NEW ZEALAND ECOLOGICAL SOCIETY

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NEW ZEALAND ECOLOGICAL SOCIETY

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Threatened Species Strategy
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SUBMISSION ON THE *DRAFT THREATENED SPECIES STRATEGY*

The New Zealand Ecological Society (NZES) was formed in 1951 to promote the study of ecology and the application of ecological knowledge in all its aspects. NZES is the leading professional society for pure and applied ecology and publishes the *New Zealand Journal of Ecology*, which is the primary peer-reviewed publication for ecological science and research in the country.

NZES currently has a membership of 580, many of whom work with New Zealand's threatened species; either through academic research or applied management. Our membership includes conservation managers, research scientists, applied ecologists, and academics working within the country's universities, Crown Research Institutes, central and local government, private consultancies, and community groups. Through its activities, NZES aims to, among other things, "promote sound ecological planning and management of the natural and human environment".

The Society welcomes the opportunity to provide comment on the Department of Conservation's (DOC) Draft Threatened Species Strategy (the Strategy). We have structured our submission as follows:

- Section I: A summary of key points
- Section II: Responses to the questions provided on the submission form

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SECTION I: **Key points**

1. The Strategy provides no basis to improve outcomes for threatened species. That is, there is nothing new in the Strategy, and the Strategy does not "build on existing commitments and programmes".

2. The Strategy provides no specific actions for implementation and is not supported with additional resourcing or funding. It is unclear how the Strategy will translate to improvements for New Zealand's threatened species.

3. The Strategy vision is vague, and unmeasurable, and fails to give effect to the purpose of the Strategy. The Strategy, taken as a whole, will not halt the decline in New Zealand's threatened species, nor prevent non-threatened species from becoming threatened.

4. The Strategy recognises the challenge of protecting New Zealand's threatened species transcends boundaries. However, the Strategy needs to include greater consideration of meaningful mechanisms for private land, including greater engagement in and support of implementation of the Resource Management Act 1991 (RMA).

5. The Strategy provides no recognition of At Risk species. Nor does the Strategy recognise that without adequate protection and management At Risk species (and currently non-threatened species) will become threatened. Without recognition of the importance of preventing species from becoming threatened in the first instance, it is hard to advocate for their protection. This is particularly an issue for RMA processes.

6. National science capability within DOC and the Crown Research Institutes has been reduced in recent years and this will have a detrimental impact on the ability of DOC to undertake science-based decision-making to achieve conservation outcomes. This capability needs to be strategically increased and targeted at those areas that will improve conservation outcomes. The Biological Heritage National Science Challenge will not be adequate to address critical knowledge gaps and research needs.

7. Plant species have not been well served by the Strategy. For example, there is no action to address herbivores (e.g. hares, rabbits and ungulates) or omnivores (e.g. rodents) in the specific context of protecting threatened plant species. Apart from seed banking, there is nothing in the Top 10 Actions to protect plants.

8. NZES applauds the genuine attempt to apply an objective process to species selection and the effort to make the process transparent.

9. Limiting the species selection process to those species already being managed by DOC has several undesirable outcomes: it reinforces the business-as-usual approach; it fails to provide guidance to other parties undertaking conservation on the highest priority species NOT being managed by DOC; the most highly threatened species are underrepresented; and some taxa benefit disproportionately, while other groups are underrepresented.

10. NZES is encouraged that our Treaty partners are recognised for their role in conservation and that Te Ao Māori and mātauranga Māori will be integrated into species management.

SECTION II: **Questions on submission form**

1: Does the proposed vision capture what you see as the desirable future state for threatened species in New Zealand by 2025?

11. No. The proposed vision is too long and vague. Only the first sentence in the first paragraph of the vision section (pg. 4) provides the sort of statement suitable for a 'vision'. The vision "aims to safeguard our vulnerable threatened species", however it is unclear which threatened species are our 'vulnerable' ones, or what 'safeguarding' means.

12. The vision does not address the stated 'purpose' of the Strategy, which includes "further steps we need to take not only to restore those species that are already at risk of extinction, but also to prevent others from becoming threatened". NZES supports this purpose, but this requires addressing species *other than and in addition to* those already in one of the three 'threatened' categories of the New Zealand Threatened Classification System (NZTCS).

13. The vision should, at a minimum, include words that precisely express intent, for example to avoid any further extinctions, and to prevent any species from slipping into a more serious threat category, covering all categories of the NZTCS.

14. Taking the document as a whole, the vision appears to avert the most imminent extinctions, but not to halt the 'conveyer belt' of species declines that is moving species closer toward extinction (the most critically threatened species). If this is the case, then the document should state that transparently. If resourcing is driving this restricted vision, the Strategy should explicitly state that DOC has not been funded to do more than this.

15. The vision of the Strategy needs to be revised to one that expresses achievement of the stated purpose, which is to halt further decline in the status of any taxon. If it in fact is not the intention to 'halt further decline in the status of any taxon' then the purpose of the Strategy needs to be changed and an explicit statement included that highlights to the New Zealand public that taxa will continue to decline under the Strategy.

2: Are there additional aspects that you think should be included in the vision?

16. Yes. To give effect to the purpose of the Strategy, the vision (and the entire Strategy) must be expanded beyond its current narrow focus on threatened species that already benefit from management.

17. Based on the information provided in the Strategy, is appears that the 'vulnerable threatened species' that are to be safeguarded (in the vision):
    - Include only those species that are already Threatened **and** already benefit from management.

- Do not include species that are not managed and therefore perhaps even more likely to be declining.
- Do not include species that are slipping towards the threatened categories, including but not limited to 'At Risk — Declining' species.
- Do not include species that have recently slipped into one of the three Threatened categories (Nationally Critical, Nationally Endangered, Nationally Vulnerable). This is because it appears that the threat status of a number of groups (such as plants) has been revised since the algorithms used to support the Strategy were run.

18. The vision needs to be reformulated to provide a clear, ambitious, and precisely worded statement that engages with and supports the purpose of the Strategy. This requires a vision statement that explicitly addresses **all** species that are slipping towards extinction, including those in the 'At Risk' categories of the NZTCS, not only a subset of threatened species that are already managed.

3: Do you agree with the characterisation of the value and current state of our native species?

19. No. There are two key aspects missing:
    (1) consideration of At Risk taxa, and
    (2) information on trends in the overall number of species considered Threatened and At Risk across the several iterations of the NZTCS process.

20. The graphic describing the current state of our species fails to mention that there are a whole lot more species classified as At Risk in each taxonomic group. The following section on 'defining the risk' ignores these by excluding these categories from the table. This has the effect of minimising the perception of the problem, and failing to give effect to the purpose of the Strategy.

21. A minor associated detail is that the chart suggests fewer than half of bat species are threatened whereas the numbers provided show that 3/5 (more than half). This raises the question of whether other rows in the graphic are also minimising perceptions of the problem in addition to excluding At Risk species.

22. The set of species recognised as threatened in New Zealand is generally growing. This growth is documented in several iterations of the NZTCS. For example, in groups such as freshwater fishes, reptiles and plants, there is a clear trend for species that are considered to be At Risk — Declining in an earlier iteration to slip into higher categories as time goes on. DOC has these data (and they are now readily available online). These data are essential context for describing the current state of our native species and why we need a comprehensive strategy to address it.

23. The following actions are required to address these issues:
    - Document and describe numbers of At Risk species and trends across all categories of the NZTCS. Specifically:
        a. Checking that the bars in all rows of number of Threatened species by broad taxonomic group correctly represent the numbers provided.

b. Adding another colour and category to show the number of At Risk species in each group.
c. Add At Risk categories to the table in the section 'defining the risk'
d. Add columns to the table in the section 'defining the risk' which show the numbers of species in each category across different iterations of the NZTCS, or alternatively add a bar chart which shows these.
e. Add narrative that describes the above.

4: Have we identified the right tools (outlined in "The right tools for the job" section) to help us achieve the vision?

24. While none of the listed tools are 'wrong', the list is dominated by business-as-usual activities. The urgency and size of the task required to meet the purpose of the Strategy justify far greater innovation and action than simply a list of tools and initiatives that are already being used or are in development. Business-as-usual will continue, not alter, the current trend toward extinction.

25. The application of many of the technical tools listed in this section is constrained by the absence of meaningful legislative tools. This lack of useful legislation is recognised in the Strategy, but commitments to address the problem are vague and insufficient.

26. The status of threatened species nationally, and the trend for the numbers to keep growing, warrants specific new legislation. One such initiative would be an 'Endangered Species Act', which would ensure that protection of threatened species is prioritised across the spectrum of resource management decisions and address key gaps in, for example, the Wildlife Act and the Native Plant Protection Act. Further, there are likely to be simple amendments to existing legislation that would help greatly to address the problem of species declines, but these do not appear to have been considered. The Strategy needs to specifically identify the goals of, and new powers required in, new and existing legislation to protect threatened species and their habitats, including on private land and in the freshwater and marine environments.

27. The strategy makes two references to new marine legislation, but it is not clear yet whether or how that proposed legislation will help threatened species. Flexibility (referred to in the ten top actions) in marine legislation does not necessarily assist endangered species, this depends on how it is enacted and implemented. The Strategy needs to state what is needed to address the problem of marine species declines, and have a plan of action should the notional new marine legislation not provide that.

28. Relying on the development of a National Policy Statement (NPS) for the protection of biodiversity on private land does not provide any clarity or certainty for the protection of threatened species. The process for developing a NPS on biodiversity has been underway on and off now for two decades, further undermining any confidence in the outcomes of the current process. The Strategy needs to include a plan of action should the NPS not deliver necessary protection for threatened species on private land (beyond voluntary *ad-hoc* initiatives).

5: Are there other tools we could use to help us achieve the vision?

29. Yes, the following additional tools should be incorporated into the Strategy:

    i. *New and amended legislation*. As detailed in the response to Question 4 above.
    ii. *Cross-agency commitment*. The Strategy appears to be DOC's strategy. Yet the seriousness of the need warrants cross-government (including local government) commitment, with relevant agencies, departments, and ministries signed up to a clear policy focussed on securing threatened species and their habitats, preferably with specific actions. Critical to success are (at least) territorial local authorities; Ministry for the Environment; Ministry for Primary Industries; Ministry of Business, Innovation and Employment; Land Information New Zealand; New Zealand Transport Authority; and Treasury.
    iii. *Economic instruments*. The range of tools could be expanded both nationally and regionally. For example, economic instruments could potentially be designed to reduce commercial incentives to degrade threatened species habitats and/or increase incentives and provide revenue to protect and manage them. These and other potential tools should be noted and their development promoted.
    Addressing the zero-sum environmental vs. economic wellbeing trade-off is central to economic and socio-political challenges facing effective conservation. There are potential ways to do this that could improve equity and the economic and environmental wellbeing of nearly everyone (see Brown & Stephens 2017[1], Stephens et al. 2016[2]).
    This leads to a key missing theme: rectifying the systemic institutional incentives that cause the human behaviours that erode species' security and drive underfunding of conservation. While the underlying causes are quite well understood and some good solutions have been proposed, there is opportunity for further innovation. Currently, the Strategy does not appear to consider these barriers to the protection of New Zealand's threatened species.
    iv. *Data sharing*. A fully-featured shared database for storage and retrieval of species distribution data.
    v. *Herbivore management.* Research on threats posed by herbivores (e.g., goats, rabbits, hares, pigs, deer and chamois) to Threatened plants and development of tools to manage them.

6: Will the proposed goals help us achieve the vision and assess our progress?

30. The Strategy provides no basis to be confident that the proposed goals will help achieve the vision. The goals would not "prevent others from becoming threatened" as stated in the purpose of the Strategy. This view is based on understanding the first two goals to be:
    i. improve the security of 150 species which already receive some management, and

[1] Brown MA, Stephens T 2017. Big issues, bigger solutions: are bottom lines enough? Policy Quarterly 13: *In press*.
[2] Stephens T, Greenhalgh S, Brown MA, Daigneault A 2017. Enhancing the tax system to halt the decline of nature in New Zealand. Policy Quarterly 12(1):26–34.

ii. take some action to reduce the likelihood that a further 350 threatened species do not go extinct. However, these 350 species may continue to decline and almost all, or all of these already receive some management[3].

The goals do nothing for any other Threatened or At Risk species and thus will not prevent further declines.

31. Since existing management was a prerequisite for a species to be selected for inclusion in the Strategy, it is not clear that the goals are fit to be described as "**further** steps we need to take…. to restore those species that are already at risk of extinction". That is, the goals promise more than the Strategy attempts to deliver.

32. It is unclear how the proposed goals will help measure progress towards achieving either the vision or the purpose of the Strategy. As noted above, the vision does not give effect to the purpose of the Strategy, and is too vague to assess progress or success.

33. Supporting research is neither a goal and nor is it measurable. It is simply good practice and a critical ingredient for success. The scope of the relevant research proposed is unrealistic in relation to its proposed funding source. Further, it is not only data deficient species that need further research. Research is essential to understand what has to be done to secure many species, and much or indeed most of this will need to be done outside the science challenge. DOC needs to develop a research plan to support the purpose of the Strategy. Such a plan would need to be properly scoped to determine the research required to achieve the purpose of the Strategy, the cost of delivering this research, and identify realistically how that will be resourced and by whom it will be done.

34. The integration of Te Ao Māori and mātauranga Māori into species recovery is needed, indeed, Te Ao Māori and mātauranga Māori should provide an integral foundation for the Strategy. However, the third goal appears to be in fact describing what should be an underpinning ethos rather than a goal.

7: Are there alternative goals that you think will better achieve the vision and assess our progress?

35. The proposed vision is inadequate to deliver the purpose of the Strategy and this needs to be addressed in the first instance.

36. There are several goals that would better achieve the purpose of the Strategy:
    - Threatened species are managed across their entire range in order to protect (in priority order) their genetic diversity, total population size, and geographic range.
    - Primary, secondary, and tertiary agents of decline are identified (or recognised as unknown) for all classified threatened species.
    - Strategic effort to address each agent of decline reflects its importance as indicated by the number and endemicity of taxa affected by each agent.

[3] the 'General Explanation' text supporting the 'Strategy algorithm' states there are 483 threatened, at risk or conservation dependent taxa that currently benefit from DOC management, and 50 species are selected because they are culturally valued.

- Conservation management prevents further decline of threatened species that occupy large geographic ranges.
- Refuge habitats are identified and protected from agents of decline.
- Develop and promote novel economic instruments to fund threatened species conservation and dis-incentivise loss and degradation of their habitats.
- The Department of Conservation recognises the importance of being a strong and respected advocate for the protection of threatened species potentially impacted by development.
- Priority for management is based on maximising biodiversity retention by focusing on vulnerability to loss and contribution to national biodiversity.
- Protocols and rules are developed for the deployment of all pest control methods and devices to eliminate population-level risk to threatened species.
- The number of threatened species under management and recovering or steady or declining is reported annually along with the number not managed and the number of these known to be declining or steady.
- Management actions for one threatened species will not undermine conservation goals for another species.

8: Have we identified the right strategic themes?

Uniting against invaders at a landscape scale

37. Achieving a sense of common purpose is a prerequisite for success. However, the focus on invaders leaves many hard and important issues unaddressed. For example: the ongoing loss, fragmentation and modification of threatened species habitats across production landscapes and incompatible land uses; opposition to 1080 and to cat control; the partnership approach and consequent relationships with commercial interests have been shown to compromise DOC's capacity for independent, objective risk assessment, and effective action. These issues need to be included as additional strategic themes in the Strategy.

Managing ecosystems at scale to protect species

38. Managing ecosystems is really important for the protection of species. The protection of refuge ecosystems — places that are less hospitable for agents of decline than for the species they threaten — is also very important; for example, cold beech forests, or acid peat bogs. The issue of scale is critical, both to control pests and to protect threatened species effectively. The Moehau example provided in the Strategy is not necessarily representative as it is a relatively large scale site. However, many of the priority sites for threatened species management are small patches within a more extensive matrix that is managed in a way that threatens species persistence.

39. The Strategy needs to specifically address the diverse and multiple barriers (including social) to managing threatened species at scale and how these are to be overcome.

Building our science and knowledge base

40. This is an essential strategic theme. The Strategy should acknowledge that 'our conservation success stories' rely on the assembly of reliable knowledge through excellent science. The important issue not addressed here is that funding and capability in conservation science has

been cut back not only in DOC but its supporting research agencies (for example, Landcare Research's Strategy 22). This reduction in funding and capability will compromise the ability to protect New Zealand's threatened species long-term.

41. The Strategy needs to address the gaps in resourcing and capability, and provide a credible way forward, through targeted MBIE funding for example.

Focusing beyond conservation land

42. This is a sound strategic theme. However, this theme needs to be supported by narrative and statistics that show where the problem lies and where to focus. How many and what types of threatened species occur on private land or leased public land? How many and what types are mostly located on private or leased public land? How many are now threatened because of past and current ongoing habitat loss and modification, and/or by other pressures, and where? This is the sort of contextual information required to direct conservation effort beyond public conservation land. For example, a well-intentioned large predator control project will yield few benefits for threatened species if there is little habitat remaining, and few species present that can benefit from the predator control effort.

43. This strategic theme needs to include acknowledgement of the key role that DOC should play in advocacy for conservation on private land, and in particular in resource management decisions under the RMA. DOC has been largely absent in this arena for the last decade, and NGOs have been forced to pick up that role with far fewer resources and less expertise, compromising the purpose of this strategy. DOC needs to commit to resourcing and supporting this role and that the role is not watered down by a 'whole of government' approach.

44. The Strategy focuses on the as-yet undeveloped NPS for the protection of biodiversity on private land. The outcome of the stake-holder lead Biodiversity Collaborative Group process for developing the NPS is highly uncertain. There are no assurances of how a future NPS will provide for the protection of species and habitats through RMA processes. This is particularly uncertain given that the development of the NPS involves a collaborative approach. Collaborative approaches risk prioritising consensus over the best outcomes for biodiversity protection. The NPS development needs specialist and ecological input at every stage.

45. A NPS is only one approach to managing biodiversity on private land and the Strategy would benefit from a discussion of the alternative and complementary approaches and options for private land, and which have and have not been tried and tested to date, giving clearly articulated reasons for those preferred in a coherent way forward.

46. Voluntary covenants (e.g. QEII Trust Open Space Covenants) are an effective mechanism supporting landowners who wish to protect biodiversity on their property. However, the effectiveness of voluntary protective measures should not be overstated, nor solely relied on. Threatened species tend to occur in areas and habitat types that continue to be subjected to land use pressure (e.g. wetlands, drylands). Regulatory protection and statutory advocacy through RMA processes is needed to protect habitats and address land use pressures alongside voluntary non-statutory mechanisms. The Department needs to work more closely and effectively with local government, and ensure regional and district plans have policies and

rules protecting and avoiding adverse effects on threatened species and habitats and this needs to be reflected in the Strategy.

47. DOC and local government need to work in a more unified way across the country (and not just a scattering of collaborative projects) to make a step-change in biodiversity conservation on private land. The Strategy does not extend past generalities to describe how this might be achieved.

48. The Strategy places importance on working with communities and landowners to protect and manage biodiversity on private land. However, in the absence of detail of how the Department will support community groups these are trite statements.

Working together in partnerships

49. Conservation is achieved via collaborative relationships, some of which might be properly described as partnerships. However, the critical issue is identifying and implementing the collaborations and partnerships that enable, not undermine, threatened species conservation. The strategy needs to recognise and address this.

50. DOC has been involved in collaborations over the last 5–10 years which have had regrettable outcomes for conservation in New Zealand, and undermine DOC's mandated role in protecting New Zealand's biodiversity for all New Zealanders. Specifically, agency capture arising from inappropriate partnerships, driven by political influence, is deflecting DOC from its primary purpose of conservation, and impeding threatened species protection and recovery. There is little accountability for what is achieved, and as importantly, what is not achieved for conservation through and because of these partnerships. A high profile recent example of this problem is the nature of DOC's involvement in the process leading up to and including the recent Supreme Court 'Ruataniwha' decision.

51. The Ruataniwha example indicates that DOC's advocacy role has been deflected in support of the government's primary production growth agenda. The risks of partnerships to DOC and conservation generally are very clear now, and these should be explicitly recognised. The Strategy needs to consider and propose ways (e.g. such as a transparency protocol, perhaps including independent audit) to protect DOC from agency capture that deflects it into 'honouring partnerships' ahead of protecting biodiversity generally and threatened species.

52. In recognising that conservation is bigger than the DOC, the scope for partnerships should be explored across the spectrum. The Strategy should include a commitment to collaborations with environmental NGOs, particularly in providing advocacy into difficult and contentious challenges in species recovery. That is, partnerships with industry groups and business interests should not preclude opportunities for achieving better conservation outcomes by working with other conservation-focused organisations.

53. Additionally, the species prioritisation process should include all Threatened species (not just those managed by DOC) to provide guidance on the highest priority species to others that are doing conservation.

9: Do you agree with our top 10 actions?

Achieve the Predator Free 2025 goals

54. Before adopting the Predator Free New Zealand 2050 (PFNZ 2050) goals outright, they need to be assessed for their appropriateness for achieving outcomes for threatened species as per the Strategy's purpose. For example, removing only rats, possums, and stoats may enhance cat and mice populations, with even more fatal effects on some smaller taxa such as invertebrates and lizards.

55. The PFNZ 2050 goals are not funded, nor have actions to achieve them been identified or planned. It is therefore doubly unclear what this action means for addressing declines in Threatened and At Risk species.

56. In two authoritative recent review papers in the NZES journal (The New Zealand Journal of Ecology), Parkes *et al*. (2017a,b) [4,5] concluded that:
"*The national scale pest- or predator-free aspiration is not currently (and may never be) feasible and risks diverting resources from more optimal solutions*",
and that
"*The risk with the vision is that, despite local and international enthusiasm, it may distract focus and resources from advancing the practical improvements we know we can achieve under the current or enhanced mainland island/network models*"

57. Further, with respect to the island eradications 2025 goal, the second paper cautions that "*The Government's interim 2025 goal to eradicate all mammalian predators from nature reserves is, in practice, limited to the Auckland Islands*"[5].

58. The reasons why PFNZ 2050 actions are deemed to be appropriate for threatened taxa need to be included in the Strategy, based on analysis of whether each one is realistic and compatible with the Strategy purpose. Potential incompatibilities with species recovery, including those set out in the Parkes *et al*. papers, must be considered in the Strategy, with a clear plan to either replace these goals, or mitigate those effects.

Continue to invest in improving tools and technologies for predator control

59. Continued and increased investment in improving tools and technologies for predator control is appropriate. However, protocols are necessary to prevent agency capture and a precautionary approach taken until new tools and technologies are proven to be both safe and free of perverse outcomes. This can be addressed by including a transparency protocol in the Strategy (see also *Working together in partnerships*, above).

[4] Parkes, JP, Nugent G, Forsyth DM. Byrom AE, Pech RP, Warburton B, & Choquenot D 2017a. Past, present and two potential futures for managing New Zealand's mammalian pests. New Zealand Journal of Ecology 41(1):151–161.

[5] Parkes JP, Byrom AE, Edge KA 2017b. Eradicating mammals on New Zealand island reserves: what is left to do. New Zealand Journal of Ecology 41(2): 263–270.

Seed banking

60. Seed banking is a useful action to include in the Strategy. However, there needs to be recognition that seed banking is only a partial response and in no way represents 'problem solved' for threatened plants. Seeds stored in banks do not have an infinite life-span and some species only have a low proportion of seeds that are viable. Further, it costs less, is easier, and is more effective to protect and/or restore existing populations than it is to attempt to rescue species that we are close to losing or to re-establish populations from seed banks.

61. The Strategy needs to acknowledge and provide a plan to address the actual or perceived risk of perverse outcomes from seed banking.

Biosecurity 2025

62. Without specifically researching this document and evaluating its utility as a contribution to threatened species recovery, we are unable to determine the relevance of this action.

Progressing regulatory reforms

63. This is a critical action for the Strategy, but it is inadequately dealt with as it is currently presented. The Strategy only considers a couple of reforms already underway and makes no attempt to identify the key legislative amendments needed to facilitate threatened species protection and recovery. Reforms such as the RMA amendments, and recent changes to the Environmental Legal Assistance fund, and their implications for threatened species are not mentioned. A pathway for the thorough analysis of where amendments to current legislation[6] or new legislation is required needs to be included in the Strategy (see also our response to Question 4).

Implement freshwater reforms

64. This action belongs under the previous heading '*Progressing regulatory reforms*'. The Strategy should identify which (if any) threatened freshwater species will benefit from these reforms, and which reforms offer most benefit to most species. Further, an analysis of where the freshwater reforms may have a negative impact on New Zealand's freshwater species needs to be undertaken.

Identify and publish 'hotspots'…

65. This action, as it is presented, is poorly thought through, with little indication of who would use this and how it should be done to maximise utility. Important risks need to be addressed. In the absence of a coherent associated strategy to turn threatened species into assets, rather than liabilities, for many private landowners with development aspirations, this could facilitate a 'shoot, shovel, and shut up' approach to conservation on private land. Lizard conservation is unlikely to be fostered by providing poachers with maps of hotspots. This action should be removed from the Strategy unless all associated risks can be addressed.

Select 500 data deficient species…

66. This action is also poorly developed. The number of species to focus research on is arbitrary and the proposed pathway to address it completely inadequate. New government funding

[6] For example, the Wildlife Act 1953 needs to be revised or replaced with a new act that includes plant species.

for the research, through a targeted fund matched to the size of the need, is required. Targeted research funding needs to be incorporated into the Strategy as both a goal and an action. Additionally, data deficient species are not the only ones that need research — for 300 of the 800 threatened species identified in the Strategy, we don't know enough to decide how best to manage them. Research is needed on understanding key threats and species' ecological requirements so they can be managed in the wild.

Ensure that national recovery planning systems and processes are fit for purpose, efficient and incorporate mātauranga Māori.

67. This seems reasonable but is completely non-specific. What is 'fit for purpose'? Efficient from whose perspective (Māori, species' recovery, managers or field staff)? This action needs to be further developed and specifically, to become meaningful. The integration of mātauranga Māori should be a foundation principle of the Strategy.

Develop a monitoring scheme…

68. Monitoring is an essential action. However, the Strategy lacks details about scope and timeframes. The Strategy needs to provide details of a monitoring system for threatened species and the identification of intervention needs, including details of what is required to achieve this and a timeframe for delivery. The Strategy should also identify how the monitoring programme would support and enhance threatened species management.

10: Are there any other actions that should be included, and any actions that should be removed?

69. There are key actions missing from the Strategy. Based on the suite of goals proposed under Question 8 (above), the following is list of actions that would materially contribute to securing our threatened species:
    i. As part of the species threat classification process, for each taxon:
        - Map its known locations and likely present distribution and potential distribution.
        - Identify where protection is required to maintain the taxon's genetic diversity, population size, and geographic range.
        - Identify and rank suspected agents of recent and anticipated decline.
        - Assess and quantify taxon vulnerability to further status decline.
    ii. Rank the national importance of agents of decline according to the number of taxa impacted by each agent. Use these ranks to prioritise strategic national initiatives for development and application of pest (including predators, browsers and weeds) control methods, legislation and policy development, publicity and research pertaining to agents of decline.
    iii. Determine how the prioritisation process and algorithm could be refined to:
        - Give appropriate weight to vulnerability relative to representation in order to maximise biodiversity retention.
        - Identify the optimum geographic extent of management to maintain taxon genetic diversity, number of individuals and geographic range
        - Account for risks and feasibility of achieving desired outcomes for the taxon
        - Account for management synergies for co-located threatened species
        - Account for representation change resulting from:
            - gains and losses to populations of the taxon elsewhere and

- gains and losses to related taxa.

70. See also our proposals for improving and expanding actions as detailed in our response to Question 9.

11: Have we identified the right number of priority species?
(Circle or highlight one) • Too many • About right • <u>Too few</u>

71. The Strategy currently identifies too few priority species (see our earlier comments regarding At Risk and unmanaged species).

12: Have we identified the right priority species?

72. There has been a genuine attempt to apply a reasonably objective process to species selection within severe political and funding constraints — earlier points about needing to consider At Risk species and unmanaged species notwithstanding. There has also been a commendable effort to make the process transparent.

73. However, many taxonomic groups are missing from the lists. This requires an explanation as to why this is, what the practical limitations are, such as insufficient taxonomic understanding, and how excluding these biotic groups impacts on achieving the purpose of the Strategy.

74. Limiting the species selection algorithm to those species already being managed by DOC may have resulted in a major bias in the prioritisation process. This subset of species already being managed is based on DOC's ecosystem management unit (EMU) approach. While this EMU approach has merits, given limited resources, proportionally fewer highly threatened species (i.e. those classified as Nationally Critical and Nationally Endangered) are benefitting from ecosystem management than less threatened species. This Strategy should be making sure that highly threatened species don't fall through the gaps, and it doesn't do that. Additionally, the EMU approach benefits a disproportionately high number of vertebrates and a disproportionately low number of plants and invertebrates. This is exacerbated by the fact that 82% of the 50 Notable species are vertebrates (mostly birds).

75. There also seems to be a mismatch between the algorithm's intent to value depth of endemism (which we would agree with), and to account for relatedness among taxa in the listed priority species.

76. This mismatch is illustrated by the following clear anomaly. The plant list includes at least seven species of *Lepidium*, six of them Cook's scurvy grasses, which are about as closely related to one another as species can be. Indigenous Brassicaceae are over-represented in our list of threatened plants because they are susceptible to a similar suite of pressures. However, the genus is not endemic, coastal taxa are particularly recently-derived, and arguably the inland *Lepidium* species have a longer evolutionary history and are more distinctive.

77. In principle, the priorities should allow us to retain as much of the tree of life as possible, with an emphasis on those branches of the tree of life unique to New Zealand. Why are each of the terminal coastal *Lepidium* 'leaves' included in the Strategy, while similarly-rapidly declining species on completely different branches, not found anywhere else in the world, are not? The algorithm needs to be interrogated to determine and explain why obvious anomalies such as the *Lepidium* example result, and adjustments and corrections made accordingly.

78. This may signal a problem with the weightings, or with the conceptual foundation of the algorithm. It may be that endemism needs multiple weightings (not just 0.9 vs 1.0), so that there is most weight on taxa that are endemic at the level of order, then family, then genus, then species and subspecies levels, and the lowest weight is given to taxa that are non-endemics at all levels (e.g. Australasian bittern, which although nationally critical, also occurs in Australia). The algorithm should differentially weight species according to the taxonomic level at which the species is endemic.

79. A further concern with the application of the algorithm is that the Strategy appears to promptly ignore the process (for the next five years at least) by picking 50 species as top priority for management based on social factors alone. Fifty species represents a third of the total number of species flagged for management over the next eight years. Social factors are important drivers in conservation decision-making, but additional funding for these socially important species, if they have not also been identified as priorities through the objective application of the algorithm, is required.

13: Do you think other species should be prioritised ahead of the ones listed? And why?

80. This question has been addressed in the response to Question 12 above.

14: Taken together, do you think the proposed vision, focus themes, goals and actions on the identified species will set the framework for safeguarding our vulnerable threatened species?

81. The proposed vision, focus themes, goals and actions on the identified species will not set the framework for safeguarding our vulnerable threatened species. The reasons for this view are outlined in the responses to the questions above.