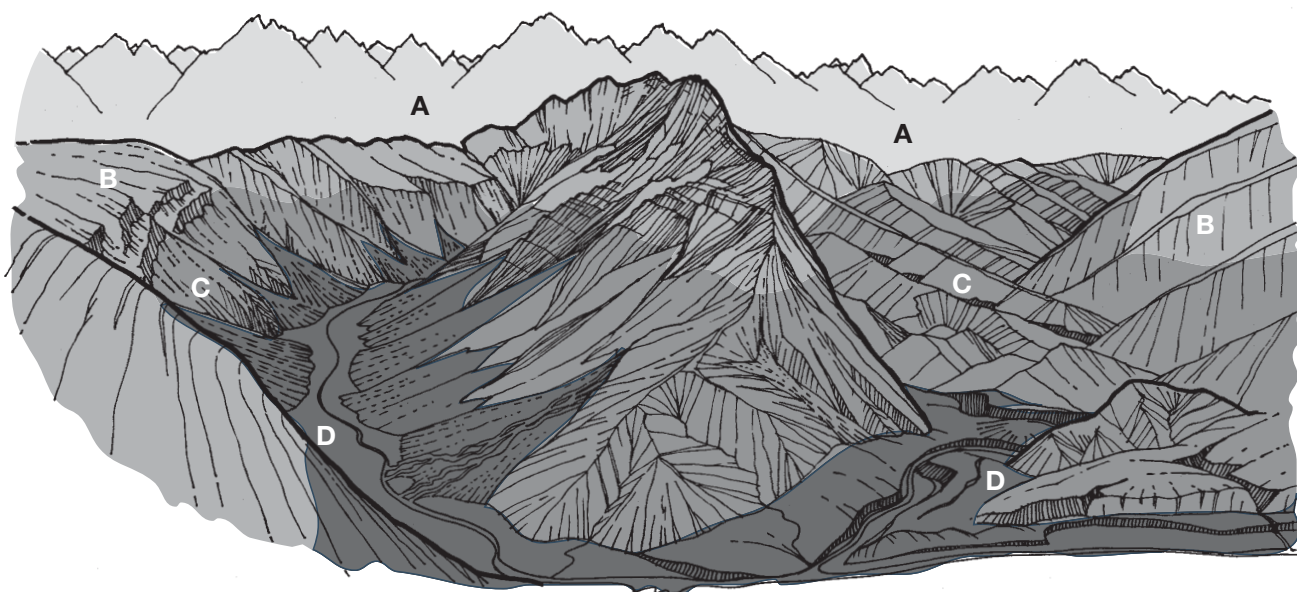


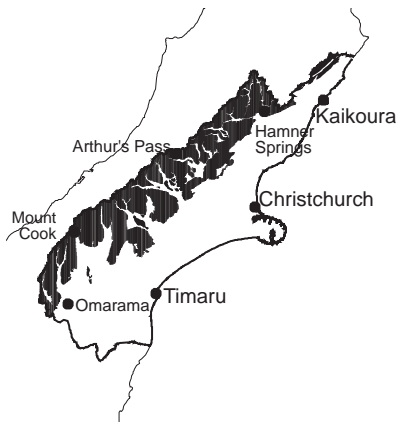
Appendix SCN1: Soil environment group overviews

- (a) High country: moist mountain ranges**
- (b) High country: dry mountain ranges**
- (c) Inland basins and major river valleys**
- (d) Soft rock hill country & downs**
- (e) Hard rock hill country**
- (f) Kaikoura coastal zone**
- (g) Banks Peninsula**
- (h) Canterbury Plains**

(a) High country: moist mountain ranges



| Land form | Resource composition (biota, soil, water) | Natural stresses |
|--|---|---|
| A Main divide and associated ranges: steep to precipitous | <ul style="list-style-type: none"> • Largely indigenous vegetation: alpine and sub-alpine scrub, tussock grasslands, and beech forest • High rainfall > 2000mm • Skeletal soils: yellow-brown earths. High organic matter in thin topsoil • Extensive scree, snow, ice | <ul style="list-style-type: none"> • Very cold temperatures restrict rate of recovery • Very high intensity rainfall • Freeze / thaw activity • Snow, ice, avalanche • Tectonic uplift • High winds • High natural erosion rates |
| B Upper mountain slopes > 1200m: steep to very steep | <ul style="list-style-type: none"> • Largely indigenous vegetation: tall tussock, alpine / subalpine scrub, fellfield, scree • Rainfall 1000-2000 mm • Yellow-brown earths; range from intact to severely eroded, relatively infertile, phosphorus and sulphur deficient • Deep regolith, significant storage for baseflow | <ul style="list-style-type: none"> • Freeze / thaw activity • Strong winds • High intensity rainfall • Snow • Low temperature restricts rate of plant recovery • Moderately high rates of natural erosion: wind, water & localised channel erosion (significant source of sediment) |
| C Lower mountain and hill slopes <1200m: moderately steep to very steep | <ul style="list-style-type: none"> • Short and snow tussock grassland, matagouri, manuka, kanuka, beech, broad-leaved forest, herbs, remnant totara • Rainfall 700-2000 mm. • Yellow-brown earths - large variations in properties due to rainfall gradient; relatively low pH in higher rainfall areas. • Deep regolith, significant storage for baseflow, significant sediment source | <ul style="list-style-type: none"> • Freeze / thaw activity • Wind and water erosion • High intensity rainfall • Strong winds |
| D Minor valley floors, fans, terraces, floodplains and colluvial side slopes: flat to rolling | <ul style="list-style-type: none"> • Short and red tussock grassland with matagouri, manuka-kanuka, beech, broad-leaved forest remnants. Introduced pasture species, weeds, some hieracium • Rainfall 1000 mm • Yellow-brown and yellow-grey earths and recent soils (shallow, low water holding capacity). All sulphur deficient; side-slope soils phosphorus and sulphur deficient. | <ul style="list-style-type: none"> • Cold winter temperatures • Deposition zone - from erosion above (e.g., debris avalanches) and flooding • Occasional moisture stress • Strong winds • Streambank erosion |



Location

The high rainfall Main Divide, with adjoining moist mountains that span the length of the region e.g. Glynn Wye, Craigieburn and Ben Ohau Ranges.



mountain beech-kea-
moist mountain ranges

Nature

- Steep mountains with extensive bare rock, bluffs and scree on high slopes. Includes the most dramatic mountain chain in NZ.
- Alpine herbfields, shrublands and grasslands clothe upper slopes, snow tussock lower down, with podocarp and beech forest below 1200m. Kea are at home.
- Vegetation of wettest and highest mountains is largely intact. Remnant, induced and depleted, tussock grasslands & shrublands on less wet and lower slopes.

Resource Values

- Main Divide highly valued for wilderness & naturalness, water yield, tourism, recreation & for its wairua (spiritual value).
- Forested and tussock grassland clothed mountains have high nature conservation, landscape, recreation and tourism values.
- Grasslands are important for pastoral production.

| Induced changes/disturbances | Effects/trends | Key issues for soil conservation |
|---|---|---|
| <ul style="list-style-type: none"> • A few roads & tracks • Wild animal grazing • Possum browsing | <ul style="list-style-type: none"> • Localised loss of vegetation from wild grazing animals (mainly thar). Signs of recovery with recent targeted management • Localised forest damage by possums | <ul style="list-style-type: none"> • Erosion risk: earthworks, extensive grazing (wild animals), vegetation clearance |
| <ul style="list-style-type: none"> • Wild animal grazing • Limited, extensive sheep grazing • A few roads & tracks • Main skifield zone | <ul style="list-style-type: none"> • Reduced grazing (due to economics and Soil and Water Conservation Plans); destocking • Some modification of tussock grasslands; increase in shrubby and unpalatable species • Long term soil nutrient decline | <ul style="list-style-type: none"> • Erosion risk: earthworks, vegetation clearance, extensive grazing (wild animals), burning • Soil quality: nutrient decline if grazed. |
| <ul style="list-style-type: none"> • Farm tracks • Extensive grazing, some developed areas (mainly on Tengawai & Hurunui soils) • Vegetation burning • Moderate rabbit-proneness in dry areas • Afforestation/forest harvesting • Possums in indigenous forests | <ul style="list-style-type: none"> • Historic vegetation changes from forest to indigenous grassland, leading to a loss of biomass and organic matter (evidenced by exposed sub-soils) • Change to introduced pasture species in developed areas. Also some reversion to scrub (manuka, kanuka, matagouri, bracken fern) in wetter areas • Overall trend to lower stature plants with shallower rooting systems • Decline in nutrient status in undeveloped areas • Wilding spread • Possum damage to indigenous forests, TB risk | <ul style="list-style-type: none"> • Erosion risk : earthworks, vegetation clearance, extensive grazing, • Soil quality: nutrient decline • Pest management (rabbits) • Reduced system resilience to extreme conditions/disturbance (loss of biomass and SOM) <p>Related issues:</p> <ul style="list-style-type: none"> • Change in landscape / natural character (wilding pines) • Reduced indigenous biodiversity |
| <ul style="list-style-type: none"> • Moderate rabbit proneness • Extensive grazing • Cultivation for pasture establishment and renewal • Afforestation/forest harvesting • Vegetation burning | <ul style="list-style-type: none"> • Change from tussock, shrub to introduced pasture species. Pasture species also widespread throughout indigenous grass and shrublands • Exposure of soils to wind • Pastoral development leading to increased soil organic matter and soil nutrient status • Wilding spread | <ul style="list-style-type: none"> • Erosion risk : cultivation, rabbits • Pest management (rabbits) <p>Related issues:</p> <ul style="list-style-type: none"> • Change in landscape / natural character (wilding pines) |