

with a large volume of correspondence, and write several bulletins dealing mainly with farm forestry plantations.

The New Zealand Institute of Foresters (NZIF), established in 1927, lists Mary among its inaugural members. She firmly supported the Institute's aims and activities, serving as a councillor in 1935 and as vice-president in 1940-41. Her design of a sprig of fruiting rimu was voted into the NZIF official seal. Shy as she was, she needed some encouragement before she showed the design to members at one of

the early Institute meetings. She was also appointed a Fellow of the Society of Foresters in Great Britain in 1928.

Mary's career was cut short when ill health suffered during field-work in Central Otago during 1954 led to her death on March 11, 1955. Mary's contribution to forestry is remembered each year in the Mary Sutherland Award granted to a student member of the New Zealand Institute of Forestry.

Mary Sutherland broke new ground for all women in forestry. She was not only

the first woman forester in New Zealand, but the first in the British Empire and possibly the world.

Pip Lynch

Reprinted with permission from The Book of New Zealand Women. Ko Kui Ma Te Kaupapa. Edited by C. Macdonald, M. Penfold and B. Williams. 1991. Published by Bridget Williams Books, Wellington, New Zealand.

NEW INFORMATION

NATIONAL EXOTIC FOREST DESCRIPTION:

(A) "YIELD TABLES AS AT 1 APRIL 1991", by A. Neumann and C. Perley, November 1992, Ministry of Forestry.

(B) "1992 NATIONAL AND REGIONAL WOOD SUPPLY FORECASTS", by J. Turland, S. Wakelin and P. Lane, April 1993, Ministry of Forestry.

Both these Ministry of Forestry publications are very valuable documents for people involved in wood supply planning regionally and nationally within New Zealand. The first of these provides information on crop-type yields by species, broad silvicultural regime and locality, while the second makes use of the crop yields provided in the first, together with area data, to examine five regional and national wood supply scenarios. The two publications are closely linked, and so they are described briefly and their contents discussed together, rather than individually.

The two publications differ in the areas of plantation forest that have been directly captured. The "Yield Tables" publication quotes a total area of 1,167,546 ha as at April 1, 1991. The corresponding figure given in the 1992 Wood Supply Forecasts publication is 1,158,427 ha, based on the 1990 net stocked areas which were then updated to April 1, 1992 with new planting and restocking estimates. Curiously, the former is probably more accurate, even though the second study was the later one to be published. As pointed out in the May 1993 journal, basic forest description data for New Zealand are becoming increasingly outdated because of the ever faster pace of harvesting in the last one or two years. An update of areas to April 1, 1993 should be a very high priority project, so that a study of the impacts of harvests in 1991-92 and 1992-93 on the

residual forest estate can be evaluated. The areas listed in the two publications both refer only to the statistics that are directly captured from major forest owners. It is believed that they contribute more than 90% of the area. As the tempo of planting by smaller owners continues to escalate, it becomes more and more vital to document their contribution. Reliable ways to do so need to be implemented urgently.

BOOK REVIEWS

The yield tables are based largely on what individual owners perceive to be representative crop-type averages in their holdings. Sometimes these are extrapolated to other crop types that are adjudged to be similar. This would be perfectly acceptable, and in line with the errors associated with yield tables, provided that all contributors extended their yield forecasts out to at least 60 years. But several cut them off earlier (e.g. Auckland radiata pine at 40; Central North Island, Hawkes Bay, Nelson/Marlborough radiata pine at age 44; East Coast Douglas fir at 42; and so on). This has some repercussions on the weighted national and regional yield tables as well as on the individual crop-type ones; consequently, most of the m.a.i. curves are quite unrealistic beyond 40 years of age. This in turn affects the reliability of wood supply forecasts from the 32,000 hectares or more that are already over 40 years of age, unless the national yield tables discussed here were adjusted for the FOLPI runs. If they were, then that undermines the value of releasing information that all planners should start from.

Let me illustrate this further with an apparent inconsistency in the wood supply forecasts: The maximum m.a.i.'s are $20 \text{ m}^3 \text{ha}^{-1} \text{an}^{-1}$ for radiata pine at ages 38 or 39 years, 16.9 at 50 for Douglas fir, 10.8 at 35 for other softwoods and 16.0 at 20 for hardwoods. The base cut scenario in the wood supply forecasts publication has a target rotation of 30 years for radiata pine, at which age the average m.a.i. is quoted as being $19.2 \text{ m}^3 \text{ha}^{-1} \text{an}^{-1}$. Theoretically then, even if the whole area of 1,158,427 ha was in radiata pine, the maximum possible sustainable yield could only be $1,158,427 \times 20 = 23.17 \text{ Mm}^3/\text{annum}$ for a 38-year rotation and $1,158,427 \times 19.2 = 22.24 \text{ Mm}^3/\text{an}$ on the specified 30-year target rotation. But the FOLPI wood supply forecasts give 23.3 Mm^3 in year 2006, rising slowly to 23.7 Mm^3 in 2021.

This inconsistency may well arise because of the influence of thinnings, but I cannot check that source of contribution properly, because the yield tables do not deal with this aspect well either. The yield tables are smoothed out net of thinning, which leads to anomalies and some confusion: for example, the Auckland intensively tended radiata pine yield table has a thinnings yield of $110 \text{ m}^3/\text{ha}$ at age 10 but a clear felling recoverable volume of $32 \text{ m}^3/\text{ha}$ at age nine and $40 \text{ m}^3/\text{ha}$ at age 10, while the minimum tended regime has a production thinning of $150 \text{ m}^3/\text{ha}$ at age 14 but a clearfell recoverable volume of $65 \text{ m}^3/\text{ha}$ at age 13 and $75 \text{ m}^3/\text{ha}$ at age 14. This may be a form of representation that is needed for analysis with FOLPI, the tool used in the Ministry's wood supply analysis, but it is not suited to other planning tools, nor does it make much sense biologically.

A better way to present these yield tables in the future would be as follows:

- (1) ensure that forecasts proceed realistically up to at least age 60 years, even if no area at the older ages exists;
- (2) quote the forecasts year by year in terms of total production, i.e. inclusive of thinnings, and compare the production of various crop types in terms of maximum m.a.i. of total production and age at which maximum m.a.i. is achieved;
- (3) itemise the approximate age of current thinning, the recoverable amount removed and the residual total stem volume/ha after thinning, which last figure may not be the straight difference between the clear fell yield and thinning volume recovered;
- (4) quote both the total stem volume and the best estimate of recoverable wood yield by age.

Point 4 is recommended because: (i) there may be uses for national growing

stock figures other than wood yield (e.g. estimating carbon sequestration), that is better related to total stem volume; and (ii) the overall 85% recoverable factor that is assumed for all crop types, ages and localities may need local adjustment.

The attempted breakdown of the recoverable volumes into log types is admirable, though not all users will be happy with the choice made here. Nevertheless I myself am perfectly content with the choice, as they are the ones quoted in the current NZIF Handbook and it is possible to make reasonable transformations into export categories with a small amount of additional derivation.

I am surprised, however, at some of the total sawlog components listed in the yield tables and wood supply figures; they may well be overly optimistic in certain situations. Two recommendations that were originally mooted for the first

national exotic forest description have never been implemented, but they would help to shed light on this matter. The first of these was to try to devise a system of directly measuring the quantities of logs used instead of deriving them indirectly from finished product statistics, while the second required owners to provide annual documentation of the averaged realised harvest yields per hectare for each age class and crop type. Without such calibration, the quality of yield tables and the assorted wood supply forecasts that can be derived from them will be compromised.

A matter which was not envisaged at the time of the first national description, but which may need to be included in the NEFD statistics collected annually, is the GF rating of each planted hectare of radiata pine. The impact of improved growth as a result of improved breeds is currently a subject of research at FRI. It may be necessary for owners to include this information in their area statistics, unless provision for GF rating has already been made in the separation of crop types and associated yield tables, so that the allowable cut effect can be properly accounted for.

Indeed, I am rather surprised that the allowable cuts have not risen more steeply in the two scenarios where extra annual plantings of 50,000 ha and 100,000 ha are made. This too may be unduly dampened by the assumed thinning strategy and it would have helped if more thinning options could have been allowed for in the non-declining harvests to take advantage of an increased area of forest estate earlier than does apparently materialise. In this regard too, it would have been helpful to state the discount rate applied to harvested wood volumes. I would hope that, in this case, the one chosen was zero, otherwise that would have resulted in another confounding effect.

The one or two criticisms made here of these two publications should not detract from the high value their release provides for resource planners, but rather emphasise that I regard the information so highly that I want to get an even better quality of it next time round. One cannot expect, moreover, this kind of publication to cover every vital contingency the first time. Rather, such publications should be revised regularly (no more than two years apart) unless no significant changes have emerged in that time. I look forward to seeing future editions of these two publications in a year or so, preferably with really up-to-date area as well as yield table statistics.

A.G.D. Whyte

**Involved in forest planning?
Assessing ports and roads,
industrial developments
and regional resources?**



WOOD SUPPLY FORECASTS

The **NATIONAL EXOTIC FOREST DESCRIPTION 1992 NATIONAL AND REGIONAL WOOD SUPPLY FORECASTS** publication is a 147 page report which contains detailed wood supply forecasts for the 50 year period 1991 to 2040.

Forecasts are presented for five scenarios assuming a range of clearfell ages and levels of new planting. The report contains a detailed description of how the forecasts were produced and offers some guidance on using the forecasts.

The report is available from: The Information Centre,
Ministry of Forestry, PO Box 1610, Wellington, New Zealand.

Telephone: 64-4-472 1569 Facsimile: 64-4-472 2314

ORDER FORM

Please send me

☐ copies of the National Exotic Forest Description 1992
National and Regional Wood Supply Forecasts

\$75 (incl GST and postage) New Zealand

\$95 (incl postage) overseas

Name:

Company:

Address:

Signature:

Cheque enclosed, payable to Ministry of Forestry, for \$