

always present, then the logical course of action is to reserve a part of the forest from logging, or to set arbitrary rotation ages to ensure that any coupe logging always retains mature forest. For instance, a rotation of 150 years in beech forest, and 300 years in non-beech forest, would ensure that mature trees are always present.

To control overcutting, not more than 1/30th of the area of beech forest, or 1/60th of the area of non-beech forest could be cut in any five-year period. A further constraint could be that in non-beech forest, coupe size could be restricted to less than say 1 ha, but there is no good scientific reason for having such a restriction in beech forest, and many good silvicultural reasons for not having such a restriction.

Ensuring that any production from indigenous forests is on a sustainable basis is only important if it is intended that production continue well into the future. Unsustainable production jeopardises future production, but it need not jeopardise the future existence of the forest, nor its value as wildlife habitat, if appropriate safeguards are adopted.

If sustainable production is an objective, then yield control on an area basis is probably the best option for coupe logging, provided that the forest is stratified into major yield types so that the most economic areas are not all logged first. In selection forests, the harvested yield, plus any natural mortality, should not exceed the gross increment, and this would require a periodic inventory check.

However, sustainable production involves more than just yield control. Regeneration after logging, whether natural or artificial, needs to be assured, the regeneration needs to be protected, and the new crop needs to be silviculturally treated to ensure that the quality of produce is at least maintained, and preferably enhanced. None of these issues is mentioned in the joint statement.

The whole tenor of the joint statement appears to be to control logging, but it does not address the real issues to which the Government claims to be committed – that of maintaining and enhancing existing areas of indigenous forest in New Zealand. Until the Government does address these issues, I think we are entitled to be sceptical of their commitment.

Dudley Franklin

'Flat earth' flavour

Sir,

Two articles in NZ Forestry Vol. 35(4) have a curiously "flat earth" flavour.

"Prospects for New Zealand Forestry" (p. 6) shows a naive belief in free market forces to provide future wood supplies, despite the fact that, since the dawn of civilisation, free market forces have treated forests as a mine to be exploited to extinction (being the most profitable option), a process which is still continuing. It is interesting to compare this simplistic belief with the article on p. 24, where it is said that the Chilean Government "adopted a free market approach in all areas of the economy **except for forestry**". And why, pray, do so many countries insist on statutory replanting of logged forests? Are we to assume they are daft?

The other example of "flat-earthery" (if I may call it so) is on p. 3, which exhibits a distressing belief that everything will continue as it is for ever. It is stated that the world's wood needs can be supplied from a land base of "little more than 10% of the present area of forest in the world". I suggest the originator of this strange idea should consult "State of the World", being the "Worldwatch Institute Report on Progress towards a Sustainable Society", published by Unwin in 1990.

World population in the year 2000 is expected to be 6.251 billion. There are something like three billion hectares of potential commercial forest, plus about 900 million hectares of savannah woodland, which I will leave out of account here, although it provides huge amounts of vital firewood. Wink Sutton gives a figure of 3.55 billion tonnes of wood used annually (about half of which is firewood). So let's say the world uses around 2 billion tonnes of industrial wood annually. World population (1990) is 5.292 billion, so per capita wood consumption is around 0.38 tonnes per annum, excluding firewood.

If we can provide that quantity from one-tenth of the potentially commercial forests (300 million hectares) the yield would need to be 6.67 tonnes per hectare per annum. It is, however, very doubtful if a mean worldwide figure of this magnitude would ever be achieved; a more likely maximum is 4 tonnes, which would require a commercial forest area of 500 million hectares, or 17% of the total forest area.

If, however, world demand reaches the New Zealand level of 2 tonnes per capita per annum, then the volume required world-wide would be, by the year 2000, 2×6.251 billion or 12.5 billion tonnes. At a yield of 4 tonnes per hectare per annum, this demand would require

the whole of the area of potential commercial forest, still excluding firewood.

And how much forest land will be cleared for food production in view of an increasing world population and ongoing degradation of farm land?

The article assumes that only present conventional uses of wood will continue indefinitely into the future. Say, however, that wood is needed for the production of all those articles now provided from mineral oil, including liquid fuels and a host of ligno-chemicals? Then prognostications based on an uncritical and cursory look at the present situation would be astronomically wrong.

I am loath to bandy figures of this kind around, but still I don't like to be hoodwinked and grossly misled into believing the unbelievable.

Geoffrey Chavasse

Global forest interactions

Sir,

The ideal of sustaining tropical forest yields is often mentioned. While it is true that experiments show that this is possible, if you examine the data you will see that building all weather roads, logging with ground-based heavy machinery, and logging lesser-known species are not referred to. However these activities are all mandatory for modern loggers if their operations are to be profitable. While the volume yielded by a second logging of any area may be similar, there will not be a similarity in species or quality.

The conservation of the remaining area of native forest cover must be supported but surely this is only one aspect! To ensure the survival of 5 billion people, who use wood every day to cook their food, requires the replanting of some 20 million hectares per year of fuelwood plantations. To offer economic opportunities to many people a further 15 million hectares of industrial plantations must be planted each year. To cater for roughly double the world population in about a generation's time these figures ought to be doubled.

K.D. Marten

Forestry or log farming

Sir,

Foresters in New Zealand, like those overseas, are prepared by education and training for a profession dedicated to managing forest and soils for a multitude of purposes. Yet to much of the public,

and to politicians especially, the main task of foresters seems to be regarded as little more than planting exotic (preferably radiata) trees and, after an appropriate lapse of time, felling them again before repeating the cropping cycle. Any suggestion of a broader philosophy involving an extensive as well as an intensive application of forestry principles is dismissed as either an economic nonsense or an assault on the natural environment.

Is it any wonder then that the demise after 70 years of the State as forest owner/manager has led to a crisis of confidence in their profession with many foresters? At one extreme, the establishment of the commercial corporations and the sell-off of as many of the nation's production forests as buyers could be persuaded to bid for acceptably and, at the other extreme, the setting up of the Department of Conservation, have in great measure removed for those who saw it as their career goal the opportunity to practise the ideals of multi-purpose management.

Yet had there been no State as forest manager, who would have established the extensive plantations to stabilise the sand dunes on the west coast of the North Island and thus protect the valuable farm behind, who would have started to plant forests on the eroding hill country of the east coast of the North Island, who would have waged the fight against deer destruction in our mountain forests before the advent of helicopter hunting, and who alone (because of the long time scale involved) could even now, if only there were the will, pursue a policy of indigenous afforestation and management.

In the space of 70 years the enormous indigenous forest resource for which MacIntosh Ellis had such high hopes and about one sector of which Leonard Cockayne in 1926 wrote: "I can assert with all confidence that in her beech forests New Zealand possesses a perpetual source of great wealth, but only so long as they are properly conserved and managed", has been squandered. Conversion to exotic plantations could have been carried out then alongside the beginnings of an indigenous forest management policy, and the bitter rangles of the past 20 years with environmentalists over the fate of the now residual forests perhaps could have thus been avoided. Graphically, Ken Shirley has provided the appropriate epitaph: "The past conflicts between natural indigenous and commercial forestry are now largely resolved in this country" (NZ Forestry, February 1991).

"Comment", in the same issue of the journal, takes up the theme. "Both views (i.e. preservationist and accountant) lead to the same conclusion

that wood production must be confined to plantations single-mindedly devoted to that purpose alone. Accidental as the alliance is, the combined effect is forcing the profession out of the forests and away from the practice of forestry as many in the profession see it." "Comment" then suggests, "but what is wrong with that?"

If, following the short-sighted abandonment of State forestry in New Zealand, this is all that is left one can only feel disillusioned and cheated. Much forest land has a potential quite different from that of farmland and is well suited to a multitude of purposes. Many foresters will be hard to convince that the only alternatives are preservation or single-species log farming.

Eric Bennett, Rothesay, Isle of Bute, Scotland

Is it silly to make new planting mandatory?

Sir,

Mr Ken Shirley considers, in the context of the sale of State wood resources, "mandatory replanting clauses for plantation forestry to be a superficial nonsense. Forest owners and managers will willingly replant provided the long-term outlook is reasonable, because that is their business." (NZ Forestry 35(4):6).

Perhaps so, but we could be sure about that only in a perfect, fair, stable economic world, which certainly does not exist. New owners and managers could have been linked to, and subordinate to, large international organisations with interests in more than one country. The ultimate concerns of these could have been the net optimal results of international operations, not just the sustainability of wood supplies from some New Zealand forests. If it had suited them to concentrate investment in places other than New Zealand at a particular time, replanting could well have stopped here. The result of that would have been a legacy of weed-infested land of reduced value, our land.

That many of the cutting rights have gone to New Zealand companies with good replanting records is a matter of relief for many New Zealand foresters. But the only way the public, the owners, can be sure that all replanting will be carried out for the whole of the rights periods is to have mandatory replanting clauses in the agreements.

Mr Shirley sees the market as inducing the best production decisions. One basic

problem with the market is that, inevitably, it has a short time-frame, well short of forest rotations. All sorts of commercial pressures could interfere with the replacement of stands as they are cut. Centuries of forestry history in many countries have shown that reliance solely on the market does not ensure sustained supplies of wood.

But perhaps one question which should be asked about the New Zealand commercial forestry market is: Will there be enough players in it to ensure that it works properly? Several New Zealand forestry companies have disappeared during the last decade and so now New Zealand commercial forestry is dominated by a small number of large ones. Will this trend of diminution continue over the next ten years? Will farm forestry develop sufficiently to compensate for it? Perhaps New Zealand is too small to have a commercial forestry market that works freely?

It may well be that, in a few cases, replanting is not the best use of the land. The odd small and isolated forest may be better suited to agricultural purposes. But in such cases the replanting requirement could have been changed to a requirement that the land be left in a condition suitable for agriculture. In other words, let the market operate but add a few wise rules.

"Superficial nonsense" or prudent protection of the productive capability of public land? I incline towards the latter view.

Peter McKelvey

ERROR IN 1986 FORESTRY HANDBOOK

Chris Goulding of Forest Technology Division, FRI, has drawn our attention to an error in the 1986 Forestry Handbook (NZ Institute of Forestry). He writes as follows:

"I have just discovered an error on page 77, in the section on Measuring Logs. Luckily it is not by me (my errors are yet to be discovered). In the formula for calculating the volume of a log, given large and small end diameters and length, commonly called the 3-dimensional formula (Ellis, 1982), the third coefficient is erroneously given as 0.004 711. The correct value is 0.884 711. This is clearly a typographical error. However, several people have used the version in the handbook, and we have had queries about the results, so perhaps a note in NZ Forestry may be appropriate."