October), the campaign website received 198,000 page views, 50,000 sessions with people viewing an average of 3.8 pages per session (https://www.mhaw.nz. The social media campaign reached 1.5 million people and generated 25,000 engagements. There was also a significant increase in resource orders compared with the 2016 campaign. Sixty per cent of people surveyed who participated in the 2017 campaign had not previously engaged in Mental Health Awareness Week which implies these are people engaging for the first time.
- Promotion of Mental Health Awareness Week helped extend the reach of Healthy Nature Healthy people in terms of the messaging / call to action for people to connect with nature for good mental health and wellbeing. A survey undertaken by Mental Health Foundation of just over 1000 people post the event found that 70% of those surveyed spent time in nature because of Mental Health Awareness Week. The survey identified that 94% of respondents replied that spending time in nature made them feel good and 74% of them said they intended to spend more time in nature because of their raised awareness. From an organisational perspective, 80% of the respondents said that the

awareness week helped people in their organisation to recognise that spending time in nature can have a positive impact on wellbeing.

- The Department of Conservation has built this recognition into policy through the Health and Safety Strategy. One of the 10 key statements is that 'staff are offered opportunities to enjoy nature' (for their wellbeing). Teams are starting to implement changes to facilitate how they can engage more in nature as individuals and as a team, such as walking or outdoor team meetings, and 'working bee' days on public conservation land.
- 51 organisations/groups/agencies have now been introduced to Healthy Nature Healthy People. At least five are actively using the language, promoting the principles, using the logo and engaging people in activities which connect them to nature settings.

Overall, we have relied upon qualitative data by way of interviews, surveys and participant feedback. These data provide insight into the effect and benefits being in, or working with nature, have on the participants.

Success of the Healthy Nature Healthy People initiative is evidenced through each individual project that is undertaken, by various means such as feedback, anecdotal evidence, surveys, social science and various other means. There is no overarching measurement framework available at present.

The example given, of promoting health and wellbeing awareness of engaging in nature during Mental Health Awareness Week and Conservation Week showed increased time was spent in nature and raised awareness of health and wellbeing benefits, by the respondents of the survey. The survey found that 94% of people said that spending time in nature made them feel good and 74% of people said they intended to spend more time in nature due to raised awareness of the benefits.

iv. Other relevant information
(include websites, web links and files for added information – optional)

ESP Matrix Programme:

https://www.seasketch.org/#projecthomepage/52322dd05d3e2c665a00d119

Mental Health Awareness Week:

https://www.mentalhealth.org.nz/home/news/article/191/its-mental-health-awareness-week

Survey of New Zealanders Report:

https://www.doc.govt.nz/Documents/about-doc/role/visitor-research/survey-of-new-zealanders-2016.pdf

Mental Health Foundation:

https://www.mentalhealth.org.nz/home/news/article/141/lock-your-staff-out-on-world-mental-health-day/

https://www.mentalhealth.org.nz/home/ways-to-wellbeing/

https://www.mhaw.nz/

The Nature of Wellbeing Report:

https://www.doc.govt.nz/Documents/science-and-technical/sap258entire.pdf

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information as needed)

The key challenge is how to quantify / measure the relationship between people engaging with nature, and health improvements at a national population level. In addition, how to measure the social benefits that the population experiences through being part of the holistic healthy ecosystem alongside plants and animals.

Blaschke (2013) comments that although there has been research on the health and wellbeing benefits associated with being in green spaces managed by the Department of Conservation, most research has inadequately characterised the types of green spaces or natural areas being assessed. As such, it has not been possible to establish what types of green spaces have what types of health benefits. Innovative new research methods could better help us understand the impact of green locations on wellbeing. MacKerron & Mourato (2013) used a smartphone app that signalled participants at random moments, presenting them

with a brief questionnaire while using satellite to determine their geographical location. Over a million responses from more than 20,000 participants were collected, and the study found that, on average, participants were significantly and substantially happier outdoors in all green or natural habitat types than they were in urban environments.

Further information:

Blaschke, P. 2013: Health and wellbeing benefits of conservation in New Zealand. *Science for Conservation 321*.Department of Conservation, Wellington. 37 p.

b) Measure 2 – Partnerships with businesses: Fulton Hogan

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Fulton Hogan are the primary partner of the Department of Conservation Takahē Recovery Programme. This partnership began in 2016. With an intergenerational outlook on business and the goal to have a net positive impact on biodiversity in New Zealand, Fulton Hogan partnered with Takahē Recovery to enable its staff and families to make a meaningful, hands-on contribution to conservation.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

To date, over 320 staff and family members have participated in conservation under this programme. As a result of ongoing conservation engagement and advocacy within the business, there has been a cultural shift where the business now actively recognises itself as guardians of our nature. The benefits of this work reach beyond physical values to enhancing the wellbeing of those involved.

Fulton Hogan has displayed comprehensive business leadership through their partnership. They have shown how a business can go beyond the initial 'value exchange' to create a true partnership culture, where different organisations can utilise each other's strengths and expertise to work together towards a common goal. This work is an example of how partnerships with businesses contributes to the success of national target 14, and more specifically actions 14.1 and 14.2 of the New Zealand Biodiversity Action Plan.

For this assessment we have relied upon qualitative data in the main by way of interviews, surveys and participant feedback. These data provide insight into the effect and benefits being in, or working with nature, have on the participants.

iv. Other relevant information (include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

The key challenge is finding a means to quantify/measure the impact our work is having on wellbeing beyond anecdotal evidence. This would greatly assist in setting tangible targets that can be communicated in a business context.

c) Measure 3 – Partnerships with agencies for upskilling the unemployed

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The programme is a partnership between the Department of Conservation and the Ministry of Social Development (MSD) and blends the goals of these two agencies. The programme is a pilot of a new model that adds to a suite of initiatives already offered by MSD to clients to help them re-enter the workforce.

Each 8-week programme offers unemployed people the opportunity to build skills to help them transition into work whilst also achieving conservation goals. MSD have a key role in the selection of applicants and the

follow-up transition from the programme into sustained employment. The Department of Conservation offers a positive work environment, hands on experience over a range of tasks, and an opportunity to realise the benefits of being in nature while achieving priority conservation outputs.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

A pilot and further programme have been carried out successfully. Work began on the design of the course in October 2017 and has been successfully implemented during 2018 in the Canterbury Region. There is a second group of participants now taking part, with two further groups planned.

Observations and outputs:

- Improvements in mental health was assessed through a feedback form where participants were asked for their input.
- Many participants had a past of mental health issues and had been unemployed for some time. Working in the natural environment lifted spirits and positivity, improved mood and energy levels.
- Most of the participants have found employment during the programme (seven of the initial nine).
- Participants finished with improved mental health, proven work ethic and new skills to take to the workforce, plus a renewed connection with nature.
- Certificates in Growsafe, first aid and river crossing has given the participants a more work-ready stance.
- MSD has agreed to fund a further three work programmes based on the success of the first one.
- The Department of Conservation goals were to provide a positive work environment, improve people's skills, engage people with nature and increase conservation output across the Department's intermediate outcomes. These goals have been met.
- The conservation output has been significant. The calculated work generated was over 3400 hours; more than that of two full time rangers for a year.

For this assessment, we have relied upon qualitative data in the main by way of interviews, surveys and participant feedback. These data provide insight into the effect and benefits being in (or working with) nature have on the participants. Surveys have been completed by programme participants and indicate a range of positive gains and their understanding and connection with nature.

iv. Other relevant information (include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

A practical challenge is how to assess the value of the programme. It is not as simple as measuring the balance between the time outputs to the time gains received through the practical work. This is just one way of looking at value. There are many social, health and economic gains for the participants as well as New Zealand. A practical way of measuring the social and health gains could be to ask participants to take part in a follow up survey to assess items such as increased job opportunities, wellbeing and new habits.

d) Measure 4 – Evaluating ecosystem services at place

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

This measure is the formulation of two different approaches for evaluating ecosystem services at place.

The first method is led by the National Institute of Water and Atmospheric Research (NIWA). This is the Ecosystem Principles Approach and is used to define key elements of ecosystem functioning in the marine environment that can be used to understand how management actions will enhance or forfeit ecosystem service(s) (Townsend et al. 2011). For example, the Ecosystem Principles Approach can be used to identify the conditions that enhance biological 'productivity' and therefore which habitats are important in delivering food services.

The second approach is led by the Department of Conservation, the Ecosystem Service Matrix. This is an evidence-based system that places habitats on one axis, and ecosystem services on another, then links ecosystem services to marine habitats that underpin service generation (Geange et al. 2019). The Ecosystem Service Matrix can be read to observe the mix of services that a habitat potentially contributes to, and to identify which marine habitats potentially contribute to a specific ecosystem service. The Ecosystem Service Matrix can be used to help inform a range of management decisions. For example, where there is an aim to protect a representative range of services within a network of marine protected areas, the Ecosystem Service Matrix could be applied to each site within the network to evaluate how well it protects a representative range of services and the amount of replication for each service across the network.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Ecosystems Principle Approach has been used to develop ecosystem service maps for biogenic habitat, nutrient recycling and ecosystem productivity in the Hauraki Gulf, New Zealand (Townsend et al. 2014). The maps score relative importance of service provision from high to low and have been statistically verified. These maps have been used by planners, managers and stakeholders to explicitly consider ecosystem services during the development of the Hauraki Gulf marine spatial plan (see Goods and Services maps at https://www.seasketch.org/#projecthomepage/52322dd05d3e2c665a00d119).

The Ecosystem Service Matrix has been applied to two marine reserves to evaluate changes in ecosystem services through space and time. Within one reserve, extent of habitats contributing to supporting and regulating services increased by approximately 1.5 times in the 29 years following protection. A comparison between two reserves found that the spatial extent to habitats contributing to waste-water treatment was approximately 50 times greater in one reserve relative to the other (Geange et al. 2019).

iv. Other relevant information (include websites, web links and files for added information – optional)

Geange, S.W.; Townsend, M.; Lohrer, A.M.; Clark, D.; Ellis, J.I. 2019: Communicating the value of marine conservation using an ecosystem service matrix approach. *Ecosystem Services 35*: 150–163.

Townsend, M.; Thrush, S.F.; Carbines, M.J. 2011: Simplifying the complex: an 'Ecosystem Principles Approach' to goods and services management in marine coastal ecosystems. *Marine Ecology Progress Series 434*: 291–301.

Townsend, M.; Thrush, S.F.; Lohrer, A.M.; Hewitt, J.E.; Lundquist, C.J.; Carbines, M.; Felsing, M. 2014: Overcoming the challenges of data scarcity in mapping marine ecosystem service potential. *Ecosystem Services 8*: .44–55.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information as needed)

The application of the Ecosystem Principles Approach and the Ecosystem Service Matrix detailed above is hindered by inadequate knowledge of the spatial distribution of communities, knowledge of the component species in these communities, habitats, and the ecosystem functions that they provide. Only 20 % of the cells within the Ecosystem Service Matrix included information from New Zealand published literature (Geange et al. 2019). Improvements in the assessment of habitat quality and the impact of human activities on ecosystem services is needed to facilitate a better understanding of ecosystem service approaches by planners, managers and stakeholders.

There is also a strong need for implementation support. There are numerous weaknesses of the mainstream economic approaches to valuation, growth and development. These can be mitigated by the coordination of an ecosystem services approach under a framework that includes mainstreaming the safeguarding of non-extractive (non-monetised) ecosystem services into the policies and practices of sectors that deal with marine planning. Such a framework for protecting the substantial non-monetary contributions of ecosystem services to sustainable wellbeing is currently lacking.

III. Assessment of progress

i. Category of progress and date of assessment

☒ On track to achieve target (July 2018).

ii. Summary of evidence used

In relation to the measures presented under Target 14, we have identified that two have been effective, and two are partially effective. On that basis, using these examples, we can determine that we are on track to achieve target.

The challenge in assessing the progress overall is that this assessment calls for a holistic understanding of the work being done across the Department of Conservation that benefits peoples' health, economic and social and cultural wellbeing. In addition, the outputs of this target are generally qualitative in nature, which are more challenging to quantify.

iii. Indicators used in this assessment

☒ No indicator used.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Conclusions have been drawn from a variety of sources including programme interviews and surveys, participant feedback, research papers, and external research and observations by organisations such as the Mental Health Foundation.

https://www.seasketch.org/#projecthomepage/52322dd05d3e2c665a00d119

https://www.mentalhealth.org.nz/home/news/article/191/its-mental-health-awareness-week

https://www.doc.govt.nz/Documents/science-and-technical/sap258entire.pdf

https://www.doc.govt.nz/Documents/about-doc/role/visitor-research/survey-of-new-zealanders-2016.pdf

https://www.mentalhealth.org.nz/home/news/article/141/lock-your-staff-out-on-world-mental-health-day

http://www.gw.govt.nz/assets/About-GW-the-region/News-and-media-releases/Physical-inactivity-costs-report.pdf

https://www.doc.govt.nz/Documents/about-doc/role/visitor-research/survey-of-new-zealanders-2016.pdf

https://www.doc.govt.nz/Documents/science-and-technical/sap258entire.pdf

https://www.mentalhealth.org.nz/home/ways-to-wellbeing/

https://www.stats.govt.nz/tereo/indicators-and-snapshots/indicators-aotearoa-new-zealand-nga-tutohu-aotearoa/

https://treasury.govt.nz/information-and-services/nz-economy/living-standards/our-living-standards-framework

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

The level of confidence in assessing progress for the various target actions is based on a review of a representative selection of current projects and partnerships, and where available relevant reports and research.

Most of the research available is qualitative in nature, with little quantitative evidence. This is primarily due to the nature of what is being assessed by target 14, being people understanding and experiences of wellbeing measures. These qualities are not hard facts, but rather, subjective experiences, and as such the qualitative assessment measures are most suitable.

Quantitative evidence has been provided by way of research by the Mental Health Foundation and has been quoted throughout the report to demonstrate the known understood benefits of engaging in nature, and how this will impact on one's health and wellbeing. Understanding the benefits of biodiversity may have improved more in the academic community than in among the public who might benefit most from it. More work is required to translate academic and technical research on the benefits of ecosystem services to the general public.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information – optional)

Output and Outcome monitoring includes interviews, surveys, and anecdotal evidence from feedback from participants created for each of the programmes, projects and partnerships that feed into target 14.

There is no centralised or formalised monitoring framework to measure the Actions. Monitoring would benefit from the creation of a framework for specifically monitoring against the target actions.

15. ACHIEVE MULTIPLE BENEFITS AND GREATER BIODIVERSITY AND ECOSYSTEM SERVICES OUTCOMES THROUGH GREATER COORDINATION, INTEGRATION AND COLLABORTIONS, PARTICULARLY AT THE REGIONAL LEVEL.

I. General information

i. Rationale for the national target

There are multiple key stakeholders working towards achieving biodiversity outcomes in New Zealand. Restoring biodiversity and greater ecosystem service outcomes requires greater coordination, collaboration and co-design between stakeholders over a large 'landscape' scale. A landscape scale approach is needed because many rare ecosystems and species are spread across large areas of private and public land in New Zealand. There is a growing need for collaborations between tangata whenua, local government, philanthropists, business and community to protect New Zealand's biodiversity on this scale.

Mainly related to Aichi targets 2, 4 and 14.

Indirectly related to no other targets.

II. Implementation measures

a) Measure 1 – Collaborative landscape-scale projects

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

New Zealand has worked over the reporting period to improve biodiversity and ecosystem outcomes through collaboration and co-design on a landscape scale. This work aims to achieve critical ecosystem connectivity across multiple land tenures using a landscape-scale approach. The Department of Conservation has established a dedicated team (the Partnerships Group) focused on accelerating achievement of conservation outcomes through collaboration.

Restoration landscape conservation projects are informed through the assessment of five criteria, (1) biodiversity significance of an area, (2) partner readiness to collaborate, (3) synergy with other national and regional programmes, (4) ability to reach hearts and minds and (5) likelihood of success. Once a site is selected, a four-part landscape strategy is applied: i) building an alliance with tangata whenua, central and local government, ii) building capability and capacity within tangata whenua and community to deliver conservation outcomes, iii) identifying and understanding potential funder objectives and iv) scoping/designing the specific landscape projects.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

This measure aims to contribute to greater biodiversity and ecosystem services outcomes through greater coordination, integration and collaboration.

The Department of Conservation is working with others in partnership to improve biodiversity and ecosystem outcomes through collaboration and co-design on a landscape scale. Thirteen collaborative landscape-scale projects have been identified to date. Projects are either led by the Department or jointly led/co-designed between the Department and partners. The first landscape-scale restoration, *Project Janszoon*, commenced in Abel Tasman National Park in 2012, covering 23,000 ha. The second is the *Taranaki Mounga* landscape-scale restoration project for the Egmont National Park and adjoining conservation lands (34,000 ha). Further landscape-scale restoration projects such as *Cape to City* in the Hawkes Bay region are underway. Substantial third-party funding and expertise has accelerated the achievement of biodiversity outcomes for each of these projects.

iv. Other relevant information (include websites, web links and files for added information – optional)

Case studies for two landscape-scale projects which have progressed during the reporting period are provided below. These are two of many examples across New Zealand.

Case Study 1: Cape to City

Cape to City is a partnership that has delivered landscape-scale predator control and ecological restoration in the Hawkes Bay (on the East coast of New Zealand's North Island). The partnership was launched in 2015. Partners include Hawkes Bay Regional Council, the Department of Conservation and tangata whenua. Other partners include research institutes, philanthropic organisations, community groups, private landowners and small businesses. The aim of the project is to deliver landscape-scale predator control and ecological restoration to provide economic and social gains as well as environmental benefits. Cape to City's sister project is Poutiri Ao ō Tāne, located in northern Hawke;s Bay. Together, these projects are working to protect roughly 35,000 ha of the region for indigenous bird species such as kiwi, kākā and kōkako, as well as many native insects (e.g. wētā) and plants.

Both projects have multiple workstreams including research and monitoring, community education and engagement, biodiversity and species, habitation restoration and pest control. Monitoring of workstreams is included in the project's interim reporting framework.

Further information:

https://www.capetocity.co.nz/resources/reports/

Case Study 2: Project Janszoon – together restoring the Abel Tasman.

This project is a collaborative restoration effort within the Abel Tasman National Park, located in the north of New Zealand's South Island. It involves the privately funded Project Janszoon Trust who work with conservationists, iwi, locals, scientists, tourism operators and volunteers. The outcome Project Janszoon has set for itself is to transform the ecological prospects of the Abel Tasman National Park over the next 30 years by investing in measures which:

- Reverse the incursions of predators and weed species in the Park.
- Restore key elements of the ecosystems, including key species and key ecological associations.
- Reestablish stable populations of lost or threatened birds, plants and animals.
- Strengthen the community of support around the Park.

Within the last 5 years Project Janszoon has made progress towards the eradication of invasive pine species from the national park. These pines were threatening the granite-based ecology of the area. Habitat has been improved for South Island kākā (forest parrot), kākāriki (New Zealand parakeet), tīeke (North Island Saddleback) and pāteke (brown duck). These species are now demonstrating population growth.

The project's partners have developed a specific set of transformational biodiversity outcomes to be achieved, the indicators to measure them and the maintenance targets. These outcomes are agreed under an Accord known as the Tomorrow Accord, an agreement between the philanthropic NEXT Foundation and the New Zealand Government. The Accord provides for philanthropic investment to achieve transformational outcomes that will then be maintained by Government in perpetuity.

The Project is implemented by a combination of Department of Conservation staff, private contractors and volunteer resources. The Project is supported by a monitoring programme which also informs learning and provides the opportunity for review.

For further information refer to *Project Janszoon* annual reports:

https://www.janszoon.org/about/

v. *Obstacles and scientific / technical needs related to the measure*
(include websites, web links and files for added information – optional)

Further research and development work is needed to support collaborative landscape-scale partnerships achieve and maintain their outcomes:

- As collaborative projects extend across various land tenures further work is needed to establish a common understanding of the current state of New Zealand's biota across all land tenures. This shared understanding then needs to be updated over time.
- More work is required to identify how the collaborative partnerships may best co-design their biodiversity outcomes and build the methods needed to achieve these. We continue to learn how to achieve tangible results through integrating the work of the Department of Conservation, communities, iwi, councils and others. This is leading to greater biodiversity gains than if the partners had invested and worked in isolation.
- It will be important to develop clear and agreed biodiversity outcomes in partnership with primary production activities; for example, the identification of significant habitats for indigenous fisheries that could be protected from land use. This will help ensure that productive land use and biodiversity are not mutually exclusive.
- Further development will be essential to identify how collaborative projects can sustain their biodiversity gains into the extended future, after the term of the initial collaborative partnership ends.
- New technology is required to measure the progress of landscape-scale projects towards their outcomes. For example, there is a new tool called the 'PAWS Pest identification sensor pad' under development that can efficiently measure stoat (an invasive predator) density at the landscape scale.
- https://www.lincolnagritech.co.nz/capabilities/capabilities-and-projects/paws-pest-identification-sensor-pad/

b) Measure 2 – Coordination of agencies in the natural resources sector

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

New Zealand Government agencies with an interest in natural resources work together to take collective action on strategic issues, to support Ministers and undertake cross-portfolio work programmes. Biodiversity cuts across most other environmental policy areas, including freshwater, marine, climate change and resource management. Therefore, this coordination is crucial for biodiversity outcomes.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Specific outcomes for biodiversity delivered by this measure cannot be directly assessed. A qualitative assessment based on development of joint outcomes, work programmes and advice, however, shows that the coordination across natural resource agencies during the reporting period has achieved greater integration and collaboration in New Zealand at both national and regional levels. Examples of achievements include:

- Agencies have worked collaboratively on cross-system issues and work programmes, including for freshwater, marine, biosecurity and biodiversity.
- Strategic discussions with others outside the sector (for example, by working with business on the 'sustainable wealth' programme which aims to embed natural capital approaches into business decision making) have been undertaken.
- Collective and prioritised budget packages have been prepared across multiple natural resource agencies.

iv. Other relevant information (include websites, web links and files for added information – optional)

The Natural Resources Sector Briefing to Incoming Ministers (2017):

https://www.beehive.govt.nz/sites/default/files/2017-12/Natural%20Resources

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

No significant obstacles have been identified, although there is ongoing work aimed at considering and developing the effectiveness of the natural resources sector. This includes consideration of the structures and approach of the sector and work to consider better integration of tangata whenua into the work of the sector.

c) Measure 3 – National agreement between Department of Conservation and regional councils / unitary authorities

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

Both the Department of Conservation and regional councils in New Zealand are mandated by a variety of legislation to fulfil their respective roles including across biodiversity, biosecurity and conservation management. These roles often overlap, which creates a range of opportunities for collaboration and partnership to enhance outcomes for the public of New Zealand.

Addressing New Zealand's Biodiversity Challenge – a regional council think piece on the future of biodiversity management in New Zealand – was released in 2017. The report recommended five key shifts to support local government to make a more effective contribution to maintaining biodiversity. The five key shifts are:

1. Stronger leadership and clearer lines of accountability
2. Building on what regional councils do best

3. Better information for better management
4. Planning and delivering joined-up action
5. Modern, fit-for-purpose frameworks

Completion of the report and development of an implementation plan provided the impetus to reenergise the relationship between regional councils and the Department of Conservation. This relationship is critically important, as only a co-ordinated and tenure-neutral approach will succeed against threats to biodiversity.

As a first step, an overarching Memorandum of Understanding (MOU) was developed in 2017 to provide a framework for the refreshed relationship. A 12-month work programme has been developed to progress key national projects. The Objectives in the MOU are:

- Where it makes sense to do so, align priorities, strategies and business planning where roles overlap.
- Develop, prepare and implement joint work programmes as standard practice for managing collaborative projects at national and regional levels.
- Improve biodiversity outcomes at key sites.
- Deliver demonstrable benefits to ratepayers and taxpayers by taking all practicable steps to avoid litigation.

Closer collaboration and co-operation at all levels (management, strategy, policy and planning, technical and operations) will result in better outcomes for the environment, economy and regional communities. It will also result in improved stakeholder, community and tangata whenua engagement, cost-effectiveness, and enable operational management efficiencies.

The regional council 'thinkpiece' on addressing New Zealand's Biodiversity Challenge:

https://www.trc.govt.nz/assets/Documents/Research-reviews/Biodiversity/AddressingBiodiversityChallenge-web2.pdf

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The MOU was signed in October 2017. An Implementation Plan has been developed and the various combined working groups are making some excellent progress. Other key highlights during the reporting period include:

- New Zealand Biodiversity Action Plan. The regional councils and the Department of Conservation are working together to implement the actions of the New Zealand Biodiversity Action Plan 2016–2020. A review of relevant sections of the Action Plan is underway.
- Refreshing the New Zealand Biodiversity Strategy and Regional Pest Management Plans. Regional councils are represented in the governance groups appointed for the refresh of the New Zealand Biodiversity Strategy and Regional Pest Management Plans. Work to shortlist potential pest programmes that require national coordination and management (e.g. for wallaby, spartina, pest fish) has started.
- Predator Free 2050. The Department and regional councils are involved at all levels of the Predator Free 2050 programme, including: the original stocktake of ideas, taskforce formation, recent strategic planning workshops, landscape-scale pest management planning, project expressions of interest, full project proposals, and community conservation.
- Better information. A joint working party has been established and is currently scoping a work programme for national biodiversity monitoring and prioritisation.
- Information platforms and web presence. A formal review of the Nature Space website is underway. Terms of reference for this review have been prepared. Nature Space is a website for groups, individuals and landowners undertaking ecological restoration in New Zealand.

iv. Other relevant information
(include websites, web links and files for added information – optional)

As noted above, an implementation plan has been developed to give effect to the objectives set out in the New Zealand Department of Conservation national Memorandum of Understanding between Regional Councils (and Unitary Authorities). There are a number of projects in the implementation plan including: national plans and policy, coordinated actions, and improved information sharing. There will be regular reporting to the Chief Executives Environment and Economy Forum on progress against the Implementation Plan.

v. Obstacles and scientific / technical needs related to the measure
Include websites, web links and files for added information – optional.

The Department of Conservation and regional councils have made significant progress towards developing a co-ordinated and tenure-neutral approach to biodiversity management across New Zealand. Key projects are being jointly planned and agreed actions implemented. More work needs to be done and continued effort will be required to deliver outcomes.

III. Assessment of progress

i. Category of progress and assessment date

☒ On track to achieve target.

ii. Summary of evidence used

The assessment above is based on evidence of progress against implementation measures.

iii. Indicators used in this assessment

☒ No indicators.

The assessment above is based on evidence of progress as provided in previous sections.

iv. Description of any other tools or means used for assessing progress
Include websites, web links and files for added information (optional)

Progress on the implementation measures relevant to the national target is based on work successfully completed by the New Zealand Government and others, as outlined in the sections above.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

The New Zealand Government has confidence that New Zealand is on track to achieve the national target. Evidence used to assess progress towards the target is in the form of completed work to progress implementation actions.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is partial (only covering part of the area or issue).

viii. Description of the monitoring system for the target (if one exists)
Include websites, web links and files for added information (optional)

A monitoring system does not exist for the national target as a whole. As noted in section iv above, progress and outcomes of implementation measures are accounted for in the form of completed work to progress implementation actions.

16. ENHANCE UNDERSTANDING OF THE CONTRIBUTION OF INDIGENOUS BIODIVERSITY TO CARBON STOCKS

I. General information

i. Rationale for the national target

An important ecosystem service provided by indigenous ecosystems is their ability to remove carbon dioxide (CO_2), a powerful greenhouse gas, from the atmosphere and lock this up as carbon in vegetation and soils. When the contributions that indigenous ecosystems make to this ecosystem service are quantified, then informed decisions to enhance the benefits can be justified. Relevance to the Aichi Biodiversity Targets:

Directly related to Aichi target 15.

Not indirectly related to any Aichi targets.

II. Implementation measures

a) Measure 1 – Quantifying the contribution of indigenous biodiversity to carbon stocks

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

New Zealand monitors carbon stocks and changes in vegetation and soils across all managed lands in order to fulfil reporting obligations under the United Nations Framework Convention on Climate Change. This is reported on an annual basis in the National Greenhouse Gas Inventory.

Four monitoring programmes contribute information on carbon stock status and trends in indigenous forest and non-forest habitats in New Zealand. Collectively, the data from these programmes assists with quantifying the contribution of indigenous biodiversity to carbon stocks. The four programmes are:

- The Ministry for the Environment Land Use and Carbon Analysis System (LUCAS) natural forest inventory.
- The Department of Conservation Biodiversity Monitoring and Reporting System.
- Greater Wellington Regional Council (GWRC) Terrestrial Ecology State of the Environment Monitoring Programme.
- Auckland Council (AC) Terrestrial Biodiversity Monitoring Programme.

The Ministry for the Environment's Land Use and Carbon Analysis System (LUCAS) has operated throughout the reporting period. The System is a key tool to measure the natural forest inventory. The LUCAS programme collects data on whether New Zealand's natural forests are carbon neutral, or whether they are a carbon source or sink. It focuses on forest land and land containing woody vegetation. Of all indigenous habitats in New Zealand, forests are the main contributors to carbon stocks.

The three other programmes listed above have also operated throughout the reporting period and apply the same monitoring and sampling framework as the LUCAS programme. The programmes make use of LUCAS data and collect data on animals in addition to vegetation in all land use classes.

The data collected under all four programmes enable the contribution of indigenous biodiversity to carbon stocks to be quantified. As these monitoring programmes operate as continuous inventories, carbon stock change and trends over time can be detected and reported.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Robust data for monitoring of carbon stock status and trends in indigenous forest habitats are available via the LUCAS programme. For example, over the period 01 January 2013 – 31 December 2016 these forests removed 25.5 Mt CO_2-e from the atmosphere (New Zealand Greenhouse Gas Inventory 1990–2016).

Further information is provided on New Zealand's greenhouse gas monitoring methods at:

http://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/measuring-greenhouse-gas-emissions.

Land-use and Carbon Analysis System: Satellite imagery interpretation guide for land-use classes, 2nd edition:

http://www.mfe.govt.nz/publications/climate-change/land-use-and-carbon-analysis-system-satellite-imagery-interpretation

Design of New Zealand's 8-km grid-based plot network:

http://www.mfe.govt.nz/publications/biodiversity/design-of-new-zealand%E2%80%99s-8-km-grid-based-plot-network-static-master-data.

How New Zealand measures greenhouse gas emissions:

http://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/measuring-greenhouse-gas-emissions

New Zealand Vegetation Survey Databank:

https://nvs.landcareresearch.co.nz/

New Zealand Greenhouse Gas Inventory 1990–2016:

http://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/new-zealands-greenhouse-gas-inventory

Department of Conservation monitoring reports:

https://www.doc.govt.nz/our-work/monitoring-reporting/

Greater Wellington Regional Council Terrestrial Ecology State of the Environment monitoring programme annual data report:

http://www.gw.govt.nz/assets/council-publications/Terrrestrial-Ecology-SOE-monitoring-programme-Annual-data-report-2015-16.pdf

Auckland Council State of the Environment report cards:

https://www.aucklandcouncil.govt.nz/environment/state-of-auckland-research-report-cards/Pages/state-auckland-report-cards.aspx

iv. Other relevant information
(include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information – optional)

New Zealand has national monitoring programmes in place in indigenous forest habitats to enable reporting against this action, however this does not cover all indigenous non-forest habitats. This is because not all habitats on private land are monitored. This means results for indigenous non-forest habitats may be biased. As such, caution is needed if extrapolating the data to a national scale.

For non-forest habitats the Department of Conservation monitors public conservation land. The Non-forest habitats on private land are not monitored. As a result, monitoring is not reported nationally.

Furthermore, regional councils' monitoring responsibilities may not align with a national monitoring system or objective. Currently, only two regional council monitoring programmes in New Zealand collect data that could be used to meet the national objective. As such, New Zealand partially reports on the carbon stock status and trends in indigenous forest and non-forest habitats. The Ministry for the Environment is working

with regional councils to improve national reporting across all land uses and has developed a national sampling plan that, if implemented, will provide the data to meet this action.

b) Measure 2 – Improved cooperation to restore biodiversity and enhance carbon stocks including through the One Billion Trees programme

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *One Billion Trees* programme was launched by the New Zealand Government in March 2018. The Programme is a major collaborative effort to plant one billion trees in New Zealand over 10 years (from 2018 to 2028). The aims of the programme are to reduce the effects of climate change and enhance carbon stocks, improve land productivity, provide habitat for species, tackle environmental issues like erosion and water quality, create jobs, and foster community action and involvement. The One Billion Trees Programme is a significant and ambitious project for New Zealand, involving collaboration and cooperation across multiple sectors, organisations, tangata whenua and community groups.

With a baseline of 50 million trees planted per year by the commercial sector, this initiative will require huge coordination and cooperation between government agencies, private land owners, scientists, community groups, non-profit organisations, the forestry industry, regional councils, tangata whenua, and the public. Planting for native, exotic, permanent, forestry, and restoration trees has commenced on both public and private land.

The Afforestation Grant Scheme (AGS) has also operated since 2015 with the aim of establishing 15,000 ha of new forest in New Zealand between 2015 and 2020.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

As of 28 July 2018, there have been 49,203,000 trees planted since the announcement of the One Billion Trees programme. Te Uru Rākau (Forestry New Zealand) collects data throughout the year on the sale and distribution of exotic and native tree seedlings, as do not-for-profit and conservation groups. These data are used to estimate the number of trees being planted.

https://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/

http://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/tracking-progress-of-the-one-billion-trees-programme/

iv. Other relevant information (include websites, web links and files for added information – optional)

There are a number of other tree planting initiatives that have made progress during the reporting period. Such initiatives include the Auckland City Council Trees that Count (a million trees programme), the Wellington City Council Two Million Trees project, and Dairy New Zealand's riparian planner.

https://www.treesthatcount.co.nz

https://www.aucklandcouncil.govt.nz/mayor-of-auckland/mayor-priorities/protecting-our-environment/Pages/million-trees.aspx

https://wellington.govt.nz/your-council/projects/two-million-trees

https://www.dairynz.co.nz/environment/waterways/riparian-planner/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

No further information required.

No information available

III. Assessment of Progress

i. Category of progress and assessment date

☒ On track to achieve target.

April 2018

ii. Summary of evidence used

Information has been collected in a number of areas to enhance understanding of the contribution of indigenous biodiversity to carbon stocks, including:

- Quantifying the contribution of indigenous biodiversity to carbon stocks via the Ministry for the Environment's LUCAS programme and local government monitoring regimes.
- The launch of the One Billion Trees Programme has already seen the planting of millions of trees in New Zealand.

iii. Indicators used in this assessment

☒ No indicator used.

iv. Description of any other tools or means used for assessing progress

No further information required.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

Evidence is based on available information from monitoring that has taken place for specific projects or actions. The assessment is based on available evidence and assessed confidence in the sources of information.

vii. Adequacy of monitoring information to support assessment

☒ No monitoring.

viii. Description of the monitoring system for the target (if one exists)
(include websites, web links and files for added information - optional)

A monitoring system does not exist for the national target as a whole. As noted in section iv above, evidence is based on available information from monitoring that has taken place for specific projects or actions.

GOAL E: ENHANCE IMPLEMENTATION

17. WHĀNAU, HAPŪ AND IWI ARE BETTER ABLE TO PRACTICE THEIR RESPONSIBILITIES AS KAITIAKI

I. General information

i. Rationale for the national target

Māori have strong interests in the natural environment. The ethic of kaitiakitanga (guardianship) between Māori and the environment is central to the expression of Māori culture and identity, and confers obligations on whānau (family), hapū (sub-tribe) and iwi (tribe) (collectively tangata whenua) to care for environmental taonga (treasures), including species of indigenous flora and fauna, wai māori (freshwater), wāhi tapu or wāhi taonga (treasured or sacred sites), and whenua (land)

Target 17 recognises the importance of kaitiakitanga relationships in protecting and preserving New Zealand's natural environment in accordance with our domestic circumstances and the rights and interests of Māori. The target is founded on the relationship between the New Zealand Government and Māori under the Treaty of Waitangi, though which the government has committed to partnership and the active protection of taonga.

This also includes better enabling tangata whenua to express their kaitiakitanga in accordance with their traditional knowledge (mātauranga Māori) and local circumstances. It recognises that relationships with the environment and biodiversity are important to whānau, hapū and iwi in their respective areas of interest. In this sense, Target 17 provides context for the implementation activities of other national targets.

ii. Relevance to the Aichi Biodiversity Targets

Mainly related to Aichi targets 1 and 18.

Not related to any other Aichi targets.

While not provided for in the international report template, the ethic of kaitiakitanga between Māori and the environment is central to the expression of Māori culture and identity. In this context National Target 17 is relevant for all other Aichi targets.

II. Implementation measures

a) Measure 1 – Co-management mechanisms between government and Māori on natural resource management

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

New Zealand has committed to work with tangata whenua through a combination of Treaty of Waitangi settlements, existing commitments and new work, to enable Māori-led conservation work, sustainable customary use of biological resources and indigenous biodiversity protection across a range of services and levels.

Co-management mechanisms between the New Zealand Government and Māori on natural resource management is one way this is being achieved. In 2018, there are a range of relationships mechanisms in place, including innovative partnerships towards mutual environmental outcomes. Many of these have been progressed through New Zealand's Treaty of Waitangi settlement process. However, we are seeing relationship mechanisms being established in a range of contexts including between iwi and local government, such as Mana Whakahono ā Rohe: Iwi Participation Arrangements. For example, the Greater Regional Wellington Council and local iwi engage through a number of relationships mechanisms, providing for partnership in action. Refer to:

http://www.gw.govt.nz/working-with-maori.

These shared approaches to environmental management form an important foundation to meeting national target 17, particularly because of its role in empowering tangata whenua to lead conservation work in line with their traditional and contemporary priorities.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

The Treaty of Waitangi settlement process has been one part of this assessment, with settlements achieved with 86 groups to date.

New Zealand Government engagement with Māori through the relationships supported by these settlements has shown that tangata whenua have worked proactively to lead locally-based and culturally monitored conservation projects and indigenous biodiversity protection.

Monitoring progress of implementation activities on National Target 17 is based on an assessment of a combination of quantitative and qualitative sources. We recognise that the government has access to information on some but not all activities relevant to this target. Information on progress is also held by tangata whenua, local government and civil society groups.

iv. Other relevant information (include websites, web links and files for added information – optional)

Each of the case studies below draw on the Treaty of Waitangi settlements process and link to one or more of the actions related to National Target 17

Case Study 1: Waikato-Tainui

In 2010, as a result of Waikato-Tainui Raupatu Claims, the New Zealand Government and Waikato-Tainui entered into an agreement providing arrangements to restore and protect the health and wellbeing of the Waikato River for future generations. Through these arrangements, Waikato-Tainui and the New Zealand Government work together and with other relevant tangata whenua to make decisions that support activities recognising the enduring significance of the Waikato River, and relationships with local authorities.

Waikato-Tainui has led a number of initiatives directly supporting National Target 17. For example, Waikato-Tainui fisheries bylaws, effective from 2014, will continue to support sustainable fishing practices and native eel migration while recognising traditional management practices. The Manaaki Tuna Project (supported by the Waikato River Clean-up Trust) is a completed multi-year project to gather and preserve Waikato-Tainui histories associated with the Waikato River.

Case Study 2: Te Awa Tupua (Whanganui River Claims Settlement) Act 2017

In 2017, legislation was passed recognising an agreement between Whanganui Iwi (tribe) and the New Zealand Government to settle the historical Treaty of Waitangi claims of Whanganui Iwi in relation to the Whanganui River. This was the culmination of over a century's effort by Whanganui Iwi to protect and provide for its special relationship with the Whanganui River.

Under the settlement, the position of Te Pou Tupua was established to act as the 'human face' of Te Awa Tupua (recognising the Whanganui River as a legal person). In 2017, the first two people were appointed to Te Pou Tupua through joint nominations made by iwi with interests in the Whanganui River and the Crown. The role of Te Pou Tupua is to act and speak on behalf of Te Awa Tupua in accordance with Whanganui Iwi kaitiakitanga relationships, uphold the legal status of Te Awa Tupua and Tupua Te Kawa, and promote and protect the health and wellbeing of Te Awa Tupua.

Case Study 3: Ngāti Tūwharetoa

In 2017, the government and Ngāti Tūwharetoa entered into a Treaty of Waitangi settlement agreement that included enduring mechanisms through which the Iwi will be empowered to participate in the environmental management of their lands and waters. This includes Te Piringa Agreement between Ngāti

Tūwharetoa and both the Minister of Conservation and the Director General of Conservation. The Agreement set a process of building hapū capability over time towards a vision in which Ngāti Tūwharetoa hapū takes over the management of the conservation estate in their area. Other specific mechanisms include:

- The establishment of Te Kōpua Kānapanapa statutory board to restore, protect and enhance the environmental, cultural and spiritual wellbeing of the Taupo catchment, to provide strategic leadership, and to provide a mechanism for Ngāti Tūwharetoa to exercise mana and kaitiakitanga over the Taupō catchment in partnership with local authorities.
- A new forum established for the co-management of the Western Bays of Lake Taupo, including representatives appointed by the hapū with interests in the Bays. The forum will have the right to develop a Conservation Management Plan for these lands.
- Ngāti Tūwharetoa has received two seats on the Tongariro Taupō Conservation Management Board.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

The effectiveness of these approaches has some immediate benefits and others that will take more time to become apparent. Although there has been progress in several areas, as we continue to 2020 there remain opportunities to learn from and further implement shared approaches to environmental management across the country.

III. Assessment of progress

i. Category of progress and assessment date

☒ On track to achieve target.

June 2018

ii. Summary of evidence used

As discussed above, understanding progress towards the implementation of National Target 17 is based on a combination of quantitative and qualitative sources, recognising that information is not necessarily held by the New Zealand Government and that any view must be considered against the relationship between the New Zealand Government and Māori.

iii. Indicators used in this assessment

Treaty settlement progress and number of Treaty settlement agreements related to kaitiakitanga.

iv. Description of any other tools or means used for assessing progress (include websites, web links and files for added information – optional)

Development of mechanisms for transferring dead wildlife to Māori so the wildlife can be used in traditional cultural practices, such as cloak weaving.

Whether there have been increased numbers of gazetted rohe moana (customary fishing areas) – and passage of relevant legislation – that enables appointed tangata kaitiki to actively manage their customary fisheries, apply for mātaitai (marine) reserves and make bylaws within those mātaitai reserves.

Incidence of relevant themes in Crown/Māori Relations portfolio consultation.

Local Government New Zealand, Council-Māori Participation Arrangements, June 2017.

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

Not all activities taking place in New Zealand relevant to the National Target are measured or reported on.

vii. Adequacy of monitoring information to support assessment

☒ Monitoring related to this target is adequate.

viii. Description of the monitoring system for the target (if one exists) (include websites, web links and files for added information - optional)

A monitoring system does not exist for this national target as a whole. As noted in section iv above, progress and outcomes of implementation measures are accounted for in the form of completed work to progress implementation actions. Discussions about a possible monitoring system (including measures of progress) will be considered in the development of New Zealand's new biodiversity strategy.

18. KNOWLEDGE, THE SCIENCE BASE AND TECHNOLOGIES RELATING TO BIODIVERSITY, ITS VALUES, FUNCTION, STATUS AND TRENDS, AND THE CONSEQUENCES OF ITS LOSS, ARE IMPROVED, WIDELY SHARED AND TRANSFERRED AND APPLIED

I. General information

a) Rationale for the national target

Adequate information, knowledge and capacity underpin the effective implementation of biodiversity management actions in the New Zealand *National Biodiversity Strategy and Action Plan*. This national target focuses on our needs at a national, regional and local level. The plan seeks to improve and share knowledge, information and experience, build our capacity to more effectively manage biodiversity, and learn lessons through monitoring and reporting progress.

Directly related to Aichi target 19.

Not indirectly related to any Aichi target.

II. Implementation measures

a) Measure 1 – Conservation and Environment Science Roadmap and Primary Sector Science Roadmap

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

The *Conservation and Environment Science Roadmap* (developed by the Department of Conservation and the Ministry for the Environment) and the *Primary Sector Science Roadmap* (developed by the Ministry for Primary Industries) are both part of the overall strategy of the New Zealand Government for the science system, as set out in the *National Statement of Science Investment 2015–2025*. Both documents were published in 2017.

The Conservation and Environment Science Roadmap sets out the science priorities and capability requirements in New Zealand over the next 20 years. It identifies the areas of scientific knowledge needed by government to support decision making for conservation and environmental policy and management to achieve the most desirable future for New Zealand. It was designed to improve the coordination of research for New Zealand, reduce duplication, ensure gaps are addressed and that research is relevant to policy. The research will be used by central and local government, the private sector, non-governmental organisations and individuals to make better decisions that affect our environment and natural heritage.

The Primary Sector Science Roadmap provides an integrated, shared view of future science needs and opportunities and is a critical starting point for better aligning science across the primary sector. It supports and guides activities throughout New Zealand's science system, including: funding and investment decisions,

aligning research, developing science capability, and encouraging industry partnerships and international collaborations.

Production from agriculture, horticulture, forestry, aquaculture and fisheries is dependent on natural capital and ecosystem services, and conservation and environmental management are often linked to primary sector activities. The two Roadmaps are aligned and address shared pressures, such as biosecurity, climate change, and marine, freshwater and soil health. They also identify opportunities to improve policy development and management; for example, through better support for and use of mātauranga Māori and investment in technology platforms.

The Roadmaps also provide strategic direction to the New Zealand National Science Challenges.

The Roadmaps are intended to be used by research providers to identify priority areas for research bidding that meet the 'impact criteria' used by the Ministry of Business, Innovation and Employment in their funding decisions. They are also useful for funders to guide their investment priorities. The information in the Roadmaps will also inform the private sector, non-governmental organisations, and citizens with knowledge to inform their own decision-making.

Work is now underway to implement both Roadmaps, and measures to evaluate their effectiveness are currently being developed.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

Both Roadmaps were published in 2017 which achieved the Actions 18.2 and 18.6 specified in the New Zealand Biodiversity Action Plan 2016–2020.

Conservation and Environment Science Roadmap: https://www.mfe.govt.nz/about-us/our-policy-and-evidence-focus/conservation-and-environment-science-roadmap

Primary Sector Science Roadmap: https://www.mpi.govt.nz/news-and-resources/science-and-research/primary-sector-science-roadmap-te-ao-turoa/

Implementation for both Roadmaps via government-led 'Implementation Working Groups' is underway to ensure effectiveness. For both Roadmaps, the implementation period has just commenced via government-led 'Implementation Working Groups' and will be on-going. In addition, a Biodiversity Conservation Science Prospectus is currently being developed, to further refine the 5-year priorities identified in the Conservation and Environment Science Roadmap.

Evaluation of implementation of both Roadmaps is currently difficult to track. But it is anticipated that the 'Implementation Working Groups' will develop a more complete evaluation framework. This will allow for the effectiveness of both Roadmaps to be monitored and evaluated, feeding into periodic review and renewal. This will require the development and use of a set of evaluation metrics, and some of these will overlap between both Roadmaps.

iv. Other relevant information (include websites, web links and files for added information – optional)

No further information required.

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Developing the Roadmaps within a cross-agency and multi-stakeholder setting has presented New Zealand with predominantly political and institutional obstacles. The development team specifically had to work through a range of conflicting objectives among those involved in the Roadmap development, circumvent inadequate capabilities to act, as well as to secure human and financial resources.

b) Measure 2 – National Science Challenges

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

New Zealand's biota is unique and so challenges faced in its management are not comparable to overseas examples. In addition, Māori have a unique relationship with the environment as kaitiaki (guardians) for future generations. This means that improving the understanding of national ecosystems and species, as well as developing a set of unique management tools, has specific cultural, local and often sub-regional significance.

There are 11 National Science Challenges (NSCs) that are designed to take a strategic approach to the government's science investment by targeting a series of goals, which, if achieved, would have major and enduring benefits for New Zealand. The NSCs are cross-disciplinary, mission-led research programmes designed to tackle New Zealand's biggest science-based challenges. To achieve their objectives, they require collaboration between researchers from universities and other academic institutions, Crown Research Institutes, central and local government, businesses and non-government organisations, Māori and local communities. The *Conservation and Environment Science Roadmap* and the *Primary Sector Science Roadmap* both provide strategic direction to the NSCs, which collectively have a budget of over NZD $326.4 million over 10 years (to 2024). The NSCs form an integral part of achieving National Target 18 of the National Biodiversity Strategy Action Plan (2016–2020).

New Zealand's Biological Heritage National Science Challenge directly focuses on biodiversity. Three others, *Our Land and Water, Sustainable Seas* and *The Deep South* each contribute to the biodiversity science base and knowledge. The focus of predator-free-related research is to develop the tools, methodologies and understanding to deliver *Predator Free New Zealand* (see Aichi Target 9 for more information).

New Zealand's Biological Heritage/Ngā Koiora Tuku Iho is hosted by Manaaki Whenua - Landcare Research and was launched in August 2014. The challenge is aiming to reverse the decline of this country's biological heritage by protecting and managing native biodiversity, improving biosecurity, and enhancing resilience to harmful organisms. The NSC includes research on ways to increase understanding of the country's biodiversity, reduce rates of incursion or establishment by foreign invader species, and to enhance and restore the resilience of vulnerable ecosystems to prevent biodiversity loss and mitigate the effects of global climate change. The NSC's national partnership between researchers, Māori and other stakeholders will deliver a step-change in research innovation, technologies and sector action to help reduce increasing pressures on our environment.

New Zealand's Biological Heritage is playing a pivotal role in coordinating biodiversity and biosecurity research across multiple research disciplines and science providers. In 2017/18, NSC parties aligned NZD $176 million of research to the NSC objective. A Predator Free 2050 Research Strategy was published in 2017. The inaugural conference, 'Crazy and Ambitious', held in 2017, provided a forum for over 340 scientists, stakeholders, community leaders and Māori representatives to exchange ideas on science solutions to reverse the decline of New Zealand's biological heritage. The NSC is closely aligned with the Māori biosecurity network *Te Tira Whakamātaki*. A series of marae-based workshops have been held to revitalise and strengthen mātauranga Māori, as part of research on customary approaches and practices to optimise cultural and ecological resistance.

Our Land and Water/Toitū te Whenua, Toiora te Wai is hosted by AgResearch and was launched in January 2016. TheNSC is aiming to enhance the production and productivity of New Zealand's primary sector, while maintaining and improving the quality of the country's land and water for future generations. The way New Zealand uses and manages its land and water will be transformed from NSC research on gaining greater value from global markets, innovative resilient land and water use, and building collaborative capacity. These drivers, along with research to connect them, form the themes that focus the NSC multidisciplinary approach that includes research expertise from a wide range of organisations.

More information about *Sustainable Seas* can be found in the Assessment of Progress for National Target 5, above.

The Deep South /Te kōmata o te tonga is working to understand the role of the Antarctic and Southern Ocean in determining New Zealand's future climate, and the impact this has on key economic sectors,

infrastructure and natural resources. NSC research will enable New Zealanders to adapt, manage and thrive in a changing climate. *The Deep South* was launched in August 2015 and is hosted by NIWA.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure taken has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used (include websites, web links and files for added information – optional)

These measures have been progressed significantly in the past years and are expected to progress further and be achieved within the timeframe of the New Zealand Biodiversity Action Plan.

- Action 18.1 – Māori knowledge, values and aspirations (including mātauranga Māori) is woven through and incorporated into all NSCs to inform new ways to protect and manage native biodiversity of terrestrial, freshwater and marine ecosystems.
- Action 18.8 – the investment approach through National Science Challenges has enabled the science system to focus and enhance stakeholder engagement with biodiversity research, which is being tracked through NSC Annual Progress Reporting processes.
- Action 18.4 – effectiveness can only be partially measured and assessed. Two projects are underway to specifically progress this Action through increased government funding for nationally significant collections and databases (additional NZD $2 million per year through Budget 2016 for the custodians of 19 Nationally Significant Collections and Databases) and through development of a National Research Information System.

The Ministry of Business, Innovation and Employment (MBIE) has completed a mid-way review of the NSC's. Funding for the NSC's has been allocated for 10 years, to June 2024, in two 5-year periods, the first ending on 30 June 2019. An independent review panel for each NSC met in July–August 2018 to assess the performance and future strategies of each NSC. The panels have made recommendations to MBIE to inform decisions by the Science Board, in October 2018, on funding for the second 5-year period for each NSC.

National Science Challenge Performance Framework Guidance:
https://www.mbie.govt.nz/assets/21ad1b6da3/nsc-performance-framework-guidance-document.pdf

Each NSC reports annually against agreed indicators. The Ministry of Business, Innovation and Employment (MBIE) then assesses the performance information and other knowledge gained from its regular interaction with each NSC, including its governance group and leadership team, and any other information that it may collect, for example through stakeholder surveys.

iv. Other relevant information (include websites, web links and files for added information – optional)

The National Science Challenges:

http://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/national-science-challenges/

New Zealand's Biological Heritage:

http://www.biologicalheritage.nz/

Sustainable Seas:

http://www.sustainableseaschallenge.co.nz/

The Deep South:

https://www.deepsouthchallenge.co.nz/

Strategic Science Investment Fund:

http://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/strategic-science-investment-fund

National Research Information System:

http://www.mbie.govt.nz/info-services/science-innovation/research-and-data/nris

Predator Free 2050 Research Strategy:

http://pf2050.co.nz/science/

v. Obstacles and scientific / technical needs related to the measure (include websites, web links and files for added information – optional)

Accessing mātauranga Māori and integrating this with a 'western' science system, in a genuine partnership approach to research, science and innovation is an ongoing challenge in New Zealand's science system.

Research initiatives increasingly include high-level statements about integrating mātauranga Māori and the values and concerns of mana whenua. However, there is often a lack of focus when carrying these dimensions through into practical implementation.

The *New Zealand's Biological Heritage National Science Challenge Future Strategy* (2019–2024) includes details of how this will be approached by the NSC, which include:

- Taking a proactive role in partnership with Māori researchers and communities.
- Creating opportunities for emerging Māori leaders and explore co-leadership models.
- Seeking to build capacity amongst non-Māori researchers and end users to enable them to work confidently in partnership with tangata whenua.
- Investing in Kaupapa Māori and Māori-led research.
- Co-design as a cornerstone principle of work.
- Partnering with other entities seeking to build Māori capability and capacity across the New Zealand innovation system
- Enriching research and innovation investments by blending mātauranga Māori with contemporary research methods.
- The strategy also including values, identified with Māori, that are embedded in every facet of the NSC.
- Connecting with communities.

For more details see:

http://www.biologicalheritage.nz/__data/assets/pdf_file/0005/167351/Strategy_2019_2024.pdf

Financial resourcing and prioritising research are a challenge for all science systems, including New Zealand's. For data-intensive research there are perceived compliance costs of providing data in required formats and a lack of agreement on data standards. Stakeholder fatigue may arise from a lack of a coordinated approach from the science system, and there is limited stakeholder capacity for engagement with science (in addition to their normal business).

The need for public education and awareness of the value of science is well recognised. Although there are numerous examples of 'citizen science' successfully engaging the New Zealand public in science, there is limited capacity in tight budgets for the amount of translation and engagement needed.

Social licence to operate is a looming barrier to several new technologies with potential benefits for biodiversity, such as genomic technology. Ongoing research is addressing public perceptions of potential new technologies, and potential barriers to their effective adoption.

c) Measure 3 – Other science funding initiatives

i. Description of measure taken to contribute to the implementation of your country's national biodiversity strategy and action plan.

In addition to the funding and science direction provided by the NSCs, two other initiatives are contributing to the delivery of National Target 18, specifically to improve access to and enhance quality of nationally

significant biodiversity-related data held by Crown Research Institutes through increased Government support.

The Strategic Science Investment Fund (SSIF) enables organisations to undertake long-term mission-led research that underpins strategic research priorities and supports capability that is critical to the future of New Zealand's wellbeing, economy and environment. SSIF also supports access to and development of larger-scale research infrastructure that supports enduring priorities and ensures a high-performing science system. The infrastructure component of the SSIF includes support for *Nationally Significant Collections and Databases*, such as the National Indigenous Vegetation Survey, the National New Zealand Flax Collection and the New Zealand Fungarium.

The Government increased funding for Nationally Significant Collections and Databases in 2016 and is currently undertaking a review of databases and collections.

In 2018/19, over NZD $260 million was allocated to SSIF programmes and infrastructure investments. The SSIF provides a mechanism for MBIE to take an active role in SSIF investment, and to initiate, evaluate and compare effectiveness of a range of strategic science investments.

This includes the *National Research Information System* (NRIS) which is currently being developed. The NRIS will be a centralised science information hub where people can easily find information about research science and innovation in New Zealand. The NRIS is intended to open up access to research, science and innovation data, simplify administration for researchers and research organisations, and improve the quality of data. NRIS will provide a central repository for information and data on outputs of all biodiversity research undertaken by New Zealand researchers.

ii. Effectiveness of measure in achieving desired outcomes

☒ Measure has been partially effective.

iii. Explain the assessment and indicate the tools or methodology used
(include websites, web links and files for added information – optional)

SSIF performance is assessed annually against *key performance indicators* (KPIs) for each investment. Performance areas for SSIF research programmes include strategic intent, science excellence, impact, research horizons and co-funding, investing in people, vision mātauranga, and domestic and international collaboration. SSIF contract holders report annually on both their investment plans for the coming year, and performance over the previous year. After assessing reports, MBIE and the contract holders engage in strategic discussions to agree on the optimum approach to SSIF investments. Performance areas for SSIF infrastructure are investment-specific.

NRIS is being co-designed with the research sector. The first step has been working with the sector on what data are needed for NRIS and to define common data standards; this will enable organisations to easily share data from a variety of systems. MBIE has started building the information technology infrastructure for NRIS and is using data to test how the concept model works in practice.

New data will be progressively added to NRIS, beginning with data from MBIE, the Health Research Council of New Zealand and the Royal Society of New Zealand. Over the next 5 years, data from all major research agencies will be progressively integrated. As part of this process, MBIE will help organisations meet data collection and quality standards.

iv. Other relevant information
(include websites, web links and files for added information – optional)

https://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/strategic-science-investment-fund

v. Obstacles and scientific / technical needs related to the measure
(include websites, web links and files for added information as needed)

Obstacles and scientific/technical needs related to the measure are as discussed above for NSC.

III. Assessment of progress

i. *Category of progress and date of assessment*

☒ On track to achieve target.

April 2018

ii. *Summary of evidence used*

The *Conservation and Environment Science Roadmap* and the *Primary Sector Science Roadmap* were both published in 2017, which completed the corresponding actions from the Biodiversity Strategy.

Information on the current status of the NSC was sourced from *Highlights from the National Science Challenges*, MBIE (2018).

The framework which will be used to assess National Science Challenges can be found in *National Science Challenge Performance Framework Guidance*, MBIE (2015).

Information on the development and progress of the NRIS was sourced from MBIE online documentation.

Information on allocation of funding through the SSIF can be found on the MBIE website and the Nationally Significant Databases and Collections can be found on the MBIE website and the websites of custodians of databases and collections.

A large amount of significant biodiversity information, and access to national biological collections and databases, is made available in New Zealand by Crown Research Institutes, academic institutions, scientists, and others. See Aichi Target 19.

Databases and collations of marine biodiversity information have improved over the reporting period. For example, accessibility to Fisheries New Zealand information has improved (an updated website and introduction of new summary reports) and public access to the Dragonfly data science database.

iii. *Indicators used in this assessment*

☒ No indicator used.

iv. *Description of any other tools or means used for assessing progress*
Include websites, web links and files for added information – optional.

The Conservation and Environment Science Roadmap (2017) can be found at:

http://www.mfe.govt.nz/about-us/our-policy-and-evidence-focus/conservation-and-environment-science-roadmap

The *Primary Sector Science Roadma*p (2017) can be found at:

https://www.mpi.govt.nz/news-and-resources/science-and-research/primary-sector-science-roadmap-te-ao-turoa/

Information on the current status of the National Science Challenges can be found at:
http://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/national-science-challenges/documents-image-library/key-documents/national-science-challenges-highlights.pdf

The National Science Challenge Performance Framework Guidance can be found at:
http://www.biologicalheritage.nz/__data/assets/pdf_file/0005/167351/Strategy_2019_2024.pdf

Information on the development of the NRIS can be found at:

https://www.mbie.govt.nz/info-services/science-innovation/research-and-data/nris

Information on the SSIF allocation of funding can be found at:

https://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/strategic-science-investment-fund

Information on Nationally Significant Databases and Collections can be found at:

https://www.mbie.govt.nz/info-services/science-innovation/funding-info-opportunities/investment-funds/strategic-science-investment-fund/funded-infrastructure/nationally-significant-collections-and-databases

Fisheries New Zealand information can be found here:

https://www.mpi.govt.nz/fisheriesnz

The Dragonfly Data Science database can be found here:

https://www.dragonfly.co.nz/

v. Level of confidence of the above assessment

☒ Based on partial evidence.

vi. Explanation for the level of confidence

It is possible to accurately assess if the knowledge, science base and technologies relating to biodiversity, its values, function status and trends, and the consequences of its loss are improved and widely shared. It is very difficult to assess if this knowledge is being applied, and if that application has meaningful benefits for biodiversity conservation in the long term.

vii. Adequacy of monitoring information to support assessment

☒ No monitoring system in place.

viii. Description of the monitoring system for the target (if one exists)
Websites, web links and files for added information

No further information required.

Section IV: Description of the national contribution to the achievement of each Aichi Biodiversity Target

1. AICHI BIODIVERSITY TARGET 1 – AWARENESS OF BIODIVERSITY INCREASED

The Department of Conservation's annual survey (undertaken since 2011) tracks engagement and attitudes of the New Zealand public to conservation and their use and enjoyment of public conservation lands and waters. The responses received to the 2016 Survey showed that the majority of people surveyed (85%) believe their connection with New Zealand's nature improves their lives, as it makes them relaxed and they get satisfaction from walking in native bush and experiencing the forests, animals and bird life. Over 2012 to 2016 the proportion of New Zealanders surveyed who participated in recreation on public conservation lands and waters at least once a year increased, reaching 80% in 2016.

Of the people surveyed, 1 in 10 have actively helped on a conservation project, the same proportion as in 2015 and 2014. The most popular activities of these helpers were tree planting (54%), protection or restoration of forest, wetland or marine habitat or species (43%) and pest control (34%). The proportion who had visited a public conservation land or place in the last 12 months increased to 8 in 10 in 2016.

Efforts across New Zealand during the reporting period that have contributed to increasing public awareness of biodiversity have involved activities by New Zealand Government agencies, environmental and community groups, businesses, and others. A good example is the Department of Conservation work with community conservation groups across New Zealand to run *Conservation Week* celebrations and activities each year. Conservation Week is a New Zealand-wide week of activities designed to celebrate New Zealand's native biodiversity and to encourage people to get involved in nature and help take care of it (www.doc.govt.nz/news/events/conservation-week).

While it is not possible to report on all activities that have contributed to Aichi Biodiversity Target 1, several further examples include:

- **Nature Space:** Nature Space is a website for groups, individuals and landowners undertaking ecological restoration in New Zealand (www.naturespace.org.nz).
- **Enviroschools:** Enviroschools is an action-based education programme where young people plan, design and implement sustainability projects. Enviroschools engages with children, young people and their communities through the formal education system – early childhood education centres, primary and secondary schools (www.enviroschools.org.nz).
- **Weedbusters:** Weedbusters is a weeds awareness and education programme that aims to protect New Zealand's environment from the increasing problems associated with weeds.

– (www.weedbusters.org.nz).

- **Sustainable Coastlines:** Sustainable Coastlines empowers people to understand and protect the marine environment. To date, 83,024 people have participated in Sustainable Coastline events in New Zealand; 200,260 online views of Sustainable Coastlines presentations have taken place, and 1,435,145 litres of rubbish have been collected (www.sustainablecoastlines.org).

2. AICHI BIODIVERSITY TARGET 2 – BIODIVERSITY VALUES INTEGRATED

The New Zealand Treasury is leading the development of a Living Standards Framework for New Zealand. The Framework is focused assessing the state of four integrated capitals, one of which is natural capital (encompassing the environment and biodiversity). Work continues towards compiling a set of indicators (presented on an integrated dashboard) that will allow the monitoring of the four integrated capitals (including natural capital) and the impact on wellbeing outcomes.

The principal legislation governing the use of natural resources and the environment in New Zealand is the *Resource Management Act 1991* (RMA). The RMA gives direction to local authorities as to how they should manage their resources and provides for the management of aspects of indigenous biodiversity. The RMA gives local authorities responsibilities for maintaining indigenous biological diversity (sections 30 and 31). Local authorities then provide for these matters through district and regional plans, and regional policy statements.

Central government can use specific tools to provide further direction to local authorities on matters of national importance which it believes require greater consistency in management across the country. One such tool, a *National Policy Statement for Indigenous Biodiversity*, is currently in development.

Lincoln University maintains the *New Zealand Non-Market Valuation Database*. The Database enables identification of non-market valuation studies that have been undertaken in New Zealand. It also includes contact details for New Zealand non-market valuation practitioners and analysts. It can be accessed here: http://selfservice.lincoln.ac.nz/nonmarketvaluation/

In 2015, Landcare Research and the New Zealand Forest Research Institute Limited (Scion) produced a study evaluating non-market impacts of wilding conifers on cultural values at three study sites in New Zealand. This study also considered debates about evaluation approaches for impacts of invasive species on cultural values in international and New Zealand literature. *Evaluating the (non-market) impacts of wilding conifers on cultural values* can be found here:

https://www.doc.govt.nz/globalassets/documents/conservation/human-values/evaluating-non-market-impacts-of-wilding-conifers-on-cultural-values.pdf

In 2017, the Office of the Prime Minister's Chief Science Advisor (Professor Sir Peter Gluckman) produced *New Zealand's fresh waters: values, state, trends and human impacts* report. The report assessed the provision and benefits of freshwater to meet economic, social, cultural and environmental needs including freshwater for sustaining indigenous biodiversity in New Zealand. The report can be found here: https://www.pmcsa.org.nz/wp-content/uploads/PMCSA-Freshwater-Report.pdf

Over 2015–2017 the *Living Water* programme (a Department of Conservation partnership with Fonterra Co-operative Group Limited (New Zealand's largest dairy co-operative)) commissioned Landcare Research to test the usefulness of an ecosystem services approach for project planning and implementation. The project was carried out in Wairua, Northland and identified the most effective farm management practices, financial costs for implementation, and potential environmental impacts that could be achieved at a catchment scale to demonstrate the value of enhancing native biodiversity (particularly wetlands).

3. AICHI BIODIVERSITY TARGET 3 – INCENTIVES REFORMED

New Zealand applies a multi-pronged approach to addressing incentives and subsidies. Agriculture, which is an integral and dominant part of New Zealand's economy, is market-driven and has operated without direct subsidies or price and income support for nearly 30 years. There are also no direct subsidies to the fishing industry or to commercial forest management.

New Zealand takes a cautious approach to the development of incentive measures, as the impacts of incentives in encouraging certain behaviours can be unpredictable and have varying outcomes. Most of what is classified as government support to primary industries in New Zealand relates to food safety and recovery from adverse events.

Positive incentives include funding for biodiversity protection on private land including the Queen Elizabeth II Trust (QEII Trust) and Ngā Whenua Rāhui Fund (see reporting for National Target 10, above). A sustainable farm forestry fund is used to fund tree plantings along riparian margins. The Biodiversity Advice and Condition Funds and Community Environment Fund provide financial support to landowners and community groups undertaking biodiversity activities.

New Zealand Government funding supports research and innovation which encourages more diverse land use options, environmental considerations and, in some cases, specific enhancements to biodiversity outcomes (such as solutions to managing lowland farm drainage and run off to reduce nutrient loss and enhance biodiversity). Government funding also supports climate change adaptation measures, many of which have positive biodiversity spinoffs. A New Zealand Government and Industry co-funded programme developed the *FarmIQ* farm management software, which is used by farmers to improve environmental management in New Zealand. Currently there are more than 1600 active sheep, beef, deer and dairy farm customers using the software.

Some regional councils have reduced indirect subsidies by limiting farming intensity to protect freshwater quality. For example, the Waikato Regional Council has put a cap on nitrogen use to protect Lake Taupo (Taupomoana) and Horizons Regional Council is working to protect the Manawatu River from further degradation. A nutrient trading scheme aimed at reducing nitrogen loads in the Lake Taupō catchment by 20% is operating.

Internationally, New Zealand supports the reform of harmful subsidies as Chair of the Friends of Fossil Fuel Subsidy Reform (a group of non-G20 countries that supports the reform of inefficient fossil fuel subsidies) and leading the Friends of Fish group, which seeks ambitious and effective World Trade Organisation disciplines on fisheries subsidies and their contribution to the worsening state of global fish stocks.

4. AICHI BIODIVERSITY TARGET 4 – SUSTAINABLE PRODUCTION AND CONSUMPTION

As noted in Aichi Target 2, under the RMA New Zealand's natural and physical resources are managed in a sustainable framework, with a raft of environmental bottom-lines. The RMA is based on the principle of sustainable management which involves considering effects of activities on the environment now and in the future when decisions are made about the use of natural resources. As well as managing air, soil, freshwater and coastal marine areas, the RMA regulates land use and the provision of infrastructure which are integral components of New Zealand's planning system.

The RMA gives both district/city and regional councils responsibilities for maintaining indigenous biological diversity. It gives direction to local authorities as to how they should manage their resources and provides for the management of aspects of indigenous biodiversity through:

– Safeguarding the life-supporting capacity of air, water, soil and ecosystems (sections 5(2)(b)).
– Protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna as a matter of national importance (section 6(c)).
– Having regard to the intrinsic value of ecosystems (section 7(d)). In this case, intrinsic values include genetic and biological diversity (section 2 (1)).

The RMA gives local authorities responsibilities for maintaining indigenous biological diversity (sections 30 and 31). Local authorities then provide for these matters through district and regional plans, and regional policy statements which are required under the RMA.

5. AICHI BIODIVERSITY TARGET 5 – HABITAT LOSS HALVED OR REDUCED

Details of New Zealand's changing land use between 1996 and 2012 can be found in the *Our Land* report released in April 2018 (Ministry for the Environment and Statistics New Zealand). An estimated 80% of New Zealand was forested before human settlement, which has been reduced as a consequence of human occupation through milling and fire. Today, indigenous forest covers less than 25% of the country, mainly in mountainous areas. In coastal and lowland areas, much of the remaining forests are in small and isolated fragments.

Total natural forest area stabilised between 2010 and 2016 (7.827 and 7.822 million hectares respectively). New Zealand has a legal framework supporting the sustainable management of resources, including forests, and manages a separation between indigenous forests (7.8 million ha) which are largely in protected areas and the planted forest estate (2 million ha) which consists of primarily exotic, privately owned forest plantations. This separation allows for the sustainable harvest of forestry resources while the indigenous stock (and the biodiversity contained therein) remains largely protected. The milling and export of indigenous timber without a specific permit is prohibited under the Forests Act 1949.

Wetlands and active sand dunes were once widespread across New Zealand but are now significantly reduced. These ecosystems support unique communities of plants and animals and provide ecosystem services. Wetland extent continues to decline in New Zealand; for example, wetlands in Southland (in the South of New Zealand) on private land were reduced in area by 1235 ha (10%) between 2007 and 2015.

6. AICHI BIODIVERSITY TARGET 6 – SUSTAINABLE MANAGEMENT OF AQUATIC LIVING RESOURCES

The Fisheries Act 1996 provides the legal framework for fisheries management in New Zealand and aims to maintain resources at a sustainable level and to ensure that adverse effects on non-target species and marine biodiversity are avoided, remedied or mitigated.

Over 400,000 tonnes of fish are removed from New Zealand's marine environment by commercial operators annually. The cornerstone of New Zealand's management of these commercial fisheries is the Quota Management System.

In 2017, 138 of the 165 fish stocks that could be assessed (84%) were above the lower bound of the desirable population size (i.e. not overfished), a proportion that has not changed much since 2009. All overfished stocks have corrective management actions in place or in the pipeline.

Comprehensive estimates of bycatch and discards of fish in deepwater fisheries are published annually and, in general, bycatch has declined over the last 10 years. Inshore fisheries are less well-understood, but New Zealand is introducing new electronic systems for tracking, monitoring and reporting of commercial fishing across all fisheries.

Around 70 of the 113 species of shark recorded in New Zealand waters are caught by fishers, with 90% of the total shark catch (11 species) managed under the Quota Management System. Seven species are fully protected. Since 2014, it has been illegal for a commercial fisher to remove the fins from any shark and discard the body.

As reported under National Target 5, the *National Plan of Action for Sharks* is in place and will be reviewed in 2019. A comprehensive risk assessment was conducted under the plan in 2015 and refreshed in 2018.

The *National Plan of Action for Seabirds* was updated in 2013 and includes the objective of reducing fishing-related risk to seabird taxa identified as at high risk from fishing. Estimates of risk for all such taxa were much lower in 2016; however, most of the reduction came from analytical improvements. Decreases in lethal interactions have occurred for many (but not all) taxa. The black petrel and Salvin's albatross remain the seabird species most at risk from fishing within New Zealand's EEZ and a further five species are considered to be at high risk. Bycatch is known to occur outside New Zealand's EEZ and the risk assessment is being extended to include such areas.

Where information is sufficient to assess, captures of marine mammals have also declined. As reported under National Target 5, the *New Zealand sea lion/rāpoka Threat Management Plan* was published in 2017 and the draft *Hector's and Māui dolphin threat management plan* is currently under review. Areas closed to fishing to protect marine mammals were last expanded towards the end of 2013. Substantial research on estimating abundance, distribution, and overlap with fisheries has been completed. A quantitative marine mammal risk assessment is under development and needs further work.

The area impacted by bottom trawling annually has decreased by about half since 1998 and there has been an even larger decline in the number of dredge tows for shellfish. Trawling affects about 23% of the area open to trawling in depths to 1600 m. This proportion varies substantially by depth and habitat type.

In addition to these measures, New Zealand's network of Benthic Protection Areas (as described under Aichi Target 11 on Protected Areas) include a range of stringent fishing restrictions to protect marine biodiversity and contribute to the sustainable management of New Zealand's aquatic living resources.

7. AICHI BIODIVERSITY TARGET 7 – SUSTAINABLE AGRICULTURE, AQUACULTURE AND FORESTRY

New Zealand's farming, forestry and horticulture depend on the resources provided by biological systems. New Zealand recognises this by having a framework of legislation and initiatives that aim to keep the impacts of use of natural resources within safe ecological limits.

The *National Environmental Standards for Plantation Forestry* came in to effect in May 2018. The Standards provide nationally consistent regulations to manage the environmental effects of forestry in New Zealand.

A number of specific initiatives aim to promote the sustainability of New Zealand's major industries. Examples include the *Sustainable Dairying: Water Accord* (2013) which is an industry-driven set of national good practice benchmarks aimed at lifting environmental performance on New Zealand dairy farms. The Sustainable Farming Fund (recently renamed as the Sustainable Food and Fibre Futures Fund and administered by New Zealand's Ministry for Primary Industries) has invested in applied research and projects led by farmers, growers or foresters. Projects deliver economic, environmental and social benefits to New Zealand. The Fund has supported many community-led groups over the past 18 years in New Zealand. Over 1000 projects have been funded through the Sustainable Farming Fund in New Zealand.

As reported in National Target 7, the *Good Farming Practice: Action Plan for Water Quality* was released in April 2018. It commits to supporting all farmers and growers to implement good practice principles that will reduce their impact on New Zealand's freshwater resources. The Action Plan, jointly developed by primary sector groups, regional councils and the Ministries of Environment and for Primary Industries, commits to supporting all farmers and growers to implement good practice principles that will improve water quality outcomes. The aim is that every farmer and grower develop and implement a farm environment plan that identifies the risk areas for water quality on their property and sets out actions needed to address those risks. This Action Plan is expected to accelerate the uptake of good framing practices across all catchments.

8. AICHI BIODIVERSITY TARGET 8 – POLLUTION REDUCED

The health and mauri (life force) of some of New Zealand's freshwater ecosystems have declined because of human activities that have reduced water quality, increased sediment yields, altered water flows, introduced pest species and modified or lost habitats or the connections to habitats. As a result, populations of freshwater species have declined and many of our native freshwater plant, fish, and invertebrate species are now classified as threatened or at risk of extinction.

The flow-on effects of upstream pollution into coastal receiving waters is gaining increased attention in New Zealand, particularly nutrient runoff and plastic waste. The nutrients of most concern in New Zealand's fresh waters are nitrogen and phosphorus. These nutrients are strongly correlated with increased pastoral land use intensity and cause excessive algal blooms and undesired plant growth. As reported in *Our Freshwater 2017* (Statistics New Zealand and Ministry for the Environment, 2017) nitrate-nitrogen

concentrations worsened (55%) at more monitored river sites in New Zealand than improved (28%). Dissolved reactive phosphorus concentrations have improved (42%) at more monitored river sites than worsened (25%).

The Ministry for the Environment is currently progressing policy work on its Essential Freshwater work programme. This programme has three objectives: stopping further degradation and loss of our freshwater resources, reversing past damage and addressing water allocation issues. The work programme intends to deliver on these objectives through:

- Targeted action and investment in at-risk catchments.
- Amendments to the National Policy Statement for Freshwater Management.
- A new National Environmental Standard for Freshwater Management.
- Wide engagement in developing options for allocating water resources, starting with allocation of discharges to water in 2019.

See National Target 7 and Aichi Target 7 for information about industry initiatives to improve water quality outcomes. See also information about the National Policy Statement for Freshwater Management at National Target 3.

9. AICHI BIODIVERSITY TARGET 9 – INVASIVE ALIEN SPECIES PREVENTED AND CONTROLLED

New Zealand has a strong focus on managing biosecurity risk before and at the border. There is significant monitoring of unwanted organisms already in New Zealand in an attempt to control and eradicate them, where possible. Surveillance is used to identify any emerging risks.

New Zealand has continued to contribute to Aichi Target 9 through increased vigilance and rapid response to potential incursions. Within New Zealand, the impacts of pests and diseases that have crossed the border (including those that have already established) have been managed. Management of established pests has required collaboration between central and local government agencies, industry, community groups, indigenous peoples and the wider public. Regional councils undertake region-specific planning and strategy drafting to manage invasive pest species. This has allowed for the specific targeting of interventions to local conditions. Crown Research Institutes have also provided national best practice guidance.

Since the last report in 2014, New Zealand has taken steps towards significant changes to the biosecurity system that will ensure risks to New Zealand's natural products, industry and environment are identified and managed early. The first of these changes is *Biosecurity 2025*, a partnership between organisations, Māori, and local, regional and central government. The aim of *Biosecurity 2025* is to increase the resilience of New Zealand's biosecurity system. The *Biosecurity 2025 Implementation Plan* will set the framework for on-going work to continue delivery of the goals and outcomes set out by the strategy. See also reporting at National Target 8, above.

New Zealand is currently responding to the dual threats of kauri dieback and myrtle rust, which have the potential to severely impact terrestrial ecosystems. Programmes for each threat focus on science, engaging the public, and delivering work on the ground such as hygiene infrastructure, vector control work and surveillance. A National Pest Management Plan is under development for kauri dieback.

In 2016 the New Zealand Government adopted a vision of a Predator Free New Zealand. The *Predator Free 2050* goal has been set as eradicating possums, rats, and stoats in New Zealand by 2050. In 2018, the New Zealand Government announced additional funding of NZD $81.28 million for the next 4 years to suppress introduced species that predate on indigenous and endemic biodiversity in priority ecosystems, to protect and increase biodiversity on offshore islands, and to develop more effective and efficient predator control methods.

10. AICHI BIODIVERSITY TARGET 10 – ECOSYSTEMS VULNERABLE TO CLIMATE CHANGE

A greater understanding of the multiple pressures impacting vulnerable ecosystems and native species (including climate change) has been attained, but much more research is required. Some land-use decisions (for example, expanding exotic plantation forestry) are increasing the stresses on natural systems. Pest and weed control programmes and improved land use decision-making are reducing some of these stresses (and also enhancing the resilience of the systems to the impacts of climate change); however, little has been done to directly minimise climate change-related impacts.

Ocean acidification is ranked as the most serious human-based threat to New Zealand's marine habitats (Macdiarmid et al. 2012). Organisms with calcium carbonate shells (such as plankton, corals, crustaceans and molluscs) are particularly at risk. New Zealand supports a wide range of ocean acidification research and aid programmes in the South Pacific, including the *New Zealand – Pacific Partnership on Ocean Acidification Programme* (www.pacificclimatechange.net/project/pacific-islands-partnership-ocean-acidification), the *Climate Change – Impacts and Implications Programme* (www.ccii.org.nz), and the *Coastal Acidification – Rates, Impacts and Management Research Programme* (www.carim.nz).

New Zealand recently joined the *International Alliance to Combat Ocean Acidification* (www.oaalliance.org/) and will be represented on the Alliance's inaugural Executive Committee in 2019. Working with science and industry leaders, the *New Zealand Ocean Acidification Working Group* is creating an ocean acidification action plan for New Zealand which will highlight the areas that government agencies, organisations and individuals can focus on to incite positive change with climate change.

NZD $13.5 million has recently been approved for three upcoming research programmes with strong acidification and climate change connections (www.mbie.govt.nz/about/whats-happening/news/2018/endeavour-fund-2018-results).

To cross-promote shared technical, scientific and policy solutions to effect broader implementation and change, New Zealand is leading the *Commonwealth Blue Charter Action Group on Ocean Acidification* (www.thecommonwealth.org/media/news/leaders-applaud-commonwealth-blue-charter-ocean-action). The Action Group is working with the *New Zealand Ocean Acidification Community* (www.nzoac.nz) to bring together national and international scientists and policy makers for a shared workshop (in February 2019) to identify opportunities and work towards strategies to address acidification.

11. AICHI BIODIVERSITY TARGET 11 – PROTECTED AREAS

Protection in place for terrestrial and inland water protected areas[2] in New Zealand is proportionally large by international standards (32.8% of the total land area for terrestrial; and 27.6% for inland water bodies[3]). However, the protection currently in place is not yet representative of the breadth of ecosystem types and habitats found in New Zealand.

Land Environments of New Zealand (LENZ) is a classification based on abiotic factors of climate and geology, describing the type of environment found at a place. When overlaid with indigenous Land Cover and legal protection, an assessment of representativeness can be made. This analysis shows that the areas with high indigenous cover and high levels of legal protection include the Western South Island foothills, Stewart Island, the Central Mountains, the Southern Alps, Ultramafic soils, and areas of permanent snow and ice. In contrast, less than 10% of lowland areas throughout the North Island and in the eastern South Island are protected, and less than 1% of the eastern South Island plains and North Island lowlands are covered by indigenous vegetation and protected. More information on the proportion of ecosystems protected and

[2] Inland water protected areas in this sense refers to freshwater bodies (lakes and rivers) that are under some form of legal protection (for instance, public conservation land).

[3] Based on a Department of Conservation analysis.

under indigenous cover can be found at: https://www.doc.govt.nz/our-work/monitoring-reporting/national-status-and-trend-reports-2017-2018/?report=ProportionOfEcosystemsProtected_LENZ

Following adoption of guidance on achieving Aichi Target 11 and on Other Effective Area-Based Conservation Measures by the Convention on Biodiversity, New Zealand will consider how this guidance aligns with our marine protection measures. Currently, New Zealand has 17,697 km^2 (0.4%) of its marine and coastal area (9.8% of the territorial sea and 0% of the exclusive economic zone) in marine protected areas that meet the strictest definition of International Union for the Conservation of Nature (IUCN) categories (those areas protected as 100% no-take marine reserves).

In addition to no-take marine reserves, New Zealand protects a further 1,268,369 km^2 under a variety of protection measures:

- 27.4% of the marine and coastal area is protected from fishing impacts on the benthic marine environment and a further 2.6% is seamounts protected from trawl impacts.
- 0.7% of the marine and coastal area is in Marine Mammal Sanctuaries that are spatial conservation measures applied to manage risks to marine mammals.
- 0.1% of the marine and coastal area is in Type 2 marine protection measures. Type 2 marine protection measures are management tools that meet New Zealand's domestic protection standard for marine protected areas. The minimum level of protection required for an area for a Type 2 marine protected area is the prohibition of bottom trawling, Danish seining and dredging (commercial and amateur).

In New Zealand's territorial sea, the distribution of marine protection is uneven across the 14 coastal marine biogeographic regions. A large proportion (96.5%) of marine reserve coverage is located around offshore islands in the northern (the Kermadec Islands) and southern (the Subantarctic Islands) extremes of the territorial sea.

The remaining 3.5% of marine reserves and other marine protection measures in the mainland territorial sea are not well spread across the biogeographic regions. Consequently, our current coastal marine protection network does not yet protect a fully representative range of habitats, with significant gaps in protection within mainland biogeographic regions.

The New Zealand Government is working on several initiatives to further advance marine protection in New Zealand, including the Kermadec/Rangitāhua Ocean Sanctuary, Sea Change – Tai Timu Tai Pari marine spatial plan, the Campbell Island/Moutere Ihupuku Marine Reserve review, and the Southeast marine protected area planning process.

12. AICHI BIODIVERSITY TARGET 12 – REDUCING RISK OF EXTINCTION

As reported in National Target 12, the Department of Conservation administers the *New Zealand Threat Classification System* (NZTCS), in which panels of experts assess the risk of extinction faced by indigenous species. The expert panels are drawn from the local and international science and conservation communities to assess groups of organisms (for example, birds, lichens, beetles).

The NZTCS comprises four main categories: 'Extinct', 'Threatened', 'At Risk' and 'Not Threatened'. The 'Threatened' and 'At Risk' categories are each divided into conservation statuses (see Fig. 4). The four categories are augmented by additional categories of 'Data Deficient', 'Non-resident Native' and 'Introduced and Naturalised'. 'Data Deficient' is used for species when the expert panels lack data to assess them. 'Non-resident Native' species include migrants, vagrants and colonisers. Migrants and vagrants do not breed in New Zealand and spend less than 50% of their lives here. Colonisers are relatively recent arrivals that have not occupied New Zealand long enough for there to be certainty that they will establish persistent breeding populations.

'Introduced and Naturalised' species arrived in New Zealand through direct or indirect human agency and have established persistent breeding populations. This category includes invasive animals and plants that pose risks to indigenous biodiversity.

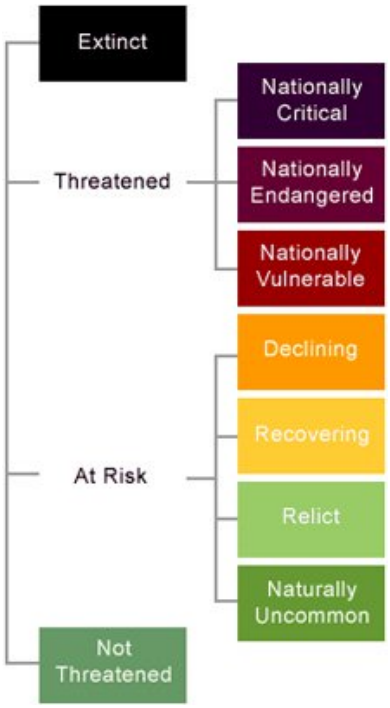

Figure 4: The four main New Zealand Threat Classification System (NZTCS) categories and the conservation statuses within the Threatened and At Risk categories.

The results of the assessments are published in the New Zealand Threat Classification Series of scientific monographs. These are freely available online in PDF format at https://www.doc.govt.nz/about-us/science-publications/series/new-zealand-threat-classification-series/. The assessment data is also available from the online NZTCS database at www.nztcs.org.nz/.

The experts use information from databases, scientific publications and the public as well as their own knowledge. Prior to 2014, species groups were reassessed on a 3–4-year cycle, but the interval between assessments is growing with the increasing number of species being assessed.

To date, assessments of approximately 12,000 New Zealand indigenous species (including subspecies, varieties and formas) are published. These comprise approximately 8% of the estimated 100,000 species of organisms thought to occur in New Zealand. Table 8 shows the number of native species in each of the NZTCS categories.

Table 9 describes the changes to conservation status of taxa since their previous assessments. It breaks those changes down according to whether they were based on observed change to populations, new information about populations or reinterpretation of existing data about them. Of the 3917 Threatened and At Risk taxa, 927 have been assessed only once so there is no information on changing conservation status. Of the remaining 2990 species, 95 have improved their status since they were previously assessed, and 316 have moved into a worse status. However, most of these changes were based on improved data and/or reinterpretation of the data that was previously used to assess them. Only 24 species (8 Threatened and 16 At Risk) were assessed as having actually improved since they were previously assessed. Populations of 87 species declined to the extent that they were assessed in a worse category than previously.

Table 8: Number of species in each NZTCS category.

NZTCS category	Total
Extinct	79
Data Deficient[1]	4245
Threatened	987
At Risk	2931
Non-resident Native	274
Not Threatened	4115
Total	12631

[1] As well as the 'Data Deficient' species, the assessments of nearly 1500 other species are qualified as 'Data Poor', reflecting knowledge gaps that impede NZTCS assessments and conservation management.

Table 9: Changes to conservation status of taxa since their previous assessments and reasons for the changes.

Conservation status	Threatened	At Risk	Total
Worse	166	150	316
Actual decline	54	33	87
More knowledge	63	38	101
Reinterpretation of data	49	79	128
Better	31	64	95
Actual improvement	8	16	24
More knowledge	16	26	42
Reinterpretation of data	7	22	29
Neutral[1]	14	101	115
More knowledge	14	84	98
Reinterpretation of data		17	17
No change	617	1847	2464
New listing	159	768	927
Total	987	2930	3917

[1] A neutral change is deemed to be any change of status into or out of 'Data Deficient'.

13. AICHI BIODIVERSITY TARGET 13 – SAFEGUARDING GENETIC DIVERSITY

The *Rare Breeds Conservation Society of New Zealand* was formed in 1988 to conserve, record and promote these breeds with the particular aim of maintaining genetic diversity within livestock species. Details regarding the society are presented here: https://www.rarebreeds.co.nz/index.html#contents.

Gene Bank has been established to preserve animal genetic resources within New Zealand and, possibly, the Pacific area by cryopreservation.

Domestic cattle germplasm in New Zealand are maintained through two major commercial entities *Livestock Improvement Corporation* and *AMBREED*. They run genetic improvement schemes for cattle breeds (dairy and beef).

Beef + Lamb New Zealand provides funding to *Beef + Lamb New Zealand Genetics* so that New Zealand ram breeders have the best tools at their disposal and sheep farmers benefit from rapid and effective genetic gain.

14. AICHI BIODIVERSITY TARGET 14 – ECOSYSTEM SERVICES

The *Living Standards Framework* acknowledges the benefits of nature and the environment upon personal wellbeing. *Investing for Wellbeing* (The New Zealand Treasury 2018 Investment Statement) states that 'wellbeing comprises tangible and intangible aspects of life experience, including housing, income, employment, community engagement, enjoyment of environmental amenity, education and health and security.' The Framework is supported by four capitals – natural, social, human and financial/physical. These capitals recognise that people, economies and countries are performing well when a holistic approach to wellbeing is applied, which clearly includes nature's benefits.

See information at National Target 14 about methodologies used by the Department of Conservation and others to link ecosystem services to habitats and processes and National Target 15 for information about improving ecosystem outcomes through collaboration and co-design on landscape-scale restoration projects.

Roberts et al. (2015) discuss the contribution of nature to the health and happiness of New Zealanders in their report 'The nature of wellbeing'. This report evaluates the relationship between ecosystem services and human health and happiness. The report places a special focus on how nature benefits and affects New Zealanders. For example, it states that as New Zealanders 'our sense of self-definition, and the way in which we portray ourselves to customers, tourists, immigrants, and the rest of the world is heavily bound up in our natural world'. In interviews with New Zealanders, Coyle & Fairweather (2005) found that the terms 'clean and green' New Zealand are to some extent embedded within the national consciousness. 'The clean green idea is associated with an abundance of accessible natural environment – a cultural imaginary that is pure and unspoilt. Moreover, this image has a materiality to it, for New Zealand was perceived by participants as a "healthy" place to live and "good place to bring up kids"' (Coyle & Fairweather 2005).

Blaschke (2013) recently reviewed the health and wellbeing benefits of conservation in New Zealand, with a particular focus on benefits associated with public conservation areas managed by the Department of Conservation. The review focused on three potential pathways through which contact with natural environments might influence health:

- Green space provides opportunities to partake in physical activity, which is strongly associated with better physical and mental health outcomes and can play a role in both preventing and managing chronic disease.
- Green space may facilitate the development of social capital by providing places to interact with other members of the public and undertake activities within groups, and by strengthening people's sense of attachment to their living environment.
- It has been proposed that nature has direct effects on health and wellbeing, especially through so called 'restoration effects', such as recovery from stress and attention fatigue.

Roberts et al. 2015 'The Nature of Wellbeing':

https://www.doc.govt.nz/Documents/science-and-technical/sap258entire.pdf

15. AICHI BIODIVERSITY TARGET 15 – ECOSYSTEM RESTORATION AND RESILIENCE

Of all indigenous habitats in New Zealand, forests are the main contributors to carbon stocks. Over the period 1 January 2014 to 31 December 2016, natural forests in New Zealand were assessed to have removed 19.2 Mt CO_2-e from the atmosphere.

Key policy measures that encourage establishment of new forests (both indigenous and exotic) in New Zealand are:

- The New Zealand Emissions Trading Scheme puts a price on greenhouse gas emissions. This price on emissions is intended to create a financial incentive for businesses who emit greenhouse gases to invest in technologies and practices that reduce emissions. It also encourages forest planting by allowing eligible foresters to earn New Zealand emission units as their trees grow and absorb CO_2.
- The One Billion Trees programme (see reporting for National Target 16) is a major collaborative effort to plant one billion trees in New Zealand over 10 years (from 2018 to 2028). As of 28 July 2018, when the programme was announced, there have been 49,203,000 trees planted.
- The Afforestation Grant Scheme has operated since 2015 with the aim of establishing 15,000 ha of new forest in New Zealand between 2015 and 2020.

16. AICHI BIODIVERSITY TARGET 16 – NAGOYA PROTOCOL ON ACCESS AND BENEFIT-SHARING

New Zealand has not acceded to the Nagoya Protocol, though the country retains an interest in the Protocol as both a user and a provider of genetic resources.

New Zealand does not currently have an access and benefit-sharing or a comprehensive bio-discovery/ bioprospecting policy framework in place. However, discrete pieces of legislation (for example, the Wildlife Act 1953) and policy provide coverage in some situations.

It is essential for New Zealand that any domestic or international regime maintains the Crown's ability to fulfil its obligations under the Treaty of Waitangi.

17. AICHI BIODIVERSITY TARGET 17 – BIODIVERSITY STRATEGIES AND ACTION PLANS

New Zealand published the *New Zealand Biodiversity Action Plan* (Action Plan) in September 2016 as a targeted update of the *New Zealand Biodiversity Strategy 2000–2020*. The Action Plan recognised that halting the decline of biodiversity in New Zealand poses a significant challenge and needs a sustained collaborative effort. National biodiversity targets (as reported on in sections 1–3 of this report) are set in the Action Plan along with associated actions, many of which are reported against throughout this report.

As this report shows, implementation has been largely effective, with many important actions and measures having made good progress. More could be done to achieve a strategic framework at the national level for driving biodiversity work in New Zealand.

In recognition that more action is needed to protect New Zealand's unique biodiversity, the New Zealand Government has commenced a process to prepare a *New Zealand Biodiversity Strategy and Action Plan*. New Zealand aims to complete the new Strategy by the end of 2019. There will be significant engagement with tangata whenua, regional councils and local government to contribute to the development of the Strategy. New Zealand will review the Strategy once parties to the Convention on Biological Diversity agree the post-2020 framework in 2020.

18. AICHI BIODIVERSITY TARGET 18 – TRADITIONAL KNOWLEDGE

Te Tiriti o Waitangi (the Treaty of Waitangi) provides a foundation for facilitating the contribution to Aichi Biodiversity Target 18. *New Zealand's Fifth National Report to the Convention on Biodiversity* referred to the findings and recommendations in the 2011 report of the Waitangi Tribunal *Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity* (the *Wai 262 Report*).

While the New Zealand Government has made progress in several areas implementing measures that respond to, or are informed by, the findings and recommendations of the Wai 262 Report, there is still more to do. Recent examples of activities include:

- Public consultation on the review of the *Plant Variety Rights Act 1987*, which was launched in September 2018. In this review, the New Zealand Government will address the recommendations the Wai 262 Report that relate to plant variety rights, as part of the review. At the same time, consultation on options to introduce disclosure of origin requirements in New Zealand's patents regime is also taking place.
- In 2018, the *Mana Whakahono ā Rohe* process was introduced to improve the participation and decision making of tangata whenua in environmental management. When negotiated, Mana Whakahono agreements will set arrangements under the Resource Management Act 1991 between tangata whenua and local authorities.

More information on progress is available in the New Zealand's Government's *Section 8I* report, released on 12 December 2018.

19. AICHI BIODIVERSITY TARGET 19 – SHARING INFORMATION AND KNOWLEDGE

The information required to understand the state of New Zealand's natural biodiversity comes from the *Biodiversity Monitoring and Reporting System*. This is providing the Department of Conservation and others in New Zealand with consistent, comprehensive information about biodiversity on the 8.5 million hectares of public conservation lands and, potentially, across the whole of New Zealand. The system measures ecological integrity, or ecological 'health', which comprises ecological processes, species occupancy and ecosystem representation. The aim is for a balance in monitoring at different levels of scope and spatial coverage to enable New Zealand to understand gains and losses in biodiversity across conservation lands, whether managed intensively or not.

Trend information is dependent on completing the 5-year cycles of monitoring (supplemented by some longer-running monitoring). Trends in ecological integrity or species abundance are in many cases only being identified after longer periods of time than 5-year intervals. This is because the influences of change may take several generations for indicator species or ecosystems to demonstrate deterioration or improvement in condition. However, some change, such as that arising from extreme weather events, can be quite rapid when it does happen, and the Department of Conservation uses monitoring results and priority setting systems to identify when and where to direct management effort. The Biodiversity Monitoring and Reporting System is part of an ongoing programme to develop a nationally-consistent and cohesive approach to managing biodiversity across all of New Zealand's land and waters. Further work needs to be done to extend monitoring and reporting of comprehensive biodiversity information for private land.

A large amount of significant biodiversity information, national biological collections, and databases is held by, maintained and made available by Crown Research Institutes, academic institutions, museums, scientists, and others in New Zealand. Citizen science has made an increased contribution to biodiversity information and knowledge sharing, with *BioBlitz* events (see https://www.landcareresearch.co.nz/science/plants-animals-fungi/bioblitz) and online resources such as *iNaturalist* (https://inaturalist.nz/).

20. AICHI BIODIVERSITY TARGET 20 – MOBILISING RESOURCES FROM ALL SOURCES

The New Zealand Aid Programme contributed an average of NZD $30.3 million per annum to support biodiversity-related development during the period from 2014/15 to 2017/18 (Table 10). This is 25% more than the 2006/07 to 2009/10 baseline.

Projects included support for work on ocean acidification, fisheries management in the Solomon Islands, enhancement of biosecurity measures in the Pacific, construction of an arboretum and learning centre in Nigeria, and technical assistance to improve the regulatory environment for wildlife trade in Samoa and the Solomon Islands. The *New Zealand Aid Programme* also supported activities where biodiversity was a significant (but not the principal) component of the activity. For example, in relation to oil spill preparedness and promoting rural bee keeping in Fiji, training for forestry officers in Vanuatu, funding for a Sustainable Development and Energy Adviser for Nauru, animal disease control in Myanmar, supporting sustainable avocado production in Kenya, sustainable cattle intensification in central America, and supporting invasive weed control in the Cook Islands.

Table 10: New Zealand overseas development assistance (ODA) for the financial years 2014/15 to 2017/18 (NZD).

Type of ODA	2014/15	2015/16	2016/17	2017/18
Principal	$4,589,856	$5,391,786	$4,186,163	$4,772,568
Significant	$18,733,470	$28,368,173	$27,639,163	$26,684,459
TOTAL	**$23,323,326**	**$33,759,960**	**$31,825,326**	**$31,457,028**

Domestic government expenditure on biodiversity occurs at the national, regional/unitary and local level. At a national level, an average of $1,178,496,000 was spent indirectly and directly on biodiversity per annum in the period from 2014/15 to 2017/18 (Table 11).

Table 11: New Zealand national level spending for the financial years 2014/15 to 2017/18 (NZD).

2014/15		2015/16		2016/17		2017/18	
Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
$586,998,000	$475,348,000	$651,683,000	$492,294,000	$713,083,000	$480,217,000	$724,927,000	$560,115,000

Using the same methodology, the combined annual average spend for four regional/unitary councils (Southland, Northland, Greater Wellington and Horizons) was NZD $81,634,526 for the period from 2014/15 to 2017/18. This represents approximately 20.31% of their operating budgets in 2017/18. Applied to all regional and unitary councils, a 20.31% spend would equate to an estimated biodiversity spend of NZD $1,033,753,094 for 2017/18 at the regional/unitary council level.

Estimates do not currently exist for local council, private or civil society biodiversity spending.

21. SUPPORTING IMPLEMENTATION OF THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT AND THE SUSTAINABLE DEVELOPMENT GOALS

New Zealand recognises that the *2030 Agenda and Sustainable Development Goals* (SDGs) align with existing international commitments including the Aichi Biodiversity Targets. We also recognise that biodiversity and ecosystems feature across many of the SDGs and associated targets.

The most direct linkages between New Zealand's contribution to the achievement of the Aichi Biodiversity Targets are to implementation of SDGs 14 (life below water) and 15 (life on land). As a country that relies on its natural environment and biological wealth for sustainable economic growth, New Zealand recognises that biodiversity also contributes to the achievement of other targets.

Table 12 provides information on direct linkages between contributions towards the Aichi Biodiversity Targets as detailed in this report and achievement of SDGs 14 and 15.

Table 12: Key Sustainable Development Goals (SDGs) and related Aichi Biodiversity Targets.[4]

SDG	Measures reported under the following Aichi Biodiversity Targets that have contributed to SDG
14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 17, 19
15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss	2, 4, 5, 7, 9, 11, 12, 14, 15, 16

[4] Based on the technical analysis of connections between Aichi Biodiversity Targets and the SDGs, as contained in the CBD/UNDP *Biodiversity and the 2030 Agenda for Sustainable Development* Technical Note: http://www.undp.org/content/dam/undp/library/SDGs/English/Biodiversity_2030_Agenda_Technical_Note.pdf