
Review: Vegetation of the Southern Alps, New Zealand

Source: *Journal of Ecology*, Vol. 1, No. 2 (Jun., 1913), pp. 144-145

Published by: British Ecological Society

Stable URL: <http://www.jstor.org/stable/2255692>

Accessed: 25-06-2016 02:18 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://about.jstor.org/terms>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



British Ecological Society, *Wiley* are collaborating with JSTOR to digitize, preserve and extend access to
Journal of Ecology

forming a nearly pure *Corynocarpus* association, some of the trees 6 feet in circumference and probably 200 years old; where *Corynocarpus* has not established itself on this beach, the latter is covered by *Muehlenbeckia complexa*, and on the slopes there grow various shrubs together with some herbaceous plants. On beach 5, *Muehlenbeckia australis* adopts the habit and habitat affected by its congener *M. complexa*, scrambling over the horizontal stones instead of climbing over trees in its usual manner.

On the fans which have covered up much of the two oldest beaches, the oldest material supports pure woods of *Corynocarpus* (karaka), often with a pure fringing wood of *Myoporum*; on the seaward and exposed portion of the karaka grove the action of the wind bunches the uppermost leaves and branches together, while they regain their normal habit as they approach the hills. The younger alluvium supports a dense sward of the indigenous grasses *Danthonia pilosa* and *Microlaena stipoides*, and various naturalised grasses and clovers. The youngest fan-material is chiefly covered with the naturalised thistles *Cnicus lanceolatus* and *Silybum Marianum*, the latter often forming impenetrable thickets acres in extent. The rare *Muehlenbeckia Astoni* grows on the talus slopes and shingle fans; it is remarkable for the regularity of the angle of branching (about 120°) and in being the only New Zealand species with an erect habit of growth.

VEGETATION OF THE SOUTHERN ALPS, NEW ZEALAND

Laing, R. M. "Some notes on the botany of the Spenser Mountains." *Trans. New Zealand Inst.*, **44**, 1912, pp. 60—75.

The Spenser Mountains (172—173° E., 42° 10'—42° 30' S.) form a little-known portion of the Southern Alps, New Zealand (South Island), lying at the headwaters of the Waiau, Clarence, and Wairau rivers, and extending for some 25 miles between the saddle of the Ada (3300 ft.) and Mount Franklin (7670 ft.). The peaks are of a nearly uniform height, with an upward tendency towards Mount Franklin at the northern end of the chain. In the valleys of the Waiau and the Clarence rivers there lie two glacier lakes, Lake Guyon and Lake Tennyson, due to banking-up of the waters by morainic deposits; indeed the whole country gives evidence of heavy glaciation. The Ada stream runs through a wide glacial valley, and there has been a large terminal moraine across the Waiau below its junction with the Ada. The country becomes progressively drier in passing eastward from the Waiau to the Wairau valley, the latter appearing as dry as the region in the neighbourhood of Mount Arrowsmith (the vegetation of which was described by Cockayne and Laing, *Trans. N. Z. Inst.*, **43**, p. 345); doubtless the westerly rains pass over the saddle above Lake Tennyson into the fertile Ada valley but are unable to penetrate into the country at the headwaters of the Wairau.

The climatic conditions and general vegetational characters appear to resemble those of the Mount Arrowsmith region; both districts present the same general physiographic features and similar plant associations of rock, river-fan, river-bed, tussock steppe, bog, lake, forest, fell-field, etc., but certain subassociations of the Arrowsmith region were not observed in the Spenser Mountains. Dwarf *Carmichaelia* spp. were seen only in the Waiau bed, but the accompanying species of the Mount Arrowsmith district (e.g. *Veronica pimeleoides*, *Muehlenbeckia ephedroides*) were not found in the more northern area, while the latter is also remarkable for the complete absence of forest trees (excepting species of *Nothofagus*, *Nothopanax*, *Gaya*, and *Pittosporum*) and of any of the species forming the usual coastal forests of New Zealand; the subalpine scrub is also poorly represented. English pasture grasses have largely displaced the native plant-covering along the river valleys, while the original tussock steppe and the forest area have been much altered by burning.

The author describes (1) the *Nothofagus cliffortioides* forest of the Ada valley and (2) the *Sphagnum* bog on the Ada saddle, which differ considerably from the corresponding associations observed in the Arrowsmith district. (1) The river flats have to a large extent been denuded of forest, and that on the sides of the valley has been much burnt and run through by stock. At its margin the ground-floor is covered to some extent by introduced herbage, though native plants occur—species of *Brachycome*, *Erechtites*, *Hydrocotyle*, etc. Further in, there are young beeches,

showing that the forest tends to replace itself, and among them are often species of *Oreomyrhis*, *Asperula*, etc., and many introduced weeds; here the largest beeches have a diameter of only about 6 inches, the trees doubtless replacing the primeval forest which was destroyed by fire about 30 years ago; the forest floor where otherwise bare is covered with beech leaves spread over a rich brown humus fairly free from stones, and abundant on it is *Veronica vernicosa*, with species of *Epilobium* and *Helichrysum* in more open spaces. On passing into the forest the introduced grasses disappear, the floor becomes damper and moss appears on it, with young beeches growing through; and as we reach the portions which cattle have not destroyed, the undergrowth becomes denser, while *Nothofagus cliffortioides* is mixed with, but never altogether displaced by, two other species of southern beech (*N. Menziesii* and *N. fusca*). The upper limit of the forest is about 1000 ft. above the bed of the valley, and the sides are often so steep as to be swept by stone avalanches which carry away the beech trees—their place is then taken by plants of the shingle-fan, but the beeches grow into this vegetation from the sides, and probably in course of time will reoccupy the whole area. (2) The upper portion of the Ada saddle is a flat open valley with English pasturage (cocksfoot and Yorkshire fog grasses, clover, sorrel, etc.) and southern beech (*N. cliffortioides*) forest similar to that described for the Ada valley some 500 ft. below. The head of the saddle is occupied by a *Sphagnum* bog about 200 yards square which divides the eastern and western watersheds and has a pond in its centre; the edges are fringed by species of *Dracophyllum*, *Podocarpus*, *Phyllocladus*, *Dacrydium*, etc.

EFFECTS OF IMPORTED ANIMALS ON VEGETATION, NEW ZEALAND

Aston, B. C. "Some effects of imported animals on the indigenous vegetation."
Proc. New Zealand Inst., **44**, 1912, Part i, pp. 19–24.

The author describes the ravages committed by imported animals on the native vegetation in various parts of New Zealand. Special attention is given to three areas in which the effects of such animals are particularly marked. Two of the areas are valleys consisting of extensive river-flats walled in by steep and heavily bushed mountains, the only natural outlet being a long winding gorge where the river issues into the plain. These valleys form natural sanctuaries for escaped cattle, wild pigs, horses, and rabbits, and their floras are rapidly changing in character owing to the attacks of the animals, which because of difficulty of access to the valleys are not kept in check by man. One effect of imported animals is that some of the more edible plants become restricted to situations beyond their reach, hence a species which is able to adapt itself to any station may by compulsion be restricted to one. For instance, *Lepidium oleraceum* has been eaten out along the Wellington coast and is now found only on inaccessible rock-faces; similarly the shrubby *Senecio Greyii*, though able to grow on any soil, has in some localities become limited, probably owing chiefly to goats, to situations which would lead the ecologist to class it as a chasmophyte; while a third common plant of littoral rock-faces is the grass *Agropyrum scabrum*, which is greatly relished by sheep and is consequently being eaten out on the central volcanic plateau of the North Island—in one district this species assumes the habit of a tussock-grass and is then better able to resist close cropping. Many interesting details are given by the author regarding the depredations of grazing animals on the vegetation of the sea-coast; for instance, in one locality the cattle laboriously drag themselves through the mud to reach the *Samolus repens* which covers the estuarine mud-flats.

Changes in the indigenous flora are also being brought about by means of the spread of exotic species the seeds of which are distributed by imported animals, especially by blackbirds, rats, and sheep. On extensive flats at an elevation of 3000 to 3500 ft., covered by pumice in which rabbits can readily burrow and of which they have taken possession in enormous numbers, it is difficult, owing to the ravages of these animals, to say what the original flora has been; apparently all the finer grasses have been eaten out and exterminated, and the rabbits have taken to attacking plants elsewhere immune from their depredations—for instance, piles of the leaves of shrubby *Veronicas* are seen near the bushes, the rabbits having nibbled the stalks and left the blades, while even harsh grasses like *Festuca rubra* are sometimes attacked, and the sole surviving native grass