



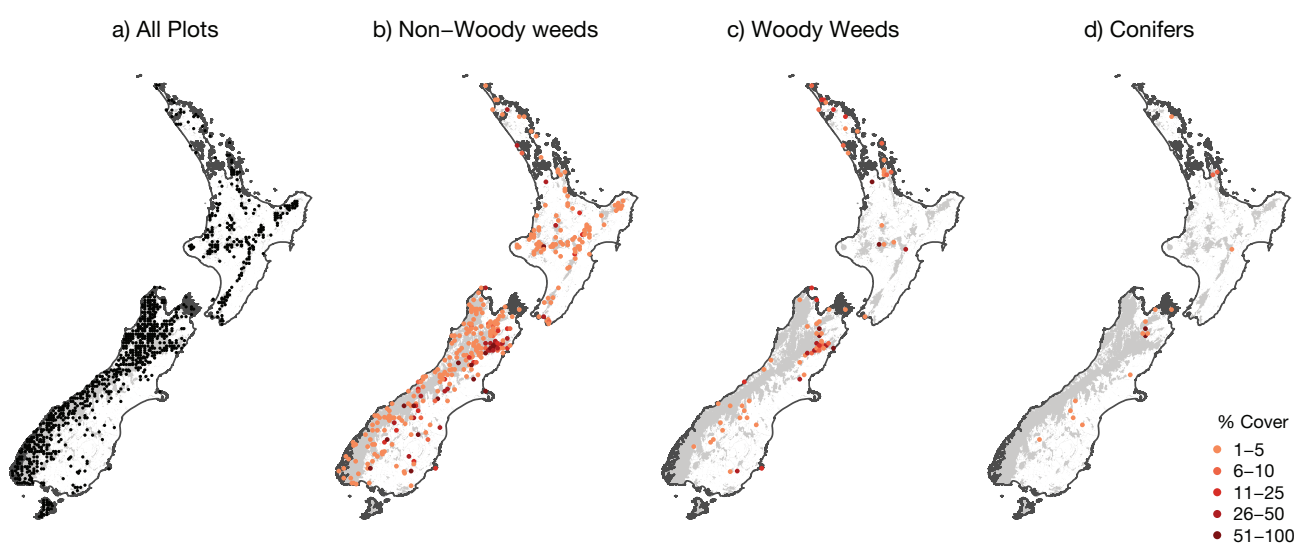
Where do woody weeds, including conifers, occur across public conservation land?

Summary

Non-woody weeds were widespread throughout most public conservation land, but woody weeds were much less widespread – being mostly concentrated in the northern and central North Island and the eastern South Island. Invasive conifers were most prevalent in the eastern South Island, as well as some northern and central North Island locations, and they dominated the cover of some parts of inland Marlborough. As well as competing with or replacing native vegetation, introduced conifers are highly flammable, so their presence has implications for fire risk in these areas.

Main findings

- Non-woody weeds were widespread throughout all public conservation land (present at 37% of sample locations), with the only substantial areas lacking them being in south Westland, Fiordland, and Stewart Island.
- Non-woody weeds were widespread across public conservation land but comprise the greatest proportion of total cover in inland Marlborough and at scattered locations throughout the eastern South Island.
- In contrast, woody weeds were more restricted in occurrence across public conservation land (present on just 8% of sample locations), and were most prevalent in scattered locations in Northland, the central North Island, the eastern South Island, especially in inland Marlborough, and Otago.
- Woody weeds were scarcely represented in large areas of the western North and South Islands and Stewart Island, most of which are higher rainfall areas.
- One group of woody weeds, invasive conifers, (e.g. lodgepole pine, radiata pine, and Douglas fir), were most prevalent in the eastern South Island, but also in some locations in the northern and central North Island.
- Lodgepole pine was the only woody weed that occurred in sampling locations above natural treelines.
- Invasive conifers had greatest cover (some more than 50% of total cover) at locations in inland Marlborough.



Why is this important?

This provides clear evidence to support the view that invasive conifers are a growing problem for management of public conservation land in New Zealand. It's serious enough in areas where they have been long established, but also on public land in northern New Zealand, where radiata pine is invading open areas such as coastal cliffs and landslides, potentially altering how these ecosystems develop. Because these conifers are very flammable they may introduce fire to ecosystems where fire has seldom been present in the past. Moreover, models predict that climate change will cause a greater likelihood of fire throughout much of the range where conifers are present, especially in the eastern South Island. The presence of flammable woody plants in regions that will probably experience more frequent fires could create a feedback of fire promotion, with devastating consequences for biodiversity and for the economy.

Definitions and methodologies

- This uses information from Measure 2.2.1 (“Distribution and abundance of exotic weeds and pests considered a threat – Weeds”) assessed across all public conservation land (Tier One systematic national sampling).
- Vegetation cover was quantified within 919 permanently marked 20 m × 20 m plots at regular sample locations on an 8 km × 8 km grid across all public conservation land.
- The cover of each vascular plant species was assessed in fixed height tiers (< 0.3 m, 0.3–2 m, 2–5 m, 5–12 m, 12–25 m, > 25 m, and as epiphytes) within each plot, with cover quantified by species within each tier in ordinal cover classes (< 1%, 1–5%, 6–25%, 26–50%, 51–75%, 76–100%).
- Each vascular plant species in each plot was designated as native or non-native, and those that were non-native were designated as non-woody (‘non-woody weeds’), woody (‘woody weeds’) and, as a subset of the latter, non-native conifers (‘invasive conifers’), according to the New Zealand flora.
- We summed the covers per plot of all species that comprised the three non-native species groups (non-woody weeds, woody weeds, invasive conifers). These were sums of the covers of all constituent species per plot as the mid-point values (e.g. 15.5% for the 6–25% cover class) across all tiers in which the species occurred.
- We then summed the covers per plot of all species that comprised native species.
- The percentage cover of non-woody weeds was calculated as the summed cover of non-woody weeds divided by the combined summed cover of all species present, expressed as a percentage.
- The percentage cover of woody weeds was calculated as the summed cover of woody weeds divided by the combined summed cover of all species present, expressed as a percentage.
- The percentage cover of invasive conifers was calculated as the summed cover of invasive conifers divided by the combined summed cover of all species present, expressed as a percentage.

Where can I find more information (links)

https://nvs.landcareresearch.co.nz/Content/Recce_FieldProtocols.pdf

<http://nzflora.landcareresearch.co.nz/>

<http://www.doc.govt.nz/Documents/about-doc/role/publications/doc-biodiversity-indicators-landcare-research-2015.pdf>

<http://www.doc.govt.nz/nature/pests-and-threats/common-weeds/wilding-pines/>

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

www.royalsociety.org.nz/climate-change-implications-for-new-zealand/