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FOREST RESOURCES, THEIR DEVELOPMENT AND EFFECTS

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ABSTRACT

Logging and conversion of Huon and King William Pine was the first industry established on the west coast. During the first hundred years it played a supporting role to the mining industry providing raw material for domestic and industrial needs. Over the last three decades it has become less dependent on local requirements and has sold the bulk of its output elsewhere.

The predominant forest type is the temperate rainforest which yields a number of valuable but extremely variable commercial timber species. This variability, coupled with adverse climate, severe topography and long haul to markets has tended to disadvantage the industry in relation to its competitors.

With the exception of Huon pine, there are considerable volumes of timber in the district. However the resource is dispersed and readily accessible forests are becoming cut out.

The Forestry Commission is in the process of preparing a systematic inventory of forest resources, the results of which will determine the long term strategy for forest operations and the scope of its softwood plantation programme in the region. This work is reinforced by research into the ecology and silviculture of temperate rainforests. A review is being undertaken of the effects on established industry of the introduction of guidelines and legislation designed to protect the environment.

INTRODUCTION

The discovery by Captain James Kelly of Macquarie Harbour in 1815 and the rich supplies of Huon Pine on its shores and in its tributaries, marked the beginning of a century of active and unrestricted exploitation of one of the world's most unusual timber species. It provided an opportunity for the establishment of an industry which acted as a springboard for other developments, notably in the field of mining exploration. Initially operations were confined exclusively to the logging of Huon pine but other species such as King William pine, celery top pine, eucalypts and myrtle came in as the demand increased for domestic requirements.

It is estimated that at the height of the Huon pine "boom" at the turn of the century some three million super feet log volume was cut annually (Casson 1952). Initially the largest proportion of timber was shipped in flitches or logs to Hobart or continental Australia but gradually the developing mining townships at Queenstown, Zeehan, Pillinger and the Rosebery area took up most of the available sawmilling capacity.

The growth of mining towns also had the effect of shifting the emphasis of logging from Macquarie Harbour to areas centred around each developing township - probably the first example of the decentralization of an industry in the Commonwealth.

The native pines continued to be exported from Macquarie Harbour at a substantial level until the late 1930's when, due to diminishing resources, the annual harvest declined to a level maintained over the last two decades.

Forest Resources

Owing to the steep and broken topography, the scattered occurrence of the premium species, the prohibitive cost of road-building and the lack of mechanised equipment, the exclusive mode of log transport to mill was on water, either by rafting of the buoyant Huon pine or by ship or lighter for other species. The logs themselves were felled into the water or were hand winched, horse sledged or manhandled from the stump to the loading area along temporary, makeshift tracks or log roads (Forestry Handbook 1928, pp.45-6). In later years, tramways were built to reach into more remote areas but this sophisticated form of log transport was usually reserved for a land based, forest to mill operation.

Vast quantities of timber were extracted but the early practice of utilizing waterways resulted in the establishment of few permanent forms of access and it was left to the mining industry to bring about a rail and eventually a road link with other centres of settlement in the State. The most valuable and most readily accessible timber resources thus have been utilized without the usual residual bequest of a road system and this early practice may pose problems and strongly influence the development of the forest resources in the future.

FOREST RESOURCE

Area Estimate

The area covered in this paper is bounded by the Pieman and Mackintosh Rivers in the north, the Cradle Mountain National Park/Navarre River/Lake King William/Holly River to the east and an east-west line on approximately 42° 45' latitude in the south. It comprises the administrative district of Queenstown, which for the purposes of this paper may be considered to terminate in a southerly direction near the Wanderer River.

Table 7 below shows the broad vegetation types on the area by land tenure categories. It was compiled from a map produced by the Forestry Commission, using an aerial spot sampling procedure at an intensity of approximately 1.7% by area. The purpose of the type mapping was to obtain an estimate of the areas of forested land of commercial value. Areas are in hectares.

Table 7

Distribution of Vegetation by Area and Land Ownership

Land Tenure \ Type of Vegetation	Tall Eucalypt Forest (ha)	Low Eucalypt Forest (ha)	Rain-Forest (ha)	Other	Total Area (ha)	% of Total
Public Land						
State Forest	-	3,900	17,900	38,100	59,900	8%
Vacant Crown land	1400	48,900	121,600	492,500	664,400	87%
Vested in H.E.C.	100	800	1,500	6,000	8,400	1%
State Reserve	-	1,600	3,300	20,400	25,300	3%
Total	1500	55,200	144,300	557,000	758,000	99%
Private Land						
Town Reserves and Private Property	-	200	900	5,300	6,400	1%
Grand Total	1500	55,400	145,200	562,300	764,400	100%
% of Total	-	7%	19%	74%	100%	

The percentages were calculated to emphasize the two main features which set the west coast region apart from other areas in the State -
(a) private property comprises less than 1% of the total area.
(b) almost three quarters of the land carries vegetation of a non-forest type, consisting mainly of mountain moors and button grass and heath plains. The bulk of the forest consists of temperate rainforest from which eucalypts are absent.

Both features reflect the rugged topography, general lack of soil fertility and the high rainfall of the west coast.

The eucalypt forests occupy an altitude range to the tree line at about 1200 m; the commercial species are confined to elevations below 750 m. The predominant eucalypt association is the peppermint type of *E. nitida/E. amygdalina*, which merges with *E. delegatensis* at higher elevations and gives way to *E. ovata* on poorly-drained sites. *E. obliqua* is confined to two patches of gabbro-amphibolite soils near Zeehan. *E. globulus* occurs on limited areas at the mouth of the Henty River and Double Cove on Macquarie Harbour - two isolated patches some 150 km from their nearest neighbours.

The temperate rainforest or "myrtle" forest as it is commonly known, can be regarded as the climax association for the climate. It is dominated by *Nothofagus cunninghamii* in association with the principal tree species of sassafras (*Atherosperma moschatum*), leatherwood (*Eucryphia lucida*) and blackwood (*Acacia melanoxylon*). On selected sites can be added celery top pine (*Phyllocladus asplenii folius*), King William pine (*Athrotaxis selaginoides*) and Huon pine (*Dacrydium franklinii*).

The rainforest consistently follows water courses at low elevations giving way to moors and heath plains at higher altitudes. It covers a range of sites but prefers argillaceous and igneous rocks to siliceous types.

Its component species are of high value for boatbuilding, furniture, decorative uses, turnery etc. and because of its widespread occurrence the rainforest is a more important forest resource than the eucalypts.

Volume Estimates

To date the formal assessment of the quantity and quality of timber has been confirmed in areas subject to Hydro-Electric Commission development, or to specific sawmiller operations. Broad estimates have been made from time to time of timber volumes in various parts of the Queenstown District but no systematic overall forest inventory has been undertaken.

Preparations are being made for a resource level inventory to be carried out. The sequence of logistic operations include the identification of forested lands, aerial photography, type mapping, the production of maps and the design and layout of the sampling system. This is followed by field work in location and measurement of sample plots, computerized data processing and finally the results in the shape and form required. The output from a resource level assessment provides the base for strategic planning and usually results in the more intensive reappraisal of discrete areas for the production of operational plans. This sequence is expected to be completed on the west coast during early 1980. For the purpose of this paper, in order to provide some estimate of the overall forest resource, I have used mean volume per hectare derived from past assessments and utilization studies carried out in the district and elsewhere in the north-west.

These averages have been applied to the aggregate areas of State Forest and Crown land forests in Table 7. The results are broad estimates and subject to error.

To give an idea of the size of the resource, the estimated sawlog volume is almost

Table 8

Estimate of Merchantable Volume in Cubic Metres X 1000

	Sawlog Volume		Pulpwood Volume	
tall eucalypt forest	150	(3%)	270	(2%)
low eucalypt forest	3170	(59%)	5810	(35%)
rainforest	2090	(38%)	10460	(63%)
Total	5410	(100%)	16540	(100%)

seven times the total cut from Crown forests in 1974/75 in the whole State. The pulpwood resource is more than 30 times the Crown quota for Tasmanian Pulp and Forest Holdings Ltd. at Triabunna. It is to be noted that the total merchantable yield from the rainforest is equal to that from the eucalypts. However potentially it is much more than that. By current utilization and merchantability standards in the industry, about half the standing volume/acre in a rainforest is classed as cull or waste. Those familiar with the often derelict stagnating appearance of an overmature rainforest will appreciate the prevalance of defect in form and soundness. Provisional research work suggests however that over 60% of myrtle currently classed as cull wood is sound fibre. This represents more wood per hectare than is presently classed as pulpwood (unpublished work, Forestry Commission). The problem, of course, is to separate the sound fibre from the rotten wood on the one hand, and to mechanically handle small pieces and short lengths on the other.

Due to the nature and condition of the rainforest, foresters are becoming inclined to think in terms of tonnes of solid fibre per hectare rather than in terms of a measure arrived at by conventional sawmilling or pulpwood logging standards.

The size of the resource is enormous, particularly in respect to the rate of usage by the industry at present. However the following factors are likely to act to drastically reduce availability:

(A) Access.- Only a fraction of the forest estate is within reach of established roads. The mean volume/ha is low and in many cases below the level required to justify the expense of road building. Forest industry could contribute towards the cost of roading but on current economics could not do so on its own.

(B) Topography.- The land is steeply dissected, with numerous flash flood streams, some tidal for many kilometres inland. A considerable proportion of the forest will be inaccessible to conventional logging equipment.

(C) Distribution of forests.- The forest estate is very scattered, often in small patches or in narrow ribbons following watercourses. This has the effect of increasing the unit costs of roading and will render areas uneconomic to reach.

(D) Environment protection.- Guidelines for forest operations with respect to the protection of soil and water values, being considered for implementation at present are likely to have the most serious effects on both availability of resource and the mode of its harvesting.

Aspects of the guidelines are being currently studied since the west coast has the most unfavourable combination of steep topography, shallow soils and high rainfall and the introduction of protective measures applicable to other parts of the State could have serious and immediate effects on the local timber industry.

EXPLOITATION AND MANAGEMENT

Past

The Crown received no direct income from the taking of timber until 1863 when a

licence fee was introduced at a rate of two shillings and sixpence per week per licence, subsequently reduced to one shilling a week in 1866. In 1885 the concept of timber royalty was introduced and prescribed rates of one penny per 1000 super feet for Huon pine cut for export and half this rate for local consumption. In 1889 this royalty was abolished.

In 1898 as a result of amendments to the Crown Lands Act the principles of granting exclusive cutting rights to sawmillers were confirmed and royalties prescribed of five shillings per 1000 super feet log volume for pine, blackwood and "other ornamental timbers" and one shilling for eucalypts. Until 1920 when the Forestry Act was introduced, control and supervision of cutting were left in the hands of police officers in their capacity as Crown Land Bailiffs, without additional remuneration for these extra duties. The Forestry Act was implemented in 1921 and a Forestry Department instituted consisting of a staff of 10, including an Accounts Clerk and a Typist. A permanent forestry officer was transferred to the "Pine District", and stationed at Zeehan in about 1923. No timber quotas were imposed on the Huon Pine operations and none existed until this year. The volume cut was governed only by availability and access to supplies.

Present

All Crown land logging operations are conducted under the authority of a licence or permit issued by the Forestry Commission, which has a field staff on the west coast of a professional forester and two technical officers. Cutting is supervised and controlled according to the provisions of the Forestry and Rural Fires Acts and Regulations. The volume cut from Crown sources is controlled by annual quotas, which however do not apply to mills cutting exclusively for the mining industry.

A plantation establishment programme was started in 1970 at Strahan as an employment project following a reduction of the labour force at Strahan. Several broad soil surveys have been conducted in the Queenstown District to evaluate the potential for a self supporting softwood industry based on sustained cut. The species is *P. radiata* which has been planted to date on recent sand dunes, with attendant soil nutrition problems. Proposed expansion into the Dundas, Zeehan and Princess River areas will be on more fertile soils.

The forestry gang of 16 permanent employees at Strahan is forming a most effective nucleus for fire fighting and together with local units of the Rural Fires Board brigades is starting to make some progress in diminishing the spate of illegal fires prevalent on the west coast.

Future

The two major aspects of forestry operations are likely to be:-

(A) The continuation of the softwood planting project and its extension onto other areas near Zeehan and east of Queenstown. A review of all aspects of the original proposals is being carried out and the results will determine the extent and scope of future plantings. As a matter of policy, the Forestry Commission will then be in a position to determine the likely role of plantation grown softwood in the overall management of forests on the west coast.

(B) The completion of the resource level inventory of native forests. Notwithstanding the vast potential resources indicated previously, the present level of harvesting is unlikely to be altered until the results of the systematic assessment are known. The next few years will mean an influx of specialist staff engaged on this work which is enormous in scope and likely to present logistic problems not faced since the earlier "pining" days.

The active expansion of the Rural Fires Board organization and effective support in fire detection, prevention and suppression by the forestry administration should, by the end of the decade, reduce the wild fire incidence and the threat of destruction

by fire which is still a dominant obstruction when considering plans for forestry investments in the area.

CONCLUSION

Resource estimates indicate that there is in the future, scope for an expansion to the existing forest based industries in the region. Economic and environmental considerations and technology will determine the nature and scale of the facilities for the use of the renewable resource.

The rainforest resource shows the bigger potential for development but its exploitation, management and regeneration will pose a severe challenge to industry and the Forest Service alike. The ultimate use of wood for the production of energy would suggest the most favourable prospects for the long term future.

REFERENCE

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