



*Gingidea grisea*, Shag Point Conservation Area, June 2004 – *John Barkla*

## **OUR GOLDEN LANDSCAPES:**

### **History of the development and use of our tussock grasslands**

Summary, 2004 Hocken Lecture

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Information is reviewed from the time grasses first appeared in the New Zealand fossil record, in the Eocene, ~40 m.y.a., to the present. Grassland became widespread in the late Tertiary, as a result of mountain-building associated with the Kaikoura Orogeny and was most extensive during the late Otiran glaciation and early post-glacial period. Contracting through post-glacial times, it was restricted by 2500 yr BP largely to the alpine zone and the interior basins of the South Island, but had a presence in most regions. Grassland expanded 2500-1500 yr ago through **natural fires** at 500-2000 yr intervals in the drier interior of the South Island and locally in the North Island, until fires lit by the first human settlers (**Polynesians**) about 700 yr ago; its incidence increasing about ten-fold. Indigenous grassland thus consolidated rapidly in the interior of both islands and reached its greatest extent at the time of European settlement in the 1840s.

**Pastoralism on all the Crown land in the South Island high country rain-shadow region** began in the 1850s, with an “eruptive phase” of “**exploitative**

**pastoralism**" involving heavy grazing by mammalian stock, a new phenomenon, plus frequent uncontrolled burning. Together, these practices adversely impacted on the grassland ecosystems. Early concern for these pastoral practices (John Buchanan, 1868) was followed by frequent reiterations by scientists and others, in relation to the depleted condition, particularly of the less responsive grasslands. These concerns will be briefly outlined: 1920 (Alf. Cockayne; Commission on Canterbury Pastoral Runs); 1912 (Donald Petrie); 1919 (Leonard Cockayne); 1920 (Commission on the Southern Pastoral Runs); 1922 (Geo. Thomson); 1938 (Vic. Zotov); 1940 (Sheep-Farming Industry Commission); 1945 (Harry Gibbs & Jim Raeside; Ken Cumberland; Royal Commission on the Sheep-farming Industry); 1954 (Tussock Grasslands Research Committee); 1956 (Lucy Moore). The last two led to initiation of overdue **autecological studies** of snow tussock species which distinguished between tolerances to burning (several positive effects), grazing (detrimental), and combined (usually highly detrimental): Kevin O'Connor & Allison Powell (1963); Alan Mark (1965a,b,c,d, 1968); Ian Payton & A. Mark (1979); I. Payton et al. (1986).

The degrading effects of pastoralism continued to be highlighted by scientists: (Henry Connor 1964, 1965; K O'Connor 1981; K O'Connor & P Harris 1991; Phil. McKendry & K O'Connor 1990; Les Basher et al. 1990; Marta Treskonova 1991; Chris Kerr 1992, who referred to a 'major systems failure'; A Mark 1994). These culminated in the "South Island High Country Review" generally referred to as the "Martin Report" (Martin et al. 1994), commissioned by the Ministers of Conservation, Environment and Agriculture (and contributed to by Mike Floate et al. 1994), which confirmed the generally deteriorated condition of the rangelands, particularly the 80% which 'receive no inputs

Land degradation continued despite periodic legislative responses: **Soil Conservation & Rivers Control Act 1941**, established catchment boards and subsidised assistance to implement run conservation plans while the **Land Act Amendment 1948** gave lessee run-holders much greater security of tenure. The serious absence of baseline reserves has been corrected only recently: the first were small scientific reserves at Maungatua (1969; facilitated by two adjoining run-holders) and Black Rock (1970) in Otago. Pastoral farming was permitted in Lindis Pass Scenic Reserve (1976) and the Nardoo proposal on Waipori Station was truncated by the Land Settlement Board, contrary to the Ombudsman's recommendation. The **Resource Management Act 1991** promoted sustainable management of natural and physical resources (with the Otago Regional Council issuing a "Code of Practice for Vegetation Burning in Otago" in 2000).

Most recently, the **Crown Pastoral Land Act 1998** appears to be more effectively addressing the complex issues, facilitating high country lessees to initiate a review of their tenure, and free-hold the 'productive' land on their runs while relinquishing to the Crown, land with 'significant inherent [conservation/recreation] values. Government also retains discretion on certain farming practices on its leasehold land. Described by initiating Minister Denis Marshall as a 'win-win' situation, tenure review is predicted to add >1 million ha of non-forested ecosystems to the South Island conservation lands and contribute significantly to the protection of our indigenous

temperate grasslands; referred to as ‘the world’s most beleaguered biome.’ As of March 2004, 173 of the 306 pastoral leases (of 1998) are in the tenure review process, 24 have been completed and 3 have been purchased outright (Camberleigh in Otago; Birchwood in South Canterbury). Molesworth Station, the country’s largest (180,000ha), will be transferred from LINZ to DoC, and become a high country park in July 2005, with cattle farming continued under licence by Landcorp, as at present. By 2002, some 12% of our indigenous grasslands present in 1840 (the baseline) have been formally protected, compared with 4.6% for the world. Recently described by Alan Mark and Katharine Dickinson (2004) as the “*South Island high country in transition*” the current tenure review represents the largest single land transfer exercise and is predictably, history in the making. It should finally and most effectively address the serious issue of land degradation in the vulnerable but valuable South Island high country while redressing the serious deficiency in representation of indigenous grasslands in our rain-shadow protected areas system. Assuming fulfilment of the present government’s policy of a series of high country parks and reserves, the central-eastern South Island tussock grasslands and associated mountain lands will become readily available for use and enjoyment by the public while also benefiting them with the important ecosystem services provided, especially soil and water conservation and particularly the production of usable fresh water from the upland snow tussock grasslands, for a wide variety of human needs.

HOCKEN LECTURE 2004

# OUR GOLDEN LANDSCAPES

An historical perspective on the ecology and management of our tussock grasslands and associated mountain lands

**Alan Mark** FRSNZ



Thursday 20 May 5.30pm  
Castle One Lecture Theatre  
University of Otago  
All Welcome

