

Native grasslands in northwest Tasmania and the role of forest managers in their conservation and management

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Introduction Grassy ecosystems are amongst the most threatened ecosystems in southeastern Australia, with over 95% of their area lost or severely modified in 200 years of European settlement. Native grasslands cover about 6500 ha in montane areas of Northwest (NW) Tasmania with an altitude range of 600-1200 m. They include some of Tasmania's largest and most diverse grasslands. Most of the grasslands are dominated by *Poa labillardierei* (tussock grass), and are maintained by fire, frost and browsing by native animals. They occur in a mosaic with moorlands, peatlands, rainforests, native eucalypt forests and timber plantations. Tenure comprises formal reserves (e.g. National Parks), other public land (mainly State Forest), and private land, including about 2000 ha owned by Tasmania's largest timber company (Gunns Forest Products). This paper describes how cooperative studies and active management, involving government agencies, researchers and forestry companies, have improved the conservation of grassland communities and species. It also discusses the evolution of management tools, and the role of legislation, education and industry certification in encouraging grassland conservation.

Methods A baseline study of Tasmania's native grassland communities was undertaken in 1984-6, which identified the conservation significance of montane grasslands in NW Tasmania. Two detailed assessments of the NW grasslands (1994, 2000) analysed floristic data from 300 plots (1x10 m) to establish the variation occurring across grassland environments. Areas of individual grasslands ranged from 1 to 860 ha. Over 350 native vascular species (almost 20% of Tasmania's vascular flora) were recorded from the grasslands. Plant species richness varied from 7 to 55 species per plot, with low species richness being associated with long-unburnt sites which had developed a dense cover of *Poa* or were being invaded by scrub or rainforest species. These assessments identified sites with a priority for conservation because of their high diversities (of species or communities), or the presence of threatened species. They included several species of forbs and graminoids and an endemic species of butterfly (*Oreixenica ptunarra*) whose larvae feed exclusively on leaves of *Poa*. The survival of these species was linked to the use of fire to maintain a range of grassland ages and communities, and to maintain inter-tussock diversity by controlling the density of the *Poa* sward.

Results and discussion Important grasslands in NW Tasmania have been added to Tasmania's public reserve system, with about 20% of the NW grasslands now in IUCN category 1 or 2 reserves. About 40 grasslands (comprising over 50% of the total area of the NW grasslands) on private land owned by Gunns and on State Forest are being actively managed for conservation by forest managers. Management includes use of cool mosaic burns at intervals of 4-9 years to maintain diversity and habitat for threatened species; programs to control invasive weed species (e.g. gorse and broom); and monitoring to assess the effectiveness of management actions. Two areas of pine plantation on Gunns land have not been replanted following logging, to allow native grassland to re-establish from residual seed and propagules from adjacent grassland.

Conclusions A cooperative approach by researchers, government agencies and land managers over the last 20 years has greatly improved the conservation status and management of native grassland communities and species in montane areas of NW Tasmania. This has been partly achieved through additions to Tasmania's public reserve system. Outside public reserves, important grasslands have been actively managed by forestry companies, with a focus on maintaining high species diversities and habitats of threatened species through the use of mosaic burning and control of invasive weeds. Management is reviewed and refined in response to ongoing research, monitoring and use of sophisticated spatial technology. Conservation management of the NW Tasmania's montane grasslands has been reinforced by: development of legislation to protect threatened species and communities (including highland *Poa* grassland); education programs (e.g. field days) and endorsement of forest industry initiatives by auditing programs and certification of forest products.