

# Report: Protecting and Restoring New Zealand's Biodiversity

What do people think about protecting and restoring New Zealand's biodiversity? To find out, we invited New Zealanders to engage with each other on this topic, as citizens, using Scoop's public engagement platform, HiveMind. This report, prepared by Scoop and [PEP](#), summarises the findings.

The Biodiversity HiveMind was launched on Monday 5 August 2019 as one way for New Zealanders to take part in the [DOC](#)-led consultation on proposals for a new Biodiversity Strategy. The participation page was at: [Scoop Hivemind: Protecting and Restoring Biodiversity](#) and included links to information resources to support participation such as the formal discussion document, in-depth independent journalism and instructions for taking part.

The Biodiversity HiveMind closed on 22 September 2019. Participants were able to submit their own ideas and proposals for other participants to consider until 11 September.

## Table of Contents

- [1. The HiveMind Process](#)
- [2. Participation](#)
- [3. Notes about the Data, this Analysis and its Presentation](#)
- [4. Findings](#)
- [5. Differences between Opinion Groups](#)
- [6. Differences of opinion about the value of non-indigenous species](#)
- [7. Disagreement about the role of, and support for, Māori and the use of mātauranga](#)
- [8. Areas of Common Ground](#)
- [9. Discussion document questions](#)
- [10. Areas of Uncertainty](#)

# 1. The HiveMind Process

Scoop developed the [HiveMind](#) platform in 2016 with [Public Engagement Projects \(PEP\)](#) to:

- Enable a more participatory and interactive public conversation on important public issues
- Foster public learning
- Provide an opportunity for citizens to shape policies that affect their lives.

HiveMind is designed to enable citizens to safely exchange and consider ideas and proposals about a public issue with other citizens, with authorities, experts, organisations and with Scoop's journalists and editors. It is designed to highlight both areas of difference and of common ground.

A HiveMind webpage is created for a particular issue or topic. The page title clearly communicates what issue is under consideration. Below a brief introduction and links to further information, participants are able to 'vote' on statements, add their own statements and review opinion groupings, trends and statistics through an embedded Pol.is window.

## 1.1 Pol.is: The digital platform

HiveMind is powered by [Pol.is](#), a new type of interactive survey technology that allows participants to consider statements about an issue, add their own statements for others to vote on, and to see how their opinions fit with other people's views.

Pol.is analyses voting patterns and groups participants based on 2 criteria:

1. Participants who tended to vote similarly on multiple statements are grouped together as an opinion group
2. Each group of participants who voted similarly will have also voted distinctly differently from people in other groups.

The resultant opinion groups are presented to participants as they participate. The visualisation highlights both areas of agreement and difference in real-time.

Unlike in standard surveys, participants are encouraged to return to Pol.is regularly over several weeks to review emerging patterns, vote on new statements and add their own ideas, perspectives and proposals for all other participants to consider. These features promote greater learning and ownership amongst participants.

Pol.is is a promising new digital platform designed to enable mass public participation and has been used by a number of governments (e.g. Taiwan, Canada) and by major organisations (e.g. Columbia University). In Taiwan, Pol.is has been used as a major part of the policy development process for at least 6 laws.

## 1.2 Seed statements

50 'seed' statements, including 15 'metadata' statements designed to collect information about the participants to assist analysis, were prepared by the Biodiversity HiveMind project team to give early participants some statements to vote on at the start of the HiveMind. The biodiversity seed statements were taken from the [discussion document](#) and from [4 archetypal perspectives](#) that were set out on the Biodiversity Hivemind participation page.

The 15 metadata statements were removed from the HiveMind during the first week following feedback that they were too great a barrier to participation. Seven age and location statements were added back into the HiveMind for the second half of the HiveMind to provide an indication of participant diversity.

## 1.3 Outreach

A range of strategies were used to attract participants to the Biodiversity HiveMind.

- The HiveMind was advertised prominently on the scoop.co.nz frontpage as well as across the website throughout the consultation.
- The HiveMind advertisements were posted on Scoop's Facebook and Twitter.
- Subscribers to ScoopPro and Scoop Citizen Member were encouraged to take part by e-newsletters.
- Scoop ran a direct marketing email campaign to various New Zealand businesses and organisations that are not Scoop subscribers.
- Scoop launched The Dig, a new platform for in-depth, long-form journalism, with a series on biodiversity, which was intended to inform and encourage HiveMind participation.
- Personal invitations were posted to at least 3 people in each of the 71 electorates, selected at random from the 2017 electoral rolls.
- Advertisements were also placed on pages across the Scoop website. People in Scoop's Facebook and Twitter communities were informed.
- DOC ran a paid Facebook advertising campaign from the second week of the HiveMind.

## 2. Participation

Almost 100 people submitted around 250 statements and 536 people voted on at least one of the 154 statements that were moderated into the 'discussion'. 443 people voted on enough statements for their voting patterns to be analysed.

### 2.1 Who took part?

Two opinion groups emerged. Group A was made up of 72 people and Group B had 371 people. Both groups include significant numbers of people who were younger (under 30), middle-aged (30-54) and older (over 55). Both include people who live in cities, towns and rural areas. However people in Group A tend to be older and from rural areas whereas people in Group B tend to be more middle-aged and from the city. Overall, participants from older cohorts and from rural populations were overrepresented in the HiveMind compared with census data as shown in the tables below. It was assumed that very few participants were under 16 years of age.

	New Zealand Population (2013 Census)	HiveMind Participants (Overall)	HiveMind Participants (Group A)	HiveMind Participants (Group B)
16-29	26%	21%	17%	22%
30-54	47%	42%	37%	43%
55+	27%	22%	25%	21%

	New Zealand Population (2018 Census)	HiveMind Participants (Overall)	HiveMind Participants (Group A)	HiveMind Participants (Group B)
Urban	86.5%	70%	36%	77%
Rural	13.5%	30%	64%	23%

### 3. Notes about the Data, this Analysis and its Presentation

Levels of support for statements and the number of votes cast are presented in tables as follows.

Percentage of those who cast votes on the statement that selected 'agree'  
 Percentage of those who cast votes on the statement that selected 'agree'  
 Percentage of those who cast votes on the statement that selected 'pass / unsure'  
 (Number of participants who cast votes on the statement)

*Note that rounding errors may mean that percentages do not add to 100 in the table.*

Statements have generally been excluded from this analysis if:

- They received fewer than 100 votes, which is the case for most statements with statement ID numbers over 200
- They received fewer than 60 positive votes, that is 'agree' and 'disagree votes'.

The [Pol.is Technical Report](#) lists all the statements and their levels of support. The raw data from the Biodiversity HiveMind is also available as anonymised open data. For more details contact [hivemind@scoop.co.nz](mailto:hivemind@scoop.co.nz).

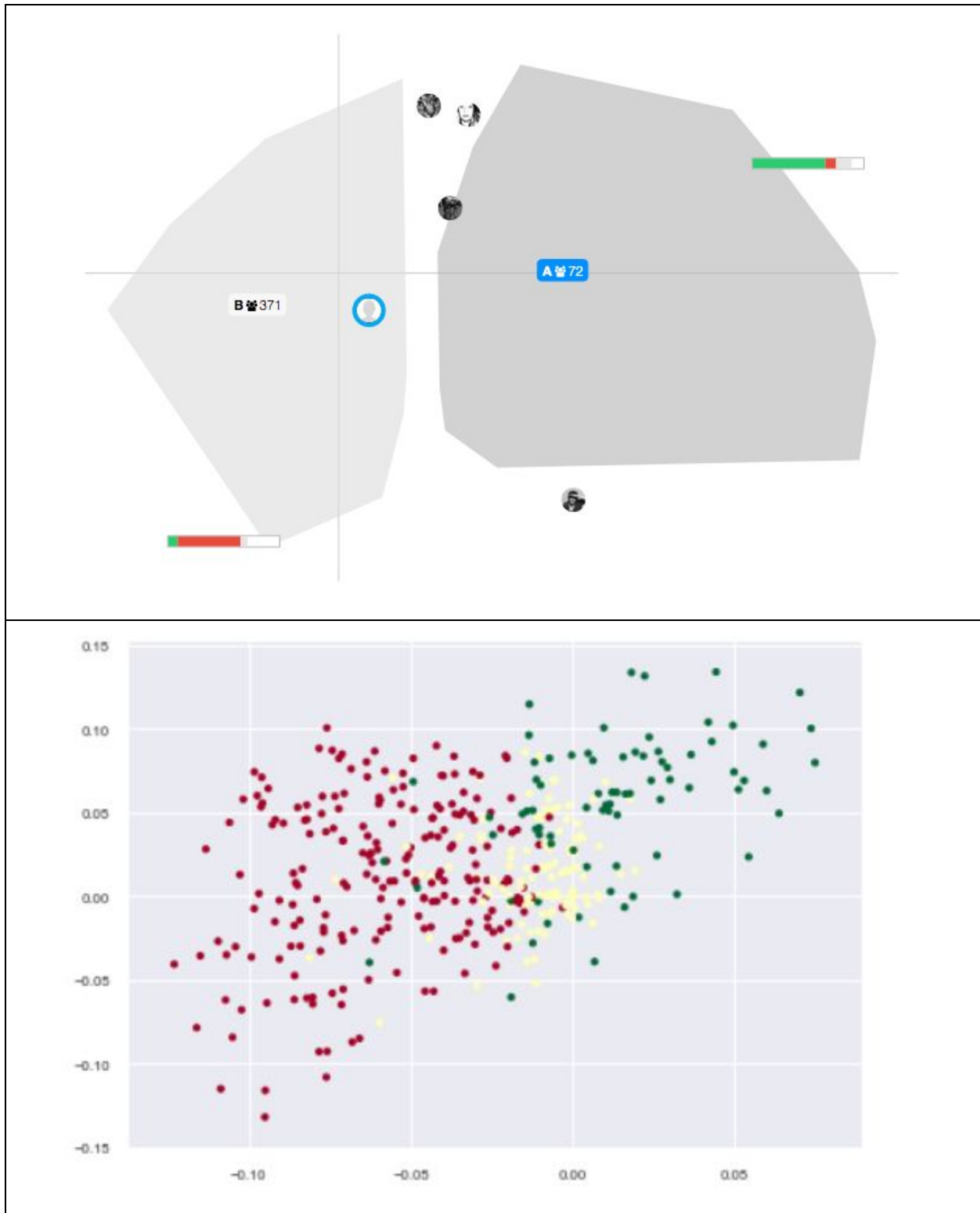
Pol.is uses Principle Component Analysis (PCA) when determining opinion groups. Further PCA and Uniform Manifold Approximation and Projection (UMAP) analysis has been carried out to check how well the opinion groups determined by Pol.is fit the voting patterns and to search for additional opinion groups.

### 4. Findings

Pol.is identified two opinion groups: Group A was made up of 72 people and Group B had 371 people. People in a group tend to vote similarly to each other on all statements that were moderated into the HiveMind but differently from people in the other group.

The following 2 plots for statement #79 - 'Please stop poisoning our lovely forests from the sky with deadly poison. Mammals and rural hunters are part of our biodiversity' - clearly show the two opinion groups - Group A on the right, Group B on the left. When there are differences of opinion on statements, this left-right split generally fits well with the voting behaviours.

The following 3 sections detail differences of opinion. In section 5, the left-right divide holds, however, the divide described in section 6 is different - top-bottom - and, in section 7, no groups are evident.



The bars in the top plot show the relative proportions of people in each group that agreed (green) and disagreed (red) with the statement, or passed (grey) on it. The white is the proportion of the group that did not vote on the statement.

Each dot in the lower plot represents a participant. Participants who voted similarly to each other across all statements are positioned closely together. The colour of the dots shows how each participant voted on statement #79 - green for agreed, red for disagreed, yellow for passed or did not vote on the statement.

## 5. Differences between Opinion Groups

The main differences of opinion between people in Group A and Group B are set out below.

### 5.1 Disagreement about the nature of biodiversity, and the desirability and feasibility of protecting and/or restoring indigenous biodiversity

ID#	Statement	Group A	Group B
22	The Biodiversity Strategy needs to prioritise conserving our indigenous species	34% 47% 17% (69)	89% 2% 8% (279)
61	The ecosystem that existed prior to 200 years ago is gone forever. All ecosystems, indigenous or not must be encouraged.	80% 3% 15% (63)	21% 55% 22% (263)
96	Biodiversity includes all life forms. In nature there are no such things as Pests. There is no such thing as being cruel to be kind.	51% 34% 14% (41)	9% 74% 15% (183)
128	Nature can manage itself. Humans are the cause of all perceived problems. Management is unnecessary. Leave wild places wild.	40% 40% 18% (32)	6% 83% 10% (146)

*Note that significant numbers of participants passed on statement #61.*

### 5.2 Different views about whether biodiversity is in crisis and whether more resources are needed to adequately manage it

ID#	Statement	Group A	Group B
17	Aotearoa New Zealand's biodiversity is in crisis	35% 46% 17% (67)	91% 1% 7% (275)
26	More money and resources must be spent to protect and restore biodiversity and ecosystem services	44% 33% 17% (67)	92% 1% 7% (275)

		21% (65)	6% (280)
78	The protection and enhancement of our biodiversity does not have to cost huge amounts of money.	72% 6% 20% (58)	41% 23% 34% (227)

*Note that significant numbers of participants passed on statement #78.*

### 5.3 Disagreement about the management of browsing game animals such as deer that are valued for hunting and as a source of food

ID#	Statement	Group A	Group B
79	Please stop poisoning our lovely forests from the sky with deadly poison. Mammals and rural hunters are part of our diversity.	73% 10% 15% (64)	11% 79% 8% (263)
88	The impacts of deer, pigs and trout need to be clearly stated and their cultural links dealt with.	25% 36% 37% (58)	80% 2% 16% (226)
92	I don't like using poisons for pest control but necessary evil until something better is developed.	29% 54% 16% (62)	81% 7% 10% (251)
111	DOC cost per dead possum is about \$25, so a \$10 bounty gets lots of youngsters into the bush (connections all round) solves several issues.	68% 21% 9% (41)	26% 44% 29% (179)
116	Deer/pig/trout are excellent food source, we can never get rid of them so control and use as such	68% 15% 15% (38)	24% 54% 21% (183)
148	Eliminate populations of non-native species that are valued for recreational or economic reasons but that negatively impact native species e.g. tahr, trout	11% 71% 17% (35)	58% 16% 25% (160)

*Note that significant numbers of participants passed on statements in this section.*



## 5.4 Differing levels of trust in government

ID#	Statement	Group A	Group B
64	I don't believe any level of Govt have moral ground for deciding this, as they have all allowed this to happen in the first place	59% 22% 17% (62)	9% 70% 20% (243)
91	Decisions on funding for pest control are made by the same people and successful innovations developed by outsiders are dismissed	60% 7% 32% (56)	15% 43% 40% (205)

*Note that significant numbers of participants passed on statement #91.*

## 5.5 Disagreement about the rights of property owners

ID#	Statement	Group A	Group B
40	While indigenous biodiversity should be given priority in protected areas, the rights and incomes of property owners must not be compromised on private land	63% 18% 17% (69)	10% 75% 13% (268)

## 6. Differences of opinion about the value of non-indigenous species

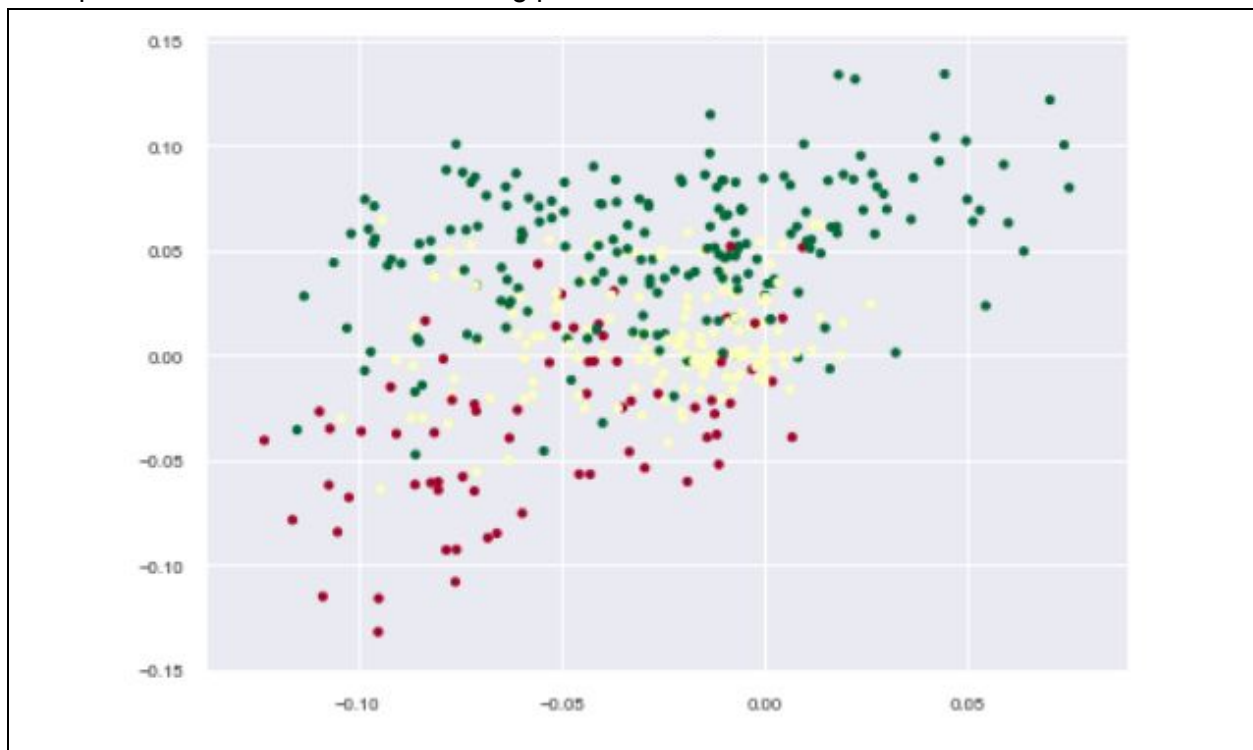
Differences of opinion about the value of non-indigenous species are not well described by the left-right divide described in section 4, that is, by the two opinion groups, A and B. This is why only overall levels of support are given in the table below.

ID#	Statement	Overall
30	Non-indigenous ecosystems and species can be valuable for biodiversity and ecosystem services	56% 20% 23% (347)
41	NZ's economic success relies on both non-indigeneous and indigeneous species	66% 16% 17% (326)
46	Non-indigenous species and habitats can provide benefits for indigenous species	55%

		18% 25% (346)
56	Introduced species are not inherently good or bad. Their place in our biodiversity depends on the impact of the specific species.	75% 13% 11% (307)

*Note that significant numbers of participants passed on statements #30 and #46.*

The pattern of division for the value of indigenous species is more top-bottom than left-right. An example of this is shown in the following plot for statement #30.



Each dot is a participant. Participants who voted similarly to each other across all statements are positioned closely together. The colour of the dots shows how each participant voted on statement #30 - green for agreed, red for disagreed, yellow for passed or did not vote on the statement.

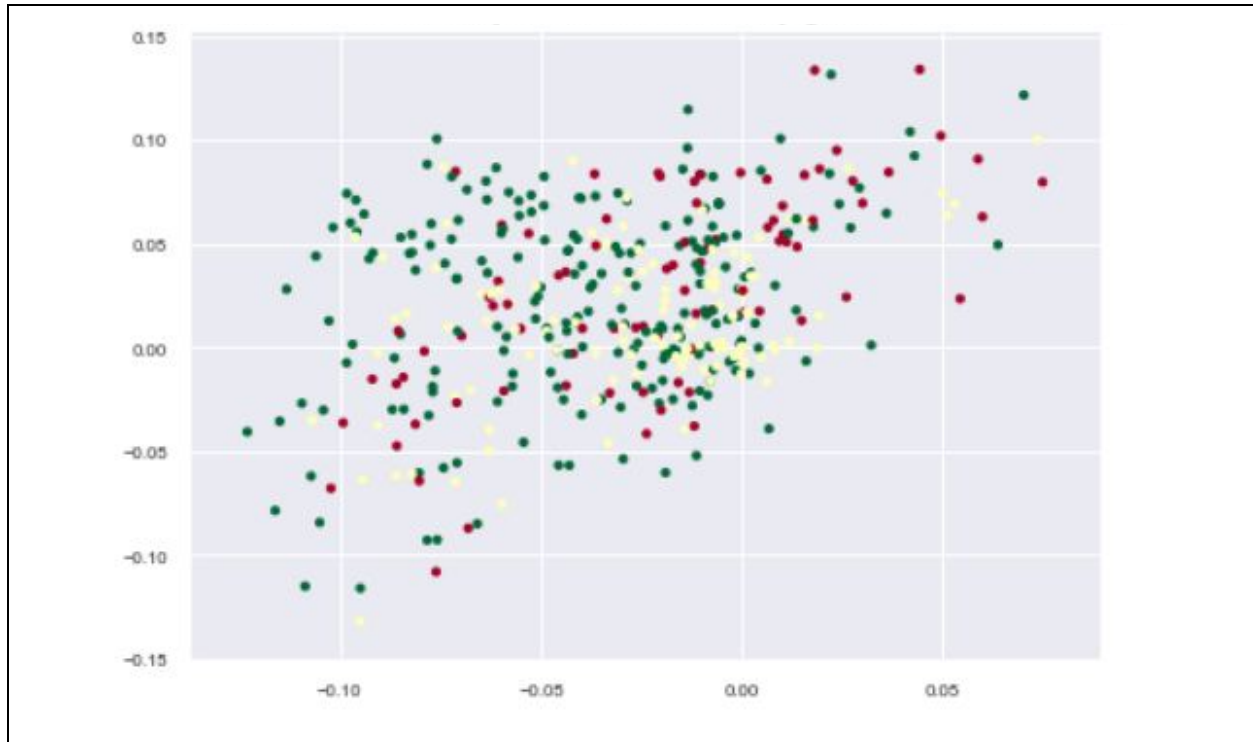
## 7. Disagreement about the role of, and support for, Māori and the use of mātauranga

Differences of opinion about the role of, and support for, Māori and the use of mātauranga are not well described by the left-right divide described in section 4, that is, by the two opinion groups, A and B. This is why only overall levels of support are given in the table below.

ID#	Statement	Overall
33	Biodiversity management should recognise the value of mātauranga Māori and practical knowledge, right from planning through to monitoring success	68% 12% 18% (364)
35	The Biodiversity Strategy should recognise the Treaty of Waitangi and the principles of partnership, protection and participation	75% 12% 12% (366)
36	A partnership between tangata whenua and the Crown should reflect aspirations for the co-management of nature	73% 9% 16% (342)
37	Māori must hold key roles in biodiversity governance structures	56% 22% 20% (389)
38	There is a need to consider and remove or alter any legislative blocks that prevent whānau or hapū from exercising kaitiakitanga/stewardship	44% 21% 34% (351)
39	There must be a programme in place to help Māori graduates move into roles at the Department of Conservation and other organisations	51% 25% 23% (373)
59	Te ao Māori regarding biodiversity / the environment and science should work together. Each perspective strengthens the other.	78% 9% 11% (327)
99	The Māori perspective should not be bought, bent and manipulated in order to incorporate it into what is essentially a pakeha view.	52% 10% 37% (213)

*Note that significant numbers of participants passed on statements #37, #38, #39 and #99.*

Significant numbers of participants who voted similarly on most statements voted differently from each other on these statements and there were no clear opinion groups. An example of this is shown in the following plot for statement #37.



Each dot is a participant. Participants who voted similarly to each other across all statements are positioned closely together. The colour of the dots shows how each participant voted on statement #37 - green for agreed, red for disagreed, yellow for passed or did not vote on the statement.

## 8. Areas of Common Ground

Despite the differences of opinion detailed in sections 5,6 and 7, there are many areas of common ground. This section details some of the key areas of broad agreement, which is defined as at least 70% of the people in Group A and at least 70% of the people in Group B agreeing with the statement. In many cases, the levels of agreement were significantly above 70%. The last 'consensus' column in the tables below classifies the level of consensus with reference to the group that 'agreed' least.

### 8.1 Biodiversity is essential for our health and economy

ID#	Statement	Group A	Group B	Consensus
23	Our physical and mental health and prosperity depends on our natural environment	85% 4% 9% (61)	95% 1% 3% (265)	≥85%

### 8.2 Protecting entire ecosystems

ID#	Statement	Group A	Group B	Consensus
133	Instead of focusing on protecting flagship species, we should focus on protecting entire ecosystems, which may include those species.	75% 6% 18% (33)	89% 1% 9% (163)	≥75%

### 8.3 Biodiversity in urban areas is important too

ID#	Statement	Group A	Group B	Consensus
42	Biodiversity is not just a rural issue, there are many biodiversity problems in towns and cities	80% 9% 9% (63)	94% 1% 3% (252)	≥80%
81	We should innovate to become more inclusive of nature and biodiversity in our city/town designs.	90% 3% 6% (61)	98% 0% 0% (232)	≥90%

## 8.4 Better biodiversity education

ID#	Statement	Group A	Group B	Consensus
142	Education standards should require educational field trips to natural spaces for all school children.	81% 9% 9% (32)	88% 1% 10% (156)	≥80%

## 8.5 More places where biodiversity can flourish

ID#	Statement	Group A	Group B	Consensus
45	There are large amounts of land are in public ownership in NZ that could be used to enhance biodiversity (e.g. roadside reserves, schools)	86% 4% 9% (66)	94% 1% 3% (261)	≥85%
141	More no-take marine reserves should be created, especially in the habitat of endangered animals, like Maui dolphins and endangered seabirds	86% 5% 7% (38)	94% 0% 5% (154)	≥85%
164	Get locals to help identify and set up as many 'mainland sanctuaries' as possible.	72% 20% 6% (29)	84% 2% 12% (132)	≥70%

## 8.6 We need to change to a more sustainable economic model

ID#	Statement	Group A	Group B	Consensus
50	We need to move rapidly towards farming practices that promote sustainable food production e.g. the use of locally produced food, using techniques such as permaculture, biodynamics, urban agriculture	76% 12% 10% (65)	85% 3% 11% (264)	≥75%
53	To protect and restore biodiversity and ecosystem services we must move away from a fixation on economic growth and towards sustainable production and consumption	74% 11% 14% (63)	93% 2% 4% (261)	≥70%
204	Establish a partnership between the agriculture industry and government to develop and promote farming practices that protect and restore our biodiversity	87% 8% 4% (24)	92% 5% 2% (91)	≥85%

## 8.7 Environmental taxes and regulations

ID#	Statement	Group A	Group B	Consensus
123	Ownership of water rights should not allow degradation of the resource. Stronger management, quality and quantity standards are needed.	78% 9% 12% (41)	93% 1% 4% (187)	≥75%

## 8.8 Some management principles for the NZ Biodiversity Strategy

20	The Biodiversity Strategy should take an intergenerational view	70% 7% 21% (65)	94% 2% 3% (255)	≥70%
24	Biodiversity management decisions need to be informed by the best available information	73% 7% 18% (64)	96% 0% 3% (254)	≥70%
56	Introduced species are not inherently good or bad. Their place in our biodiversity depends on the impact of the specific species.	90% 1% 8% (62)	72% 15% 11% (245)	≥70%

## 9. Discussion document questions

Te Koiora o te Koiora: A Discussion Document on Proposals for a Biodiversity Strategy for Aotearoa New Zealand included 16 questions to help submitters respond to the Department of Conservation's proposals for a biodiversity strategy and possible actions that would need to occur if the strategy is to meet its goals. From the results of the HiveMind, we have attempted to match those questions against the responses from participants. It is not possible to exactly line-up the questions and responses because, although a copy of the Discussion Document was provided online, it is not possible to know to what extent, if any, participants read this. Some of the initial seed statements included statements which reflect some of the questions, the remaining responses are statements the participants came up with and that were voted on.

Despite the structural differences between the HiveMind and the Discussion Document, it is clear from the responses that the issues raised by participants map onto many that are found in the Discussion Document. As well as many of the responses mapping onto the Discussion Document, there are many suggestions, criticisms and suggestions to improve a future

biodiversity strategy that give a rich picture of how a wide range of New Zealanders are thinking about the future of biodiversity in Aotearoa New Zealand.

### 9.1 How well does Part 1 of the discussion document set out the problem and consider the challenges and opportunities facing nature now and in the future?

In general, HiveMind participants responded favourably to the problem definition and the challenges and opportunities facing nature as set out in Part 1. Both opinion groups accept that nature is intrinsically valuable, that it is central to our wellbeing, that nature in Aotearoa New Zealand is unique, and that our prosperity is built on the natural environment. They also recognised that nature provides us with services essential to our survival and that labelling non-indigenous flora and fauna as bad and indigenous species as good is not an accurate reflection of how they fit into our environmental system. For example, many participants thought the Strategy should propose more proactive ways of using deer, pigs, possums etc as the basis for employment and wealth creation.

In terms of pressures on biodiversity, many participants saw the capitalist economy, and the drive for increasing growth and profitability as fundamental to biodiversity loss. Many believe that profitability is driving farming towards unsustainable monocultures and that badly planned urban development is having a serious adverse effect on biodiversity. Climate change is seen as a threat and using biodiversity to mitigate and adapt to it are seen as useful strategies.

Many participants think that the strategy needs to include a much greater emphasis on removing domestic cats and dogs from natural habitats. Many think these domestic animals are having a major negative effect on our biodiversity.

### 9.2 What do you think of the proposed strategy framework? Does it provide a useful way of linking the elements of the strategy together?

There was a high level of agreement amongst participants that science, technology and indigenous knowledge were all necessary to ensure that best practice is applied to protecting and restoring biodiversity. There was less agreement about the role of Māori in governance processes as proposed in the discussion document.



### 9.3 What do you think of the proposed vision for Aotearoa New Zealand and its timeframe?

The vision that by 2070, nature in Aotearoa NZ should be healthy, abundant, and thriving was supported. However, many participants saw this as requiring a move away from monocultures and infinite economic growth. The point was made that New Zealand should and could reduce the pressure on our biodiversity by following the advice of the World Economic Forum and other major institutions to invest in creating a circular economy that minimises waste and makes the most of resources.

### 9.4 What do you think about the proposed values and principles? Is there anything you would add or change? Which of the values and principles do you think are most important?

Participants see ecosystems as interconnected and believe that any biodiversity strategy should take an intergenerational view. They agree with the principle that biodiversity should be managed in a coordinated way across boundaries and that the biodiversity system needs more collaborative decision-making that involves all affected parties. Participants are on-board with the values of learning, knowledge and courage. They also tend to agree with the proposal that conserving our indigenous biodiversity should be a priority.

While a majority of people were in favour of respect for property rights and compensating landowners, this was not by an overwhelming majority. Between 55%-60% of both opinion groups held this view. However, many more participants believe many private landowners will protect native biodiversity on their land if they know how to and are assisted and encouraged.

### 9.5 What do you think about the proposed long-term outcomes? Is there anything you would add or change?

There is a high level of agreement with the long-term outcome that all New Zealanders can connect with nature and recognise its value in supporting intergenerational wellbeing.

There is also wide acceptance that non-indigenous species and ecosystems are managed to maintain or enhance indigenous biodiversity, while providing for the cultural, economic and recreational values that non-indigenous species provide. Recreational and cultural practices, especially as they relate to the ability to hunt non-indigenous species such as deer and tahr featured prominently responses in Opinion Group A.

## 9.6 What do you think of the proposed set of goals? What are the most important things to track to measure our progress? What else should be included?

Below are statements added by participants that reflect the goals that participants believe New Zealand should be aiming for.

- 92% agreed that more no-take marine reserves should be created, especially in the habitat of endangered animals, like Maui dolphins and endangered seabirds
- 86% agreed that we need more protection corridors that run from the sea to the mountains, managed to allow native species to thrive
- 84% agreed that our biodiversity habitat and climate change responses should go hand in hand
- 49% agreed that populations of non-native species that are valued for recreational or economic reasons but that negatively impact native species (e.g. tahr, trout) should be eliminated.

## 9.7 What do you think about the proposed plan for implementation planning? What do you think are the requirements for a governance structure to oversee implementation planning and delivery?

Collaborative decision-making and coordination across boundaries are recognised by participants as key to the success of any biodiversity strategy. Evaluation and monitoring are also seen as critical to ensuring that governance, research, regulation and decision-making make the positive impacts proposed. Also, there was support for more funding. Without additional funding, many people thought it unlikely that the strategy would succeed.

## 9.8 What do you think about the proposal for progress reporting and review of the strategy? How do you think this reporting should take place to ensure it is useful, transparent, inclusive, and drives accountability?

Three statements relate to progress reporting and review of the strategy and show widespread agreement in these areas.

- 88% agreed that monitoring and evaluation of biodiversity management is crucial to ensure activities are effective and efficient

- 69% agreed that any biodiversity strategy must be measurable
- 60% agreed that the use of open-data commons, curating/visualising environmental, social and financial data from all users of the whenua will help make decisions more democratic.

### 9.9 What do you think about the five system shifts? Are they the right areas to focus on in the near term? Are there other areas that should be included?

No statements related to the 5 systems shifts together. Relevant statements are referred to below.

### 9.10 Getting the system right: Do you agree with the proposed first steps? What other actions should be included?

In terms of system coordination, participants agreed that roles and responsibilities in the biodiversity system need to be better defined and that there needed to be collaboration in decision-making and coordination across boundaries. There was also agreement that local district and regional plans and/or strategies, as well as national tools (e.g. national policy statements and legislation) should guide action on the ground.

### 9.11 Empowering kaitiakitanga and mātauranga māori: Do you agree with the proposed first steps? What other actions should be included?

Overall, respondents tended to agree that the following should be part of any biodiversity strategy:

- 75% agreed that the Biodiversity Strategy should recognise the Treaty of Waitangi and the principles of partnership, protection and participation
- 73% agreed that a partnership between tangata whenua and the Crown should reflect aspirations for the co-management of nature
- 68% agreed that biodiversity management should recognise the value of mātauranga Māori and practical knowledge, right from planning through to monitoring success
- 78% agreed that Te Ao Māori regarding biodiversity / the environment and science should work together. Each perspective strengthens the other

The following proposals were marginally supported or not supported.

- 56% agreed that Māori must hold key roles in biodiversity governance structures

- 52% agreed that the Māori perspective should not be bought, bent and manipulated in order to incorporate it into what is essentially a pakeha view
- 44% agreed that there must be a programme in place to help Māori graduates move into roles at the Department of Conservation and other organisations

It is not possible to tell from the responses whether these should be included as the proposed first steps as no statements were framed in this way.

## 9.12 Communities are empowered to take action: Do you agree with the proposed first steps? What other actions should be included?

Participants came up with a number of statements which closely align with the suggestions for community involvement as laid out in the discussion document.

- 91% agreed with the proposal to establish a partnership between the agriculture industry and government to develop and promote farming practices that protect and restore our biodiversity
- 89% agreed that we must continue to develop innovative ways of educating young people about our biodiversity
- 87% agreed that education standards should require educational field trips to natural spaces for all school children
- 82% agreed with the proposal to get locals to help identify and set up as many 'mainland sanctuaries' as possible
- 82% agreed that many private landowners will protect native biodiversity on their land if they know how to and are assisted/encouraged
- 75% agreed we need more advertising campaigns about NZ's unique flora and fauna, so we feel the need to protect our species and so that we know what to do.

## 9.13 Connecting ecosystems from the mountain tops to the ocean depths: Do you agree with the proposed first steps? What other actions should be included?

Participants recognise that ecosystems are connected and that actions need to be taken to ensure that connectivity is at the forefront of any future strategy. The following statements added to the HiveMind reflect this view:

- 92% agreed that biodiversity is not just a rural issue, there are many biodiversity problems in towns and cities
- 92% agreed that there are large amounts of land are in public ownership in NZ that could be used to enhance biodiversity (e.g. roadside reserves, schools)

- 90% agreed that ecosystems are interconnected and biodiversity should be managed in a coordinated way across boundaries
- 86% agreed that we need more protection corridors that run from the sea to the mountains, managed to allow native species to thrive
- 83% agreed that more money and resources must be spent to protect and restore biodiversity and ecosystem services
- 82% agreed with the proposal to get locals to help identify and set up as many 'mainland sanctuaries' as possible
- 70% agreed that the biodiversity system needs more collaborative decision-making that involves all affected parties
- 64% agreed that roadsides and other public land are currently pest plant corridors. Where possible this aspect must be eliminated.

Other actions suggested included:

- 96% agreed that we should innovate to become more inclusive of nature and biodiversity in our city/town designs
- 87% agreed that instead of focusing on protecting flagship species, we should focus on protecting entire ecosystems, which may include those species
- 81% agreed that pest plants are a significant threat to indigenous biodiversity. More resources and focus are needed to address this issue
- 70% agreed with the statement: I don't like using poisons for pest control but necessary evil until something better is developed
- 67% agreed that more focus needs to be shifted from charismatic fauna to lesser known, threatened species
- 67% agreed that trapping for rats, etc should be fully subsidised on private property close to national and regional parks, and island sanctuaries so that native populations can expand beyond the protected areas
- 23% agreed and 66% disagreed with the plea: Please stop poisoning our lovely forests from the sky with deadly poison. Mammals and rural hunters are part of our diversity.

#### 9.14 Innovating for the future: Do you agree with the proposed first steps? What other actions should be included?

There was strong evidence from the responses that knowledge, including Western science and mātāuranga Māori are critical to the restoration and survival of our biodiversity. The statements below clearly indicate that respondents recognise the value and necessity of evidence, information and research:

- 91% agreed that biodiversity management decisions need to be informed by the best available information

- 88% agreed that monitoring and evaluation of biodiversity management is crucial to ensure activities are effective and efficient
- 83% agreed that we must invest in science and technology to achieve the vision and long-term outcomes of the Biodiversity Strategy
- 81% agreed with the proposal: Farming monocultures are harmful, funding should be given to research and promote diverse systems of farming
- 78% agreed that Te Ao Māori regarding biodiversity / the environment and science should work together. Each perspective strengthens the other
- 70% agreed that the biodiversity system needs more collaborative decision-making that involves all affected parties
- 69% agreed that the biodiversity strategy must be measurable
- 68% agreed that biodiversity management should recognise the value of mātauranga Māori and practical knowledge, right from planning through to monitoring success
- 60% agreed with the proposal: Open-data commons, curating/visualising environmental, social & financial data from ALL users of whenua will help us make decisions democratically
- 54% agreed that we should prioritise research and development into alternatives to 1080 poison
- 49% agreed that research into CRISPR genome editing must be looked at as a potential pest control tool.

Other actions included:

- 92% agreed that more no-take marine reserves should be created, especially in the habitat of endangered animals, like Maui dolphins and endangered seabirds
- 89% agreed that the Biodiversity Strategy should take an intergenerational view
- 83% agreed that more money and resources must be spent to protect and restore biodiversity and ecosystem services
- 83% agreed that we should reduce the pressure on our biodiversity by following the advice of the World Economic Forum and other major institutions to invest in creating a circular economy that minimises waste and makes the most of resources
- 56% agreed that priority should be given to developing humane ways of eradicating pests such as possums and rats at scale

9.15 Overall, are these the components of an effective strategy? What do you think of the proposals as a package? Is there anything we have missed?

Below is a list of statements that reflect what participants thought should be included and/or actions that need to be taken to ensure the restoration and preservation of our biodiversity:

- 69% agreed that the impacts of deer, pigs and trout need to be clearly stated and their cultural links dealt with
- 62% agreed that the Strategy does not address the underlying economic incentives driving the continued loss of biodiversity e.g. through urban development
- 56% agreed that priority should be given to developing humane ways of eradicating pests such as possums and rats at scale
- 54% agreed with the proposal: Restoration can't occur if destructive actions are ongoing. Stop poison spraying, land clearing, intensive farming
- 52% agreed with a proposal to allow seaweed aquaculture, which will improve biodiversity, sequester more carbon than trees and reduce ocean acidification
- 49% agreed and 26% disagreed with the statement: Eliminate populations of non-native species that are valued for recreational or economic reasons but that negatively impact native species e.g. tahr, trout
- 31% agreed and 47% disagreed with the statement: Deer/pig/trout are excellent food source, we can never get rid of them so control and use as such
- 23% agreed and 66% disagreed with the plea: Please stop poisoning our lovely forests from the sky with deadly poison. Mammals and rural hunters are part of our diversity.

## 10. Areas of Uncertainty

Significant proportions of participants did not positively 'agree' or 'disagree' with the following statements and instead choose to select 'pass / unsure'.

ID#	Statement	Overall	Group A	Group B
136	Distributed decisions re:land use must account/forecast impact across human, social, natural, production, intellectual & financial metrics	42% 7% 50% (142)	25% 16% 58% (24)	46% 5% 48% (118)
50 percentage of participants passed overall				
102	The cost of monitoring the state and change of biodiversity values may exceed the cost of management	26% 24% 48% (195)	32% 18% 48% (37)	25% 25% 48% (158)
45 percentage of participants passed overall				
147	Allow seaweed aquaculture, which will improve biodiversity, sequester more carbon than trees and reduce ocean acidification	52% 3% 44% (165)	48% 6% 44% (29)	52% 2% 44% (136)

178	There aren't enough endemic bird species being bred in captivity.	27% 29% 42% (94)	40% 45% 15% (20)	24% 25% 50% (74)
199	Control of most introduced bird species is inadequate.	42% 17% 40% (99)	22% 50% 27% (22)	48% 7% 44% (77)
<b>40 percentage of participants passed overall</b>				
91	Decisions on funding for pest control are made by the same people and successful innovations developed by outsiders are dismissed	25% 36% 38% (261)	60% 7% 32% (56)	15% 43% 40% (205)
99	The Māori perspective should not be bought, bent and manipulated in order to incorporate it into what is essentially a pakeha view.	52% 10% 37% (213)	40% 29% 29% (37)	54% 6% 38% (176)
70	The Strategy does not address the underlying economic incentives driving the continued loss of biodiversity e.g. through urban development	62% 2% 35% (261)	67% 3% 28% (53)	60% 1% 37% (208)
<b>35 percentage of participants passed overall</b>				
38	There is a need to consider and remove or alter any legislative blocks that prevent whānau or hapū from exercising kaitiakitanga/stewardship	44% 21% 34% (351)	27% 48% 24% (66)	48% 15% 36% (285)
135	Open-data commons, curating/visualising enviro, social & financial data frm ALL users of whenua will help us make decisions democratically	60% 8% 31% (157)	55% 14% 29% (27)	61% 6% 31% (130)
78	The protection and enhancement of our biodiversity does not have to cost huge amounts of money.	48% 20% 31% (285)	72% 6% 20% (58)	41% 23% 34% (227)
44	Allowing the private sector to compete in providing biodiversity services would make them more effective and efficient, and drive innovation	39% 30% 30% (292)	50% 27% 21% (61)	36% 31% 32% (231)
<b>30 percentage of participants passed overall</b>				



31	Roles and responsibilities in the biodiversity system need to be better defined and communicated	67% 3% 29% (302)	57% 11% 31% (63)	70% 1% 28% (239)
55	Research into CRISPR genome editing must be looked at as a potential pest control tool.	49% 20% 29% (286)	31% 45% 22% (57)	53% 14% 31% (229)
87	Biodiversity values on private land can be a liability from a development perspective	24% 48% 27% (237)	27% 35% 37% (54)	23% 51% 24% (183)
60	Indigenous biodiversity enhancement will buffer us from the impacts of climate change.	54% 18% 26% (301)	20% 53% 26% (60)	63% 10% 26% (241)
46	Non-indigenous species and habitats can provide benefits for indigenous species	55% 18% 25% (346)	82% 1% 16% (67)	49% 22% 27% (279)
111	DOC cost per dead possum is about \$25, so a \$10 bounty gets lots of youngsters into the bush (connections all round) solves several issues.	34% 40% 25% (220)	68% 21% 9% (41)	26% 44% 29% (179)
<b>25 percentage of participants passed overall</b>				
62	Restoration can't occur if destructive actions are ongoing. Stop poison spraying, land clearing, intensive farming.	54% 21% 24% (299)	61% 21% 16% (60)	52% 20% 26% (239)
120	The only way of rectifying the environmental issues is less humans. Either we control our numbers or nature will, unlikely to be "humane"	34% 40% 24% (205)	41% 48% 9% (41)	32% 39% 28% (164)
30	Non-indigenous ecosystems and species can be valuable for biodiversity and ecosystem services	56% 20% 23% (347)	83% 4% 12% (66)	49% 23% 26% (281)

39	There must be a programme in place to help Māori graduates move into roles at the Department of Conservation and other organisations	51% 25% 23% (373)	19% 54% 25% (71)	58% 18% 22% (302)
47	Healthy functioning nature is a collective good and private landowners should be compensated if they are protecting or restoring biodiversity or ecosystem services	55% 20% 23% (297)	63% 20% 16% (60)	54% 20% 25% (237)
89	Roadsides and other public land are currently pest plant corridors. Where possible this aspect must be eliminated.	64% 11% 23% (273)	44% 28% 26% (56)	69% 7% 23% (217)
95	More focus needs to be shifted from charismatic fauna to lesser known, threatened species.	67% 9% 23% (267)	43% 25% 31% (60)	73% 5% 20% (207)
148	Eliminate populations of non-native species that are valued for recreational or economic reasons but that negatively impact native species e.g. tahr, trout	49% 26% 23% (195)	11% 71% 17% (35)	58% 16% 25% (160)
88	The impacts of deer, pigs and trout need to be clearly stated and their cultural links dealt with.	69% 9% 21% (284)	25% 36% 37% (58)	80% 2% 16% (226)
61	The ecosystem that existed prior to 200 years ago is gone forever. All ecosystems, indigenous or not must be encouraged.	33% 45% 21% (326)	80% 3% 15% (63)	21% 55% 22% (263)
163	Trapping for rats, etc should be fully subsidised on private property close to national and regional parks, and island sanctuaries so that native populations can expand beyond the protected areas	67% 10% 21% (155)	60% 25% 14% (28)	68% 7% 23% (127)
32	We should prioritise research and development into alternatives to 1080 poison	54% 25% 20% (348)	72% 9% 17% (62)	50% 28% 21% (286)

37	Māori must hold key roles in biodiversity governance structures	56% 22% 20% (389)	27% 50% 22% (70)	63% 16% 20% (319)
80	the biodiversity strategy must be measureable	69% 10% 20% (274)	62% 15% 22% (58)	71% 8% 19% (216)
116	Deer/pig/trout are excellent food source, we can never get rid of them so control and use as such	31% 47% 20% (221)	68% 15% 15% (38)	24% 54% 21% (183)
145	The biggest threat to biodiversity in our oceans and beaches is plastic pollution. We need to stop importing it, making it and buying it.	67% 12% 20% (180)	70% 9% 19% (31)	67% 12% 20% (149)