

This fact sheet covers the impacts of high country farming on native biodiversity.

made from



Merino FIBRE

BIODIVERSITY

WHAT IS BIODIVERSITY?

The New Zealand Merino Company, in partnership with the Ministry for Primary Industries Sustainable Farming Fund and the University of Canterbury, has been studying ways to measure the impacts of high country farming on native biodiversity.

Native biodiversity refers to the plants and animals that occur naturally in a region. A high level of biodiversity is an indicator of a healthy ecosystem and environment.

WHY IS BIODIVERSITY IMPORTANT?

- Provides shelter for livestock (Tussocks, Matagouri, low shrubs)
- Provides quality feed options
- Ensures clean water for drinking
- Enables marketing on the basis of sustainability
- Improves overall sustainability of farming systems
- Helps to ensure the soil, water and ecosystem cycles are functioning
- Creates micro climates which provide feed in times of adverse climatic conditions

HOW DOES THIS EFFECT HIGH COUNTRY FARMING?

High country farms have a mix of cultivated flat land, downlands & lower hill country and high steep country. This means that the challenge for the grower is to balance the capabilities of these land types to meet the nutritional needs of their animals. Getting the balance right means:

- There are a range of grazing opportunities
- Areas are allowed to be rested to recover
- Overgrazing can be prevented
- Native species can persist long-term

Getting the balance wrong can mean:

- Vigorous introduced species take over if there is no-grazing or too little grazing
- Tussocks and most native plant species are eliminated if grazing intensity too high

WHAT DID WE DO?

BIODIVERSITY MONITORING PROGRAMME

AIM:

- Assess high country ecosystem response to management inputs and species invasion
- Understand sustainability and resilience of high country ecosystems
- Identify trends in native biodiversity

METHOD:

- Land-cover monitoring
 - Species abundance quantification
 - Photo-points
- Aquatic monitoring
 - Water chemistry analysis e.g pH, nitrogen, phosphorus, turbidity
 - Invertebrate fauna quantification

RESULTS:

- Good levels of biodiversity and land-cover abundance over a range of areas with little change though time
- Rivers and streams healthy – higher water quality compared to more intensive farming systems

BIODIVERSITY AND SHEEP HABITAT USE STUDY

AIM:

- Determine daily activities and habitat use of Merinos in high country summer grazing blocks
- Understand impact of activity on biodiversity and land-cover of these blocks

METHOD:

- 16 GPS collars were fitted to Merino ewes to track their movements
- Data recorded every 15 minutes; date, time, latitude, longitude, bearing and speed of movement
- Observation days to monitor sheep movements and activities
- Assessment of quantified and land-cover abundance

RESULTS:

- Merinos exhibit daily activity patterns
 - Morning grazing, midday resting, afternoon/early evening grazing, night camping
- Different habitat use for different activities
 - Grazing = flat to low slopes in short tussock grassland
 - Resting = riverbeds and short tussock grassland
 - Night camping = higher altitudes than rest and graze
- Preference of different vegetation type for different activities
 - Short tussock grassland for grazing
 - Riverbed and short tussock grassland for resting
 - Tall tussock grassland and Native Mix for night camping
 - Grey scrub, alpine gravel and rock and the herbfields were avoided
- Different altitudes were preferred for different activities
 - Rest = lower
 - Graze = mid
 - Night Camp = higher

SUGGESTED FURTHER WORK

Continue monitoring land-cover abundance in different areas

- Photo-points of same location at same time each year
 - Allows changes to be easily interpreted over time
- Select and monitor indicator species

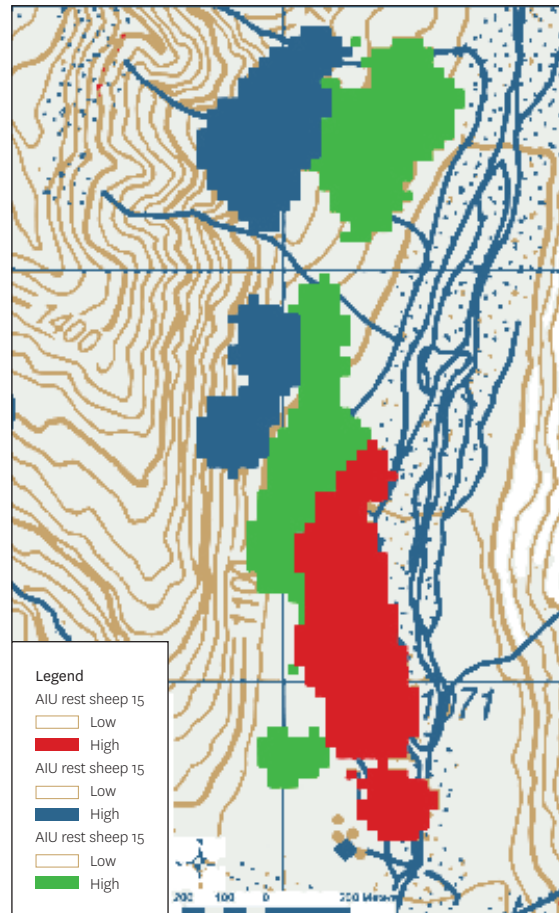
Continue monitoring river and stream health to allow changes over time to be observed

Account for Merino activity patterns and habitat use in farm management planning

DISCUSSION

WHAT DOES ALL THIS MEAN FOR HIGH COUNTRY FARMERS?

Farmers have the opportunity to maintain and where possible improve native biodiversity on farmland. Extensive farming practices, as carried out on high country farms, are considered to have a positive impact on native biodiversity when managed appropriately. By grazing tussock grasslands to an intermediate level, exotic species are kept under control and native species are maintained.



This map shows areas the sheep used intensively and how these varied for each of the three activities: Resting (red), Grazing (green), Night Camping (blue).

There is clearly an altitudinal difference in habitats used for each activity which is linked to differences in vegetation. Impacts on each habitat will vary with activity and knowledge of how individual habitats are used is important for sustainable management.

The study results show that Merino sheep exhibit daily activity patterns that cause them to make use of a variety of habitat options available. With this understanding it is possible to ensure a grazing regime and subdivision policy is maintained that provides benefits in terms of sheep health and welfare, production, and farm sustainability.

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