Examining the Relationship between Biodiversity and Land Management in mid-altitude tall Tussock Grasslands

Katherine Dixon¹, Peter Whigham¹, Katharine Dickinson², Grant Norbury³

¹Spatial Information Research Centre
University of Otago, Dunedin, New Zealand,
Phone: +64 4 79-7391 Fax:+64 3 479-8311
Email: kdixon@infoscience.otago.ac.nz
pwhigham@infoscience.otago.ac.nz

²Botany Department
University of Otago, Dunedin, New Zealand
Phone: +64 3 479-7577 Fax: +64 3 479-7583
Email: Kath.Dickinson@planta.otago.ac.nz

³Landcare Research
PO Box 282, Alexandra, New Zealand
Phone +64 3 448 9930 Fax: +64 3 448 9939
Email: @Landcareresearch.co.nz

Presented at SIRC 2004 – The 16th Annual Colloquium of the Spatial Information Research Centre
University of Otago, Dunedin, New Zealand
November 29th-30th 2004

Agricultural expansion is a major threat to the indigenous biodiversity of New Zealand’s tussock grasslands. Options for integrating biodiversity conservation with agricultural management is a topic that requires further research. This talk presents a subset of the results from a doctoral study that investigated the relationship between land management and biodiversity within the tall tussock (Chionochloa rigida) grasslands of mid-altitude eastern Central Otago, New Zealand.

It was hypothesised that, in mid altitude tall tussock grasslands, limited modification resulting from land management could result in increased levels of indigenous biodiversity. A second hypothesis proposed that there would be a threshold of modification beyond which levels of indigenous biodiversity would rapidly decline. Thirdly, it was predicted that the spatial scale at which these hypotheses were tested would influence the results attained.

Surveys of soils, plants, invertebrates and common skinks (Oligosoma Leiolopisma sp.) within ten study sites of similar physiographic features but different land management histories were undertaken. Indices ranking the study sites according to modification were created. The relationship between the estimated intensity of modification and the abundance and diversity of the biotic groups at a range of spatial scales is presented.

**Keywords and phrases:** biodiversity, tussock grasslands, private land, spatial scale, agriculture