

THE NZ SHEEP & BEEF SECTOR'S CONTRIBUTION TO BIODIVERSITY AND CARBON SEQUESTRATION

Norton, DA. (1); Buckley HL. (2); Case BS. (2); Pannell J. (2)

1. School of Forestry, University of Canterbury, Christchurch, New Zealand
2. School of Science, Auckland University of Technology, Auckland, New Zealand



NEW ZEALAND'S
BIOLOGICAL
HERITAGE

Ngā Kōwhiri
Tūku iho

National
SCIENCE
Challenges

BACKGROUND

Climate change and the environmental impact of food production is a key modern challenge for farming in Aotearoa New Zealand.

In this study we undertook a desk-top analysis of native vegetation on sheep and beef farms, in order to understand how the sheep and beef sector currently contributes to native biodiversity conservation and carbon sequestration in New Zealand.



RESULTS

Collectively, sheep and beef farms comprise the most extensive land use in New Zealand, accounting for 40% of the total land area (compared to 31% of NZ in the public conservation estate).

Twenty-five percent of New Zealand's native vegetation (2.8 million hectares) and 17% (1.4 million hectares) of all remaining native forest is estimated to be on sheep and beef farms. This is the largest amount of native vegetation present outside of the public conversation estate.

The native woody vegetation forest on sheep and beef farms is particularly important because it typically occurs in those parts of New Zealand with the least remaining native woody vegetation, especially at lower altitudes and in drier regions.

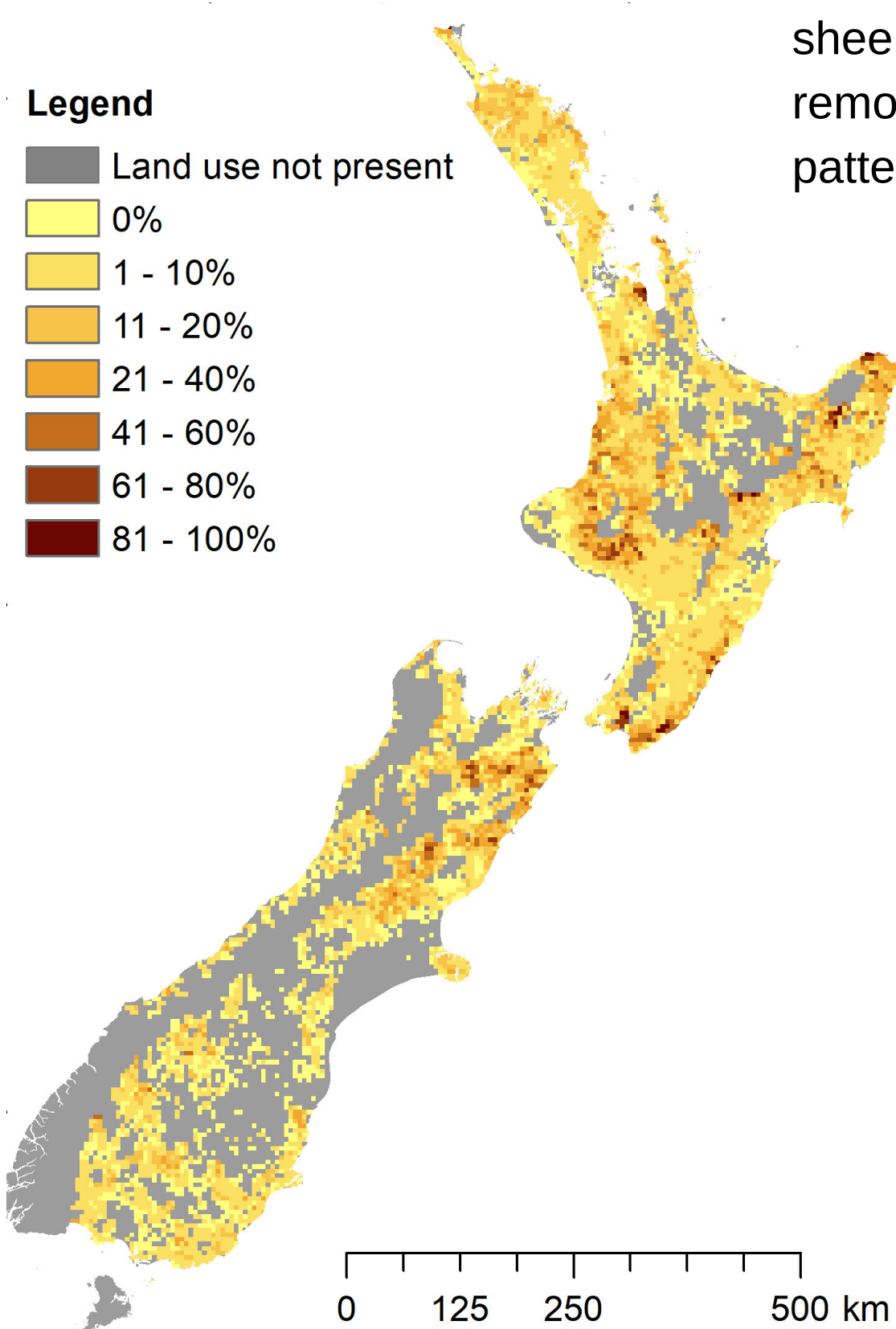
The large amounts of vegetation, and especially native woody vegetation, on sheep and beef farms reflects a range of factors including often steep, more remote country where sheep and beef farms occur, the extensive grazing patterns that characterises these farms, and the values of farmers.

METHODS

Remote sensing data was used to assess the amount and type of native vegetation at the regional and national levels.

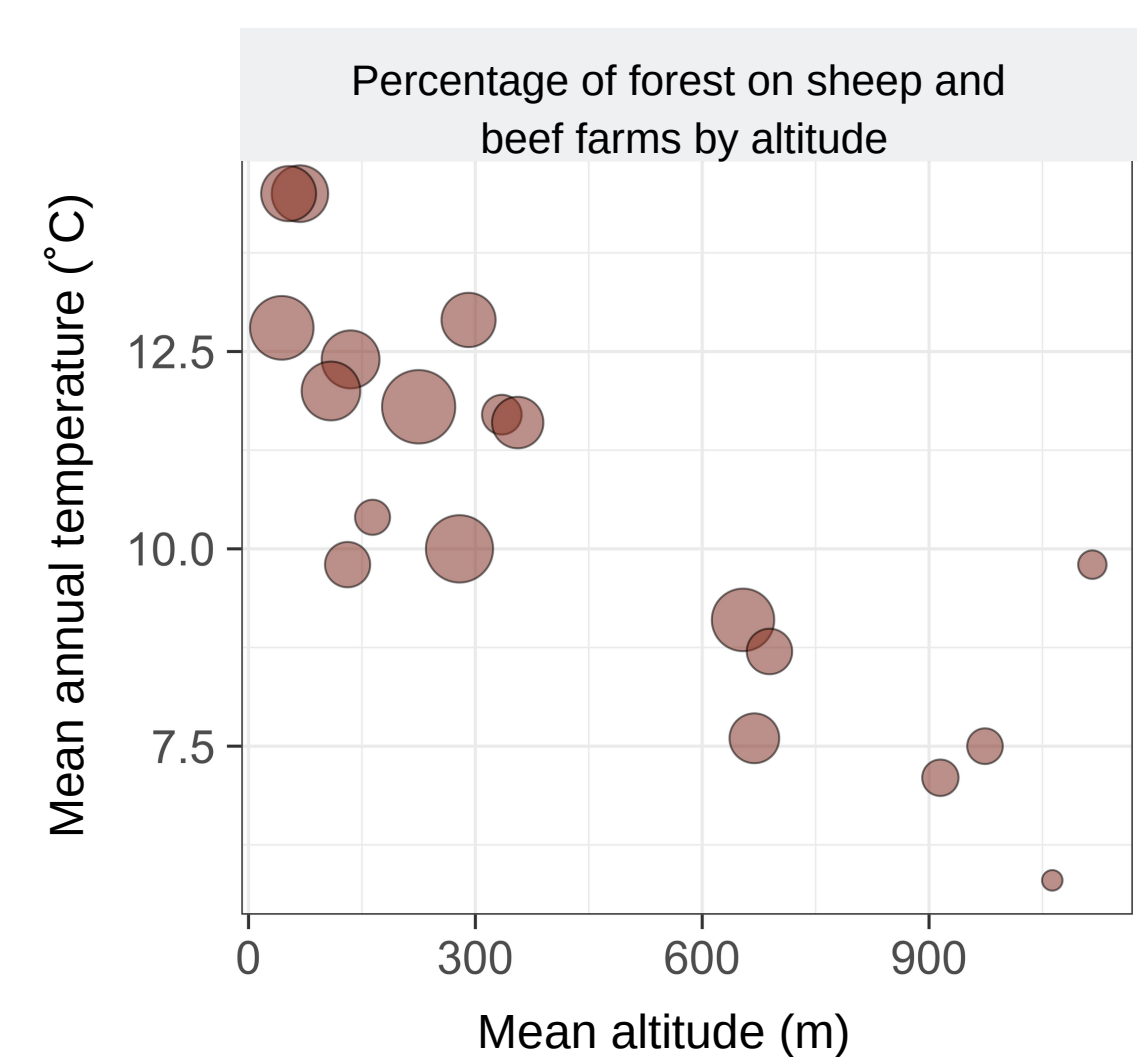
We used a variety of data sets including Agribase, Land Use and Carbon Analysis System, Land Cover Database and Land Environments of New Zealand.

A geographical information system was used to calculate the total area of all native vegetation cover, and of native forest cover, on public conservation land, sheep and beef farms, and other land use types.



The percentage of five square kilometer grid cells of sheep and beef farmland that is covered in native forest.

The percentage of remaining native forest that occurs on sheep and beef farms is greatest in those parts of NZ at lower elevations and that experience higher mean annual temperature.



Percentage of native forest on sheep and beef farms by altitude. The larger the circle, the more remaining native forest that occurs of sheep and beef farms versus other land uses, including public conservation land.

CONCLUSIONS

Native forest on sheep and beef farms is an important resource for supporting on-farm and landscape-level biodiversity conservation, and a source of carbon sequestration in New Zealand, especially in regions where there is relatively little public conservation land. This finding is particularly important in places where there is little native cover remaining, like those in lower altitudes, on more gentle slopes and in drier regions.

These findings contribute to the ongoing improvement of sheep and beef farming and contribute towards Beef + Lamb New Zealand's Environment Strategy.

ACKNOWLEDGEMENTS

Beef + Lamb New Zealand, New Zealand's Biological Heritage and Stacey Bryan.