Member's Comment

CONSERVATION AND THE PRISTINE CONDITION

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The seventies, and perhaps the eighties too, will come to be remembered for strong public pressure to conserve the indigenous forests, especially lowland and mid-altitude indigenous forests which have born the brunt of more than a century of logging and/or burning. The controversies and arguments which have raged are still vivid in the minds of people closely concerned and in the minds of many of the public. To a significant extent they were fuelled by the accelerants of oversimplification and selective evidence introduced by extremists on both sides. They were fuelled also by imprecision in the use of the term conservation. Conservation is an over-used word. Preservationists say that they are pressing for conservation of the indigenous forests, meaning no logging. Sawmillers say that they are the true conservationists because they take trees which would die and decay if left. There is nothing like arguing on different grounds to prolong a debate.

The answer is, of course, that the word conservation has different connotations; there are different sorts of conservation and different conservation objectives. The conservation of pristine ecosystems—the essential national park objective—is the most widely recognised type of forest conservation but is by no means the only one. It is closely linked to conservation for scientific study, although the two are not synonymous; the latter need not be confined to indigenous biota. Moreover, when it is, there is good reason to limit the entry of people, preferably to *bona fide* scientists, for the more people who visit a scientific reserve the greater the chance of artificial modification of those reserved forest stands. Such a precaution is not normally part of national park management. Similarly, the conservation of genetic variety is closely linked to conservation of pristine ecosystems but is not identical with it; again it need not be confined to indigenous biota.

Other forms of conservation may be less "pure" but they are valid. One form of conservation is the insurance value provided by reserving areas of indigenous forest in case of disaster striking

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concentrations of exotic forests. A large part of the exotic forest estate is within 90 km of Rotorua. The risks there from pathogens, and even volcanicity, are obvious. While the indigenous reserves could not replace the exotic resources, they could mitigate loss to some extent.

The protection of the catchment forests to ensure that complete root webs hold the soil and subsoil on steep mountain slopes, so protecting the flood-plains below from accelerated aggradation, is an important form of conservation which confers such an off-site benefit. The production of water of good quality, which results also from catchment forests maintained in good condition, is another benefit.

Then there is the conservation ethic of renewal: if a stand is felled it should be replaced. The working production forester is under economic and social obligations to keep his forest thrifty and productive and to regenerate it after it has been harvested. There is the implication, of course, that the productive quality of the constituent sites must be maintained. Such conservation through renewal leads on to conservation through economic use. This is the sort of conservation which reduces waste in the forest and the mills. It is what led to 100% cruising in State forest sawmill areas. It has led in sawmilling to the replacement of circular saws with the more efficient bandsaws and the utilisation of progressively smaller sawlogs. The use of chemical preservatives to prolong life of non-durable timbers is another example of this form of conservation.

All these are valid forms of conservation. The issues about "conservation" are really about where and how much of each sort. The principal issue, ecological and political, is to what extent the protection of pristine ecosystems should dominate the conservation spectrum. Of course, the concept of the pristine state must be looked at in a relative way. There are really no pristine or primeval forest ecosystems left on the three main islands of New Zealand. This is because of the effects, direct and indirect, of introduced animals. Such introductions presaged a new biotic era for New Zealand forest ecosystems and this feature must be accepted. For practical purposes the word pristine can only be taken to mean forest unaffected by fire or logging.

But must this distinction of what is pristine and what is not be maintained in perpetuity? May it not be possible, even expected, that stands which were culturally modified decades ago, and where seed sources were maintained, are developing anew to approach a pristine condition?

Forest Service surveys in the areas logged 70 years ago on Stewart Island show there that stands are redeveloping, and becoming similar to the original in broad features. Again, when the National Forest Survey undertook field work in 1946-47 in podocarp/hardwood Longwood forests which had been logged up to 70 years before, podocarp regeneration was found to be negligible; yet field studies 30 years later have revealed significant quantities of podocarp seedlings and saplings. Perhaps we have been too impatient.

Since the National Forest Survey (1945-55) there have been numerous local surveys of exploited forest undertaken to determine if commercial species were regenerating. But I suspect these have not all been well co-ordinated and almost certainly the sampling procedures would not have been optimal for appraising the quality of "pristineness".

The extent to which a modified forest type has approached the pristine condition can be determined only by making a comparison, in terms of forest structure and botanical composition, between those stands and comparable unmodified stands. Such comparison must be made, of course, with recognition of the inherent patterns of New Zealand indigenous forests. Most New Zealand indigenous forest types tend to merge into each other, and to vary within themselves, along broad environmental gradients of altitude, moisture, and even latitude. A minority of types are more discrete with better-defined boundaries and are more uniform in themselves. Such discreteness is due to more abrupt differences in growing conditions such as sharp differences in drainage or sharp changes in soil type. Within the merging forest types, and in some of the discrete forest types, there may be "second-order" continua of forest change which are usually between drier and wetter sites. The important point, in the context of determining a stage of re-development towards "pristineness", is that structures and compositions must be compared along these environmental gradients, major and minor. And comparisons must be made, too, of the way the small forest species, including such as epiphytes and ground bryophytes, occur along the gradual habitat changes.

There is another relevant consideration when comparing modified with untouched forest. Different canopy species have different replacement mechanisms. Some can develop under and grow into small canopy gaps; some can develop only after large gaps have been provided by natural catastrophes such as extensive windthrow or large slips. The result is that the forests are made

up of mosaics of consequential patches, the patch size varying with type and with each patch changing over time, sometimes in composition.

Obviously when modified and non-modified stands are being compared, to determine if the former are approaching the pristine condition of the latter, replacement mechanisms must be taken into account, so that like can be compared with like. It is clear that such comparative work requires a good and refined synecological knowledge of the native forests. Fortunately this is now being achieved. It is clear also that the zoological aspects, particularly birds, must be taken into account. Again, there is now a better understanding of forest fauna, due largely to the provision of research funding which was a consequence of the controversy over the Beech Scheme in the early seventies!

If it were found that significant areas of logged lowland forest are redeveloping perceptibly towards the pristine condition, the land management implications would be profound. They would still be profound if it were found that such was not the case. Whatever the result, the land managers would be in a better position to determine that mix of forest conservation objectives best suited to the comprehensive needs of New Zealanders. They would be able, in a more informed way, to place appropriate emphasis on conservation aimed at the pristine condition.

It is time for a new National Forest Survey, one with the purview of modified low and mid-altitude forest. Such a project would have the tremendous advantage of being able to use the findings of the old survey and the later findings of the Ecological Survey and the Protection Forestry Division of the Forest Research Institute, and also the relevant work which has been going on in the universities. In addition to information of high importance to land management, a survey of modified forests on a national scale would yield, as did the other national surveys, substantial training benefits for a range of young people.