

NZ peatlands and their restoration



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Background

Aim: Increase the protection and restoration of wetlands by providing scientifically-based guidelines and tools

Progress to date

- Wetland classification: Wetland Types in NZ 2004
- Wetland monitoring: Wetland condition handbook 2004

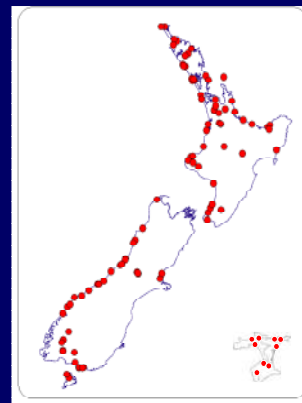
Current research

- Wetland functioning
 - vegetation, invertebrates, nutrients/ chemistry, water regime
- Wetland restoration
 - Best practice summarised in restoration handbook due 2009

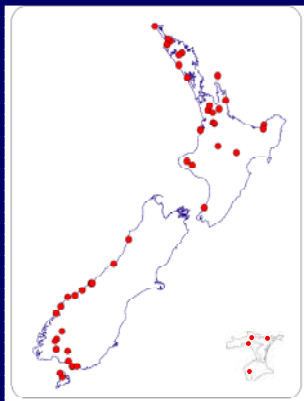
Classification of freshwater wetlands based on water and nutrient characteristics (J&G 2004)

| Wetland Type | Water Source (Fluctuation) | Nutrient Levels | pH | Peat (%C) |
|--------------|----------------------------|-----------------|------------------------|------------------|
| Swamp | Surface & Groundwater fed | High | Rel. high 4.8 - 6.3 | None (or little) |
| Fen | Groundwater & rain fed | Medium | Medium 4 - 6 | peaty |
| Bog | Rain fed | Low | Low 3 - 4.8 | peat |

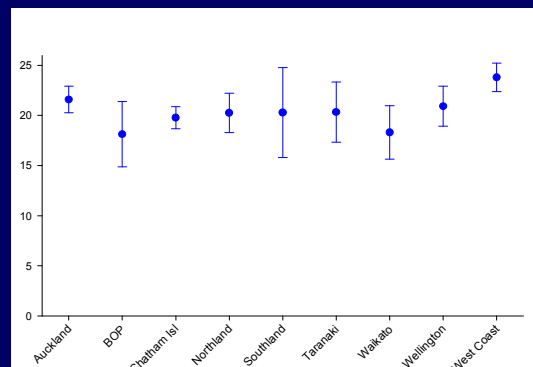
Wetland database: all wetlands



Wetland database: fens & bogs



Mean Regional Wetland Scores With Standard Deviation



Classification of freshwater wetlands based on water and nutrient characteristics

| Wetland Type | pH from J&G 2004 | pH mean from database | ± SD |
|--------------|------------------------------|-----------------------|--------|
| Swamp | Relatively high 4.8 - 6.3 | 6.21 | ± 0.64 |
| Fen | Medium 4 - 6 | 5.57 | ± 0.59 |
| Bog | Low (acidic) 3 - 4.8 | 4.63 | ± 0.26 |

Top three species in wetlands

- *Empodisma minus* - wire rush (210/536)
- *Gleichenia dicarpa* - swamp tangle fern (197)
- *Leptospermum scoparium* - manuka (165)



Restiad peatlands

- Dominated by Restionaceae
 - *Empodisma minus* - mainland NZ
 - *Sporadanthus ferrugineus* - ntnh North Island
 - *Sporadanthus traversii* - Chatham Island
- Form extensive raised & blanket bogs
- NZ's equivalent to NH sphagnum bogs
- Unique to New Zealand



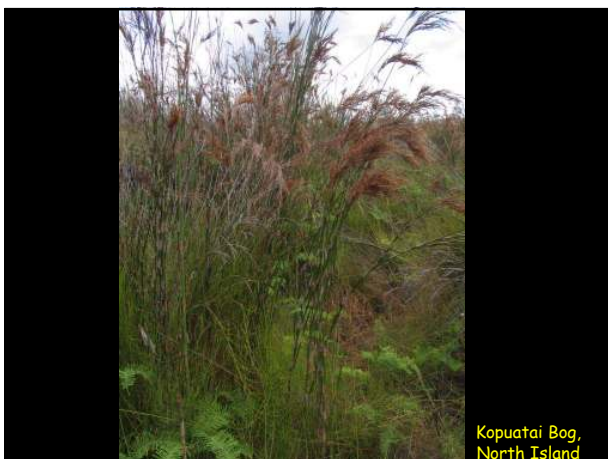
Empodisma minus



Cluster roots



Awarua Bog, South Island



Kopuatai Bog, North Island



Wharekauri Bog, Chatham Island

Aim: Restoration of a threatened bog type (NI Sporadanthus-Empodisma bog)

- Background
- Summary of experimental trials at a mined bog
 - Restoration of plants and invertebrates
 - Development of best-practice techniques
- Current project
 - 'Re-creation' of bog type at two marginal wetland sites



Background

- Dominated by *Sporadanthus ferrugineus* and *Empodisma minus*
- Confined to three sites
- Successional sequence:
 - *Leptospermum scoparium* → *Empodisma* → *Sporadanthus*
 - nutrients N,P decline

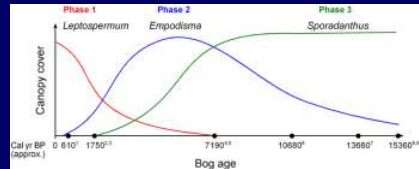
Leptospermum



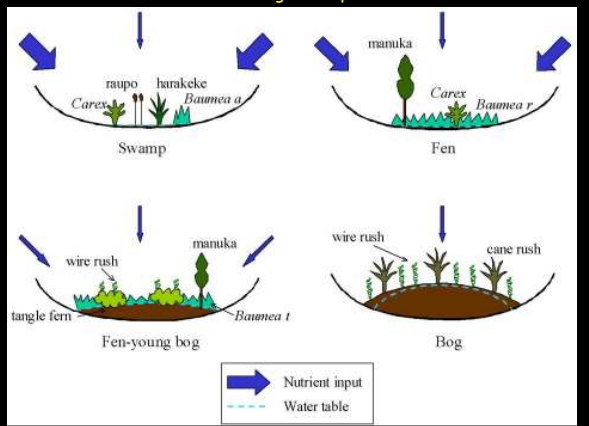
Empodisma



Sporadanthus



Restiad bog development



Anzybas carsei



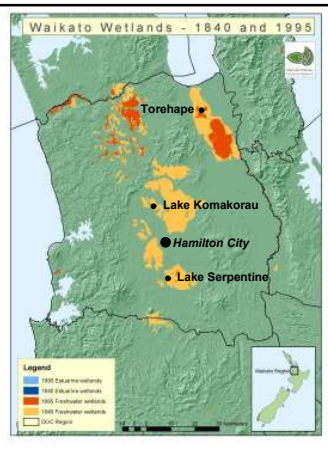
Calochilus robertsonii



Lycopodiella serpentina



Houdinia flexilissima



Aerial view of Torehape Bog & peat mine

Imagery sourced from TerraLink International Limited

