

Reviews

INVENTORY OF WOODLANDS OF THE FOREST AND WILDLIFE SERVICE. INVENTORY OF STATE FORESTS—1968. Liam P. O'Flanagan, Stationery Office, Dublin. pp. 94. Unpriced.

As the title indicates, this publication gives detailed descriptive lists of the characteristics of State woodlands in regard to areas, species and volume and also gives forecasts of production up to the beginning of the next century. Indeed, two-thirds of its pages are devoted to tables of forest statistics.

The stated prime objectives of the inventory were twofold:

1. To provide short and long term forecasts of timber production from State forests at national, county, district and forest levels.
2. To provide up-to-date forest maps with stand descriptions for use by forest managers.

The first objective is oriented toward planning at national and regional levels. The second is aimed largely at local management and relates to the first only in so far as some basis of forest area classification is required to forecast growth potential. A third possible objective, estimation and classification of the volume of growing stock was considered to be "not of such significance," although tabular estimates are provided.

The provision of stock maps involved visiting and mapping all sub-compartments in forests planted prior to 1958. Each compartment was described on a field form, using seventeen criteria. These data were then punched on cards for computer processing and listing. In all, a total of 90,000 inventory data cards were punched, validated and processed on an I.B.M. 360/20 computer. Details of the field procedures and criteria used are provided as well as an outline, complete with flow diagram, of the methods adopted for computer processing. Computer output is presented in the form of summary tables showing forest type by area, industrial timber volume and firewood at national and county level. (Tables A).

Field data for forecasting the growth potential were obtained concurrently with the mapping exercise. The yield classes of coniferous sub-compartments were estimated by "selecting subjectively a point in the sub-compartment where growth was deemed average and taking two top heights per species in a 1/20th acre circular plot." A field test to check the accuracy of this procedure "showed that the Assessors estimated the correct yield class eight times out of ten." This was considered sufficiently accurate for the

purposes of the inventory. In view of the fact that the field assessor had to visit each stand for mapping purposes it was deemed desirable to carry out a "complete inventory" rather than resort to a sampling procedure. In this way the objective to provide up-to-date maps determined the actual inventory method.

Forecasts of production relate only to conifer high forest, both pure and mixed. It is based on data from three sources: (a) the inventory of forests planted up to 1958 (b) a supplementary forecast for crops planted 1958 to 1968 inclusive (c) the projection of (b) to cover subsequent planting. In all cases the vehicle for forecasting is the Production Forecast Tables of the Forest Management Tables, which assume an annual thinning yield of 60% of the yield class during the thinning period. These tables were read into the computer, either in tabular or equation form, and used to forecast thinning yield on the basis of area and yield class of the various species as they entered the thinning stage. Clear felling yields were allocated to stands which had reached the age of maximum mean annual increment and these which were to be prematurely felled on a reduced rotation.

Forecasts of thinning, clear felling and total yields at national level are given for all conifers up to the year 2002, for Sitka and Norway spruce show yields at county level. Tables of weighted mean yield class, area and volume of main coniferous species both at national and county level complete the picture.

The publication is printed on good quality paper, with a generally acceptable presentation format. The practice of using the same alphabetical character to identify a whole series of tables may facilitate computer programming but it can be somewhat confusing to the reader. This is further aggravated by detaching tables A and B on pages 61 and 62 from their respective series. The dual titles, one on the cover and one on the fly-leaf, essentially convey much the same meaning, but why should not one of them suffice? Some misspellings, e.g. "forewood" for firewood, point to hasty proof reading and there is at least one error in the tabulated data. Apart from these criticisms the publication is very readable.

Sawmillers and those in the pulp and particle board industries who are concerned about the short term supply of material and the prospects for expansion will find the tables of forecasts extremely valuable. Planners of regional wood using industries will welcome the presentation of data on a county basis. Foresters and students of yield regulation will appreciate the existence of a reference manual on the vital statistics of our forests even though it is already some years out of date.

The author is to be commended for including the tables giving forest type by area and volume despite an earlier reference to the lack of significance of such data. Although they appear to be based on ocular assessments without estimates of their standard of accuracy they provide a picture of the national wealth in our older plantations. In these days of high inflation, soaring timber prices and scarcity of supplies, this provides a bulwark against an emergency, which would be none the less critical if it were economic rather than military.

What is the outlook for forestry? The mean yield classes of the main coniferous species at national level are very encouraging. With pure Norway spruce leading the field at 185 hoppus, followed by pure Sitka at 165, the data show an overall average yield class of 146 for pure conifers and 130 for mixed conifers.

Although these figures are somewhat optimistic in that they do not take into consideration 36,300 acres of "other conifers" which have not been given a yield class in the table, they still represent some of the best growth rates in the Northern Hemisphere.

With a 1 million-acre normal forest of yield class 140 (hoppus) managed on a sustained yield basis our average annual cut would represent 50 million cubic metres. Compare this with production in Norway, a country with a long established forest enterprise playing a major role in its economy. There the current average annual cut is 72 million cubic metres from 8 million hectares of forest.

From an overall planning and forecasting point of view this table of weighted mean yield class at national level (page 62) is one of the most important in the book. Regretably it has two defects; firstly the omission of a yield class for "other conifers" and secondly, a printing error which has robbed *Pinus contorta*, pure, of 5,000 acres. It should read 18,343 acres instead of 13,343. If the reader is so inclined he can use the table to do his own forecasting. Assuming that the present acreage of 600,000 acres (240,000 hectares) will all be in the thinning stage at the end of this century and that an average yield class of 130 obtains. The annual thinning yield (60% of the yield class) will then be $130 \times 0.60 \times 600,000 = 46.8$ million hoppus feet (1.69 million cubic metres). A similar, but most accurate, result will be obtained by referring to the forecasts of coniferous production from State forests, 1971/72 to 2001/02 (page 29), showing the thinning yield, clear felling yield and total yield. In contrast to the previous table, however, this is rather disappointing. In view of the known excellent performance of crops planted prior to 1958 and the present

policy of acquiring land of similar yield class potential the slow increase in clear felling yield baffles this reviewer. Accepting that the constant clear felling yield from 1990 to 2002 is due to yield regulation one must ask why is there not a greater clear felling yield during this period. Does the answer lie in the application of the "reduced" rotation concept or in the acceptance of a rotation of maximum mean annual increment which is just around the corner? A projection of the table for another ten years would ascertain if the latter were the case.

The inventory spanned a three year period and cost approximately £95,000 of which some £21,000 is set against data processing. The total area covered in the inventory was 264,514 acres. This is possibly the last inventory of its kind. An inventory of stands over 10 years of age if undertaken in 1974 would add another 150,000 acres to the above total. In these conditions some form of continuous inventory or sampling procedure is indicated. Whatever inventory design is adopted it is essential to have a periodic assessment of the position for forecasting, regulating and controlling yield. Without these, forest management is non-existent.

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