Assessing Significant Ecological Values

EIANZ New Zealand Chapter & Ecology Special Interest Section

November 2017

Main Contributions:

Mark Bellingham[a], Kelvin Lloyd[b], Carolyn Lundquist[c], Justine Quinn[d], Judith Roper-Lindsay[e], Alison Davis[f] and Stephen Fuller[g]

Version 1.1

Environment Institute
of Australia and
New Zealand Inc.

a   Terra Nova Planning
b   Wildland Consultants
c   NIWA
d   Tonkin and Taylor
e   Judith Roper-Lindsay
f   NZ Defence Force
g   Boffa Miskell

Contents

1. Executive Summary

This paper offers guidance on the definition of ecological significance of indigenous vegetation and indigenous fauna habitats and proposes standards for implementing this within the Proposed NPS for Biodiversity currently under preparation. Significance has a specific statutory meaning in the Matters of National Importance in the Resource Management Act 1991, the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna (s6(c)) and this links with the function of Local Government to maintain indigenous biodiversity (ss. 30 & 31).

Councils, landowners, interest groups and the public have spent millions of dollars presenting their cases on how and what biodiversity should be protected through RMA policy statements and plans. This has been without any guidance to Councils from the Ministry for the Environment who administer the Act. Although most participants agree that some biodiversity should be protected, the debate continues over what is significant.

Participants in the EIANZ Ecological Significance seminar (November 2016) identified a number of key themes with the current framework for assessing ecological values. The most prevalent were:

- National consistency was required with assessment criteria sets.
- Assessment criteria needed to consider the local and regional level, as well as national criteria.
- Criteria assessments can be at a local (ecological district), regional or national scale and should all be considered where relevant information at each scale is available.
- The lack of national guidance or a Biodiversity National Policy Statement had weakened local government, and the public's ability to protect and maintain indigenous biodiversity.
- The consistent application of biodiversity protection and management in New Zealand requires national guidance.

Currently there is no consistency in Regional Policy Statements and Plans, and District Plans for biodiversity assessment and criteria, with the most glaring examples being:

- At a national level (e.g. for significant habitats of threatened species or rare but widespread significant ecosystems);
- Within ecological regions or districts and particularly those that cross local government boundaries;
- For migratory species on their breeding or wintering habitats (e.g. the critically endangered NZ fairy tern in Auckland and Northland).

We consider that these significant deficiencies have exacerbated the decline of New Zealand's biodiversity, and emphasise the need for a National Policy Statement for Biodiversity. Including national criteria for assessing significant indigenous vegetation and significant habitats of indigenous fauna, either within a NPS or as a National Environment Standard would be a critical tool for arresting biodiversity decline in New Zealand.

2.   Introduction

This report reviews the practice of assessing the ecological values of significant indigenous vegetation and indigenous fauna habitats, for the maintenance of indigenous biodiversity under the Resource Management Act 1991.

A seminar to address these matters was organised by the Environment Institute of Australia and New Zealand (EIANZ) at Waikato University, in Hamilton on 19th of November 2016. The theme of the seminar was "Restoring Resilience Across All Environments" and was to draw ecologists into the dialogue and conversation on the draft Biodiversity National Policy Statement (NPS) being prepared under the Resource Management Act 1991. This is the third attempt by successive New Zealand Governments to complete a Biodiversity NPS over the past 20 years, with the previous draft Biodiversity NPS processes polarising landowners on one side and environment groups, the public and professional ecologists on the other.

Meanwhile collectively Councils, landowners, interest groups and the public have spent millions of dollars presenting their cases on how and what biodiversity should be protected through RMA policy statements and plans. This has been without any guidance to Councils from the Ministry for the Environment. Although most participants agree that some biodiversity should be protected, the debate over what is significant continues.

This paper offers guidance on the definition of ecological significance of indigenous vegetation and indigenous fauna habitats, and proposes standards for implementing this within the NPS for Biodiversity currently under preparation.

2.1   The state of indigenous biodiversity

Consistently assessing ecological significance across New Zealand is essential for effective and fair outcomes from the National Policy Statement on Biodiversity, as it is the tool for identifying key areas and ecological processes for the protection, maintenance and recovery of indigenous biodiversity.

In the absence of a consistent approach, successive stock takes of the state of New Zealand's biodiversity have documented an on-going decline[1]. The reports have reached broadly similar conclusions, the key ones being:

- The decline of indigenous biodiversity is New Zealand's most pervasive environmental issue.
- In terrestrial environments approximately 60–70% of threatened vascular plant species appear to be dependent on private land.
- Past losses and fragmentation of biodiversity have been most severe on flat lowland or coastal land, and the condition of what remains here continues to decline.

---

[1] DOC & MfE (2000), MfE (2000a, b), Davis (2002), Green & Clarkson (2005), Walker et al. (2006) and the World Wildlife Fund (2012), MfE (2016)

- On private land the main causes of decline are habitat destruction or modification through the removal, fragmentation and degradation of ecosystems, wetland drainage and the effects of animal pests and weeds.
- Habitat loss and destruction is still occurring, with agricultural intensification being a prime causal factor, especially associated with dairy farming. This has resulted in further pollution and degradation of water in rivers and lakes, and downstream in coastal and estuarine systems, and further loss of habitat for indigenous biodiversity.
- In marine environments, significant gaps in regional and national data make it difficult to assess biodiversity and the state of marine habitats.

2.2   Ecological significance and importance

It is important to understand the context within which ecological values need to be assessed. Ecological assessments need to reflect the underlying importance of local settings, while placing them within national frameworks. Sites may appear to be of little ecological value to non-ecologists and have been subject to modification or loss, yet when considered in the broader ecological context they may have significant ecological values and should be protected.

Significance has a specific statutory meaning in the Matters of National Importance in the Resource Management Act 1991, the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna (s6(c)) and this links with the function of Local Government to maintain indigenous biodiversity (ss. 30 & 31). This applies to private and public land, as significant sites occur on all land and water types, and can be modified or destroyed by a variety of threats. Significant ecological areas can be afforded protection under regional plans under the Resource Management Act. A definition of significance was provided in the Proposed National Policy Statement for Biodiversity (2011) and above makes the important link between s6(c) and ss.30 & 31 of the RMA: *An area of significant indigenous vegetation or a significant habitat of indigenous fauna is an area or habitat whose protection contributes to the maintenance of indigenous biological diversity at the Ecological District level.*

A related but separate issue is that areas may also be assessed to determine their management requirements (e.g. to improve or maintain their condition or viability). This can be done at the same time as assessing an area's significance, and management assessments may require additional detail. It is important to recognise that assessments for significance and management requirements are separate assessments with a different purpose. Management requirements (e.g. the perceived viability of a site) can and should influence prioritisation of management efforts, but not necessarily whether an area is identified as being significant or not.

If areas of the inner Hauraki Gulf are protected for green lip mussel restoration these areas could restore historic mussel beds as opposed to existing the last few relict mussel beds. But in all systems restoration trajectories are unsure. But generally management assessments, i.e. costs of monitoring, maintenance should be not determine identification of significant ecological areas (SEA's). Whereas the costs to ensure ecosystem functioning are relevant and Greater Wellington RC and Auckland Council have both contracted spatial prioritisation to identify restoration/ecological area priorities

that take cost of predator/weed removal into account in addressing habitat quality to inform SEA designation.

3. Statutory policies and plans

3.1 National Policy Statements (NPS) & National Environment Standards (NES)

NPSs and NESs are prepared to provide national guidance for objectives, policies, rules and implementation of the RMA. Currently there are two operative national policy statements that directly affect the management of biodiversity, the New Zealand Coastal Policy Statement (NZCPS) and the NPS for Freshwater Management. When considering an application for resource consent, consent authorities must have regard to any relevant provisions of an operative NPS. Similarly, when preparing plans or policy statements under the RMA, consent authorities must give effect to an operative NPS.

A NPS for Biodiversity has been proposed since the time the Resource Management Act became operative in 1991. An opportune question (addressed by the seminar participants) was:

> *"Now that most regions have included biodiversity objectives and policies in Regional Policy Statements, is it too late for:*
>
> - *for a Biodiversity NPS?*
> - *to be developing a national definition of ecological significance?*
> - *and will it take another 10 years for them to be implemented?"*

We will address these important questions through outlining current practice for defining ecological significance and reviewing the application of biodiversity protection and management through RMA policies and plans, and on-going implementation.

3.2 Regional Policy Statements and Regional and District Plans

The purpose of the RMA is sustainable management, and an important element of this is the protection and maintenance of indigenous biodiversity, not just recognising and providing for significant indigenous vegetation and significant habitats of indigenous fauna. Regional Policy Statements (RPSs), regional plans and district plans are the tools used by regional councils and territorial authorities to meet their responsibilities under the RMA. These should include the development of policies and rules for maintaining indigenous biodiversity.

4.   Framework for assessing ecological values

At the EIANZ seminar three leading ecologists presented overviews of ecological significance assessments for terrestrial ecosystems (Dr Kelvin Lloyd), freshwater ecosystems (Justine Quinn) and coastal ecosystems (Dr Carolyn Lundquist).

This section provides a brief overview of the presentation and they can be viewed on the EIANZ website.[2] The following section outlines criteria used for assessing ecological significance, with examples of good practice and criteria for assessing ecological values including those that have been endorsed by the Environment Court.

Terrestrial Ecosystems

The process for assessing ecological significance in New Zealand has been developed for terrestrial ecosystems, and Dr Lloyd outlined:

- The development of ecological assessment criteria sets in New Zealand;
- The key criteria sets and sub-criteria;
- The criteria sets being used by Local Government;
- Problems arising with conflicting and overlapping criteria; and
- Examples of good and not so good practice.

Freshwater Ecosystems

Ms Quinn outlined ecological assessments for freshwater ecosystems, where the focus has been on balancing multiple demands for water allocation and minimising contaminant inputs. In freshwater ecosystems, 74% of all native freshwater taxa and 76% of all non-diadromous taxa are considered threatened or at risk. Only cursory attention has been given to assessing areas for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

The NPS for Freshwater Management focuses on protecting significant values of wetlands and outstanding freshwater bodies (Objectives A2 and B4), although the NPSFM does not define 'outstanding' or relate it to significance. Furthermore, the NPS water quality limits are insufficient to protect threatened fish and other taxa. Although the NPSFM policies generally pick up representativeness and rarity, habitat evaluation methods fail to implement the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna (s6(c)) or the maintenance of indigenous biodiversity (ss. 30 & 31). Many methodologies within the NPSFM are insufficient for biodiversity protection. For example methods include the RIVAS[3] methodology that

---

[2] https://www.eianz.org/chapters-divisions/new-zealand-2

[3] RiVAS – River Values Assessment System. K Hughey, K Booth & MA Baker 2010 River Values Assessment System (RiVAS) – The method. Hughey, K.F.D., Baker, M-A. (eds). (2010a). The River Values Assessment

mixes ecological criteria with use criteria, and the Stream Evaluation Assessment (SEV) that has no criteria to identify 'significant' freshwater habitats or areas.

Coastal and Marine Ecosystems

In introducing assessment of ecological significance in marine areas, Dr Lundquist pointed out that marine significant ecological areas were dominated by coastal areas and shorebird/seabird areas. They were typically ad-hoc based on anecdotal evidence, though occasionally supported through systematic assessment (but still typically limited to assessment of coastal habitats).

Similar criteria were being applied across most regional coastal plans, and this was guided by the NZCPS (2010), NZ Biodiversity Strategy and Action Plan, and the Marine Protected Areas Classification, Protection Standard and Implementation Guidelines (2008), and the Marine Protected Area Policy and Implementation Plan (2005). Common criteria include the protection of representative habitat types and threatened/rare/diverse/indigenous fauna and flora. Uniqueness and distinctiveness were often used in describing MPA 'ecological values' but were poorly defined, typically anecdotal and overlapping with 'diversity'.

A combination of a lack of historical data and insufficient emphasis on the quality of habitats are a weakness for the assessment of marine SEAs. A further lack of habitat classification that adequately represents the biodiversity in soft sediment habitat challenges the identification of representative (and high quality) habitat types that cover the spatial variation in diversity of marine ecosystems. Changing ecological values from invasion by indigenous and non-indigenous species, and sea level rise weaken these as a planning tool, as SEA designations are rarely revised.

5.   Assessment criteria and their application

The EIANZ seminar participants identified a number of key themes with the current framework for assessing ecological values. The most prevalent were:

- National consistency was required with assessment criteria sets.
- Assessment criteria needed to consider the local and regional level, as well as national criteria.
- Criteria assessments can be at a local (ecological district), regional or national scale and should all be considered where relevant information at each scale is available.
- The lack of national guidance or a Biodiversity National Policy Statement had weakened local government and the public's ability to protect and maintain indigenous biodiversity.
- The consistent application of biodiversity protection and management requires national guidance.

Although it was encouraging that the Ministry for the Environment has recognised the need for a NPS for Biodiversity, the Ministry's encouragement of Councils to develop their own resource management standards since 1991 has resulted in a lack of national consistency; rather there has been a range of assessment criteria developed.

5.1   Framework for Robust Biodiversity Assessment Criteria

The fundamental requirements for robust assessment criteria sets require:

1. Categories must be discrete and have no overlap i.e. avoiding double counting where the same attributes under included under different criteria.
2. National consistency is required with criteria sets.
3. The need to consider local and regional level as well as national criteria.
4. Criteria assessments can be at a local (ecological district), regional or national scale and should all be considered.
5. Criteria are required to consider biodiversity in decline and cumulative decline.
6. Criteria that 'catch' the commonplace as well as the best examples. (This should be considered under the representative criteria).
7. Criteria need to assess and protect (ecological) processes, e.g. braid plains, valley hills, ephemeral wetlands, etc.
8. Criteria need to include assessment of potential threats to habitats.
9. Criteria need to consider degraded habitats although they may be the best remaining.
10. The need to factor in vulnerability to climate change (for marine and terrestrial environments especially).
11. Sea-level rise is an issue that needs to be considered for coastal and marine habitats, and included in criteria assessments.

Additional issues are:

12. There are problems relating to the measurement of 'potential' as a criterion.
13. Various freshwater assessment processes (RiVAS, SEV) are not linked to biodiversity criteria.
14. The 1840 and pre-Maori references for representativeness and naturalness criterion overlooks and confounds cultural changes in the landscape with naturalness.

5.2   Department of Conservation Criteria Sets

The Department of Conservation have promoted assessment criteria in the DOC Science for Conservation 327 report.[4] The criteria sets promoted were:

    1. Representativeness

    2. Diversity and pattern

    3. Rarity and special features

    4. Naturalness

    5. Ecological context

The DOC guidelines for assessing significant ecological values have be used as a standard for the Draft NPS for Biodiversity (2011), but at the time of publication of the report these criteria sets were being superseded by Councils and the Environment Court. Consequently there is now some variance with some of the assessment criteria sets recommended in this report to those proposed by the authors of the DOC report.

More recently the trends are for broader, more inclusive criteria, with an emerging focus on fauna habitats. There is less use of pernicious qualifiers and a greater use of the Ecological Regions and Districts framework[5], rather than the use of the LENZ tool[6].

We have provided an overview of the criteria sets for assessing significant ecological values that we recommend as a standard for the Proposed NPS for Biodiversity (2018). This includes an evaluation of the key criteria, their application in regional policy statements and plans and district plans, and Environment Court cases supporting their implementation. (Some examples of criteria have been included from regions where overall the significant criteria set is deficient, but a particular criterion is consistent with good practice.)

We recommend the following criteria sets and define them as follows:

    1. Representativeness
    2. Diversity and pattern
    3. Rarity and special features
    4. Ecological context

5.3   Representativeness

The aim of this criterion is to identify the typical and characteristic habitats and taxa, but most criteria don't specify how this can be assessed. Vegetation structure and composition are the key attributes used to define representativeness in terrestrial ecosystems, and a standard, or baseline is needed, to assess the typical and characteristic at the Ecological District scale.

---

[4] M. Davis, N.J. Head, S.C. Myers, S.H. Moore 2016 Department of Conservation guidelines for assessing significant ecological values. Science for Conservation 327. Wellington.

[5] WM McEwen (ed.) 1987 Ecological Regions and Districts of NZ. DOC, Wellington

[6] LENZ classifies landscape using biological surrogates - precipitation, altitude, solar radiation, and the models species that might occur there, rather than using presence data.

This is the only criterion that captures all vegetation classes, but it has not been developed for terrestrial faunal habitats, and could be problematic when fauna habitats that are exotic vegetation are included. For example Auckland[7] ecosystems are entirely based on vegetation types and fauna within those types are noted but not part of the ecosystem assessment.

In coastal and marine ecosystems representativeness criteria poorly differentiates between non-vegetated habitats, particularly within subtidal soft-sediment habitats that are the most extensive marine habitat in New Zealand and globally. Apart from shallow water habitats, most coastal and marine ecosystems are dominated by fauna species, and may have few plant species.

Environment Court decision: NZEnvC 345 (Friends of Shearer Swamp vs. West Coast RC, 2010)

This has been the main test case of the application of significance criteria to terrestrial ecosystems. The Court found that:

- Significance doesn't lie in the size of the class, but the values of the shared attributes of members of the class

- Representativeness doesn't concern the extent of habitat

- Representativeness helps provide for the maintenance of biodiversity – so it needs to include more than the 'best' examples

To date the West Coast Regional Council has only applied this to wetlands, but not other freshwater ecosystems, or to other terrestrial, coastal or marine ecosystems.

The following are examples of representative definitions from other regions:

Auckland Unitary Plan (Operative in part) 2016

An indigenous ecosystem (including both mature and successional stages), that contributes to the inclusion of at least 10% of the natural extent of each of Auckland's original ecosystem types in each ecological district of Auckland (starting with the largest, most natural and intact, most geographically spread) and reflecting the environmental gradients of the region, and is characteristic or typical of the natural ecosystem diversity of the ecological district and/or Auckland. (Schedule 3 Significant Ecological Areas – Terrestrial Schedule)

Greater Wellington Regional Policy Statement (2013)

The ecosystems or habitats that are typical and characteristic of the full range of the original or current natural diversity of ecosystems and habitats in a district or in the region, and:

  i.   are no longer commonplace (less than about 30% remaining); or

  ii.   are poorly represented in existing protected areas (less than about 20% legally protected).

(Policy 23: Identifying indigenous ecosystems and habitats with significant indigenous biodiversity values – district and regional plans. P.104, Regional Policy Statement for the Wellington region (2013)).

Canterbury Regional Policy Statement (2013)

---

[7] Singers et al. 2017 Ecosystems of Auckland

Indigenous vegetation or habitat of indigenous fauna that is representative, typical, or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.

(Appendix 3: Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity. P.234, Canterbury Regional Policy Statement 2013)

Problems with Significance criteria

The authors and other professional ecologists have found a number of problems that often arise with the various definitions and representative criteria used by regional and district councils. The most common are:

- Pernicious thresholds (e.g. the last 10% or 30% of ecosystems or habitats), allowing the mediocre to be captured instead of the good quality.

- Mixing of rarity and protected status criteria into representativeness.

- Imposing filters not related to representativeness.

- Complexity and ambiguity.

- Excessively high thresholds (e.g., 'best'), often without qualitative metrics.

Representativeness Summary

Criteria for representative vegetation and aquatic habitats need to address:

- Typical structure and composition
- Indigenous species dominate
- Expected species and tiers are present
- But thresholds may need to be lowered where all examples of a type are strongly modified

Criteria for representative fauna assemblages need to address:

- Fauna assemblages that are typical of the habitat.
- Indigenous species that occur in most of the guilds expected for the habitat type.
- A marine assemblage classification.

5.4   Diversity and Pattern

This criterion is derived from the DOC assessment guidelines and covers the extent to which the expected range of diversity and pattern is present for the relevant Ecological District.

Natural diversity includes the physical and biological diversity, and ecological processes. In general, larger areas contain more diversity, but some areas with lower fertility or minimal altitudinal range, naturally have low diversity. Species and community composition change along environmental gradients and this is reflected in ecological patterns e.g. altitudinal sequences and ecotones are particularly important zones for species and community diversity.

A mosaic of connected habitats is required to support the range of life history stages of many marine and coastal species. In marine ecosystems environmental gradients can also be temporal, for example upwelling and other spatially and temporally variable biophysical features that support a high diversity of fish and seabirds, including spawning aggregations. There is seasonal or even daily movement up and down the water column.

5.5   Rarity and Special Features

Rarity is the natural or induced scarcity of biological, physical and ecological features within an area. This criterion incorporates rarity in the uncommon sense, and threatened in its classification sense (e.g. species classified under the NZTCS as Nationally Threatened or At Risk; ecosystems classified as naturally rare (Williams et al. 2007)), and ecosystems or species that have become uncommon.

It is important to apply this criterion within a local context (i.e. Ecological Districts and Regions), as some biota or ecological features can be uncommon locally, but common elsewhere e.g. bellbird in the upper North Island.

Rarity is the ecological assessment criteria that have been used by almost every region and district, and it usually includes:

- Indigenous vegetation and habitat on/in
- Originally rare ecosystems
- Wetlands and sand dunes
- Land environments with <20% indigenous cover
- Habitats of threatened, at risk, locally uncommon taxa.
- Distinctive assemblages, distribution limits of taxa
- Rare environmental? gradients, vegetation/habitat types

The Draft NPS for Biodiversity (2011) proposed criteria for rarity have been used for guidance for biodiversity protection on private land and the Statement of Draft National Priorities 1-4:

1. To protect indigenous vegetation associated with land environments (defined by Land Environments of New Zealand at Level IV) that have 20% or less remaining in indigenous cover.
2. To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.
3. To protect indigenous vegetation associated with "originally rare" terrestrial ecosystem types not already covered by priorities 1 and 2.
4. To protect habitats of acutely and chronically threatened indigenous species.

National Priority 1 uses Land Environments of New Zealand (LENZ), the Land Cover Database (LCDB) and a national database of land protection status to identify what type of vegetation occurs in each land environment and the broad pattern of protection. But a number of issues have arisen with the interpretation of these priorities that has limited their use. For instance it is unclear whether all indigenous vegetation on these land environments is significant, even if it is not significant against other criteria.

Rarity assessment criteria (including the Draft National Priorities) are the most-used criteria by Councils, but the assessment of rare fauna with limited mobility versus highly mobile rare fauna varies considerably. These discrepancies centre around the following issues:

- The assessment of limited mobility plants, lizards, and invertebrates

- Locally uncommon taxa, if present, when is significance is triggered?

- Protection of the habitats they occur in is important, as fauna habitat is important for feeding, breeding, resting or refuge from predation

- How do we treat mobile rare fauna? E.g. Is a lamp-post significant because a threatened red-billed gull rests on it?

- Breeding sites and refuges almost always important for mobile rare fauna, whereas other parts of their habitat e.g. feeding/resting sites may not be significant.

Examples:

Canterbury RPS (2017)

3. Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the region, or relevant land environment, ecological district, or freshwater environment.

4. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district.

5. The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.

6. Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.

(Appendix 3: Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity. P.234, Canterbury Regional Policy Statement 2013)

5.6   Ecological Context

This criterion covers the maintenance of indigenous biodiversity related to the size and shape of an area, and how it is buffered from the surrounding anthropogenic landscape, land how areas important for ecological processes or fauna or flora life history stages are connected. Context and buffering usually are applied together, as they are inter-related. Larger and compact areas have greater natural diversity and carrying capacity, and are less affected by edge effects. Buffers around core areas of ecological value help to reduce external influences and maintain their values. They may be natural areas degraded by edge effects or highly modified areas of ungrazed riparian pasture or exotic pine plantations.

Current knowledge is inadequate to be definitive about the needs of all biota and communities in terms of site size and shape. Despite this, it is known that some fauna are able to survive in small habitats (e.g. some lizards and less-mobile invertebrates), emphasising the need to take a broad approach. A similar approach is needed for (some) threatened plants.

Stepping stones, corridors and linkages appear to provide for migration, dispersal and the exchange of seeds, spores and genetic material between close and isolated remnants or distant ecosystems. There is inadequate knowledge of species migration and dispersal processes across New Zealand landscapes.

What is a significant habitat?

> This is the second limb of S6(c), significant habitats of indigenous fauna. They have traditionally not been assessed very well. Yet they are critical to capture if biodiversity is to be maintained.

> There is an urgent need to identify important habitats, including important habitats of common indigenous fauna, not just habitats of rare fauna.

Also, habitats that:

> Support large populations

> Support uncommon populations

> At ecological district and national scale

Provide important connectivity (kereru) vs. ground beetles and flightless

As with mobile rare fauna, breeding, feeding, resting, and refuge habitats all need identification and assessment. Sites with at least three indigenous vertebrate groups (e.g. bats, birds, lizards, and fish) are notable also.

Canterbury RPS (2017)

In the Canterbury RPS (2017) a separate buffering and linkage criterion is included in the Ecological context criteria and is simply expressed as:

8. Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.

(Appendix 3: Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity. P.234, Canterbury Regional Policy Statement 2013)

Auckland Unitary Plan (2017)

In the Auckland Region there is a separate set of criteria for Stepping stones, buffers and migration pathways[8] that are identical for terrestrial and marine ecological areas.

(4) STEPPING-STONES, MIGRATION PATHWAYS AND BUFFERS

Sub-factors:

(a) It is an example of an indigenous ecosystem, or habitat of indigenous fauna that is used by any native species permanently or intermittently for an essential part of their life cycle (e.g. known to facilitate the movement of indigenous species across the landscape, haul-out site for marine mammals) and therefore makes an important contribution to the resilience and ecological integrity of surrounding areas.

(b) It is an example of an ecosystem, indigenous vegetation or habitat of indigenous fauna, that is immediately adjacent to, and provides protection for, indigenous biodiversity in an existing protected natural area (established for the purposes of biodiversity protection); or

(i) it is an area identified as significant under the 'threat status and rarity' or 'uniqueness' factor. This includes areas of vegetation (that may be native or exotic) that buffer a known significant site. It does not include buffers to the buffers.

(c) It is part of a network of sites that cumulatively provide important habitat for indigenous fauna or when aggregated make an important contribution to the provision of a particular ecosystem in the landscape.

(d) It is a site which makes an important contribution to the resilience and ecological integrity of surrounding areas.

(Schedule 3 Significant Ecological Areas – Terrestrial Schedule)

---

[8] Appendices 4 & 5: Significant Ecological Areas: Terrestrial Schedule & Significant Ecological Areas: Marine Schedule

Development of Biodiversity Assessment Criteria in NZ over 25 Years

Over the past 25 years a number of biodiversity assessment outcomes have developed:

- Most Regional Councils have developed biodiversity criteria and assessment at a regional scale and some have taken account of the range of ecological variation within their regional boundaries.
- Larger and well-resourced Councils generally have more robust criteria and assessment processes, particularly those councils that have a history of in-house ecological advice.
- Most RCs have developed biodiversity criteria and assessment processes quite different to adjoining Councils.
- A small number of ecologists and policy analysts/planners with ecological experience have been instrumental in developing robust assessment criteria.
- A small number of Regional Councils have delegated the assessment to TLAs (Manawatu-Wanganui RC, Taranaki RC) or biodiversity implementation to TLAs (Greater Wellington)
- In summary. there is no consistency:
  - nationally (e.g. for significant habitats of threatened species or rare but widespread significant ecosystems);
  - within ecological regions or districts and particularly those that cross local government boundaries;
  - Migratory species on their breeding or wintering habitats (e.g. the critically endangered NZ fairy tern in Auckland and Northland).

The cascade effect of RPS policies to Regional & District Plan policies and criteria

We have observed a cascade of policies from the Regional Policy Statement to regional and district plans. This can be beneficial where the RPS has a robust set of ecological assessment criteria e.g. Auckland Unitary Plan. Where there are deficiencies in the RPS ecological assessment criteria, this may be carried through into the underlying plans.

A good example of the latter has occurred in Hawkes Bay, where the significant ecological area criteria in the RPS are deficient. The Hawkes Bay RPS (2006) criteria identified sites as follows:

- A site has to be either:
  - protected
  - larger than 40 ha
  - over 1 ha where canopy height is >6 m
  - over 5 ha with regenerating indigenous trees
  - Or identified as a Recommended Area for Protection (RAP) or similar.

The criteria fail to identify rare species and habitats, most wetlands, representative or distinctive vegetation, fauna habitats, and the ecological context values of sites in the Hawkes Bay Region[9].

---

[9] K Lloyd, EIANZ Ecological Significance Seminar November 2016.

These criteria then flow on into the Central Hawkes Bay District Plan (2003), where slightly different criteria have been applied. A site of significant conservation value one that is identified in a plan schedule, has indigenous woody vegetation >1 ha, >6 m tall or indigenous woody vegetation >5 ha.

The criteria fail to identify rare species and habitats, most wetlands, representative or distinctive vegetation, fauna habitats, and the ecological context values of sites, and non-woody indigenous habitats in Central Hawkes Bay.

In the Hastings District Plan (2003), different criteria again have been applied. There permitted activity standards are similar to the RPS criteria, but sites need to be Non-scheduled sites that are:

– Greater than 5 ha

– Wetlands >100 m^2 with average width of 5 m

– Over 100 m^2 in the coastal environment

– Or contain 100-year-old trees

Restricted discretionary standards cover Representativeness/naturalness, sustainability, threatened vegetation types, scheduled sites.

In summary the Hawkes Bay the RPS ecological assessment criteria have led to:

• Criteria focused on indigenous forest and existing protected areas (in a region where existing protected areas are largely in montane and alpine habitats, and unprotected lowland wetlands and riverbeds are critically important for indigenous biodiversity).

• Limited scope for protecting significant indigenous vegetation and fauna habitat, as many important attributes are not included.

• Criteria that failed ground-testing for assessing the significance of indigenous vegetation and fauna habitat affected by the Ruataniwha Dam scheme on the Makaroro River[10].

The future scenario for the Hawkes Bay Region is uncertain, but the Proposed Hastings District Plan has more comprehensive significance criteria, and the Hawkes Bay RPS (2006) and the Central Hawkes Bay District plan (2003) are yet to be reviewed. So there are opportunities for a significant improvement and a more consistent approach from regional to local, with objectives, policies and standards from an Indigenous Biodiversity NPS.

We consider that the significant deficiencies in Regional policy Statements, Regional Plans and District Plans have exacerbated the decline of New Zealand's biodiversity, and emphasise the need for a National Policy Statement for Biodiversity and including national criteria for assessing the significant indigenous vegetation and significant habitats indigenous fauna, either within a NPS or as a National Environment Standard.

---

[10] K Lloyd. 2015 Evidence before the Board of Enquiry in the Matter of the Ruataniwha Water Storage Scheme and Plan Change 6 to the Hawkes Bay Regional Resource Plan ("Tukituki Catchment Proposal")