A NOTE ON SEEDLINGS IN SHORT TUSSOCK GRASSLAND

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Short tussock grassland, dominated mainly by *Festuca novae-zelandiae* (hard tussock) and *Poa colensoi* (blue tussock), covers over one million hectares of New Zealand, particularly the lowland hill country and montane areas of eastern South Island. In studies of short tussock grassland it has often been noted that, for the dominant tussock species, there appears to be little evidence for regeneration by seed and seedlings are generally regarded as rare (e.g., Lord 1990, Moore 1977, Scott *et al.* 1988, Sewell 1952).

There could be two explanations of this phenomenon:
(1) that tussock seedlings are extremely inconspicuous (cf., Moore 1977); (2) that there is in reality very little seedling establishment in short tussock grassland.

If the latter is the case, this does not automatically indicate that short tussock grassland is relictual and will eventually vanish. Low seedling levels may be quite adaquate for tussock replacement due to the longevity of adult plants (Barker 1953, Moore 1977).

In May of this year, during the course of my field work in the grassland around the University field station at Cass, I found evidence to support the first explanation given above for the lack of observed seedling regeneration in alot of short tussock grassland. It was found that a large proportion of seed set by hard tussock and blue tussock germinated in the autumn and overwintered as 1-4 cm high seedlings with 1-3 leaves. Similar sized seedlings of a number of other grass species were also encountered. Seedlings were identified using characters of the attached seed as well as the nature of the leaf blade and ligule. Finding and identifying these minute individuals without damaging them involved a great deal of nose-to-the-ground botanising (literally).

The seedlings were found predominantly on mats of *Raoulia* and *Coprosma* (possible because they were more easily spotted in short vegetation) but a few were also discovered growing under moderately dense browntop (*Agrostis capillaris*). No seedlings were found on moss presumably due to a near complete lack of light within the moss mat. Seedling density was very patchy and, apart

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from the requirement for a certain amount of light, seemed generally to be determined by (1) proximity to a seed source, (2) protection from desiccation (3) protection from frost heave.

A further inspection at the begining of September revealed about 20 % mortality over winter. Most of the seedlings that died appeared to have failed to get their roots into a suitable substrate.

Species seen as <1 year old seedlings	observed range of densities per m^2
Festuca novae-zelandiae	*5 - 40*
Poa colensoi	*5 - 40*
Anthoxanthum odoratum	*5 - 50*
Agrostis capillaris	*0 - 10*
Rytidosperma sp.	*0 - 20*
Deyeuxia sp.	*0 - 5*
Festuca sp.	*0 - 5*

References

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