

Recreating rare restiad wetlands in the Waikato

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INTRODUCTION

Significant losses of restiad dominated peat bogs have occurred throughout NZ following drainage for agricultural and horticultural development. In the northern half of the North Island, the *Sporadanthus ferrugineus* and *Empodisma minus* vegetation type originally covered >100 000 ha. Today, probably less than 3140 ha remains¹. *Sporadanthus* is now only found in 3 Waikato peat bogs; Moanatuatuta, Torehape and the Ramsar listed Kopuatai Peat Dome. Successful revegetation trials at Torehape peat mine² (Hauraki plains) lead to an experiment to determine how restiads, in particular *Sporadanthus* would establish on peat land heavily modified by farming.



Kopuatai peat dome



Seed heads



Jointed stems with leaves reduced to sheaths

Species associated with restiad bogs include the fern *Gleichenia dicarpa*, a liverwort *Goebelobryum unguiculatum*, along with the heath *Epacris pauciflora*, a sedge *Schoenus brevifolius*, and the sundew *Drosera spathulata*. Rare species include the clubmoss *Lycopodiella serpentina*, and the swamp helmet orchid *Anzybas carsei*.

METHODS

A 110m² site near to Lake Komakorau (Waikato District) and a 315m² near to Lake Serpentine east (Waipa District) was selected using a range of social, economic and environmental criteria⁴. Both sites have relatively high nutrient levels probably because they are minerotrophic wetlands and influenced by adjoining agricultural practices. Experimental treatments included combinations of substrate (milled peat, control), 2 year old plants (*Sporadanthus*, with and without *Empodisma*, control), and a weed/non weed management regime.



Substrate treatments at Lake Serpentine: milled peat (in excavations) and control (herbicided pasture), September 2006



Experimental trial site at Lake Komakorau filled with milled peat, September 2006

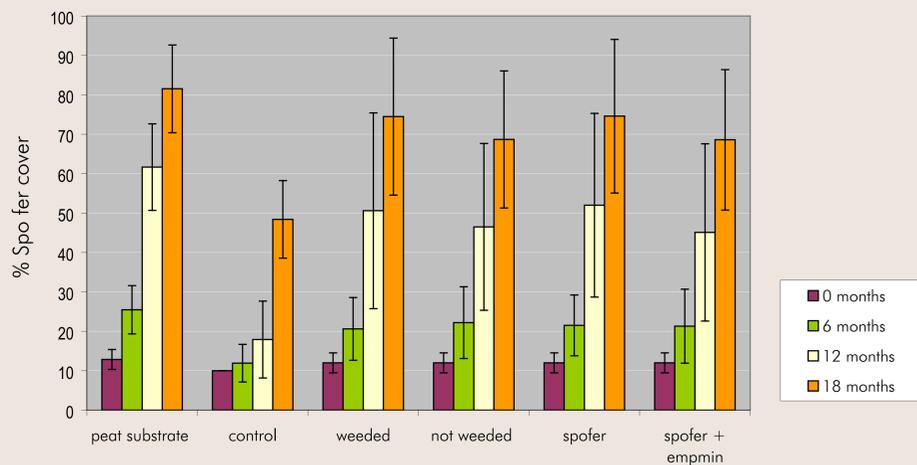


Planting out *Sporadanthus* at Lake Komakorau, October 2006

RESULTS

Overall restoration success is being evaluated using the New Zealand wetland condition index⁵, based on 5 indicators known to degrade wetland condition. The sites currently score 8 and 10 out of 25 and the 10-year aim is 16 and 17 respectively, i.e., a significant increase in wetland condition.

COMPARISON OF TREATMENTS



Lake Serpentine November 2006



Lake Serpentine May 2007



Lake Serpentine March 2008



Unique fauna associated with *Sporadanthus* Photo by Birgit E. Rhode

Sturdy rhizome with anchor roots

CONCLUSIONS

- Milled peat is most successful (c.780% cover increase over 18 months), however plants on higher nutrient substrates such as herbicided pasture will also grow (c.480% cover increase over 18 months)
- 2yr old *Sporadanthus* plants can establish extremely well and grow rapidly
- With dense planting (3-4 plants/m²), weeding may not be necessary though willow and blackberry must be removed

WHAT NEXT?

Due to the success of the trials a 375m² area of restiads was planted near Lake Waiwhakareke in June 2008. The site forms part of a new natural heritage park being developed by the Hamilton City Council and the University of Waikato. Further restiad wetland recreation will also take place in the Waipa District as new esplanade reserve areas are developed adjacent to peat lakes.

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- 2 Schipper, L.A., Clarkson, B.R., Vojvodic-Vukovic, M., Webster R. 2002. *Restoring Cut-over Peat Bogs: A factorial experiment of nutrients, seeds and cultivation*. *Ecological Engineering* 19: 29-44.
- 3 Watts, C.H. Didham, R.K. 2006. *Rapid recovery of an insect-plant interaction following habitat loss and experimental wetland restoration*. *Oecologia* 148: 61-69
- 4 Peters, M.A. 2006. *Action Plan: Recreating rare restiad wetland ecosystems*. New Zealand Landcare Trust.
- 5 Clarkson, B.R., Sorrell, B.K., Reeves, P.N., Champion, P.D., Partridge, T.R., Clarkson, B.D. 2003. *Handbook for Monitoring Wetland Condition*. Coordinated Monitoring of New Zealand Wetlands. Available online.