



Silviculture in Australia's Native Forests

(IFA Forestry Policy Statement Number 2. 9)

Key Statement

Silvicultural practice in Australian native forests represents applied ecology where natural ecosystem processes are managed to create and maintain a structure and species composition that best fulfills the diverse needs and values of landowners and society on a sustainable basis. Silvicultural intervention in native forests can enhance the supply of desired forest goods and services while ensuring all ecological processes are maintained.

The Issue

Given the great diversity in species, stand structure, tree condition, regeneration requirements and management objectives in native forests, no single silvicultural system will be appropriate in all situations. An appropriate silvicultural decision requires knowledge of the ecology and current circumstance of each stand and agreement on the desired management objectives. Silvicultural practice in this way can enhance forest health and productivity, water yield and biodiversity as well as reduce adverse impacts of severe wildfires and other perturbations, thereby contributing to sustainable forest management.

Background

Silviculture is the art and science of controlling the establishment, growth, composition and quality, health, protection and utilization of stands of trees or forests to meet the diverse needs and values of forest owners and society on a sustainable basis. Silvicultural practice embodies a range of treatments to maintain and enhance the utility of the forest for any defined management purpose.

Silvicultural systems generally refer to the processes and practices used to regenerate, tend and harvest forests and are classified in terms of whether they produce even aged or uneven aged forests, and by the size of canopy openings created in order to achieve regeneration. Given the great diversity in native forest ecosystems there is no single system which can be applied to all forest types, even if the management objectives are similar. The most common silvicultural systems used in Australian forests are based on clearfelling, clearfelling with seed trees, and the harvesting of single trees or groups of trees. Recently, aggregated retention systems have been trialed in tall wet forests. As fire has helped shape Australian forest ecosystems, its use can be an integral and extremely important part of silvicultural practice. Chemicals may also be used to thin dense stands of regrowth or to remove weak or poorly formed trees that are inhibiting the growth of potentially vigorous trees.

Australian native forests are diverse - including rainforest, multi-aged wet sclerophyll forests, dry sclerophyll forests, even-aged forests or stands resulting from fire, the river red gum forests reliant on water flow for regeneration, and the inland cypress forests. Each forest type requires the application of appropriate and often specific silvicultural practices to achieve both ecological sustainability and management objectives - be they timber production, water management or conservation. Within any given forest, silvicultural practice should also take account of the diversity in stocking and structural attributes of forest stands and, particularly, historical influences on the tree condition and stand productivity. For example, where forests have been selectively cut over periodically to remove only high quality logs, the forest may now be dominated by trees of non-commercial species or trees in a growth-restricted, defective or otherwise non-commercial condition.

One of the challenges of implementing silviculture in public native forests is ensuring that land managers and society agree on management objectives and the priorities attached to the various uses and values, especially where there are multiple and conflicting objectives. Other challenges include provision of required funding and maintenance of the skills required to implement silvicultural practices and monitor outcomes.

Research has been essential to the development and improvement of sustainable management strategies for Australia's native forests. The development and testing of silvicultural practice requires an ongoing adequately funded and co-ordinated research program linked to operational scale monitoring and a network of long-term research sites.

Native forest silviculture is no longer concerned simply with traditional sustained yield forestry for wood production. Society's expectations are now much broader, requiring an integrated ecosystem based or 'new forestry' approach. Native forests are now managed at multiple scales: trees, stands, and landscapes. Silviculturists are required to develop and apply approaches that produce landscapes with stand structural diversity, very different from an ordered sequence of stand ages. Modern silvicultural systems integrate multiple and often conflicting objectives, and consider forest stands as elements in a broader landscape, and not as isolated patches.

The production of timber, although a common objective, is neither the only objective nor necessarily the dominant one. Conservation of wildlife and timber production may be co-equal objectives in many forests –as will management for timber and grazing in others. Biodiversity takes precedence in forest with high conservation values, and water yield and quality are pre-eminent in dedicated water supply catchments. In many native forests the impacts of severe wildfires and other perturbations, soil erosion, a decline in biodiversity, water yields, forest health and economic productivity are issues which good silviculture can address.

Policy

The IFA advocates that silvicultural practice in native forests, incorporating prescribed burning, is a necessary part of sustainable forest management on all land tenures and should be attuned to natural ecosystem processes and conducted to achieve forest management objectives to meet the diverse needs of landowners and society.

The IFA supports and encourages:

- The development and implementation of silvicultural systems that take an ecosystem based approach, considering multiple scales of management that are designed to create and maintain the type of native forest that best fulfills the diverse needs and values of landowners and society on a sustainable basis;
- The use of a variety of silvicultural systems and practices in native forests, that are economically, socially and environmentally appropriate for the forest type in which they are applied;
- Greater use of silvicultural intervention in native forests, to maintain and improve their health, regenerative capacity and productivity, according to the priorities attached to the various forest goods and services;
- The application of silvicultural standards, relevant to a particular forest type, that include explicit objectives linked to quantitative standards and scientifically based monitoring protocols;
- Continued research into improved silvicultural techniques to match natural processes and competing demands for timber, water, biodiversity and other forest values; and
- The use of prescribed burning, appropriate chemicals and selective or non-commercial harvesting as silvicultural tools.

The IFA recognises that:

- Balancing the diverse values and management objectives from native forests involves trade-offs between particular outputs; and
- The choice of appropriate silvicultural practice requires knowledge of the ecology and condition of the forest as well as the desired management objectives and outputs.

The IFA considers that:

- Land managers need to develop clear priorities and realistic objectives for the management of native forests as a precursor to implementing appropriate silviculture;

- Silvicultural practices contribute to ecologically sustainable forest management in terms of maintaining forest community patterns and processes as well as the health and productivity of the forest;
- Silvicultural treatments are required in some multiple use forests and conservation reserves to improve forest health and counteract undesirable ecosystem changes resulting from previous poor management practices;
- Decisions on appropriate silvicultural practices should ensure effective regeneration of the range of species within a forest, maintain forest health and consider occupational health and safety requirements; and
- Thinning and or culling of trees in multiple use forests can maintain their productive capacity and in some cases enhance growth on trees important for biodiversity conservation.

Further Information

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