

Response to the Draft National Policy Statement on Indigenous Biodiversity

Summary

- The Royal Society of New Zealand welcomes the purposes of the proposed National Policy Statement (NPS) on Indigenous Biodiversity
- The NPS should cover invertebrates, microbiota (e.g. nematodes), fungi, lower plants (mosses, liverworts, lichens) and algae, as well as indigenous birds, other vertebrates and plants
- The significant habitats that NPS should cover river and lake systems and the biodiversity of freshwater species
- In order to ensure 'no net loss' of biodiversity, there needs to be a practical method for monitoring an area's biodiversity which encompasses invertebrates and microbiota

Introduction

The Royal Society of New Zealand welcomes the opportunity to contribute to the Ministry for the Environment consultation on the proposed national policy statement on indigenous biodiversity. The Society operates under an Act of Parliament to advance and promote science and technology in New Zealand and provide expert advice to the Government and the community.

The Royal Society of New Zealand welcomes the purposes of the proposed National Policy Statement (NPS) which build on the non-statutory guidelines previously published by the Ministry for the Environment and the Department of Conservation. The largest component of indigenous biodiversity in New Zealand is the terrestrial invertebrates of which insects have the highest number of species¹. The few studies to date indicate that most indigenous insects are restricted to indigenous habitats^{2,3} and while some indigenous species will rapidly colonize new areas, most species do not move readily. This is equally true for soil and litter dwelling species and for those inhabiting plants. To be meaningful The National Policy Statement on Indigenous Biodiversity needs to be relevant and cover invertebrates, microbiota (e.g. nematodes), fungi, lower plants (mosses, liverworts, lichens) and algae, as well as indigenous birds, other vertebrates and plants.

There is also concern over the application of the NPS in its apparent restriction of water-based biodiversity to wetlands, potentially excluding rivers and lakes and the biodiversity of freshwater species. It also does not apply to coastal marine areas, nor public conservation land, potentially

¹ Gordon DP. (ed). 2011. New Zealand Inventory of Biodiversity (Volume Two), Canterbury University Press, Christchurch, New Zealand. 544 pp

² Kuschel G. 1990. Beetles in a suburban environment: a New Zealand case study. DSIR Plant Protection Report 3: 1-118.

³ Martin N. 2010. Invertebrate biodiversity and habitat quality: some thoughts. The Weta 40: 4-13.

resulting in complications for flora and fauna whose habitats overlap with these areas, such as freshwater fish whose juvenile stages migrate through coastal areas.

Specific sections of the NPA are addressed below:

Interpretation

In the Interpretation section of the Statement, the definition of indigenous vegetation needs to be clarified. It currently states:

"Indigenous vegetation means any local indigenous plant community through the course of its growth or succession consisting primarily of native species and habitats normally associated with that vegetation type, soil or ecosystem or having the potential to develop these characteristics."

The words "having the potential to develop these characteristics" should be deleted, as this could include most plant communities over time.

Policy 1: Defining significant areas and habitats for the purpose of the NPS

In protecting indigenous biodiversity, the NPS should support the protection of indigenous biodiversity as well as indigenous vegetation or significant habitats connected with them. In this regard the NPS should, for example, look to reduce the impact of exotic introduced species that compete with or feed on indigenous biodiversity.

Policy 2: Criteria for identifying significant indigenous vegetation and the significant habitat of indigenous fauna

Schedule 1, which lists the identified naturally uncommon ecosystems should include naturally uncommon river and lake systems, such as geothermal aquatic and wetland habitats and alpine and upland aquatic habitats. The vegetation classification of most of the land which contain the lakes, ponds, tarns and cirque lakes that lie in areas of high country in Central Otago and Canterbury, is "native not protected" and the Otago Region has the highest proportion of all the Regions in New Zealand with land in this classification. Although the biodiversity of the pelagic food webs of most of these water bodies still needs to be determined, preliminary data have revealed new phenotypes of some native crustaceans that are potentially new, native species.⁴

Some specific points in connection with Policy 2 would be:

- With regard to the conservation of sand dune habitats, this should be interpreted to include dunes planted with non-native vegetation, such as Marram grass (*Ammophila arenaria*) which supports significant and indigenous animal species below ground.
- The Society supports the inclusion of land environments that have 20% or less remaining in indigenous vegetation cover (item d). These areas will include the coastal forest remnants in urban Auckland, where small remnants of coastal forest completely surrounded by urban landscape are only one of three places where, for example, an undescribed native leaf mining beetle is known to occur¹.

Policy 4: Identifying areas and habitats in district plans

⁴ Personal communication, Professor Carolyn Burns, Department of Zoology, University of Otago

In developing district and regional plans, in addition to identifying significant indigenous vegetation and habitats, it may be useful to highlight particularly vulnerable zones. For example, the boundary of wetlands/estuaries with 'dry land' can be particularly vulnerable as it is often a narrow strip with a distinctive flora and fauna. The area is often made steeper and narrower with the formation of boundary paths/roads, breakwater or playing fields.

Policy 5: Managing effects to achieve no net loss.

In order to ensure 'no net loss' of biodiversity, there needs to be a practical method for monitoring an area's biodiversity. This could be a major problem for invertebrates and microbiota, which currently rely on highly skilled taxonomists and is expensive to undertake. Alternative methods need to be developed. One such methodology for invertebrate herbivores is called Plant-SyNZ. This uses photos of plant damage symptoms, has a simple scoring method that is used in the field, and gives immediate results.

It would be appropriate, when Considering a Biodiversity Offset, to include a mitigation hierarchy, so that it is evident that a developer has considered options and can demonstrate that the one adopted, although still having residual adverse effects, is the only practicable option, and that potential adverse effects have been kept to a minimum.

Measurements of biodiversity will also be subject to natural variability and the different stages of habitat succession. For example, geothermal springs can change their temperature and chemistry, and features can change from being liquid-fed to being steam-fed. These changes can have radical effects on the biota within the features.

Do you agree with the principles outlined in Schedule 2 (Principles to be Applied when Considering a Biodiversity Offset?)

The approach taken by Environment Waikato⁵ for its geothermal systems is an example of a form of biodiversity offsets, restoring the natural character of a degraded habitat elsewhere in the region where adverse effects cannot be adequately mitigated. The Horizons One Plan already specifies a requirement for net biodiversity gain, a higher threshold than "no net loss".

For Schedule 2, section 4a requires a comprehensive assessment to be made of the biodiversity components at risk but then the second sentence only requires consideration of whether the vegetation or habitat is rare, securely protected or threatened. This should be widened to include consideration of rareness, protection or threat to the fauna and microbiota as well. In addition, when considering habitat, and important component of this for invertebrates will be soil type and characteristics.

It would be useful if some further guidance was provided of what is meant by 'vulnerable or irreplaceable', e.g. criteria or definitions for these terms, with some real examples.

As part of the offset process for vegetation, consideration could also be given to ex situ conservation, through a seed bank of native species. Such a seed bank was established by the NZ Plant Conservation Network in 2007 as the NZ Endangered Species Seed Bank and is hosted by the

⁵ Environment Waikato Regional Policy Statement (<http://www.waikatoregion.govt.nz/Policy-and-plans/Regional-Policy-Statement/Operative-Waikato-Regional-Policy-Statement-October-2000/RPS-372/>)

Margot Forde Germplasm Centre at AgResearch in Palmerston North. Although protection of ecosystems in situ is a preferred method of conservation, seed banks offer not only a back-up but also provide a different genetic risk profile for species conservation. However, one problem is that they are suitable only for species with orthodox seeds. Quite a few NZ native species have recalcitrant seeds that will not tolerate drying and are unsuitable for a seed bank. Cryo-preservation could be a potential method for dealing with these species.

Policy 6: Supporting maintenance and enhancement of biodiversity.

Creating linkages between indigenous habitats, especially small areas, is particularly important for indigenous flora and fauna, such as invertebrates, because many do not readily colonize new areas that are not closely connected to their existing habitat. Areas providing these linkages should also include plant species in the existing habitats in order to provide continuity for the herbivores and be more than just flax and a few trees. Ideally they should as much as possible recreate the original valley vegetation, forest, shrub land, swamp etc, so that indigenous flora and fauna of the area can colonize these areas and move along them.

In the enlarged Auckland City there are many remnants of indigenous habitat in urban areas. These include clearly defined indigenous reserves and less well defined areas such as cliff edges around parks and golf courses and areas managed for wildlife. These areas are often managed by contractors as if the indigenous areas were part of a park and a common issue is the use of herbicides along the boundary between shrubs/trees and 'grass' that kills existing indigenous plants and prevents regeneration of indigenous plants. There would be merit in encouraging the production of guidelines about the management of indigenous habitats in urban areas.

Additional Information and References

This response was produced by the Royal Society of New Zealand and signed off by the Chair of the Academy, Professor Keith Hunter. Any enquiries about this submission and others should be addressed to the RSNZ's External Relations Manager, Dr Marc Rands (Email: marc.rands@royalsociety.org.nz). Responses are published on the RSNZ website (www.royalsociety.org.nz/publications/policy)