Drawing meaning and direction from private native forest research – a summation of two recent studies

N. L. Cameron, T. Lewis & S. Ryan

To cite this article: N. L. Cameron, T. Lewis & S. Ryan (2019) Drawing meaning and direction from private native forest research – a summation of two recent studies, Australian Forestry, 82:2, 123-125, DOI: 10.1080/00049158.2019.1595348

To link to this article: https://doi.org/10.1080/00049158.2019.1595348
Drawing meaning and direction from private native forest research – a summation of two recent studies

N. L. Cameron a, T. Lewis b and S. Ryan c

a NSW Department of Primary Industries, Parramatta, Australia; b QLD Department of Agriculture and Fisheries, Sippy Downs, Australia; c Private Forestry Service Queensland, Gympie, Australia

ABSTRACT

Information about the state and use of private native forests has been traditionally hard to gather, however, recent research in north-east New South Wales (NSW) and southern Queensland (QLD) is helping to bridge the knowledge gap. Research, recently completed by the NSW Department of Primary Industries and soon to be completed by the QLD Department of Agriculture and Fisheries, has used a combination of traditional and novel techniques to quantify the extent, status and value of private native forests and their role in domestic timber supply. The research supports the strategic planning priorities of NSW and QLD Governments.

DPI engaged mapping company Foresense Pty Ltd (2017) to analyse the growth status and productivity of the private native forests in north-east NSW using three-dimensional aerial photograph interpretation (API). This technique proved relatively cost-effective with approx. 500 000 net ha mapped. The exercise generated a snapshot of the status of the forest which can be readily viewed in Google Earth and used as a forest planning tool. Forest growth status was not mapped in the DAF study. However, DAF did engage Bluechip Forest Services (unpubl. 2018) to model and map forest site quality (productivity) at a coarse resolution (90 m wide pixel) and also mapped the status of forest as regulated or non-regulated vegetation.

For many years there has been anecdotal evidence of the deteriorating condition of private native forests. Reduction in forest health and vigour are known to be caused by repeated selective harvesting where only the best timber trees are removed (also known as ‘high grading’) and by passive management of high density regrowth. Hard data to quantify the extent of these problems have been lacking.

To address this, DPI commissioned Bluechip Forest Services (2017) to analyse the data from 379 inventory plots that were spread over 32 properties located between Coffs Harbour and the QLD border. Analysis found that the forests were predominantly mixed-age regrowth with a high proportion of trees less than 40 cm in diameter. The data confirmed that much of the regrowth was in a poor growing state. For example, half of the basal area of measured trees in the 25–40 cm diameter class had suppressed or subdominant crowns with low vigour. The DAF study also drew on private inventory using data from more than 200 plots spread across southern QLD. These data showed that regrowth forests had a particularly high density of trees in the 10–20 cm diameter class, where approx. 76% of stems were assessed as un-merchantable. In addition, the DAF...
study was able to demonstrate that the merchantable growth rates achieved in silviculturally treated forests (average $1.5 \text{ m}^3 \text{ ha}^{-1} \text{ y}^{-1}$) were many times those that received no silvicultural treatments (average as low as $0.3 \text{ m}^3 \text{ ha}^{-1} \text{ y}^{-1}$). The private native forest estate in southern QLD is estimated at between 50% and 70% of the state’s domestic hardwood production (ABARES 2017). Reliance on private native forests is expected to increase with reduced supply of native timber from public state forests in southern QLD in the future. The importance of private native forestry in NSW is also significant accounting for an estimated 35% of the hardwood timber supply in the North-East Region (Jamax Forest Solutions 2018; NSW DPI 2018b).

More effective communication and engagement between landholders and forestry professionals needs to occur if timber and grazing livestock. In the PFSQ landholder survey, 89% of respondents agreed that lack of skills and knowledge were either a significant or very significant impediment to managing forests for timber production on private land. In the Jamax Forest Solutions (2018) survey of NSW PFN harvesting contractors, 82% of contractors rated PNF landowner’s knowledge of growing sawlog quality timber as poor or very poor.

Another important finding from the DAF survey was that there is strong support for more forestry advisory services. In particular, 100% of respondents agreed that they were interested in refreshing their skills by attending field days and workshops and 81% respondents agreed that a training and extension program would improve their current forest management practices.

In order to engage private landholders in forestry there is a clear need for better information and meaningful data to guide management decisions. This is currently occurring under a separate DAF-funded extension program run by PFSQ where there have been eight four-day workshops and more than 1000 landholders attending 30 field days. The DAF study is supporting the extension program by developing a suite of products that will reduce uncertainty around the benefits and value of silvicultural intervention. In particular, the cost-effectiveness of thinning overstocked stands to improve productive potential is being assessed. The assessment is being supported using a silvicultural decision support tool that allows users to select different options (e.g. to thin or harvest the stand at varying intervals) and compare the modelled outputs ($\text{S ha}^{-1}$). The outputs will include gross financial returns from both timber and livestock production. The tool is underpinned by tree measurement data collected by PFSQ and DAF from permanent plots (up to 15 years old), with 158 of the plots located on private land across 19 properties and 45 plots in state forest (Lewis et al. 2010). DAF’s yet to be published results look promising, with both chemical (e.g. tree stem injection using axe) and mechanical treatments (e.g. chopper-roller) showing productivity improvements and positive commercial returns when assessed over a 20-year period.

Other useful products from the DAF study include a series of fact sheets about the extent, condition and management of private native forest for four separate regions and regional case studies of actual properties that are being managed for timber and grazing livestock.

The DPI study did not undertake a financial evaluation of silviculture, however, it did develop a property valuation model that ranked properties with large native forest holding according to their suitability for timber production (NSW

---

2025 is the year when supply contracts are currently due to expire in Southeast QLD. State forests are currently being harvested at rates higher than their sustainable yield.

25% of private native forest landholders were found to be responsible for managing 65% of the region’s private native forests.
The property rating model took into account net harvestable area, proximity by road to wood processing facilities, slope and terrain roughness, forest type and site productivity. A map of the modelled output shows that properties with the highest timber production rating are located between 10 km and 50 km from the coast between Taree and Coffs Harbour and between 50 km and 100 km from the coast between Grafton and the QLD border.

In summary, recent research by DPI and DAF has generated a suite of products and information that may be used to guide and improve landholder management of 5 900 000 ha of private native forest. The DAF research has been tailored to meet the needs of private native landholder whereas the DPI study was designed to meet the needs of a broader range of stakeholders. When viewed together the two studies provide a comprehensive package of information that advances the state of knowledge of an important natural resource.


**Disclosure statement**

No potential conflict of interest was reported by the authors.

**Funding**

Work for the NSW north coast study was funded by the NSW Department of Primary Industries. Work for the QLD study was jointly funded by the Department of Agriculture and Fisheries, Queensland Government and Forest and Wood Products Australia.

**References**


NSW DPI (Department of Primary Industries). 2019. Valuing the suitability of native forests for timber production. A rating model applied to private native forest on the NSW north coast. (accepted).