

FOREST RESOURCES OF THE MACKENZIE RIVER VALLEY, N.W.T. By R. P. HIRVONEN. *Ottawa: Information Canada 1975. (Forest Management Institute Information Report FMR-X-71, Study FM-112). 8½ x 11 inches, 42 pages plus appendices. Soft cover, no price indicated.*

This survey, carried out by the Forest Management Institute of the Canadian Department of the Environment, provides an introduction to the forest resources of an area of roughly 36,000 square miles (93,000 km²) in the Mackenzie and Liard river basins in the Northwest Territories. It was prepared as an appraisal for general planning and identifying of areas of immediate and potential forestry interest. The author divides this vast area into three sections. The southern section, from the Alberta-British Columbia boundary to Fort Simpson, contains the prime forest lands, and approximately 12,000 square miles of it have been forest-cover mapped. The mapping includes only the forested lands adjoining the Mackenzie and Liard rivers. Current population centres and existing transportation facilities are also briefly described in each section. The central section, between latitudes 62°N and 65°N, parallels the Mackenzie River in a strip 15-50 miles (24-80 km) wide, and covers 7,150 square miles of forest mapping. The northern section, between the latitudes 65°N and 68°N, covers 16,580 square miles, and is by far the largest. It includes the population centres of Norman Wells, Fort Good Hope, Fort McPherson and Arctic Red River. Aklavik and Inuvik lie to the north of the sixty-eighth parallel, outside the area surveyed. The author describes the climate as sub-arctic with a 120-140 days' growing season, a frost-free period of 60 days and an average precipitation of 12-16 inches (30-41 cm) of which half falls as rain.

Past forest surveys of the region were scanty until 1951 although many early travellers provided impressions of the timber. E. Stewart, in 1906, was the first forester to specifically report on the forests. By 1969, several forest inventories included many of the major saw-timber tracts between the sixtieth parallel and the Mackenzie Delta but, due to the spread in years, continuity of information was lacking. The possibility of a transportation corridor paralleling the Mackenzie River resulted in the mapping in 1974 of all forest and vegetation types from the Alberta boundary to the Beaufort Sea, and up-to-date forest-cover maps became available. Sources of data relying heavily on the interpretation of aerial photography came from six separate studies undertaken between 1951

and 1973. Although the terrain and transportation facilities hindered sampling to some degree, since the better forests occur in the river valleys, most of the significant tracts of timber have now been surveyed. Data from 1,235 sample plots, plus descriptive information, form the basis for the calculations in the report. An index map shows areas covered, the year and the scale, and Appendix I contains eight maps at a scale of 1:1,000,000 showing the distribution of productive forested lands in the Mackenzie Valley. Two forest types only are identified on these maps: stands less than 60 feet (18 m) in height, and large timber — *i.e.*, that over 60 feet.

The land-use classes for the total area are divided into: forested land, productive; forested land, non-productive; stunted or stagnated forest; protection forest; non-forested land-brush; grass and sedge; open muskeg; rock-cleared and improved land; recent burn; and water. The forest stands are mapped according to species composition, 20-foot height classes and crown closure into 20 per cent classes. Estimates of area in square miles are given for four land classes (productive forest, non-productive forest, non-forest, and water) for each of the sections. In the southern section productive forest comprises 44.2 per cent (5,199 square miles) of the four land classes measured. The central section contains 26.7 per cent (1,912 square miles) while the northern section contains only 11.1 per cent (1,866 square miles) of productive forest. Gross merchantable volume calculations for three cover types:—softwoods, mixedwoods and hardwoods are given in *cunits* (100 cubic feet) for stands over 40 feet in height and *board foot* volumes for stands over 60 feet. A brief forest description with site types and tree species present is as follows: forests on recent alluvium; forests on older alluvium moderately drained upland forests; dry upland forests; forests on imperfectly drained uplands and organic terrain and steep slopes. Photographs illustrate the main site categories described.

In the summary it is stated that one quarter of the region of 36,000 square miles consists of productive forest land of which one third is covered by softwood, over one half mixedwood, and the rest hardwood stands. The total volume amounts to 50 million *cunits* made up of 37 per cent softwoods and nearly 50 per cent mixedwoods. The total board foot volume is 6.2 billion f.b.m. of which softwoods account for about 42 per cent, and mixedwoods about 35 per cent. Most of the saw-timber is found in the southern section, much scattered on upland sites and mostly confined

in narrow strips along the rivers. Large concentrations occur in the Liard River region south of the South Nahanni River.

The report concludes with the warning that, before significant logging operations commence, the difficulty of restocking cut-overs must be investigated. Adequate research is required to prevent the destruction of the forest resource, because of the severe climatic soil and permafrost conditions. Sustained-yield forest management is questionable, particularly in the northern areas, where over 200 years is needed for an average-size tree of uncertain quality to grow. Precipitous exploitation must be avoided, as it could seriously affect soil stability and lead to excessive erosion and an undesirable lowering of the permafrost level. Besides timber products, the forest cover is invaluable for the preservation of wildlife, aesthetic enjoyment and recreational purposes. These non-timber benefits are of unique importance in this northern location and must be protected.

Maps and appendices containing area and volume estimates by cover types and species groups complete the report—a useful preliminary study of the forest resources of the Mackenzie Valley.

A. R. C. Jones

flung settlements of the tundra and taiga, the reindeer- or dog-drawn sledge is often used for short journeys, and reindeer breeding is an important occupation.

Because of its importance to the northern peoples, therefore, the reindeer figures prominently in their art and handicrafts. The skins are used for winter clothing and sledge linings, and in the past they covered the yourts and *chumy* (collapsible dwellings) of the nomadic herdsmen. Leg pelts, used for footwear, mittens and bags, are both durable and beautiful. The needlewomen of the Far North are extremely talented, and with their careful selection of pelts, the variety of textures, patterns, colours and trims, they produce garments which are not only functional but are works of art as well. Sometimes the clothing is decorated with other furs, as well as ivory and metal ornaments, *rovduga* (chamois made from reindeer skins) tassels, beads and inserts of woollen fabric.

Other items are also made from reindeer skins: rugs, wall hangings with pockets to hold household implements, reindeer harnesses and saddles, carrying bags, belts, aprons, etc. Wood, birchbark, walrus tusk and mammoth ivory are also featured in their handicrafts.

In the Land of the Reindeer features 77 excellent colour plates of handmade artefacts by members of some dozen national groups of the Soviet North, including Eskimos. Many are in close-up so that the design and the meticulous care taken in executing them are readily discernible. In such cases there is a black and white insert to show the whole garment or object. The captions identify the objects in both English and Russian. English takes precedence in all instances, so it would seem that this book was intended primarily for the English-language market. At the back of the book are two lists of the plates (in English and in Russian) which give details of the materials used, the name of the artist, if known, the size of the article and the name of the museum owning it.

A short introductory article, by N. Kaplan of the Art Industries Research Institute in Moscow, gives a succinct and clear analysis of the special features of the applied and decorative arts peculiar to the peoples of the Far North. It is illustrated with black and white photographs of walrus tusk carvings.

This very handsome book will be of interest not only to ethnologists and others studying Arctic peoples, but to anyone with an appreciation of beautiful handiwork, both functional and ornamental. It is a book to be looked through at random, and in detail.

Nora T. Corley

IN THE LAND OF THE REINDEER: APPLIED ART IN THE NORTH OF THE SOVIET UNION. *Leningrad: Aurora Art Publishers, 1974. 84 pages, 77 coloured plates, 36 black and white illustrations. No price indicated.*

The reindeer is still a very important factor in the lives of the peoples of the Soviet North. Although the aeroplane now links the far-