



CONSERVATION  
TE PAPA ATAWHAI

## CONSERVATION ADVISORY SCIENCE NOTES

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### FORESTRY AND ENVIRONMENTAL ISSUES

(Short Answers in Conservation Science)

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# "FORESTRY AND ENVIRONMENTAL ISSUES"

Presented to "Prosperity and Security in Hawke's Bay Forestry" Conference, 5 August 1993, Napier.

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## INTRODUCTION

Thank you to the Hawkes Bay Chamber of Commerce for the recognition that environmental issues are important considerations in looking at the subject of forestry investments; and thank you for the opportunity to highlight a few of the major concerns.

Firstly, a brief explanation of where the Department of Conservation fits into the picture. We have little statutory authority relating to forestry matters. Those matters are more the domain of the Ministry of Forestry or the Regional or District Councils.

The Department of Conservation does however, have a legislative mandate "to advocate the conservation of natural and historic resources generally". That does not mean that the Department stands in the way of development. But, what the Department must do, is ensure that conservation concerns are properly taken into account as development occurs, and that there are appropriate safeguards.

### 1. INDIGENOUS FOREST USE

- The catch word now is that of "sustainability" as reflected in the Forests Amendment Act.
- While the philosophy of sustainability has become the statutory bottom line, in places, greater protection may be desirable.
- The Department of Conservation uses a scientific survey approach evaluating forest remnants in the landscape. This process, called "the protected natural areas programme", is based on an ecological mapping of NZ which divides the country into 85 different ecological regions. Within each region the survey process looks at what remains of "natural NZ", what of that is already protected, and finally, what unprotected areas deserve protection if we are to retain both representative and unique examples of our natural heritage.
- Such surveys have recently been completed in southern Hawkes Bay and the highest priority areas deserving protection have been identified.
- Government, as a part of its Indigenous Forest Policy has made funds available for the protection of some of these important places. Both the Forest Heritage Fund, and the Nga Whenua Rahui Fund assist landowners to voluntarily protect private forests.
- Many landowners have also taken the option of protecting private indigenous forests through the QEII National Trust.

- In a largely denuded landscape such as we have here in Hawkes Bay, most indigenous forest remnants of any size are important for protection of a proper representation of what used to be here, and are important as "stepping stones" for wildlife as they move through the landscape.
- The Resource Management Act in its section on "Matters of National Importance" states that "the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna" are matters of national importance which both Regional and District Councils must recognise and provide for in their planning and consents processes.

## 2. EXOTIC FOREST DEVELOPMENT

This is clearly the major focus of this seminar. As I talk about this aspect of forestry, I'd like you to consider that it is important to fit forestry development into the landscape, rather than to make the landscape fit the forest.

- Exotic forest can and should be a friend of conservation interests.
- Exotic forest can stabilise unstable and eroding country, and can provide a habitat for a wide range of indigenous wildlife.
- However, the development and management of exotic forests can also be detrimental to the environment and its natural and historic values.
- The areas of concern include:

"Scrub" clearance - where marginal farmland has often reverted to "scrub", exotic forest development is seen as the saviour. And it can be, but that "scrub" can often have important value for wildlife and may be on such extremely steep and erodible country, that it is in fact best left well alone.

Fire - which is used in preparation of land for planting, and is sometimes used between crops. Just as this can be a hazard to forest owners, it is hazardous to protected areas managed by DOC.

Roading - Where erosion can be a significant impact on waterways. For example in research undertaken in Nelson, sediment production can be as high as 1.5kg/m<sup>2</sup>/year.

Spray - Desiccants used preparing for fire seem to have a propensity for "drifting" over the boundary or over the ridge to the nearby scenic reserve. It is not many years ago that White Pine Bush Scenic Reserve, that beautiful native remnant north of Napier was subjected to some of this and had an ugly brown tinge for several weeks.

Wildlife considerations can be important at several stages. In the initial clearing and land preparation process, the retention of "corridors" and "stepping stones" can be invaluable. Later, when fire is being used, wildlife salvage may be necessary. While some species can simply "fly away", others will perish unless rescued. In this category is the kiwi, and these can be caught and removed. But - they are best caught and removed before cutting.

Wahi tapu - (which are places sacred to Maori), and other historically important places can be easily destroyed during forest development, or harvest. Archaeological sites should be avoided in planting and roading. These places are specifically protected by law.

Landscape - considerations can be important. Above all else, it is our landscape which gives our country its distinctive features, its individual character. The Resource Management Act states that "the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development" is a matter of national importance. So, for example, I would argue that planting exotic forest over the skyline of Te Mata Peak would be inappropriate. Also, the Resource Management Act states, again in its national importance section, that "the preservation of the natural character of the coastal environment, wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision use and development" is a matter of national importance. So, you are likely to see DOC and other groups in the community watching Regional and District Councils, to ensure that their policies, plans and rules recognise those parts of the Act.

Species Selection can be important, and species such as Pinus contorta and Douglas fir have caused conservation interests considerable concern in the past, as they spread onto adjoining natural areas.

The margins of lakes and rivers were mentioned in the last extract of the Resource Management Act I read. These areas, known as riparian zones, are one of the most vital concerns to conservation interests and I want to devote the remainder of my time to that subject:

### **3. RIPARIAN ZONES**

#### **3(a) Overview**

Riparian zones are important in maintaining both aquatic and terrestrial conservation values in terms of their capacity to:

- maintain soil stability and reduce loss of land through streambank erosion;
- regulate water flow by increasing water retention times and evapotranspiration rates (but not to the point that streams become unnaturally dry);
- maintain water quality and clarity and protect aquatic habitat by reducing sediment and nutrient run-off to waterways;
- reduce maximum water temperatures and minimise diurnal fluctuations by providing shade;
- influence energy dynamics by affecting light quality and quantity, inputs of terrestrial organic matter and retentive characteristics of stream channels;
- provide breeding and resting areas for many native birds (eg blue duck) and breeding areas for fish (eg whitebait);
- serve as areas of high species diversity;

- display intact successional sequences of soil horizons, plant communities and their associated biota from the mountains to the sea;
- provide suitable corridors for the dispersal of native plants and animals;
- retain cultural and spiritual connections with early Maori settlement, mahinga kai and tauranga waka;
- contain many waahi tapu and waahi taonga;
- contain archaeological and historic sites (eg middens, flax milling and gold mining sites);
- provide high quality recreational and tourist access routes along valleys;
- enhance landscape, recreational and wilderness experiences.

### **3(b) Natural Values**

From a natural value perspective, it is important to view rivers and their catchment groundwaters as complete interactive systems with one part linked to others. For example, disturbances such as sediment inputs in one part of a river move downstream with the water and can have adverse effects on river ecology for long distances. Coniferous plantations adjacent to the edges of wetlands can alter groundwater dynamics and cause wetlands to become dewatered (eg dune lakes in Northland). Riparian management needs to consider these linkages within rivers, lakes and groundwaters, and the extent of likely impacts of activities on many parts of the catchment. It is also important to view riparian zones as ecosystems in their own right with unique qualities, instead of seeing them only as the margins of other ecosystems.

### **3(c) Relevance to Production Forestry**

It is well known that production forestry can have significant impacts on rivers and riparian zones. Specific management guidelines are available for most of the problems. For example, roads and major stream crossings should be built some time before heavy use to allow for stabilisation, and greater use should be made of sediment traps. One means of reducing the effects of harvesting and replanting on waterways is to limit the size of catchment area felled in a given year. Native forest remnants should be left along water courses and at the heads of catchments, not only for stream protection but also as landscape features and for wildlife. If this is not possible, planting of non-economic tree species should be carried out to avoid the later temptation of felling trees immediately adjacent to waterways. Types of chemicals used in pest-disease control, and methods of application and disposal, should be carefully matched to the conservation values of riparian zones adjacent to coniferous forests.

### **3(d) Forestry Management Scenarios**

Foresters are likely to be faced with two management scenarios for riparian zones:

- a. Where plantation forests have already been planted to river edges, should riparian zones be left intact, and, if so, what should their dimensions be?
- b. Where "new" land is being planted in exotic forest, should plantings extend to river edges,

and, if not, how should these edges be managed?

To establish and manage riparian zones under the first scenario requires a knowledge of their values and functions, and the effects that clear-felling has on aquatic systems. Much of this information has been well documented, especially from studies overseas. Lessons from overseas and New Zealand work need to be extracted and applied to local situations. The New Zealand Forest Code of Practice prepared by the Logging Industry Research Association (LIRA) is a very useful guide in this respect.

Where modified land is being planted in production forest, the opportunity exists to restore riparian zones using native vegetation. In these situations or where native riparian vegetation is still intact, linkages between patches of native vegetation and wetlands outside the plantation can be maintained or enhanced. Central to restoration and enhancement is an understanding of the patterns and processes of plant succession. Replanting of native (preferably natural) plant associations in riparian zones needs to take into account the management objectives and the full range of natural, cultural, spiritual, archaeological and recreational values.

In reading some background papers to prepare for today I found a large amount of material, often supported by a large amount of scientific data. In regard to water quality, there was one paragraph which particularly impressed me. To quote;

"These riparian zones also prepare a valuable function in filtering nutrients and chemicals from both surface and sub-surface runoff from adjacent land and in this respect act as buffer zones for the protection and/or enhancement of the water quality of adjacent water bodies. A recent study by the DSIR Water Quality Centre found that more than 87% total solids, more than 84% of the suspended solids, more than 80% of particulate nitrate, more than 55% of dissolved phosphate and more than 67% of nitrate-nitrogen were filtered from surface runoff in a riparian pasture retirement scheme on moderately steep hill country in an agricultural catchment near Hamilton."

To conclude, let me reiterate that exotic forest can and should be a friend of conservation interests. The key to achieving that is to try to "fit the forest into the landscape", rather than to make the landscape fit the forest.

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