

## Meeting & Trip Reports

20 July, Geoff Rogers: *Otago in the time of the moa*. Talk report

Anon

Landscape history is a science low on data and high on speculation, with some vivid and confident pictures and propositions erected from the slimmest of data packages. Trawling carefully through the most controversial topics such as the extent of 'natural' or pre-human tussock grassland, Geoff avoided dogmatic and detailed pronouncements on landscape settings with liberal use of "maybe" and "possibly". He availed himself of a wide suite of research tools and data to erect generalised ecological theories on why woody plants would have dominated most Otago vegetation, the patchy and infrequent pattern of natural fire, co-evolutionary relationships between extinct birds and plant traits, and the adaptive selection of a specialist guild of dryland moa.

He concentrated on the 10 000 years before humans arrived 750 years ago. He described how samples of radiocarbon-dated charcoal, pollen diagrams with and without a charcoal record, and relict patches of living trees and shrubs can be used to reconstruct the pattern of vegetation and fires. It was likely that various facets of dryland forest were widespread on the hill-country and range slopes, being composed of mixes of drought-tolerant beeches, celery pine, Hall's totara, ribbonwood, lacebark, fierce lancewood, kowhai, marbleleaf, and kohuhu. Scrub of many small-leaved species was extensive on basin floors, gorges, and other rocky outcrops. The light-canopied forest and scrub had rich grass and herb understoreys. Straight grassland was quite restricted, even above the treeline, where shrubs competed successfully with the snow-tussocks to produce extensive tussock-shrubland.

All the evidence is that pre-human fire was highly infrequent and patchy and there are only rare instances where those fires generated a sustained rise in tussock grasses in secondary vegetation, benefiting from their fire-adapted traits. Although all of Otago is fire-prone, at least in summer, places with woody vegetation rich in phenolic compounds such as inaka, mountain celery pine, Hall's totara, and bog pine were the primary sources for the breakout of fire. Paradoxically perhaps, wetlands appear to be particularly fire-prone, especially upland peat bogs, because of their phenolic-rich vegetation.

The palaeontologists have been busy, too. They are not only examining fossil bone deposits but collecting plant seeds, leaves, and twigs to get a clearer picture of the habitat relationships of extinct birds of eastern South Island. Their latest discoveries tell us that a scrub-adapted guild of moa of broad-breasted and squat proportions of 150 kg weight and only 1 m tall at the shoulder were specialised to dryland scrub. One species was a specialised wood (twig) eater, with secateur-like capability of clipping branchlets up to 15 mm diameter. Another was a grazer on softer herbaceous ground-hugging plants. Their primary predator, *Harpagornis* or Haast's eagle, was specialised to hunt larger birds above about 3 kg body weight within glades and other openings of eastern South Island dryland scrub and low forest.

There wasn't too much back-peddling in the question session, despite searching questions. Alternatively, it threw-up interesting discussion on how fire- and mammalian-browse-adapted traits in plants from Australia might have been inherited by the New Zealand flora from long-distance dispersal. Matagouri, the only native plant with true spines is one such candidate as a comparatively recent immigrant. Lignotubers – the underground swollen basal part of stems used as storage organs as a survival mechanism in times of disturbance (fire) or climatic extremes - are rare in the New Zealand flora but a frequent plant trait on dry, fire-prone continental landmasses.

### 23 July, Tunnel Beach field trip.

Allison Knight

A very low tide after a full moon is a perfect time to explore Tunnel Beach, and Graeme Loh made the perfect guide to all the extra sights. As well as the fairy prions (apologies for calling them fairy terns in the last newsletter) there were white-fronted terns and rock pigeons nesting on the cliffs. Embedded part way down the sandstone cliff was a partly exposed fossil whale, while on the wind-eroded top were exposed fossils of shells including cardiocrinum, scallop and the gizzard stones of ancient seabirds.

A closer look at the coastal turf revealed a mat of *Leptinella dioica*, the first flower of spring on *Samolus repens*, the sea primrose, and the last fruit of autumn on *Selliera radicans*. *Atriplex buchananii* was also in flower while the *Salicornia australis* and the *Disphyma australe* (native ice plant) on the exposed slopes were looking a bit weather-beaten. Down near the shelter of the tunnel mouth we spotted *Hebe elliptica*, *Senecio lautus* with purple stems and veins, and the stout form of the native celery, *Apium prostratum*. For the daring, right on the edge of the cliff grew sea blight, *Suaeda novae-zelandiae*.

Rocks and fence posts were host to a variety of lichen communities. Graeme introduced us to the best botanical aid to kneeling he'd come across – Eazi-fit neoprene knee protectors, from Placemakers. I've got some now - they're brilliant for lichening and I can garden all day without getting a sore back or damp knees!

Thanks to John Barkla for preparing the handout. Braving the winter weather were: Graeme Loh, Toni Atkinson, Janet Ledingham, Judy Russell, Francie Beggs and Allison Knight.

### 21 Sept. Leaving the white line: Conserving tropical forests in the Adelbert Range, Papua New Guinea. A talk by Matt Scott.

Norman Mason

The audience was treated to a typically vivacious talk by Matt Scott on tropical forest conservation in a remote part of Papua New Guinea. Matt began by explaining that the flora and fauna of Papua New Guinea was a mix of Gondwanan and Asian origins, with podocarp-like and acorn-producing species occurring in close proximity to one another. We were reminded that the human diversity of New Guinea is as fascinating as the rest