A measure and planner for biodiversity in plantation forests

The silvereye is a typical woodland species. John Manger

Researchers have developed a system for quantifying the potential biodiversity benefits of tree plantations based upon intended management practices and geographic location of the plantation.

All forests, be they industrial plantations, revegetation plantings or native old-growth forests, provide a range of habitats for conserving and enhancing biodiversity.

CSIRO researchers have been able to use measured values of biodiversity in planted forest systems to develop tools for the assessment and planning of biodiversity in plantation and revegetation projects.

Where native revegetation programs in particular are concerned, biodiversity values need to be properly quantified for informed decision-making. Key indicators, such as habitat complexity and bird species richness, can be used to help determine these values.

Commencing in Spring 2005, surveys of bird species and numbers were undertaken at 38 sites of direct-seeded revegetation, tubestock revegetation, natural regeneration following stock exclusion, remnant forest and farm forestry plantation in north-central Victoria.

The relationships between biodiversity indicators, forest type, plantation age and vegetation structure indicated that woodland bird species, known to be declining in the region, were most strongly associated with the older revegetation sites and remnant woodland sites.

Investigations suggested that birds were most likely to be associated with structural features of the habitat, such as vegetation cover and age of woody vegetation, rather than being associated with functional features, such as the carbon sequestration role of plantations.

To assess the relative biodiversity benefits of a plantation plan or established coupe, researchers developed a rapid scoring system that can be used at the planning, management and harvesting stages of any plantation operation in Australia.

The Plantation Biodiversity Benefits Score (PBBS) is based on extensive research on the biodiversity values of native forests, commercial plantations and environmental plantings to improve habitat for native species.

The Score system has been incorporated into a Scenario Planning and Investment Framework (SPIF) tool to assess the score of individual plantation plans. The planner selects an area to establish a plantation and is provided with a series of questions related to the intended management practices pertaining to the plantation, for example maintaining existing paddock trees, growing mixed-age stands, increasing tree rotation length and planting buffers of local native trees, shrubs and grasses. This approach allows adaptation of plantation design and management for the highest feasible biodiversity value.

The biodiversity studies undertaken by CSIRO and other researchers suggest that the habitat values of commercial plantings can best be improved by establishing mixed-age stands of trees; increasing rotation length of plantings; planting buffers of local native trees, shrubs and grasses; including native stream-side vegetation in plans; where possible, targeting plantations near isolated patches of native forest to improve the important habitat connectivity for native species, and particularly by incorporating native paddock trees and fallen timber.

The Plantation Biodiversity Benefits Score system, together with the Scenario Planning and Investment Framework, reduces uncertainty associated with long-term forestry projects for timber plantation managers, natural resource planners and general landholders. This is particularly important given the increase in scale of plantation establishment across Australia.

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