

CONFERENCE PAPER

Multiple-use indigenous forestry on West Coast of South Island

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ABSTRACT

Multiple-use forestry has been "officially" regarded as the essence of New Zealand State forestry for nearly half a century. However, the underlying reason for adopting the multiple-use concept as a central pillar of State forest management was never clearly spelt out. Misconceptions crept in, especially the idea that timber production was an essential component of forestry and that national parks were gazetted for a single use. This bias is still prevalent today and is a contributory reason for the confrontation between two groups (for convenience labelled "foresters" and "conservationists") over the use of "lowland" podocarp forests on the West Coast. Many foresters (and others too) now lament the "locking-up" of many of these resources in national parks and reserves, without acknowledging that these functional arrangements express particular, legitimate societal values and where, nevertheless, multiple-use management principles have and will continue to have a role. These perceptions raise questions about the definition of "multiple-use" and its application; indeed even of "forestry" itself, and the term "production" and the often quoted remedy for conflict situations, "balanced use". As the setting of priorities is necessary when making a decision on the allocation of resources to meet different needs and values, there is ample scope for argument and conflict. These can be expected to continue on the West Coast. The resolution of differences though is inherently a socio-political process, involving value judgements and is not merely a technocratic/professional task. This should not absolve policy makers and resource managers commissioning and undertaking the necessary research and presenting realistic options for public debate.

Forests play a central role in the earth's bio-physical processes, which sustain all life on this planet. They provide habitat for wildlife in their own right and have a water and soil conservation function too. For aeons they have provided products useful to man. They were a source of food, fuel and medicinal products, as well as timber, but because they were abundant and apparently indestructible there was a slow appreciation of the need to conserve them. By the time of the Romans large areas of the Mediterranean region had been deforested. Pockets of deciduous forest were also cleared during this period in Central Europe, as brown forest soils were better suited to arable farming than the podzols of coniferous forests. Nevertheless, large individual trees and dense groves of fine trees were held in awe and in spiritual and religious reverence, probably leading to the first ideas of preservation. By the Early to High Middle Ages forests were formally recognized for their hunting, fishing and forest products in France and as royal and other parks for the management of game for the nobility in England (Osmaston 1968).

In England most were Crown or Royal forest. Some were alienated for the king's subjects and common rights were gran-

ted to take certain products and for grazing. However, protective laws were gradually relaxed as the population increased, more land was cultivated and the wool trade prospered (Osmaston 1968). As in other parts of Europe, forests were razed, principally by fire. By the fourteenth century much of the present landscape of Western Europe was recognizable (Houston 1963). The farmlands thus created were mainly in lowland areas.

This is not to deny early attempts to develop forest management, such as those of the French dating from the 9th century, which became more sophisticated in the 14th and 16th centuries and especially so with the controls of Colbert in the mid 17th century, some of which still survive today. German foresters were active too. In the 18th century they developed more advanced sustained-yield techniques, based amongst other things on volume yields and successive fellings for the natural regeneration of uniform, even-aged stands (Osmaston 1968). The concern may not have been only to balance harvest with growth and to regulate the use and enjoyment of forest products. It has been hypothesized that sustained-yield might have developed as an instrument for ordering social and economic conditions and been initiated to produce multiple benefits too (Lee 1983). One other important point needs to be borne in mind: right up until the nineteenth century, industrial activity remained decentralized and small in scale and overland transport and access to resources remained difficult, and so a high degree of local self-sufficiency was necessary.

The Industrial Revolution brought an intensification and acceleration of development. Industry became agglomerated and supported by large urban centres where mass markets evolved. Raw materials were obtained from distant lands, where resources such as those derived from forests, were seemingly inexhaustible. Not surprisingly, the forestry concepts of the 17th, early 18th century Europeans were "overlooked" (Forestry and Timber Bureau 1975).

This neglect initially occurred in New Zealand too. Later multiple use and sustained yield, nurtured by a necessity to conserve resources, became interlinked and the catch-cry of New Zealand forestry. This is understandable as the rapid destruction of forests was reducing options on their use and productivity. However, a number of events and changes in technology from the beginning of the Industrial Revolution till today affected the interpretation and implementation of the multiple-use and sustained-yield concepts. These historical factors are briefly examined as they suggest a partial explanation for the rift between "conservation" and "development", the allocation of significant areas of "lowland" forests to reserves, particularly on the West Coast and the ultimate demise of the Forest Service.

New Zealand Context

Approximately 1000 years ago 78% or 20.95 million ha of New Zealand was covered by forest (Froude *et al* 1985). About 6.95 million ha was destroyed by Maori inhabitants over a period of nearly 900 years before European settlement in 1840 (Wendelken and Hannan, 1974). Forests were cleared princi-

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pally by the use of fire and it is suggested by McGlone (1983) that those that were conserved were retained mainly because there was no 'superior economic use' to which they could be put. This may be an extreme explanation for the retention of forests, as the Maori had no great need to destroy them all. Furthermore they had a spiritual reverence for forests and derived many material products from them including medicinal remedies, food, fibre for baskets, twine and rope and wood for carving, building and other uses such as canoes.

Pakeha influence was decisive, accentuating and speeding up the destruction of the forests. Finding an estimated 14 million ha of forest in New Zealand in 1840 (52% of the land area) (Wendelken and Hannan 1974), European settlers and Maori alike actively cleared the land. Almost all of these cleared forests comprised lowland podocarp/hardwoods (including beech) (Froude *et al* 1985), [see Definition, appended]. Whilst it might be lamented that over 90% of cleared indigenous forest was burnt and less than 10% used for timber production (NZFS 1959), it should be remembered that agriculture was the dominant preoccupation, not forestry.

In Europe, there had been an intensification of change over many centuries, though as noted above much of the present landscape was recognizable by the 14th century. In contrast, most of the destruction of New Zealand's indigenous forests is recent. Between 1840 and 1983 approximately 7.8 million ha was cleared, representing 53% of the total forest cleared since the arrival of humans in New Zealand about 1000 years ago. Even by 1874 (the first Forest Act) there was growing concern for the conservation of native forests (Wendelken and Hannan 1974). However this was overshadowed by continued pressures, legislative measures and incentives to settle (i.e. clear) the land and incidentally to supply the building industry with low-priced timber. The result is that only about 6 million ha (23%) of the country now remains in native forest.

Most of the present indigenous forest cover is protection forest, as defined by Kirkland and Trotman (1974). This has long been recognized as having an important soil and water conservation function. Significant areas of these forests were set aside under the provisions of the Land Act 1877 (Froude *et al* 1985) and protected by the Forest Service. Hence recent conflict has revolved around the clearance of the remaining "merchantable lowland" forests. Approximately 40% of these are in the West Coast Region, between Karamea in the north and the Cascade Mountains in the south (Kirkland and Trotman 1974). This region contains fine examples of relatively unmodified podocarp forests and is the nation's State indigenous timber production area.

The Timber Imperative

In the space of a few decades, the early Maori appreciation of forests for an extensive range of products and values had been submerged by a narrower Pakeha development ethic. Although the need to conserve native forests was recognized by 1874, the concern for "lowland" forests was based mainly on a desire to maintain long-term timber supplies, exemplified by the first annual report of the Director of the Department of Forestry, L. MacIntosh Ellis. He certainly recognized a wide range of forest functions, the need to protect forest resources, reforest and afforest 'unproductive' land and to eke out supplies when he set out the principles on which a forest policy for the nation should be based. Amongst other things, however, "...the policy should be framed in such a way as to ensure the consumer a maximum supply of timber at the critical time towards the end of the duration of the country's virgin forests and before new crops take their place". (Department of Forestry 1920)

This preoccupation with timber supply is understandable as it was estimated that native timber would last only 30-50 years. Podocarp forests, from which most timber was now derived, were found to be complex, difficult to manage and



Low-impact logging using a portable chainsaw mill. Photo: Ian Platt.

slow to mature (up to 300 years). The properties of exotic species were already appreciated as they had been grown during the early period of European settlement. Hence attention was directed to these faster-growing, easier-managed plantation species from the 1920s onwards. In 1959 these species overtook indigenous species as the main source of the nation's timber. By following this practice, it was argued that thousands of hectares of indigenous forest were saved (NZFS 1956).

Multiple Use and the Timber Ethic

The concern to keep native timber supply options open whilst the exotic estate matured led to an unfortunate distortion of the concept of multiple-use forestry in New Zealand. Forestry was seen not as the mere sum or attainment of multiple values. It was something infinitely more... "deriving its greatness not solely from the complex inter-relationship of its constituent parts, but from its basic contribution to the solution of the Dominion's general land-use problem. ...By keeping in a state of maximum productivity its own non-agricultural lands forestry, through the maintenance of climatic equilibrium, regulation of stream flow and control of erosion, preserves inviolate many factors on which agricultural lands depend for their productivity" (State Forest Service 1939).

Whilst it was asserted that "...only by putting non-agricultural or forested lands to a multiplicity of uses can forestry be made of greatest possible service to the community" one of those uses clearly included a timber production option in low-altitude forests, even though it was acknowledged that the provision of the entire range of uses was seldom possible. This led to the view that national parks and scenic reserves were "single uses" as timber extraction was precluded (SFS 1939) and subsequently to support for the forest park concept. Thus, Tararua State Forest was to be managed for recreational purposes and although sawmilling was to cease, the Forest Service would be able "...to treat the forest to improve its far-distant productive potential, even if not realized for centuries" (NZFS 1954). Similarly, commercial uses which included timber production precluded North-West Nelson State Forest Park being dedicated as a National Park (NZFS 1966). In reality, national parks and reserves are not "single users" as they fulfil a number of roles. Although, for instance, national parks are designated principally to preserve indigenous flora and fauna, they have an important soil and water conservation function too and activities such as hunting and fishing of introduced animals, commercial beekeeping, grazing, tourism and recreation activities are permitted, with the consent of the Minister, provided they are not detrimental to the main preservation objective.

Leslie (1977) has previously commented on this subject, tracing the concern for multiple-use to 1944 when the Annual Report of the Forest Service "affirmed that multiple-use management is the essence of national forest policy". He also noted the primacy that timber production was given and how the Forests Acts of 1949 could be misconstrued, as although recreation and amenity uses were provided for, they were not to be "prejudicial to forestry". He noted that "forestry" was not defined although the intention seemed to be timber production on State forest land that could so be used and soil and water conservation on the rest, or some combination of both. The introduction of the term "balanced use" in the Forest Amendment Act of 1976 appeared to Leslie to remove this ambiguity.

A Question of Definitions

The Forest Service's multiple-use philosophy of accommodating a wide variety of uses compatible with the supply of timber has been succinctly reviewed by Leslie (1977). He perceived that the problem lay in the implementation of the philosophy. Two interpretations of the multiple-use concept were possible: the Dana-McArdle approach by which each hectare would be managed for several purposes, and the Pearson approach whereby multiple use would be applied to large tracts of forest, but some would be managed for specific uses.

The former approach was unworkable as some uses were correctly perceived as being incompatible (NZFS 1939). The Forest Service followed the Pearson approach, which entailed the determination of a primary use for each administrative zone of forest and secondary subservient uses which had, by necessity, to be compatible with the primary use (Leslie 1977).

As the setting of priorities is inevitable when dealing with potentially conflicting uses, there is ample scope for argument and disagreement. This is especially true when extreme positions are taken. This seemed to be the case with the Forest Service which appeared to favour timber production wherever commercially feasible, i.e. in the "lowland" forests. To counteract this the "environmental" movement has taken an opposing view, which some people see as the opposite extreme.

With hindsight it can be concluded that Leslie's hoped for



Sphagnum moss gathering. Photo: Ian Platt.

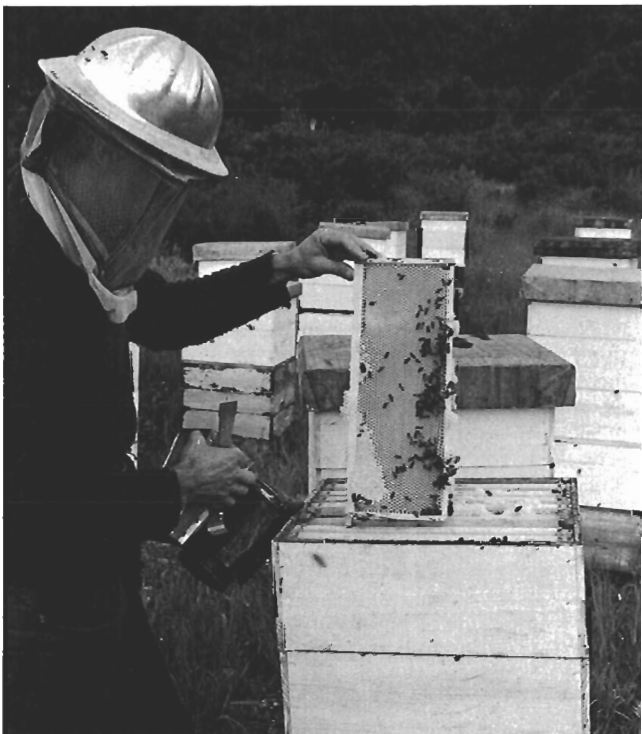
redress by the introduction of the notion of "balanced use" was not completely satisfied by the 1976 Amendment to the Forest Act. This is because the term "balanced use" is ambiguous too. This inappropriate term should not imply the giving of equal weight to all uses; merely equal consideration. In the end the scales may be tipped strongly in favour of a narrow range of uses, which may or may not include timber. However, evidence of the pervasiveness of the timber ethic is still to be found in the current usage of the terms "productive potential", "production" forestry, "merchantable" and "production" forests. Whilst timber and fibre production is implied, other products are not included or are accorded subservient status. For instance, under the Noxious Animals Act deer were not seen as a "product" of the forest, but as a pest to be eradicated. Whilst a balance needs to be struck between animal numbers and the biological condition of forests, more could have been done to promote commercial game management following the advent of helicopter hunting which drastically reduced deer numbers.

Hence it is apparent that multiple use was and still is often equated with using or extracting something, as opposed to non-consumptive use, or non-conversion of resources largely found in national parks and reserves. The consumptive interpretation could arise out of an economic or "use it" ethic (Miller and Armstrong 1982) which may or may not include the renewing of resources. The problem is that the word "use" has many connotations and furthermore words are often employed to suit or reinforce a particular ideology. Thus resources in wilderness areas, scenic reserves and national parks were "locked-up" (SFS 1939; NZFS 1970, 1983). This emotive language was used to deride such functional arrangements and is current terminology following the Blakeley report and the continuing debate over the fate of indigenous forests in South Westland (discussed below).

It is better to think of a spectrum of use from preservation on the one hand, to exploitation, in a pejorative sense, on the other. Right across the spectrum conservation, or wise use and management, should be all pervasive. This should include the renewing of resources too, where appropriate. The range of "uses" that can be allowed at either extreme will, by definition, be narrow, e.g. in a wilderness or a forest that is "mined" and greater in the middle.

Multiple Use and Protection Forests

It would be wrong to conclude that uses other than timber production were not provided for. (McKelvey 1984) perceives a chronological accretion of different uses, apart from timber, starting with the management for soil and water conservation in the mid 1950s, recreation (early 1960s), nature conservation (early 1970s), landscape (late 1970s) and the provision of educational opportunities (from the early 1980s). It cannot be



Beekeepers on the West Coast often rely on native trees such as rata and kamahi for honey. Photo: Ian Platt.

denied that much has been achieved. Forest parks, such as North-West Nelson and Victoria, have been enjoyed by thousands of people even though they are not as spectacular as national parks. In recent years a good deal of effort has gone into planning and interpreting these parks for the better enjoyment of the public. However, it can be argued that this has principally occurred in "upland" and "lowland" protection forests where soil and water conservation is paramount. These forests make up 69% of the nation's indigenous forest cover (Kirkland and Trotman 1974; Froude *et al* 1985). Much of this area has probably been uneconomic to log too; hence the conversion versus non-conversion conflict has probably been avoided by default rather than by explicit design.

Furthermore, it took decades for the multiple-use concept to be put into practice. There is no one simple explanation for this delay. It cannot be entirely because of the lack of demand. For instance, scenic qualities were long regarded as being important. The first national park in New Zealand was established in the 1880s and in 1901 17,000 ha was purchased in the Otira Valley for Arthurs Pass National Park, which formally came into being in 1929 (Burrows 1974). Moves to reserve areas of lesser grandeur for their scenic value were also afoot. However, timber production in these areas was not a major issue, as it was in "lowland" forests. In these latter forests multiple use has not been so successful.

Multiple Use of West Coast "Lowland" Forests

In "lowland" forests the multiple-use concept could only really be applied successfully to areas where sustained-yield forestry was being attempted or achieved, as options are severely curtailed when forests are "mined". Thus in order to evaluate the success of the concept, sustained-yield management needs closer examination.

Sustained-yield forestry had been the guiding philosophy of the Forest Service since the time of its inception, though this term was not used until 1938 when plans for Lake Ianthe State Forest were announced (SFS 1938). However, as noted above, podocarp forests, from which most native timber was now derived, had been found to be complex, slow to mature and difficult to manage. Early research at the University of Canterbury's School of Forestry had suggested that these forests could be managed for perpetual yields (see for instance Hutchinson 1931), but these efforts were curtailed following the closure of the School. The Depression and other events including World War II made subsequent progress slow (NZFS 1956).

Nevertheless, various management techniques were tried, starting with strip felling, then selection logging (NZFS 1954 and 1962). Some of these measures were of doubtful benefit, though this was not evident until trials had first been undertaken (James 1980). Classic European silviculture was never achieved in podocarp forests in Westland.

Attempts were also made to reduce the annual cut to the level of the biological increment (Chavasse 1986). This was also unsuccessful, perhaps because of the influence of the sawmillers. There is some circumstantial evidence to support this. The Forest Service had for a long time opposed monopoly practices, price controls on sawn timber and before 1960 long-term sales contracts. Yet sawmilling enterprises became progressively larger, more vertically integrated and externally (mainly Canterbury) controlled. Small, privately owned mills gave way to corporate enterprises, especially after World War II. These companies must have benefited considerably from the subsidy that low stumpages conferred on them, as the price of final products, such as houses, was not subject to price control. Successive Governments did nothing to discourage this situation, but rather encouraged it, especially after 1960 when long-term tenders were let.

Another divergence from the classic European practice was the linking of forestry to wider socio-economic objectives than



Possum hunting for skins. Photo: Ian Platt.

the satisfaction of local needs. Thus the price controls on rough sawn indigenous timber, which was in force until 1978, was purportedly to keep housing prices down. Furthermore, the long-term contracts, which were let following the West Coast Committee of Inquiry (1960), were to encourage West Coast processing in order to help boost limited regional West Coast employment and economic opportunities. The proposed large-scale industrial utilization of West Coast beech forests in the 1970s and the current call for tenders for their present use can also be seen as attempts to meet wider than local objectives.

By the end of 1960s there was a general environmental awakening in the New Zealand, following a similar process in Europe and the USA. This was heightened by the hydro-electric power plans for Lake Manapouri and the opposition to clearfelling and exotic conversion suggested by the Beech Scheme. The continued over-cutting, in sustained-yield terms, of podocarp forests raised mounting criticism. With continued "environmentalist" pressures more and more of these forests were reserved. Hence, South Okarito and Waikukupa State Forests were added to Westland National Park in 1981. The reduced area available for timber production coupled with continued contractual supply arrangements to mills severely curtailed remaining sustained-yield efforts, despite the gazettal in 1984 of Saltwater and North Okarito State Forests as 'Sustained-yield Indigenous Management Areas' and continued experimentation with portable sawmilling.

Where immediate monetary returns were realizable, intangible non-market values were overridden or extremely difficult to achieve except as a trade-off (see below). In addition, where market values were evident but in conflict with vested timber interests, it took some time for these other uses to be recognized. For example, sphagnum moss had been gathered on a small scale for a considerable number of years. It was of minor significance and no challenge to forestry. Exports, principally to Japan, subsequently made it a multi-million-dollar business, yet there has been considerable resistance in recognizing it as a legitimate use of Crown forest land (Denne 1983).

The above events make it apparent that various conflicting objectives could not be reconciled. Some attempt was made to take account of different viewpoints, such as through public participation programmes, but though these may have been useful as a democratic exercise and as a source of ideas, they were an inappropriate and ineffectual mechanism for reconciling widely divergent positions. Johnson (1975) offered some sound advice: policy makers need to understand the possibilities and limitations of forestry while foresters need to com-

bine a political understanding with a broad appreciation of the wider, not necessarily quantifiable, benefits of forestry. With respect to the West Coast, this was easier said than done.

The Present and Future Use of "Lowland" West Coast Forests

In an attempt to resolve the conflict over the use of "lowland" forests, the Cabinet Policy Committee directed the Secretary for the Environment after consultation: "to report back to the committee with recommendations on the area of land to be set aside for the maintenance of a viable exotic and indigenous sawmilling industry on the West Coast, a small-scale sustained-yield beech scheme and appropriate reserves, taking into account the environmental, economic and social implications for the West Coast" (West Coast Forests Working Party 1986). No explicit directive was given for the sustained-yield management of podocarp forests, even though this is now possible with portable chainsaw mills. With these terms of reference and the composition of the Working Party, it is perhaps not surprising that reserves were traded off for timber production areas. Hence the bifurcation that was increasingly evident at the beginning of the 1980s was further exacerbated. The sub-title of the Working Party's report "Integrating Conservation and Development", is grossly deceptive and far removed from the meaning originally attached to it by the Nature Conservation Council (1981). The example of Lake Ianthe State Forest will suffice. Instead of being allocated for sustained-yield management as originally intended, it is recommended that clear felling continue until at least 1992 (West Coast Forests Working Party 1986). What will happen after this date and to the future of Saltwater and North Okarito forests?

Debate is now shifting and focussing on South Westland. Owing largely to the considerable degree of public concern over logging spreading south of Okarito, a management evaluation study of the area was initiated, amongst other measures. A striking feature of the resource report just released is the detailed evaluation of timber resources and the inadequate coverage of existing and potential alternative commercial use of the indigenous forests (NZFS and Dept of Lands and Survey 1987). Already various interest groups and political parties are again drawing a simplistic division between the milling and non-milling of forests, between reservation and timber production.

The description of resources is clearly a first step. Tangible and realizable options should follow. These require some imagination and should not just be based on expressed demand, but also on latent potentials which might be realized with appropriate management and promotion. Tourism, for example, will not just happen and it will not necessarily be beneficial to the local economy or the natural environment. Long-term planning is necessary. This raises many questions; for instance, what criteria should be used to judge development; who will benefit, suffer or lose from change and who should pay for the research to find this out? Market mechanisms will not provide adequate answers to these questions. As most of the region is a public asset, it is incumbent on the State substantially to foot the bill. Otherwise, little will be done. As in the case of the sphagnum moss industry, research will grind to a halt. Consequently there is a danger that resources will be "mined". Unless there is a genuine commitment to sensitively manage these forests, multiple-use opportunities will be curtailed.

One final issue remains to be resolved: The interpretation and application of the Conservation Act 1987. At the moment nobody seems to be sure how or where it is going to apply

and what, if any, commercial activities will be permitted in conservation areas. For instance, with respect to forest parks, the application of sections 61(2) and 38 of the Act need early clarification as it might be interpreted that activities will be more restrictive in these areas than in national parks, at least until management plans are produced.

Summary

Indigenous forest management in New Zealand started with high ideals borrowed from a European context. For a variety of reasons these were not fully achieved. A preoccupation with timber supply and the foreseen timber shortage directed attention to plantation silviculture and management and truncated the "forester's" perception and interpretation of the multiple-use concept. The accusation that scenic reserves and national parks were "single uses" is nonsense: so is the notion that these areas are "locked up". These opinions reflect vested positions rather than logic.

Notable success with multiple use has been achieved in protection forests, though even this was a long time coming. One might postulate that this success would not have been so if timber production had been economic. Thus recent concern has centred on the diminishing "merchantable lowland" forests and especially on those of the West Coast because they are of national importance.

The emphasis on timber production being a necessary part of forest management and the failure to manage indigenous forests on a sustained-yield basis has alienated "environmentalists". Furthermore, since these "lowland" indigenous forests have for a long time been of more than local and regional importance and have been used to satisfy a number of social and economic objectives, it is inevitable that the resolution of the many issues has become political.

Similarly, South Westland forests are a national issue, the use of which will be settled at a political level. In this case though, appropriate means exist to manage the forests sensitively and provide for a wide range of "uses". Whether this will include timber production remains to be seen.

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Definition of 'Lowland' Forest

Whilst Froude *et al* (1985) base their definition of "lowland" and "upland" on Kirkland and Trotman (1974) the latter state that the distinction was arbitrarily defined. For them, "lowlands" are those forests below 910 m a.s.l. north of the Manawatu Gorge; below 760m a.s.l. in the rest of the North Island, Nelson, Marlborough and Westland north of the Arnold River; and below 610m a.s.l. for the rest of the South Island. On the other hand, Nicholls (1983), acknowledging that the upper and lower limit of no one forest type or even forest class can demarcate lowland from highland forest throughout New Zealand, nevertheless suggests that if one single tree species is sought, only rimu (*Dacrydium cupressinum*) appears to have the necessary attributes. Using this species, he distinguishes four distinct lowland forest regions, [the upper limits of which, in fact, closely correspond to those of Kirkland and Trotman (1974)], i.e. **Northern Lowland**, from the northern tip of the North Island to about the 39th parallel, with an upper limit of 900m a.s.l.; **Central A Lowland**, comprising the remainder of the North Island and the northern extremities of the South Island (Marlborough Sounds and Takaka-Collingwood districts) with an upper limit of rimu at about 600m a.s.l., and 750m a.s.l. at the most; **Central B Lowland** comprising the northern third of the South Island to the Taramakau River on the West Coast and a small area on the east coast, except Marlborough Sounds, down to Banks Peninsula with an upper altitudinal limit of 600m a.s.l., but sometimes a little higher; and finally the **Southern Lowland** region, covering the remainder of the South Island, up to 600m a.s.l. in Westland, below 450m a.s.l. in Fiordland and below 300m a.s.l. in Stewart Island.

The Forestry Sector in New Zealand

This publication follows on from the 1980 edition and is a completely revised second edition which outlines the New Zealand forestry scene.

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The following have applied for recognition:

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Pacific Basin based in Vanuatu
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