

Ecosystem services

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This issue of the Journal has several papers on the theme of forest ecosystem services, in its broadest sense also known as management for non-timber benefits. Scion researchers have provided two papers on their work in quantifying the financial benefits of the ecosystem services of New Zealand's plantation forests, while Peter Oliver provides an industry viewpoint. Relating to the theme of non-timber benefits are several papers, one on forest management guidelines for brown kiwi by Wendy Sporle, another on making essential oil from Douglas fir foliage by Paul Greaves. There is also a paper on Forest Stewardship Council (FSC) certification by Cyrielle Durand where a broad range of environmental and social outcomes are key performance indicators. A paper by Robert Hughes and Paul Molloy emphasises that small-scale forest owners make a significant contribution to New Zealand's post-1989 sequestration of carbon, but queries the high relative cost of assessing forest carbon for those owners.

The two papers from Scion demonstrate the range of ecosystem services that New Zealand's forest plantations provide, despite the main object of management being to obtain a satisfactory return on the investment in the production of timber. Most of the non-timber benefits provided by those forests do not receive any form of payment, with the exception of forest carbon sequestration, which is essentially a once only payment for afforestation. The paper by Yao et al. demonstrates the use of analytical methods to calculate the full value of the forest estate to the owner and society. The environmental and social values can be greater than the financial benefits from timber production.

In their paper Monge et al. state, 'Current economic indicators, such as dairy payouts and land values, do not take into account the full value of ecosystem services, both positive and negative, that different land uses entail.' They compare the full benefits provided by dairying and forestry on a nominal 28,000 ha block of land in the Central North Island when all currently unrealised environmental costs and payments were taken into account. They also note that, 'Under various plausible assumptions considering regional circumstances, national statistics and current environmental policy plans, forestry as a land-use alternative could potentially receive environmental payments in the order of approximately \$1,000/ha (or \$1.60/m³) from carbon and nutrient schemes. On the opposite side of the spectrum, a dairy farm could potentially be penalised with a nitrogen and carbon externality payment of approximately \$680/ha (or \$0.70/kg MS) if the farmer decided to operate at current stocking level.'

While some ecosystem services lend themselves to financial valuation, others do not. A respected kaumatua suggested that attempting to monetarise the spiritual value of their forest lands was the antithesis of that value. As an undergraduate on our French forestry tour, I listened as a French forester explained that internal rate of return (IRR) had little place in his management of oak forests on a 200-year rotation. The forests were near Paris, visited by many Parisians. If they arrived stressed at the weekend, and walked or rode through the woodlands, then returned to their jobs refreshed so that they made the right decisions, how could one value that?

The value of some services accrues to others. The Crankworx mountain biking festival with trails downhill through forest plantations generated about \$8 million for the Rotorua economy in 2016. The Rotorua mountain biking club describe their (free) use of Whakawerawera forest as, 'providing a rich playground for locals and tourists ... all compressed into around 40 square kilometres of lush, ferny forest.'

Peter Oliver states that there has been a revolution in the way City Forests (and other forest management companies) manage forest ecosystem services. Eleven percent of their forest estate is in permanent ecological reserves; surveys have shown the forests are home to significant populations of threatened bird species absent in much of the surrounding land. Good practice maintains pristine water quality. Visitors in cars, on motorcycles, horses and bicycles or walking, hunting and fishing use the forests and trails for recreation. He states that this seldom attracts the public's attention or comment. He is probably correct about current comments from the public, but not about their attention and expectations. This will be apparent should there be a threat to these non-timber benefits.

In 2010, Caroline Spelman, the British Environment Secretary, wanted to raise £100 million from the sale of the state-owned woodlands, threatening the rights of the public should the woodlands be transferred to private ownership. More than 500,000 people signed a petition in protest. On 17 February 2011 she was forced to make a 'humiliating' reversal, telling Parliament, 'I am sorry, we got this one wrong.' Government economists had neglected to account for the value the general public placed on the non-timber benefits of their forests, many of which are plantations of non-native species. The subsequent Independent Panel on Forestry, headed by a Bishop, calculated that this value was in excess of £400 million per year. The 'outraged public' included many Conservative Government MPs. The value of forest ecosystem services to ladies who directly support those Conservative MPs through afternoon teas etc and who like to walk in woodlands, and the power of those ladies, should not be under-estimated.



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