

Public perceptions of natural character and implications for the forest sector

John Fairweather^a and Simon Swaffield^b

Abstract

This article presents results from a number of studies of public perceptions of natural character in New Zealand to show that there are two fundamental positions - 'pure nature' and 'cultured nature'. It measures the proportions of these viewpoints in the Gisborne/East Coast population and finds that there is 67 per cent support for the cultured nature viewpoint. Assuming that this is an indication of how the wider New Zealand population would respond to the same stimuli, the article discusses the results in terms of implications for extensive land uses such as forestry, and in terms of how forestry could best respond to a preference for land uses to be natural.

Introduction

The forest sector in New Zealand is well familiar with the tensions and arguments that characterise the definition of what is 'natural'. The importance of protecting natural features and natural character is embedded in resource management legislation, and perceived threats to natural character are a significant factor in many debates over land use change and environmental management.

In this article we give an overview of recent research into public perceptions of natural character to show that there is good evidence, from a variety of studies, that there are two fundamental viewpoints predominant within New Zealand - 'pure nature' and 'cultured nature'. We then present results of recent research that measures the frequency of these views among the public in a New Zealand rural region where expansion of the forest sector is a major contemporary issue. The discussion examines the viewpoints in some detail before exploring their implications for the forest sector. We argue that foresters and the forest sector will need to consider carefully how future forest management can chart a course that acknowledges both viewpoints.

Two views of natural landscapes

A number of recent studies at Lincoln University have focused on perceptions of natural character as expressed within New Zealand landscapes. The first study (undertaken in association with Forest Research) was located in the Coromandel Peninsula and examined perceptions of a wide range of groups with interest in land management (Fairweather & Swaffield 1999; Swaffield 2001). In that study 88 diverse stakeholders

were interviewed and asked to sort 51 photographs¹ of different landscapes to identify those which had most and least natural character. Factor analysis identified two distinctive viewpoints. Factor 1 expressed a 'pure' nature viewpoint and Factor 2 expressed a 'modified' nature viewpoint. There was general agreement across both factors about what had most natural character, namely relatively unmodified coastal, estuarine and upland settings. However, there was a different perception in each factor of what was least natural.

The key distinguishing feature between the two factors was the way they evaluated monocultural productive land use, which in this case study consisted mainly of examples of plantation forestry. Factor 1 recognised natural character to be on a continuum from unmodified pristine environments to highly modified urban settings. Buildings and artefacts were consistently identified as least natural, and plantations as largely neutral. For Factor 2, photographs which showed young plantations, clear cut or visibly managed plantations, and one example of extensive pasture without any bush or tree cover, were evaluated as less natural than some buildings and artefacts. Photographs showing landscapes with built structures that were carefully designed, old, or modest in scale were evaluated as neutral or even somewhat natural. Furthermore, in the focus range Q sort, which excluded the highly modified urban environment, photographs showing more obvious built structures were neutral or not natural, but rated more natural than all the photographs where forestry dominated. Clearly, perceptions of extensive or visually dominating forestry played a significant part in assessment of natural character for a number of stakeholders in the Coromandel region.

In the Coromandel study, comments about the photographs were recorded and analysed for each factor. Factor 1, 'pure nature', specified natural settings in the following terms: coastal, unmodified, least changed, bush/rocks/sea, nothing man made, no apparent human influence, water/coastline, not changed and natural beach. Taller and older exotic trees, and pasture with trees, were also seen as generally having natural character. The reference to the apparent absence of human influence is important and distinctive. Factor 2, 'modified nature', specified natural landscapes in the following terms: less modified, not built, natural, foreshore.

Comments about the least natural photographs included the words: not natural, highly modified,

¹ The 51 photographs were presented in two sets: the first included a wide range of landscapes from the almost pristine to the highly modified (the 'full range' Q sort, $n = 25$ photographs). The second focused more on the middle range of modified landscapes (the 'focus range' Q sort, $n = 26$ photographs)

^a Agribusiness and Economics Research Unit, PO Box 84, Lincoln University, Canterbury
Fairweat@lincoln.ac.nz

^b Environmental Management and Design, PO Box 84, Lincoln University, Canterbury

completely modified, totally modified, most unnatural, disaster for nature and visually revolting². The photographs rated as least natural evoked strong responses and many comments showed that they were disliked³. However, some types of modification were not an intrusion, for example signs indicating protected heritage, and there was greater acceptance of past impacts which had been superseded by regeneration of New Zealand trees and bush (e.g., an old concrete mining foundation that was surrounded by bush). Factor 2 therefore appeared to accept a greater level of human involvement in the landscape compared to Factor 1, provided that the involvement was appropriate. Appropriate was defined as encouraging nature, and integrating human activities into the environment in a way that was unobtrusive.

The second study was part of an ongoing Lincoln University programme which is examining the effects of tourism in a number of locations. Research at Kaikoura (Fairweather *et al.* 1998; Fairweather & Swaffield 2001) and Rotorua (Fairweather *et al.* 2000c; Fairweather & Swaffield 2002) examined tourist experiences by asking both tourists and locals to evaluate photographs of a variety of settings (including natural sites and landscapes), different land uses, urban and cultural features and a variety of activities. Respondents were asked to sort the photographs for what they liked and disliked, and also for what they considered most unnatural to most natural. Analysis of the results based on the latter instruction is presented in Newton *et al.* (2002). It shows two basic patterns of responses. One view of nature emphasises its wild or natural character devoid of human presence, and the other emphasises nature as a point of connection for people, so that nature is humanised and linked to human culture. The first is a 'pure' nature viewpoint which excludes built structures, because these are a certain sign of human presence. The second is a modified or 'cultured' nature viewpoint which accepts, with conditions, the presence of humans in the natural environment. These results are remarkably similar to those from the Coromandel study and reflect the same basic bipolar perception of natural character in landscape.

The term 'cultured nature' derives from Hull *et al.* (2001) who have reviewed an extensive range of North American literature which parallels in many respects the New Zealand-based findings noted above (Fairweather *et al.* 1998; Fairweather & Swaffield 2001; Fairweather *et al.* 2000c). The results from the synthesis of the Kaikoura and Rotorua research (Newton *et al.* 2002)

complement and extend these interpretations. They indicate that the cultured nature viewpoint sees nature primarily as a resource for human enjoyment and activity, and naturalness is defined more in terms of personal experience of the natural environment rather than in the physical attributes of settings. Cultured nature is therefore about people feeling connected to nature through personal experiences in particular places. In contrast to this, the underlying sentiments of the pure nature point of view include the idea that nature and natural processes are too complex and unpredictable for humans to safely modify, and that nature has homeostatic or self-healing properties. In this view, human intervention is seen as degrading. Wild nature or wilderness is healthy nature, marked by an absence of pollution, a diversity of vegetation and species, and visual indicators of greenness and cleanness.

The results from the two New Zealand studies are consistent with international research. We take these studies to show that when it comes to assessment of natural character in landscapes there are two fundamental views that can be expected to be expressed in the New Zealand population generally. Further, since they are such fundamental viewpoints, they are unlikely to significantly change over the short term of say 1-5 years.

How are these Viewpoints Expressed in the Wider Population?

The two viewpoints each have implications for the forest sector. But before we can consider these implications it is important to investigate what proportion of the general population adopts each view. The studies to date have focused on identifying and characterising the viewpoints, rather than upon measuring the occurrence in a wider population. It might be the case that either view of nature is a distinctly minority viewpoint.

Knowing the population viewpoint is important in assessing the implication for forestry for four reasons:

- Public response to the way plantations affect the environment can influence political support or reaction to the overall development of forestry as a land use. These responses can be influential even when they come from relatively small groups. Favourable attitudes make it easier for change to occur, while negative attitudes can hinder change.
- The Resource Management Act (1991) identifies preservation of the natural character of the coastal environment, lakes, waterways and wetlands, and its protection from inappropriate subdivision, use and development, as a matter of national importance (S6(a)). It requires similar protection of outstanding natural features and landscapes (S6(b)). As a consequence, district plans typically require notified resource consents for forestry development in many locations. This enables local communities to express their views and concerns, and influence the consent process. Knowl-

² The recording sheet for the Q sort made reference to sorting from least to most natural, and also that the least natural photographs were unnatural. It was quite clear during the interviewing process that respondents took 'least natural' to mean unnatural.

³ All respondents also sorted the full range photographs from most like to least liked (disliked) and the results were very similar.

edge of public views on natural character will be important in preparing applications for resource consent.

- Public attitudes affect many other parts of the forest sector, from the need to attract suitable skilled labour, to investment, and the overall willingness of local and regional communities to support sector development. Again, knowledge and understanding of public attitudes can be crucial to the formulation of successful growth strategies.
- Finally, public consultation and social impact assessment are important requirements to achieve Forest Stewardship Council certification. Increasingly, this is recognised as an essential part of marketing forest products.

Opportunity to Survey Public Opinion

Research from another programme, jointly conducted by Forest Research and Lincoln University, addressed the question of the attitudes of a wider population towards the forest sector. Research to date has focused on the Gisborne/East Coast region and has reported on a number of issues relating to forest sector development. For example, the programme has examined the social and economic consequences of land use change from farming to forestry (Fairweather *et al.* 2000a, 2000b), and documented the associated community perceptions of forest sector development (Swaffield & Fairweather 2000; Tomlinson *et al.* 2000). In addition it has established a baseline of urban and rural awareness and attitudes concerning land use change and development generally (Fairweather *et al.* 2001; Langer & Tomlinson 2002). That baseline was established using a random sample survey and personally interviewing respondents. The survey provided an opportunity for an indicative assessment of public perceptions of natural character, and key photographs from the earlier Coromandel study were selected for inclusion in the questionnaire.

Using Selected Photographs to Indicate Population Views

A random sample of 280 persons was taken from the Maori and General electoral rolls for the East Coast region. A sample of this size gives a standard error of plus or minus six per cent. It must be noted, however, that while the sample is good for the East Coast it may not be representative of attitudes in the remainder of New Zealand. In some ways the East Coast is atypical in that it is relatively isolated, has an economy based on primary production, and has a high proportion of Maori (42 per cent in 1996). However, the majority of the population lives in Gisborne which, while relatively small, is still an urban area. While we therefore cannot take the results presented here as definitive for New Zealand they do present a regional perspective, and may indicate a possible pattern of response for New Zealand as whole. This is particularly so if the results show that one viewpoint is clearly more dominant than the other.

The questionnaire had two questions about natural character. Each respondent was asked: "For the pair of photographs shown on this card please pick the one which you think has most natural character". This question was repeated for another card showing another two photographs. The two questions took only a few minutes for respondents to consider. Some respondents found the question difficult saying that the two photographs could not be easily compared. Nevertheless, even with this short time and based on two questions it was possible to get potentially important results. There were no preparatory questions and no other related questions. The questionnaire was oriented to general development issues on the East Coast, not landscape issues, and the two questions were at the end of the questionnaire just before five questions on respondent characteristics. Thus the responses were a simple and direct reaction to the photographs presented and likely to be good indicators of basic feelings about landscapes.

The colour photographs were selected from those used in the Coromandel study because they were the most discriminating between Factor 1 and Factor 2. In other words, each photograph was strongly associated with a particular factor and did not figure significantly in the other factor. Our reasoning was that by selecting these particular distinguishing photographs it would be possible to identify the factor preference of each respondent in the random sample, and so find out the population proportion for each view of natural character. The discriminating photographs showed relatively modified settings - one in each pair was of a forestry setting and the other featured a built artefact⁴. The critical issue was the response to these settings. We know from the earlier research that people with a Factor 1 preference rated all forestry settings as neutral, including the one showing recent disturbance, whereas the wharf and concealed house were rated as less natural. In this survey we therefore assumed that they would choose the photographs showing forestry as more natural. On the other hand, the previous research showed that people with a Factor 2 viewpoint see plantation forestry as less natural, so we assumed that they would choose the

⁴ In one of the photographs showing built structures there is water in the foreground which is known to be a factor in landscape preference (Kaplan & Kaplan 1989; Amadeo *et al.* 1989). Some reviewers have made the point that the presence of water may have favourably influenced the selection of this photograph. The Coromandel study showed that for Factor 1, there were three photographs with a built structure and with water and they were all rated as less natural, while for Factor 2 they were all rated at or close to neutral. Consequently, a photograph including water is still a good discriminating photograph. Water may be attractive to some people but not to those with a Factor 1 preference - the presence of a built structure is critically important and overrides any attraction to water.

Fig. 1: Pairs of discriminating photographs (Photo 17 vs Photo 12, Photo 18 vs Photo 9) and frequency of support.

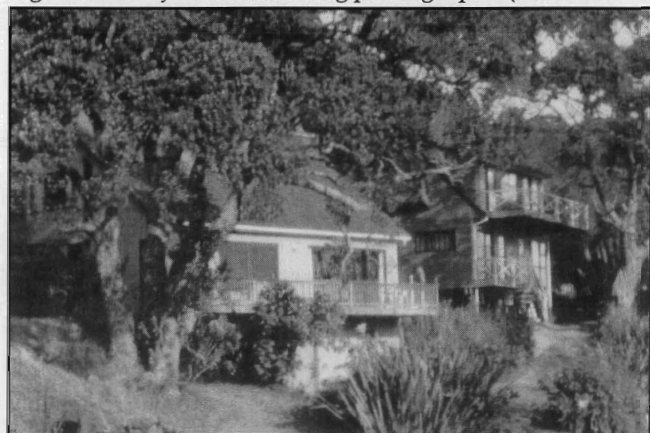


Photo 17: Concealed house: 68%.



Photo 12: Young pines on hill: 28%.

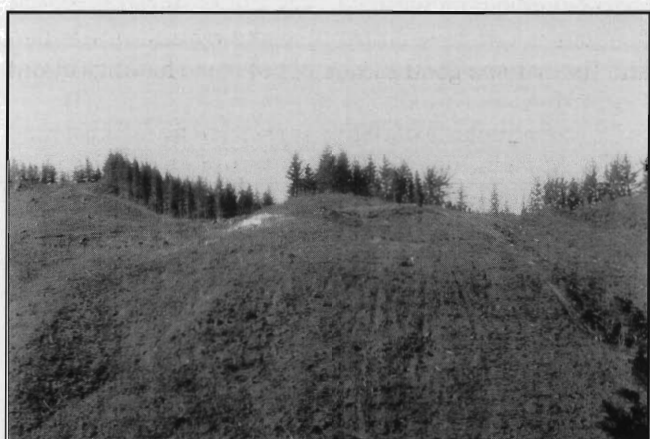


Photo 18: Logged hill site: 29%.

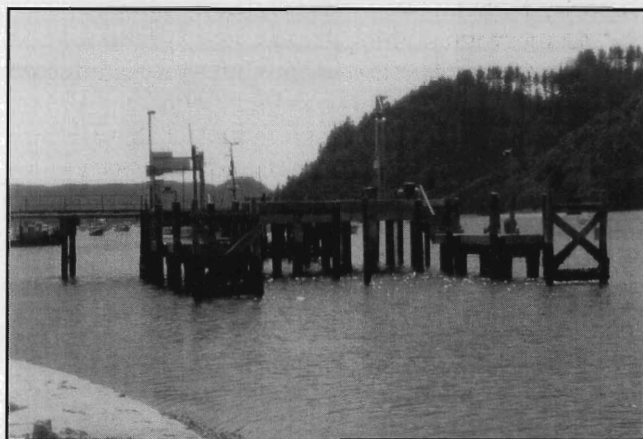


Photo 9: Wharf, 67%.

photographs showing the wharf and concealed house as more natural. For people who made unambiguous selections, and thereby indicated their perception of natural character, we can expect that the full characterisation of the factor preference detailed in the Coromandel study would also apply to them. This is the case because the critical issues for distinguishing factors were plantation forestry and built structures and these issues were encapsulated in the four discriminating photographs selected for the population survey.

Three considerations are relevant to this approach.

- An important qualification is that while we expected that a majority of people would make a definitive selection of either one or the other photographs there would be a minority who would either not discriminate or who would be inconsistent in their choice. This is to be expected with the choices people make about complex topics like landscape perception.
- While the discriminating photographs were statistically significant among the arrays of 25 and 26 photographs in the Coromandel study this does not mean that they will be perfect discriminators when used alone. However, the relatively large original sample size, for qualitative research, of 88 persons means that this is likely to be the case.
- There are intermediate positions between one view and the other, so that the preferences of some people

may not be entirely consistent with one factor or the other.

These considerations mean that the use of selected photographs is a useful but not a perfect indicator of factor affiliation. We expected that some respondents would not fit neatly into either the pure nature or cultured nature viewpoint. The fact that some people may not fit either factor does not mean that the factors themselves are imperfect nor that they cannot be identified by the other respondents. Since there is substance to the factor distinctions found in the Coromandel study we expected reasonably coherent results with most respondents able to make a choice between two photographs. For these respondents the factor affiliation would be quite clear and their views would match the views described for each factor in the Coromandel study.

Results: A Majority Viewpoint

For the first pair of photographs, shown in Figure 1, 68 per cent of the random sample on the East Coast chose the Factor 2 photograph (concealed house) as having most natural character and 28 per cent chose the Factor 1 photograph (young pines on hill) as having most natural character and four per cent gave no response. For the second pair of photographs, 67 per cent chose the Factor 2 photograph (wharf) as having most natural character photograph and 29 per cent chose the Factor 1

photograph (logged hill site) as having most natural character and four per cent gave no response.

The overall results were consistent for the two pairs of photographs. However, not everyone was consistent in his or her selection. For example, some people choosing the Factor 1 photograph from the first set chose the Factor 2 photograph from the second set. We found the Factor 1 photographs were the less reliable indicator of factor affiliation. From the 262 responses there were 183 (70%) who made a consistent choice and 79 (30%) who made an inconsistent choice. For the 183 making a consistent choice, 78 per cent chose Factor 2, and 22 per cent chose Factor 1. These latter results are perhaps the better indicator of the population proportions and suggest what might be possible if the discriminating photographs were perfect at distinguishing preference. The presence of some inconsistency reflects imperfection in the discriminating photographs not necessarily inconsistency in the preferences among the sample. On balance, it is relevant to report the preference for each factor as expressed for all the choices not just the consistent ones. Consequently, the 67 per cent preference for Factor 1 is the best indicator of population preference.

The use of a random sample allows us to infer that this is the proportion in the East Coast population and, given the qualifications already discussed, the results are a possible indication for the New Zealand population as a whole, although this has yet to be determined definitively.

Some Points of Discussion

The results show that for the Gisborne/East Coast population, at least, there is a marked preference for Factor 2 compared with Factor 1, which may be seen as expressing a cultured nature viewpoint rather than a pure nature viewpoint. It may be that this dominant viewpoint is held more widely but a national survey is needed before we can be sure about the presence of a dominant New Zealand viewpoint. In the meantime though, there are results here that are worthy of discussion, especially from a forestry point of view.

The characterisation of extensive plantation forestry as less natural than many built artefacts by the cultured nature viewpoint suggests that there is likely to be significant opposition wherever natural character is perceived to be compromised by forestry expansion. Further, the comments made about the photographs during the original sorting in the Coromandel study showed that their concerns are heightened when trees are harvested and when young trees are visible. This sensitivity to the effects of logging and replanting means that these concerns are likely to be particularly heightened at the beginning and end of each forest cycle, and will become more widespread as the forest estate planted over the past 20 years reaches maturity in many areas. The pure nature viewpoint appears to be less sensitive to the stage of harvesting and when young trees are visible in its evaluation of natural character. These observations

suggest that, if maintaining or gaining public support for forestry is important, then the forest sector should give attention to the cultured nature viewpoint's sensitivity to the extensive land use changes that will result from increased harvesting over the next decade.

Another issue is the contrasting and paradoxical way each factor characterises plantation forestry. The cultured nature viewpoint appears to accept human involvement in the landscape and seems to have a position more accommodating to human intervention. Fundamentally, they see that humans are part of nature, not separate from it. Potentially at least, this could include plantation forestry. In practice, however, our results show that the cultured nature viewpoint sees plantation forestry among the least natural options, and in comments characterised it as unnatural. Analysis of the comments in the Coromandel and tourism studies leads us to suggest that the negative reactions could stem, in part, from a belief that intensive monocultural plantation forestry is seen as a form of poorly managed intervention that also tends to exclude humans from the environment. In contrast, it would seem that the pure nature viewpoint which more clearly distinguishes between 'built' and 'natural' environments accepts plantation forestry and pastoral farming as more natural than any current activities that result in a built structure.

Is the cultured nature viewpoint on natural character concerned only with plantation forestry? The comments lead us to expect that the response to monocultural plantation forestry may also apply to monocultural pastoralism as a land use. Factor 2 rated one photograph with extensive pasture and no trees as among the least natural environments, outside built up areas. It may be that their preference is for humans as part of nature provided that human involvement occurs in such a way as to be sensitive to nature⁵. This would explain why a photograph of farmland with considerable native bush and some exotic species was rated as moderately natural, but more natural than another with farmland and some pines.

That the cultured nature viewpoint accepts humans as part of nature but sees plantation forestry as one of the least natural forms of rural land use, is both a paradox and a matter of major concern. The differing responses to other photographs in the Coromandel study and to photographs in another of the East Coast studies (Swaffield & Fairweather 2000) throw some additional light on this paradox. Landscape settings in which pastoral farming is combined with bush or woodlot forestry were assessed as neutral or even relatively natural in the Coromandel study and identified by some as a preferred future option in the East Coast study. This suggests that farming and forestry in a mixed mosaic of land uses would be more favourably received by both viewpoints. If this is the case then the issue is not so much a widespread opposition to any forestry, but rather the predominant cultured nature opposition to plantation

⁵ We are indebted to Barbara Hock for this suggestion.

forestry as currently practised, particularly on the East Coast.

How Best to Proceed?

These results should not lead to pessimism for those working in the plantation-based forest sector. The resolution of the apparent difficulties requires understanding and consulting with the different viewpoints. There is a need to develop policies and strategies that are responsive to each viewpoint described above. It is our view that the results presented here show that natural is preferred to non natural, the public prefer land uses to be natural and that foresters therefore need to make plantations look natural. The limitation of the study means that we cannot take these values as conclusively proven, especially for the New Zealand public. Therefore we take them as indicated by the evidence and assume that they are relevant to policy discussion.

The cultured nature viewpoint can be addressed by noting that at base it acknowledges that the permanent presence of humans is a natural part of the landscape. Their objection is to very visible, large-scale and monocultural land uses. The photographs rated least natural by the cultured nature viewpoint in the Coromandel study were also disliked and seen as aesthetically unattractive. This evaluation included mature forests. This perception was held despite one plantation forest in the Coromandel providing access and walking tracks.

The policy challenge is to show how forestry is, or can be more, inclusive of human use and sensitive to nature. This could be accomplished in at least three ways. One way is to show that forestry management benefits many species, including humans. This means that the industry could consider ways of widening ownership and participation in forest development. Research on landscape perception clearly indicates that involvement in a landscape setting significantly affects preferences. It is perhaps not surprising that forest owners, managers and workers accept and even appreciate the managed and cultural character of plantation forests, as it represents the outcome of their work, as well as investment. One challenge is to find ways of getting the wider population to 'buy in' emotionally and financially to the sector, so that they feel they have their own stake in it either directly via ownership⁶ or through participation in decision making. The role of education should not be overlooked; perhaps the industry should be more active in schools?

A second way to appeal to the cultured nature viewpoint is to show how forestry sustains human life and human needs directly via activity and participation. This means that forestry needs to be developed in ways that provide for and encourage wide use, most obviously by recreational activities. Perhaps all forests should have

their recreational potential planned and developed as a regular part of forest management. Where these already exist there may be scope for advertising them more widely. Recent debates over the future of Hanmer Forest, North Canterbury, following a change of management style, indicate how important access can be in shaping a community's perception of the forest sector. It is notable that in another of our studies (Fairweather *et al.* 2000c), the Redwoods Walk in Rotorua, which is open to the public and well used and promoted, was rated by many as a highly desirable and highly natural landscape, despite being an exotic forest.

A third way to respond is to address the concern that plantation forestry is monotonous and monocultural. Since in many places plantations are not monocultures, there is a need to better document this fact. Encouraging greater recreational use of forests would help in this regard because visitors would then appreciate first hand the diversity of life in the forests. However, in places where plantations do not support diversity of species (i.e., in the drier and cooler regions of New Zealand) there is a need to consider using a wider variety of species, encouraging understorey species, or to have riparian or other edge plantings of appropriate species.

It is ironic that many of these approaches to forest management were well developed and documented in the latter days of the New Zealand Forest Service. In their book entitled 'Creative Forestry', Anstey *et al.* (1982) set out forest planning processes that addressed many of the concerns and opportunities identified above. The introduction of the Forest Stewardship Council certification scheme provides an opportunity to 'rediscover' many of these principles. The requirement for preparation of a landscape plan in particular should provide forest managers with an opportunity and a means to better integrate forest operations into the environment, and ensure effective consultation, in ways that address the concerns identified in our studies.

The concerns of the pure nature viewpoint can be most easily addressed at the macro scale by separating forestry from conservation. This viewpoint will not readily accept that forest management, even of the most enlightened kind, is a substitute for the processes of nature left to its own devices. In a sense, the entire process of reallocating New Zealand Forest Service land to either the production or conservation agencies, during the reforms of the 1980s, was driven in part by a 'pure nature' view. The ideological and practical partitioning of land into 'production' and 'conservation' has a long history in New Zealand (Swaffield 2001), and still underpins much policy. However, this coarse and uncompromising separation of conservation and production becomes more and more problematic at the micro scale. It also fundamentally limits the achievement of conservation outcomes in the longer term as it essentially excludes conservation as a management goal on much of the productive land area of New Zealand, whilst also excluding productive use of land as source of funding for conservation. It is interesting that the

⁶ We do not mean by enforcing public ownership of companies but by owning land directly.

population survey on the East Coast suggests that the 'pure nature' view is significantly in the minority.

Overall, our results suggest that most people seek a subtle approach to forest management. The forest sector therefore faces challenges in presenting itself as an industry that is working with nature, not against it, (and with communities and their aspirations not against them) and that forestry is a desirable way for humans to manage the environment. The particular challenge in the light of the findings presented here is for the forest sector to better accommodate what may be a majority view of forestry. This is a challenge because, as a broad generalisation, at present the forest sector and the majority of the public may see plantation forestry in quite different terms. Accommodating public expectations, even partially, could necessitate possibly significant changes by the forest sector. Failure to try however, is likely to result in lack of support from the public generally, and rejection of the idea that plantation forestry is a desirable land use. Attempts to improve the situation may involve changes for the forestry sector, but these attempts may also change the public viewpoint, as their knowledge of forestry improves.

The question of precisely why members of the public think the way they do remains to be answered. This topic is timely, now that there is discussion about sustainable forestry, certification and incorporating public viewpoints into forestry planning. A national survey of perceptions of sustainable forest management is highly desirable.

Acknowledgements

We acknowledge the work of Lisa Langer (Forest Research) in organizing the field survey which produced the data analysed in this article. Barbara Hock, Murray Davis, Tim Barnard and Lisa Langer (Forest Research) provided detailed and useful comments on earlier drafts. Funding for this research was provided by the New Zealand government through the Foundation for Research Science and Technology.

References

- Amadeo, D.; Pitt, D.G.; Zube, E.M. 1989: Landscape feature classification as a determinant of perceived scenic value. *Landscape Journal* 8(1): 36-50.
- Anstey, C.; Thompson, S.; Nichols K. 1982: Creative forestry: a guideline for forest managers. Landscape Section, Planning Division, New Zealand Forest Service, Wellington, New Zealand.
- Fairweather, J.R.; Langer, E.R.; McNab, K.; Robertson, N.; Tomlinson, C.; Smith, B. 2001: Community visions, values and preferences for development on the Gisborne/East Coast. *Sustainable Forest Management Technical Report No. 1*, Forest Research, Rotorua.
- Fairweather, J.R.; Mayell, P.J.; Swaffield, S.R. 2000a: A Comparison of the employment generated by forestry and agriculture in New Zealand. *AERU Research Report No. 246*, Lincoln University.
- Fairweather, J.R.; Mayell, P.J.; Swaffield, S.R. 2000b: Forestry and agriculture on the New Zealand East Coast: Socio-economic characteristics associated with land use change. *AERU Research Report No. 247*, Lincoln University.
- Fairweather, J.R.; Swaffield, S.R. 1999: Public perceptions of natural and modified landscapes of the Coromandel Peninsula, New Zealand. *AERU Research Report No. 241*, Lincoln University.
- Fairweather, J.R.; Swaffield, S.R. 2001: Visitor experiences of Kaikoura, New Zealand: An interpretative study using photographs of landscapes and Q method. *Tourism Management* 22(3): 219-228.
- Fairweather, J.R.; Swaffield, S.R. 2002: Visitors' and locals' experiences of Rotorua, New Zealand: An interpretative study using photographs of landscapes and Q method. *International Journal of Tourism Research* 4 (4): 283-297.
- Fairweather J.R.; Swaffield S.; Simmons, D.G. 1998: Understanding visitors' experience in Kaikoura using photographs of landscapes and Q method. *Tourism Research and Education Centre (TREC) Report No.5*, Lincoln University.
- Fairweather J.R.; Swaffield S.R.; Simmons, D.G. 2000c: Understanding visitors' and locals' experience of Rotorua using photographs of landscapes and Q method, *Tourism Research and Education Centre (TREC) Report No.13*, Lincoln University.
- Hull, R.B.; Robertson, D.P.; Kendra, A. 2001: Public understandings of nature: a case study of local knowledge about 'natural' forest conditions. *Society and Natural Resources* 14: 325-340.
- Kaplan, R.; Kaplan, S. 1989: "The experience of nature: a psychological perspective". Cambridge University Press, Cambridge.
- Langer, E.R.; Tomlinson C.J. 2002: Preferences for development and attitudes towards forestry of population groups in the Gisborne/East Coast region. *Sustainable Forest Management Technical Report No. 2*, Forest Research, Rotorua.
- Newton, B.M.; Swaffield, S.R.; Fairweather J.R. 2002: Public perceptions of natural character: Empirical evidence and policy implications in New Zealand. *New Zealand Geographer* 58 (2): 14-25.
- Swaffield, S.R. 2001: Natural character in culturally modified landscapes: Public perceptions and policy frameworks. Pp 39-44 in "Asian places in the new millennium", Proceedings of the 38th IFLA World Congress, Singapore Institute of Landscape Architects, Singapore.
- Swaffield, S.R.; Fairweather, J.R. 2000: Community perception of forest sector development on the New Zealand East Coast: Likely and acceptable employment activities, infrastructure and land use. *AERU Research Report No. 248*, Lincoln University.
- Tomlinson, C.; Fairweather, J.R.; Swaffield, S.R. 2000: Gisborne/East Coast field research on attitudes to land use change: An analysis of impediments to forest sector development. *AERU Research Report No. 249*, Lincoln University.