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Committee Regional Sustainability Committee  
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## Biodiversity overview

### 1. Purpose

To inform the Committee of the state of biodiversity in the Wellington region, and to provide an overview of Greater Wellington's approach to biodiversity management.

### 2. Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

### 3. Background

#### 3.1 What is biodiversity?

Biodiversity is short for biological diversity. It describes the variety of all biological life – the different species, from micro-organisms to trees, animals and fungi: the genes they comprise; and the ecosystems they collectively form. This includes diversity within species, between species and of ecosystems. It forms a fundamental part of the natural heritage and unique character of our region.

In other words, the term biodiversity encompasses not only the diversity of life on earth but the processes that keep them, and the ecosystems of which they are part, healthy and functioning.

#### 3.2 The state of region's indigenous biodiversity

The two most significant factors influencing the state of the region's biodiversity, whether it is terrestrial, freshwater or marine are the reduction in the area of habitat and the pressure on the remaining remnant habitats from pest plants and animals. Since human settlement, New Zealand has experienced one of the highest extinction rates in the world due to habitat loss and the impacts of introduced pest plants and animals.

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The Wellington region reflects the national situation. For example, before the arrival of humans about 98 per cent of the region was covered in native forest but today that figure has reduced to 28 per cent. As significantly, what remains is predominantly upland forest with the ecologically richer lowland areas having been cleared for agriculture and settlements. Plant pests such as Old Man's Beard and animal pests such as possums, goats, rats, cats and mustelids have put further stress on our ecosystems, and now it is accepted that our ecosystems cannot survive without interventions to reduce the impact of pests.

One challenge we face is trying to get an accurate picture of the state of our biodiversity. Work by various organisations such as the Ministry for the Environment, Department of Conservation, Greater Wellington and city and district councils provides a reasonable idea of the quantity of various ecosystems remaining in our region. For example we know that of the original estimated historical extent of wetlands in the Wellington region of 83,658 hectares only 10,161 hectares or 12 per cent remain. By examining this data the Council in 2000 identified the following as the ecosystems that are most diminished in the region:

- lowland forests
- rivers, lakes and river margins
- wetlands
- dunes
- estuaries
- coastal escarpments

More recently, ecologists have developed the Threatened Environments Classification which allows a more detailed analysis, particularly of the region's terrestrial ecosystems. The classification is based on one of the most fundamental relationships in ecology, the species-area relationship (or "slippery slope graph") as shown in **Figure 1**. As a general rule, the relationship between the number of species contained in an area and the size of that is not linear, but a curve. If this rule is applied to an environment, ecosystem or habitat type, then as habitat loss advances, each additional increment of habitat loss will remove a larger proportion of the original species that it once contained.

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## Habitat loss – Species-area relationship

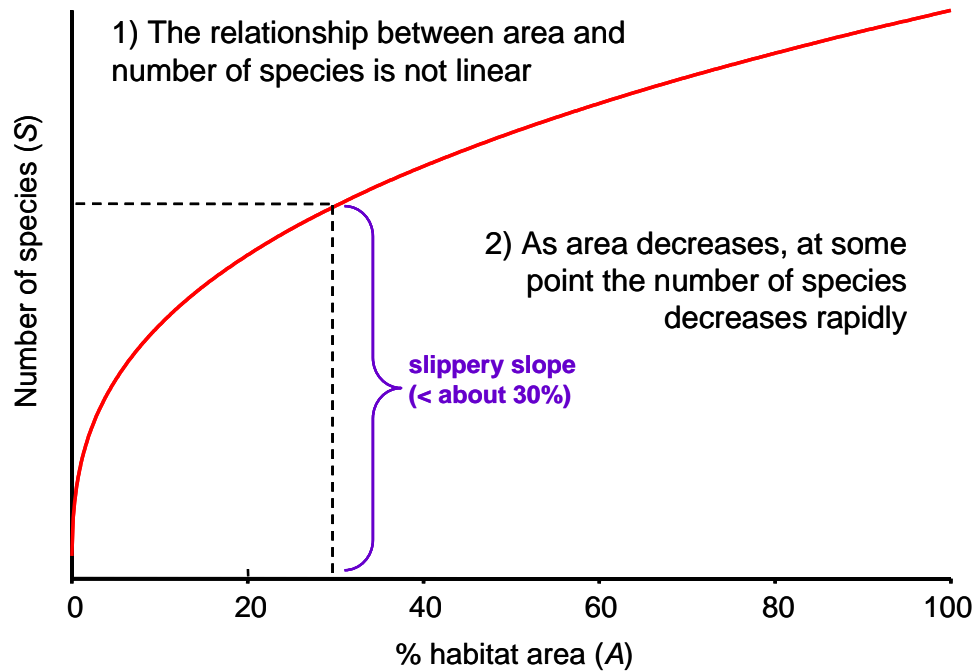


Figure 1: The ecological “slippery slope”

The classification also uses Land Environments of New Zealand (LENZ), a national classification system that maps areas that are similar to each other, regardless of where they occur. LENZ uses 15 climate, landform and soil variables that can influence the distribution of species to identify areas with similar environment or ecosystem character. These are known as “land environments”. By combining LENZ maps with satellite images from the Land Cover Database, as well as showing legal protection status, we can identify changes in vegetation cover over time and see what vegetation is legally protected.

The Threatened Environments Classification uses a set of criteria for assessing biodiversity loss based on the ‘slippery slope’ graph and information on legal protection. It is assumed that if an ecosystem is legally protected then the area will be actively managed, for example to control plant and animal pests.

The Threatened Environment Classification is based on the following categories:

Category	Criteria
Acutely threatened	Less than 10% indigenous cover remaining
Chronically threatened	Less than 20% indigenous cover remaining
At risk	Less than 30% indigenous cover remaining
Critically unprotected	Greater than 30% indigenous cover remaining but

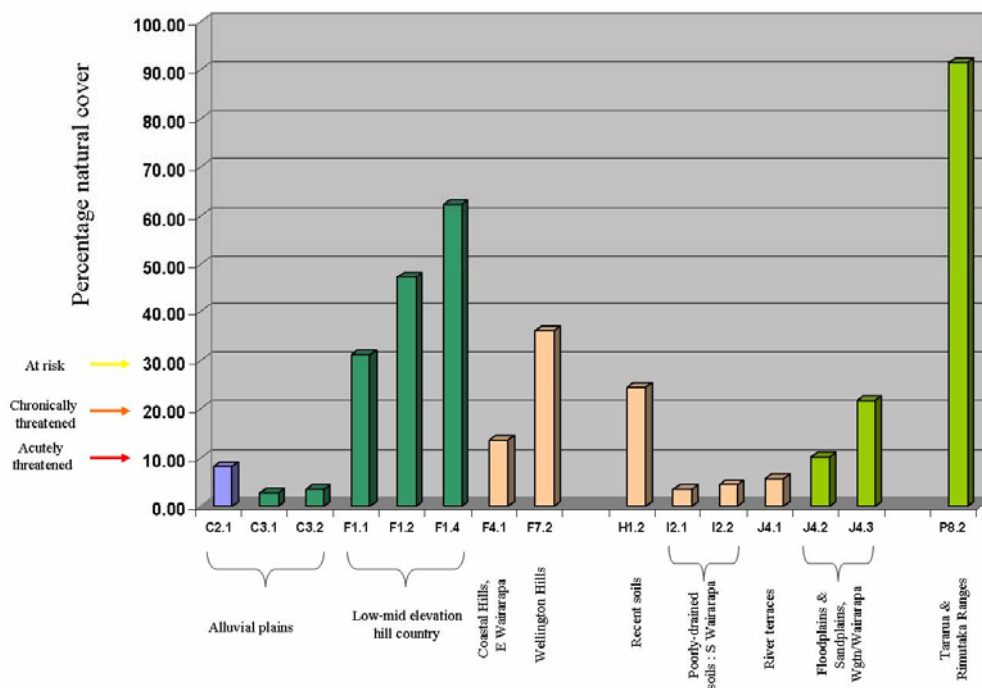
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	Less than 10% legally protected
Underprotected	Greater than 30% indigenous cover remaining but 10 – 20% legally protected

Table 1: The Threatened Environments Classification

Using the Threatened Environments Classification an examination of the Wellington region shows what and where the most vulnerable places are.

### LENZ Level 3 classes, percentage of area in natural cover



The C class land environments represent the fertile alluvial plains of the Wairarapa, Kapiti Plains and Hutt Valley. Originally they would have carried a cover of dense lowland podocarp forests of kahikatea, matai, tawa and pukatea. Today less than 10 per cent cover remains.

The hill country of the F environments shows patchy health. The F1 environments representing moist hill country, such as the Tararua foothills, are moderately intact averaging 52 per cent cover left. However, the F4.1 environment - the dry eastern Wairarapa hill country - is left with just 13.5 per cent of its original forest cover.

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In contrast, the montane P8.2 environment with 90 per cent intactness is the least degraded environment on the region. This environment is predominantly made up of the Tararua, Rimutaka and Aorangi Forest Parks.

The Threatened Environments Classification is useful as it identifies the places likely to contain the most threatened ecosystems and, therefore the priorities for protection. For instance, we know that approximately 30,000 hectares of unprotected native vegetation is in land environments reduced to less than 20 per cent of their original extent in the Wellington region.

#### 4. Greater Wellington's response to the challenges

The "science" above confirms what we intuitively know. The indigenous habitats of our lowland areas are significantly depleted in extent and their ability to support biodiversity is therefore compromised. What is our response to these challenges?

Greater Wellington has identified three generalised work areas for biodiversity:

1. Managing the lands it owns to maximise the biodiversity values they contain so that it can "lead by example".
2. Working with the community and other agencies to restore degraded ecosystems on public lands.
3. Working with private landowners to encourage and enable them to protect and enhance biodiversity on their land.

Within this framework, there is a differentiation between protection and restoration.

The first priority, if the decline in indigenous biodiversity in the Wellington region is to be halted, must be the protection and maintenance of remaining significant habitats and ecosystems and the linkages between them. Not only will this prevent further loss, it is also the most efficient use of the limited resources available. The costs of restoring or recreating habitats or ecosystems once degraded or lost are considerable and the task, at times, impossible.

Council programmes that are intended to respond to the protection and maintenance challenge are:

- Greater Wellington Parks and Forests Asset Management Plan  
*Integrated pest plant and animal management to improve ecosystem health on our own lands*
- Wainuiomata Mainland Island project  
*Intensive pest control to restore the ecosystem to a healthy functioning state*
- Key Native Ecosystem programme

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*Integrated pest plant and animal control in the region's highest value ecosystems on private land or in city or district council ownership*

- QEII National Trust covenant assistance programme

*Financial assistance for landowners entering into perpetual QEII covenants to protect high value ecosystems.*

- Advice and information on biodiversity protection options for private landowners

However, given the degree of loss and modification that has occurred, restoration of representative habitats and ecosystems is a second priority for the region. Without restoration, indigenous habitat in many parts of the region would remain well below the critical 20% threshold and indigenous biodiversity would be vulnerable to further decline. Restoration is expensive and time-consuming so it is important that effort is directed to those areas where the greatest benefits will be achieved.

Council programmes that are intended to respond to this challenge are:

- Wetland incentive programme

*Expert advice and targeted financial assistance for wetland restoration*

- Streams Alive riparian programme

*Expert advice about riparian restoration and financial assistance to landowners in 12 selected catchments*

- Take Care care group programme

*Expert advice and financial assistance for community groups wishing to restore certain degraded ecosystems*

- Advice and information to landowners on the management options for different ecosystem types.

## **5. Presentation**

A short PowerPoint presentation will be given to the committee to highlight some of the key points from the report.

## **6. Communication**

The potential to publicise the Council's biodiversity initiatives is considerable and, wherever possible, opportunities are taken to publicise the beneficial outcomes of our biodiversity programmes.

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## 7. Recommendations

*That the Committee:*

1. **Receives the report; and**
2. **Notes the content.**

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