

## **The impact of fire on tussock grassland invertebrates**

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The impacts of burning on two tussock grassland invertebrate communities in the southern South Island of New Zealand were investigated between 1998 and 2006. At each site three replicate 1-ha plots of either unburned (control), spring- or late summer-burns were quantitatively sampled. Pre- and post-burn sampling compared invertebrate densities and trophic group structure in inter-tussock and tussock samples, and recovery after treatment. Most invertebrate groups were initially reduced in density immediately after the fires. The herbivore groups Thysanoptera (thrips) and Hemiptera (true bugs) 'rebounded' and reached higher population densities than before the fires in the 1-2 year period after the burns took place. The litter-dwelling detritivores such as the Myriopoda (particularly millipedes) exhibited a delayed response and took 2-3 years to recover to pre-burn densities at one site, and had not recovered at the other site 3 years after the fire. Amphipoda (bush hoppers) were the most severely affected group, failing to recover to pre-burn densities at either site three years after the fire. When Amphipoda were re-sampled in 2009, eight years after burning, recovery had still not occurred at one of the sites. In general, herbivore population density recovered over a 2-3 year period, and litter-dwelling invertebrate population densities were most negatively impacted. Season of treatment had no major impact on invertebrate responses in general, but fire intensity was a more important factor.

