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AN ECOLOGICAL STUDY OF A CHIONOCHLOA POPULATION

A thesis presented in partial fulfilment of the requirements
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The morphologically variable population of Chionochloa tussocks growing on the summit of Mt Kaiparoro are shown to be hybrids between C. rubra and C. flavescens. This was established by comparing the pattern of variation in three vegetative characters of the Kaiparoro population with that of the parent species. Six sample populations were used for this purpose. Four populations represented different positions along the full range of morphological variation in the Kaiparoro tussocks, and the remaining two typified the parent species as they are found at their respective type localities. Each population consisted of 100 ramets, representing 50 genotypes or tussocks. A transplant experiment involving the four Kaiparoro populations indicated that the morphological variation was mainly under genetical control.

The distribution of the Kaiparoro hybrids correlates with soil oxygen diffusion rates. To measure these a soil oxygen diffusion meter with a platinum electrode was constructed. The Kaiparoro soil oxygen diffusion rates are in the range usually critical for plant growth. Aeration differences between the four sites examined varied over three sampling dates but the relative site levels remained constant. The differences were largest during the wettest seasons.