

Conservation and indigenous forests

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6.3 million ha, or 23% of New Zealand's 27 million ha of land area, are indigenous forest, a more than 70% reduction from the area before humans arrived. Maori burnt most of the dry, eastern parts of the country while Europeans felled and burned twice as much forest area in half the time in the wetter regions, with the uncontrolled fires that were set destroying old-growth trees that have little capacity to regenerate by resprouting. Selective logging took the larger, dominant and more merchantable trees, leaving behind degraded 'bush' that has not naturally regenerated back to the previous high forest within one, two or even three human lifetimes. Of the 1.2 million ha of original kauri forest, only a few thousand hectares remain today as original high forest, illustrated by the photograph on the cover. Now, individual kauri trees are in danger of dying from kauri dieback. The clearance of habitat along with the introduction of pests – rats, stoats, possums – threaten New Zealand's native bird life. Some species sit on the brink of extinction.

This issue of the Journal contains four papers on the work of the Department of Conservation (DOC). The Battle for our Birds describes DOC's role in ensuring that species persist and thrive, stating 'Do nothing' is not an option. With new knowledge of the drivers of pest populations, multi-species pest control can be achieved. DOC launched a draft Threatened Species Strategy in May 2017, linking to national initiatives such as Predator Free 2050. The paper concludes by quoting the Parliamentary Commissioner for the Environment: 'The Department of Conservation has a crucial role to play in protecting our birds. However, restoring abundant, diverse, resilient birdlife to the mainland will require the efforts of many others, including private landowners, councils, iwi, and community groups.'

Kauri dieback is the subject of the second paper. It has the potential to kill all kauri in New Zealand. Caused by *Phytophthora agathidicida*, it infects kauri roots and damages stem tissue. Its presence was first noted 45 years ago on Great Barrier Island. The disease is spread by people and animals such as wild pigs carrying soil from contaminated areas, so that it has now been observed across the whole natural range of kauri. There is no known cure. It is hoped that some trees have a natural resistance and research into tree selection and breeding is continuing. The paper describes the efforts DOC is making as part of the multi-agency Kauri Dieback Management Programme to combat the spread of the pathogen by raising public awareness and by track management.

The third paper describes the recovery of logs from native windblown trees following Cyclone Ita on the West Coast in 2014. The windblow affected over 40,000

ha of mature beech/podocarp through to remnant tōtara/matai forest. 8000 m³ volume in total has been extracted. The volume salvaged is a very small proportion of the amount fallen (estimated as 135,000 m³ merchantable on DOC lands), with strict restrictions on the proportion of the fallen volume in a patch removed. Helicopters were predominantly used for the extraction of logs or of timber sawn from portable mills.

Wilding conifers regenerating from windblown seed are described as now the most significant weed problem New Zealand faces. The general public believe that wildings damage environmental, social, cultural and landscape values, and currently affect 1.8 million ha, with the area likely to rapidly rise without control. DOC efforts to control them are described in the fourth paper, which states that they are easier to control than many other pests, provided measures are taken when the trees are young.

New Zealand's history of exploitation of the indigenous forest led to the current policy of virtually all the forest being conserved from logging in practice. There was vociferous opposition to even the salvage of logs from the West Coast windblown area, with only about 6% of the potential retrieved, something unthinkable in the northern hemisphere. Paradoxically, New Zealand is now dependent on the exploitation of other countries' forests for imports to meet its demands for high-quality timber. The long-lived nature of New Zealand's tree species creates silvicultural problems quite different from those of the commercial plantations where there is a wealth of expertise. There is little long-term experience and hence knowledge of how to successfully re-establish native trees within an existing forest degraded by selective logging. The efforts in preventing the spread of kauri dieback might be mainly unsuccessful, with the disease killing more and more trees. But if research into tree breeding finds a small percentage that are naturally resistant, it will become imperative to understand how to grow these trees under an existing canopy.

The 'Last word' is provided by Greg Steward on the need to maintain or re-establish the indigenous forest silviculture trials implemented by the Forest Service that tested establishment methods. Funding for the necessary assessments and silvicultural operations was not continued by the funding agencies, perhaps due to low priority or low expectations of success based on bad press and ambiguous anecdotes. The trials still exist, if not having received the later treatments originally planned, but with the early records archived and measurements available on the Permanent Sample Plot system. More than anything, resurrecting the indigenous forest trials can save time, 30, 40 or 50 years over starting new trials afresh.

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