

How well are threatened ecosystems protected?

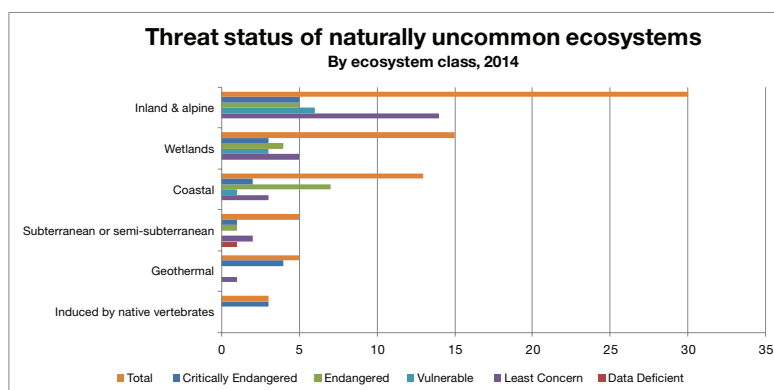
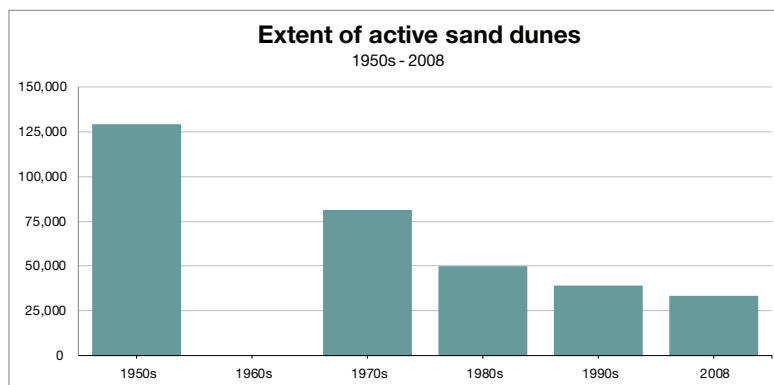
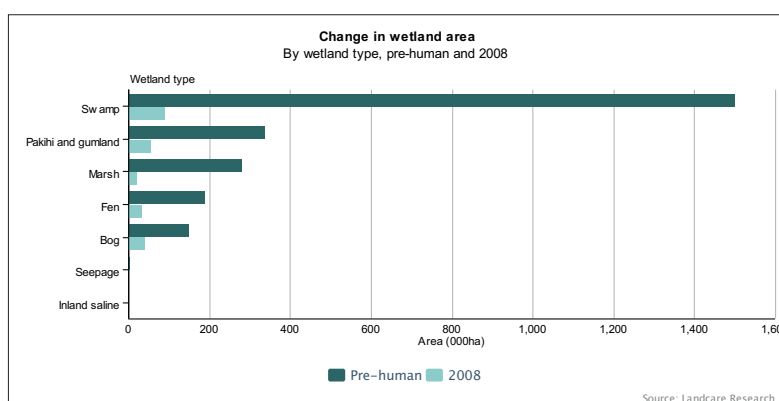


Summary

New Zealand's wetlands (especially swamps, fens and marshes) and active sand dunes are much altered in condition and reduced in extent as a result of human activity. Of the naturally uncommon ecosystems that have been mapped, four are both endangered and have less than a fifth of their current extent under protection. These are volcanic dunes, young tephra plains and hillslopes, coastal turfs and shell barrier beaches. The data presented highlights the specific ecosystem types most in need of further protection.

Main findings

- Wetlands and active sand dunes are much reduced in extent (only 10% of the original extent of wetlands is left) and altered in composition from their pre-human state. These ecosystems support unique communities of plants and animals, and provide ecosystem services.
- Of the different types of wetland, swamps, fens and marshes are a high priority for protection. All remaining freshwater wetlands face significant threats; in particular, from land-use change (drainage, vegetation clearance), invasive species and nutrient enrichment.
- To date, 71 different types of naturally uncommon ecosystems have been described for New Zealand. These ecosystems range from those that are small in size (100 m² to a few hundreds of hectares), but geographically widespread, to those that are larger (e.g. ten thousands of hectares) but geographically restricted. As each has distinct environmental conditions and support unique communities of plants and animals, including rare and threatened species, they make significant contributions to our national biodiversity.
- Based on the International Union for the Conservation of Nature (IUCN) Red list criteria for ecosystems,



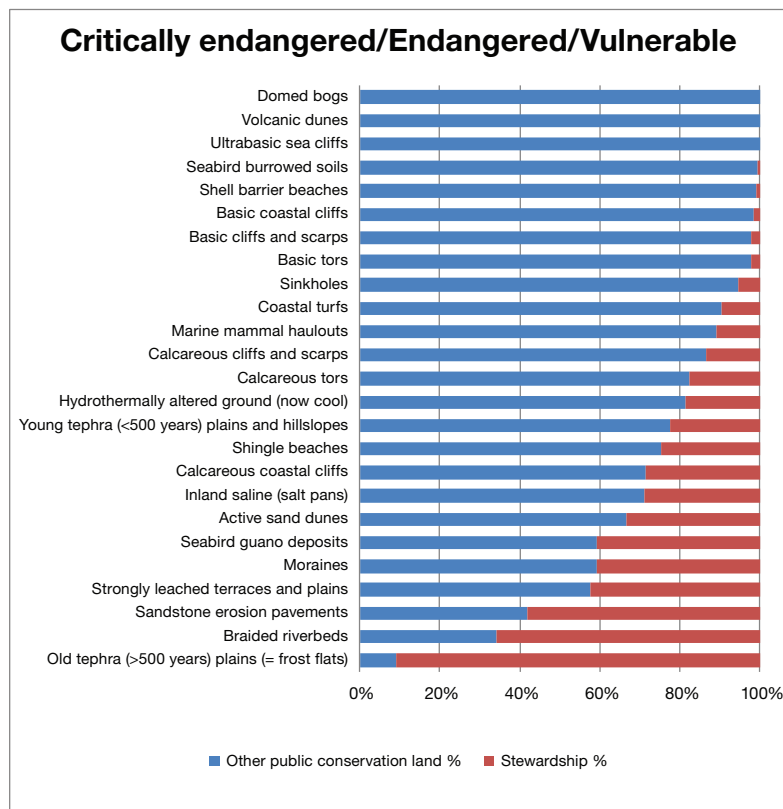
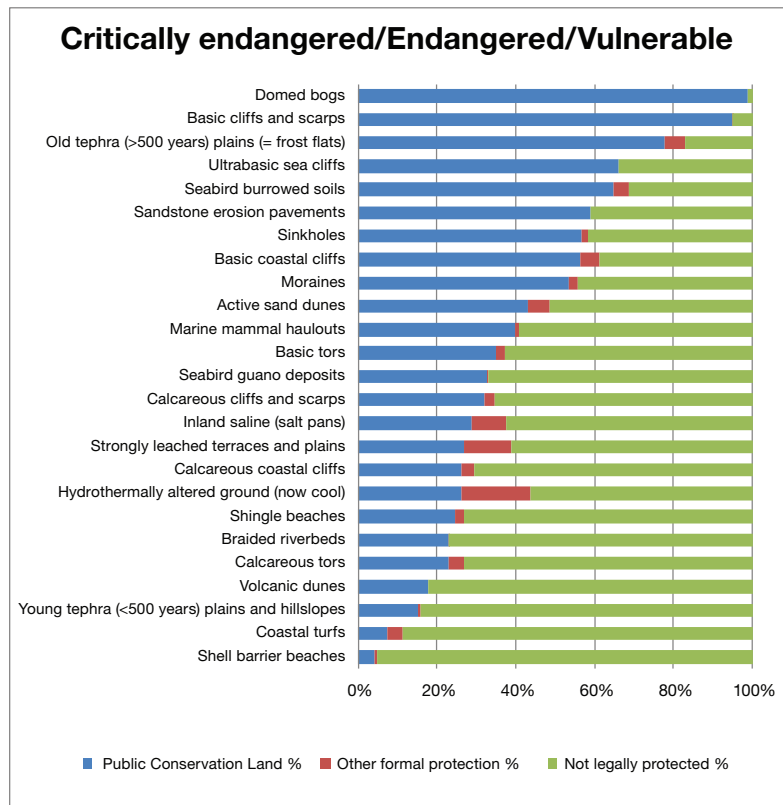
45 of these naturally uncommon ecosystems are threatened. Of these, 18 are classified as critically endangered (the highest level of threat), 17 as endangered, and 10 as vulnerable.

- Of the 23 mapped critically endangered or endangered ecosystems, four (volcanic dunes, young tephra plains and hillslopes, coastal turfs, shell barrier beaches) have less than 20% of their total area under public conservation land or other formal protection.
- Of the 23 mapped critically endangered or endangered ecosystems that occur on public conservation land, one (old tephra plains or ‘frost flats’) has more than 20% of this classed as ‘Stewardship land’, the least secure level of protection.

Why is this important?

Wetlands, sand dunes and other naturally uncommon ecosystems are still seriously under-protected in New Zealand. Their protection should remain a priority in national and regional conservation policy statements. All remaining New Zealand wetlands should rate as high priority for protection if New Zealand is to meet its international obligations under Target 11 of the Convention of Biological Diversity. Similarly, most remaining active dune systems are facing significant threats and these are likely to continue, particularly from invasive plant species, coastal development and projected sea-level rise.

The application of the IUCN’s Ecosystem Red-List criteria to naturally uncommon ecosystems provides a rational basis to identify which ecosystems are the most threatened and so inform conservation priority setting. Of the 45 threatened ecosystems, the four ecosystems that have so far been identified as having less than 20% of their total area under formal protection are of the top priority for future protection efforts. It is a high priority to define the conservation status of the lands supporting old tephra plains (frost flats) as more than 20% of their total extent on Public Conservation Land is classed as ‘Stewardship Land’ (the lowest level of protection).



Note: Ecosystems may be listed more than once where they are mapped as a combination of polygons, points and linear features

Definitions and methodologies

- This uses information from Measure 6.1.4: “Proportion of threatened naturally uncommon and significantly reduced habitats under protection”.
- The contemporary and estimated pre-human extents of wetlands were mapped at 1:50,000 to a minimum size of 0.5 ha. The historic extent was estimated from the national Fundamental Soil Layers (FSL) database based on soil drainage and other soil properties and refined using a 15m digital elevation model derived from 20 m digital contours.
- The contemporary extent was mapped using 26 Landsat Enhanced Thematic Mapper (ETM+) satellite imagery, and wetland point and polygon data. The data were collated from recent surveys, field work, or photo-interpretation held by local and central government. The list of naturally uncommon ecosystems developed by experts on the basis that they each covered less than 0.5% of the land area of mainland New Zealand.
- The total area of sand dunes has been assessed at regular intervals, and historical estimates of total extent were available for 1911, 1950, 1970s, 1980s, and the 1990s. A current (2008) map of active sand dune extent was developed by DOC using a mix of existing data and recent remote imagery. A list of 71 naturally uncommon ecosystems was created by experts on the basis that they each covered less than 0.5% of the land area of mainland New Zealand. DOC and Landcare Research have produced maps for 33 of them by using pre-existing maps, modelling and interpretation of aerial imagery. Of these, 22 are threatened. Land tenure and protection status were examined using GIS analysis. The wetland maps still need to be ground-truthed in parts of the country (e.g. North Island) and most of the naturally uncommon ecosystem maps have yet to be ground-truthed. As such, the statistics presented here must be interpreted with caution.

Where can I find more information (links)

Ausseil A-G, Gerbeaux P, Chadderton WL, Stephens T, Brown D, Leathwick J 2008. Wetland ecosystems of national importance for biodiversity: criteria, methods and candidate list of nationally important inland wetlands. Landcare Research Contract Report LC0708/158 to the Department of Conservation, Wellington. 174 p.

Holdaway RJ, Wiser SK, Williams PA 2012. Status assessment of New Zealand’s naturally uncommon ecosystems. *Conservation Biology* 26: 619–629.

Johnson P, Gerbeaux P 2004. Wetland types in New Zealand. Wellington, Department of Conservation. 184 p.

Williams PA, Wiser S, Clarkson B, Stanley MC 2007. New Zealand’s historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology* 31: 119–128.

Naturally uncommon ecosystem factsheets:

<http://www.landcareresearch.co.nz/publications/factsheets/rare-ecosystems>

Protecting our places: Information about the national priorities for protecting rare and threatened biodiversity on private land:

<http://www.mfe.govt.nz/publications/biodiversity/protecting-places-information-apr07/index.html>

http://www.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Fresh%20water/wetland-extent.aspx

http://www.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/home/land/rare-ecosystems/sand-dune-extent.aspx

http://www.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/home/land/rare-ecosystems.aspx