

## **Mountain Ash in Victoria's State Forests Silviculture Reference Manual No. 1**

Andrew Flint and Peter Fagg

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This book is a 'why' and 'how' manual for management of mountain ash (*Eucalyptus regnans*) for wood production in Victoria's state forests. It is also a celebration of more than 50 years research on the biology and silviculture of this king among trees. There is an evident excitement in being involved with the tallest flowering plant in the world; the Californian conifer *Sequoia sempervirens* is the only taller tree.

There are six chapters, the first three reviewing the extensive ecological literature on *E. regnans*. The second half reviews results of the 20-year 'Sustainable Systems Project' that compared clear-felling with four alternative silvicultural systems plus some studies of thinning and plantation establishment. The constant theme of the manual seems to be that the only silvicultural system that really works for this light-demanding species is clear-felling with slash burning and broadcast seeding.

The dedication is to Dr David Ashton (1927–2005), whose pioneering research on every ecological aspect of an ash forest included interactive studies of mosses, fungi, understorey trees, flowering biology, ants, birds, soil, litter, roots, light, frost and fire as well as the cycle of growth of these beautiful trees.

That mountain ash is a much-valued part of the heritage of Victorians and Tasmanians doesn't rate a mention. There is no acknowledgement that the Wilderness Society and the Australian Conservation Foundation have focused on preserving old-growth mountain ash as a principal feature of the conservation movement's national campaigns for conserving Australia's natural heritage.

Putting aside such issues of ecology and social responsibility, the authors stick firmly to their task of giving evidence-based advice on sustainable timber harvesting for the 137 000 ha of mountain ash in Victoria's state forests. This is the first of an intended series of manuals for Victoria's main forest types. The total of 250 000 ha of *E. regnans* in Victoria is the remnant of a much larger area before European settlement. In Tasmania the area is now about 72 000 ha.

The ash forests are almost entirely even-aged, resulting from wildfire or clear-felling. The current rate of harvesting, 900 ha  $y^{-1}$ , provides about 39% of total production from native forest in Victoria. Harvest is almost entirely by clear-felling for the various practical reasons enumerated by the authors.

The major findings of the Sustainable Systems Project on requirements for regeneration are that seedlings are suppressed

under a full canopy of older trees and even under a partial canopy in the seed tree, shelterwood and group selection systems. Only shade-tolerant species are well suited to the partial canopy systems. On an 80-year rotation, the clear-felling system in coupes of up to 30 ha followed by a high-intensity slash burn results in far more seedlings, better growth and lower costs than mechanical preparation of the seed bed. In the recently introduced variable retention system there is clear-felling with retention of small islands of trees for conservation purposes. This system has been implemented in Tasmania but not yet in Victoria.

The operational procedures are clearly illustrated with excellent diagrams and the advantages and disadvantages of each silvicultural system are well presented. For example, disadvantages of clear-felling include loss of nutrients and difficulty in achieving water catchment, flora and fauna and social amenity objectives. The authors explain that those objectives might be better achieved by reserving greater areas from harvesting.

Seed source is a subject on which the reader might wish to have more information. While it is stated that it is best to collect seed from the coupe being felled and regenerated, that is often not possible because sufficiently heavy seed crops cannot be relied on. With up to three years seed supply in store (more than 1000 kg) it seems inevitable that sometimes non-local seed from a distant area would be used. Although the review of literature on relation between provenance (seed source) and growth of planted trees showed no systematic pattern, it would still be prudent to have seed zones. Seed zoning is important for conserving the genetic integrity of a forest. A zone limits the area from which seed can be collected to plant a particular coupe. The only zoning mentioned is above and below 700 m.

The manual is directed primarily to forestry practitioners who are responsible for planning and supervising silvicultural operations. There are numerous references to departmental documents including the Code of Practice and 13 reports of the Native Forest Silviculture Guideline series.

Although the primary objective of the manual is management for sustainable wood production, many other aspects of the splendour of mountain ash forests are touched on and referred to in the review of literature. It will give evidence-based material for many a discussion by foresters, students, field naturalists and interested readers.

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