

Environmental services provided by plantations

New Zealand's forests largely consist of either intensively harvested planted plantations of radiata pine, Douglas fir and eucalypts (1.8 million ha) or lightly managed or unmanaged indigenous forests (6.4 million ha). This strong dichotomy in the makeup of our forest estate appears to influence the way in which society perceives the functions and capabilities of the two dominant forest types. A common viewpoint is that plantations are simply wood factories with limited or no aesthetic, conservation and environmental protection attributes. On the other hand, the indigenous forests are viewed as prime habitat for wildlife, protectors of soil and water values and the source of much of New Zealand's known biodiversity; attributes which should not be compromised by any forms of utilization including the removal of timber.

However, these perceptions are somewhat flawed and suffer from large gaps in understanding. Despite their highly intensive management, plantation forests contain a surprisingly large amount of biodiversity and provide a range of important conservation and protection services. In some instances plantations may provide better habitat for indigenous fauna than many pest-infested indigenous forests.

In the case of indigenous forests, past research has demonstrated that some forest types can be managed in a sustainable manner for timber and other products without diminishing their conservation and protection values. Furthermore, some of New Zealand's montane indigenous forests in central Westland and in the central axial mountains of the North Island, are in very poor condition after decades of possum browsing and have much-reduced abilities to maintain soil stability and protect water resources.

The steadily rising population of New Zealand has been accompanied by increased intensity of agricultural land use, increased demand for land for different land uses and not least, increased demand for good quality fresh water. Over the last few years there has also been a heightened emphasis on the need to ensure that land uses must be economically, environmentally and socially sustainable in the long term. This emphasis was recently highlighted by the Parliamentary Commissioner's report "Growing for Good".

Inevitably, forestry has become intimately entangled in the plans to change land use patterns and in the competition for access to water. Much publicity has been accorded to the plans to convert forest plantations to agricultural land uses. Some such plans are for land in the central North Island where nitrate runoff is a major problem for important lakes such as Lake Taupo. Other conversions are planned for the upper Waipaoa River where much of

the landscape is extremely unstable and, in the opinion of this writer, should be mainly under forest cover.

At the same time at least one regional council is developing policies which aim to limit future forest development in upland catchments where summer low flows struggle to meet the requirements of downstream allocations of water for irrigation. The greater use of water by forests compared to lower stature vegetation such as scrub, pasture and tussock grassland is considered to be a threat to minimum summer flows and to aquatic ecosystem health. Ironically, some of these policies and plans concern land where, if a thorough assessment of which land uses would be most sustainable in the long term was carried out, forestry would probably come out ahead of alternative agricultural land uses on both economic and environmental grounds.

Protection of the soil resource is often overlooked when heady issues concerned with maintaining water supplies and maximizing short-term returns to land owners and shareholders are concerned. Over the last two decades large tracts of hill country under light scrub or pasture have suffered severe erosion during heavy storms such as cyclone Bola and the February 2004 storms in the Manawatu-Wanganui region. These hill lands remained stable under indigenous forest over many thousands of years. The soils which support the pasture are forest soils. It should not be surprising that without a reinforcing tree root network, the soils fail on steep slopes when they become saturated. If trees had been located on the critically sensitive areas which probably occupy as little as 20 percent of the areas of the hill country which suffered severe damage, there is little doubt that the damage caused by the storms would have been ameliorated significantly.

This issue of the journal addresses some of the issues mentioned above and focuses on the environmental services and benefits provided by plantation forests. The collection of papers should help provide an improved appreciation of the environmental values of plantation forests, identify where land use planning needs improvement and identify those areas of forest land use research which need to be considered a priority for future funding.

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Editorial Changes

Readers will note some changes to this edition of the Journal. By way of refreshing the layout, we have changed the font and the format, but have retained the "professional" look of the publication. In keeping with the age of consensus, we have provided a sample in a slightly larger font in Piers Maclaren's column. Feedback is welcome.