Social aspects of biodiversity in the urban environment

Margaret Kilvington[1] and Will Allen[2]
Collaborative Learning for Environmental Management
Landcare Research, PO Box 69, Lincoln 8152, New Zealand
[1] kilvingtonm@landcareresearch.co.nz
[2] allenw@landcareresearch.co.nz

ABSTRACT

The premise of this conference is that 'greening the city' by enriching the indigenous biodiversity of the urban environment is an important normative goal. However, in order to successfully enact this, it is necessary to explore just what is the nature of this goal? Is it for fundamentally environmental or ecological reasons we might pursue it or are we after something else? It would be hard to argue that there are many instances where the conservation of unique ecological systems rests on the opportunities presented to us in an urban environment. In fact it is more likely to be the opposite. Ecological restoration in an urban setting generally refers to the restoration of systems and species once present or even abundant — into environments fraught with challenges for them. This could surely be better achieved in an environment without the multifarious competing interests of urban living.

In this paper we suggest that the goal of bringing biodiversity back into the urban environment is multifaceted, and as much about social objectives as it is about achieving environmental ends. It may be based on a changing cultural identity, which calls for greater representation in our landscapes of the iconic symbols of indigenous New Zealand. It may be for reasons of 'holism' — a desire to see greater integration of human and non-human ecological systems. It may also be for the potential for enhancing a kind of 'nature stewardship' ethic in society to which greater interaction between people and 'nature' might lead.

If these are indeed at the root of the goal to bring biodiversity back into urban environments, this has significant implications for both our interpretation of what constitutes 'biodiversity' in the urban environment and the social processes by which we enact any landscape transformations. In this paper we present what we consider to be some of the important ingredients of a framework for biodiversity restoration in urban environments that takes cognizance of the essentially social nature of this goal. We begin by exploring what the goals of restoration in an urban environment might be. We pay particular attention to how we might work with existing community values about nature and the environment, and how to facilitate change that results in the kind of positive associations with natural biodiversity that we hope for. Finally, we present some findings from a study of attitudes in Christchurch City with a view to considering how best the common issues, values and concerns raised by members of an urban community might be brought into consideration in a biodiversity restoration project.

WHY UNDERTAKE BIODIVERSITY RESTORATION?

There is certainly enough debate in the academic ecological and restorationist communities to furnish us with answers to this question from an environmental perspective. Authors such as Ehrenfield & Troth (1997), Cairns (2000), Ehrenfield (2000), Meurk & Hall (2000), Forrest (2003) and others suggest the following are widely acknowledged aspects to the environmental argument for undertaking restoration of biodiversity:

- Firstly, there are the concerns that our fundamental genetic diversity is under threat. This is expressed as diminishing habitat, species decline, and poor degree of representativeness of a number of fauna and flora associations particularly in lowland, fertile areas largely taken over for agriculture and development
- Related to this is the argument of ecosystem compensation. As a rationale for ecosystem

© Royal New Zealand Institute of Horticulture (Inc.) 2005

restoration it is largely about addressing the values of habitat and species protection and representation in situations where development is going to happen that will compromise those values. In such instances it may be a practical management alternative (and argued by some a moral imperative) to reinstate equivalent biodiversity values elsewhere

- Thirdly, there is an interest in progressing the science of ecology and the practice of ecological management through restoration practices. This is expressed as the need to learn the science of 'intervention' and means restoration sites can be used as action-research experiments in improving the understanding of how ecosystems function
- Finally, a more human centric but still fundamental environmentally oriented rationale for ecosystem restoration is the need for the ecosystem services that natural environments provide. These include hydrological or pollution abatement processes.

While these arguments, expressed fully, present an impressive case for ecosystem restoration generally, their robustness is less certain when applied to ecosystem restoration in an urban or highly populated context. Urban environments characteristically have natural systems that are highly disturbed. Such systems make a poor starting base for the seed sources, soil structures, and networks of fragmented habitat systems needed to make the restoration of self-sustaining viable ecosystems a reality. At the same time, urban environments are places of scarce land availability and high land value. They are subject to competitive and conflicting resource use needs where multiple values of many groups must be negotiated. While the long-term benefits that the ecosystem services of natural environments can offer to highly pressured urban engineering problems may be appealing, it is difficult to escape the conclusion that urban environments are highly challenging places in which to undertake biodiversity restoration.

It turns out that the arguments most frequently and strongly presented for undertaking biodiversity restoration in urban environments are fundamentally social rather than biophysical. Many 'future thinkers' and writers urge that the long-term sustainability of urban environments is dependent on a deepening consciousness of 'the city as an ecosystem'. Without the obvious integration of indigenous biodiversity into that system there is a risk of fostering thinking amongst citizenry, politicians and planners that the environment is 'out there' beyond the urban perimeter. Furthermore, while many recognise indigenous biodiversity as symbolic of New Zealand's uniqueness and character, its absence in urban settings can risk fostering the idea that indigenous systems are incompatible with urban life and aesthetics (Kilvington & Wilkinson 1999). Images of Christchurch as presented on one of the principal tourism websites (http://www.christchurch.org.nz/) support this theory by illustrating how one of New Zealand's recently termed 'greenest cities' has achieved this reputation by encouraging the planting of exotic species associated with the contrived landscapes of Britain and North America rather than the particular fauna and flora that are symbolic of New Zealand uniqueness and character.

Fundamentally then, the concern that is being expressed is that city dwellers need the opportunity to interact with viable, living, uniquely New Zealand ecosystems. Notably these arguments for ecosystem restoration are primarily about 'us' — humans, New Zealanders, urban dwellers — and how we are interacting with the environment. They suggest that the 'good' reasons for restoring biodiversity in urban environments, despite the challenges, are not exclusively or even predominantly ecological ones.

Moreover, as a steadily increasing percentage of New Zealanders are moving to the city, these goals become even more important nationally. A report by the Parliamentary Commissioner for the Environment (PCE) stated that approximately 80% of the population now lives in what would be classed as an urban environment, noting 'in little more than a century we have moved from being a predominantly rural, natural-resource-based nation, to a predominantly urban people with a much more diverse range of wealth-generating businesses' (PCE 1998). A

consequence of this shift is that for the majority of people their primary interactions with the environment are within a city.

If then, we hold it to be true that there are significant social goals relating to our understanding and interaction with the environment being pursued through urban ecosystem restoration, then to argue for ecosystem restoration in the urban environment is to advocate not just for greater opportunities for biodiversity but for the need for an improvement in the relationship between human and non-human nature (Helford 2000; Light 2000).

Consequently the practice of ecosystem restoration in the urban environment has a real and strong social-capacity-development function. This in turn implies that the processes that link people to the non-human environment are as important and legitimate a part of restoration as the actions taken to promote biodiversity, and restoration projects have to work actively to balance these social and ecological goals.

WHY IS ADVOCATING FOR BIODIVERSITY ENHANCEMENT SUCH HARD WORK?

This balancing is particularly important for restoration practitioners, most of who have traditionally viewed their job as one of advocacy (Kilvington et al. 2000). From this perspective, when asked what they consider are the important social issues affecting ecosystem restoration, restoration practitioners are likely to indicate the following: how to get people volunteering to undertake restoration activities, how to keep them enthusiastic, how to deal with opposition to proposals from various individuals or groups, and (sadly) how to deal with outright hostility and even vandalism towards their work.

However, Hull & Robertson (2000), writing on the language of restoration, make the following observation:

> *"The goals of a restoration project are often based on decision makers' ideas (and ideals) of what is natural, healthy, or otherwise best for nature. Yet there is no simple answer to the question 'what is natural?' or 'what is ecologically best for nature?' What is best is negotiable; neither science nor nature provides value-free directives for management and many people are equally well qualified to participate in the negotiation about values."*

What they are critiquing is the tendency of restoration initiatives to set goals based on criteria determined by the advocates and decision makers, without inclusion and negotiation with the wider community that may be required to carry out the tasks, live with the results, and hopefully be favourably influenced by them. Ecosystem restoration practicioners consequently become advocates not just for the cause of restoring ecosystems but for the specific actions of how this is to be carried out.

The difficulties in taking on the role of advocacy are numerous. As Hull & Robertson (2000) note there are no satisfactory 'value free' definitions for environmental quality, integrity or health emerging from the science or from nature itself. Without incontrovertible arguments there is the real (and evidenced) risk of competing visions and justifications for which nature should exist vying for political and civic popularity. An example of this is the long-standing, (and to many wearying) debate within Christchurch City where opposite images of the 'colonial English city' vs. 'indigenous Aotearoa-New Zealand' exchange verbal blows in the local newspapers.

Other unappealing aspects to the task of advocacy are the risk to both the self-esteem of the advocate and those they are seeking to influence. Advocacy is only effective where others can be persuaded to a particular point of view. It consequently sets both the advocate and the subject of the advocacy up to be 'proven wrong'. Only one can be victorious. Advocacy is consequently a natural approach in a judicial system but is less useful in achieving the goals of restoration, particularly the social goals of increased understanding and appreciation of the environment that is lived in.

An alternative to advocacy is to base ecosystem restoration on collaboration. But for many restoration enthusiasts this carries

Table 1 Distinctions between compromise and collaboration.

Compromise	Collaboration
• Holding on to the most important bits and trading the others • No shift in how each party sees the situation • Division of resources into separate priorities • Feeling you ended up with a lesser outcome than desirable.	• Listening to others without giving up your own needs • Looking for shared / common ground • Sharing of resources • Discovering new options — 'third alternative' • Increased outcome than could otherwise be achieved • Not reliant on people thinking the same — just understanding and accepting each other's goals.

the risks of being forced to accept viewpoints they do not agree with and ending up with a restoration project that is a compromise of differing value sets.

COMPROMISE OR COLLABORATION?

Because the notion of working alongside members of the wider public to design and implement ecosystem restoration initiatives does hold a genuine fear for many restoration practitioners, it is worth exploring the distinctions between compromise and collaboration[1].

By these distinctions (Table 1), the notion of compromise in any given project is undesirable for many reasons. The action of compromise is of trading that which you can most willingly (albeit reluctantly) part with in exchange for some similar shift on behalf of others. It results in no change to original viewpoints, no creation of 'third' alternatives, often involves a division of available resources into separate priorities (yet more trade-offs), and an inevitable sense of a less than desirable overall outcome. In contrast, those who have been involved in successful and creative collaborations note a different set of processes and a more satisfactory outcome. Collaboration requires a degree of listening and understanding of differing needs that leads to recognition of common ground. As with compromise, collaboration does not necessitate all must 'share the same view.' However, since nothing is being 'sacrificed' to achieve harmony, the end result is more likely to be an increase on what would otherwise have been achieved and involve a sharing of resources from different contributors.

However, even a collaborative approach to ecosystem restoration in an urban environment has to begin with the raw material available — in both the biophysical and social sense. The observations, concerns and aspirations of urban communities are crucial ingredients in designing successful social processes to improve human natural interactions in the urban environment. In the remainder of this paper we will review conclusions from a study by Kilvington & Wilkinson (1999) on community attitudes to vegetation in the urban environment, and the contribution they make to what are the important social aspects of the process of ecosystem restoration.

VALUES ABOUT URBAN VEGETATION: A CHRISTCHURCH CASE STUDY

The study conducted in 1998 used a range of focus groups throughout Christchurch to explore issues, values and aspirations associated with vegetation in the urban environment.

The range of values expressed regarding vegetation in the Christchurch urban environment was, not surprisingly, extremely broad. It encompassed psychological values of aesthetics, and fulfilment of inner 'spiritual' needs for connection, through to basic physiological values of shade, shelter, and sound modification. However, the needs and concerns of groups did vary notably and not all groups shared the full range of values expressed overall. For instance, the group from the suburb of Linwood (a comparatively low socio-economic area) expressed the greatest

[1] For many of the points in this comparison we are grateful for a conversation with Bill Fleury, Department of Conservation, Wanganui.

concerns over vandalism and security in public spaces, while the group from the kōhanga reo[2] was the only one to discuss with interest the resource use values of various vegetation types.

An observation from the study of importance to ecosystem restoration efforts is the degree to which vegetation is a predominant symbol of the city. This was expressed in an overall landscape sense, such as through pride in the parklands and public green spaces of the city and in a local sense where certain key trees or vegetation patterns were viewed as important local landmarks.

The topic of 'native vs. exotic' was not immediately introduced into the focus groups from the viewpoint that if this was a genuine issue of concern it would emerge by itself from the discussion. Notably it rarely did so independently of the focus group facilitator. Instead participants were generally more interested in issues such as aesthetics of plantings and the age and size of familiar trees. When the topic was discussed there was much talk about 'balance' but no ready agreement on what this should be. However, many of the participants' comments revealed that expressed aversion to predominant new planting of indigenous plants was not about the plants themselves but about the perception of the approach that had been taken, with the concern emerging that the policy was determined by 'political correctness' and would wipe out the colonial heritage of the city — equally treasured by many.

If the object in an ecosystem restoration project in an urban context is to establish some common dialogue around naturalness in the urban environment, it is also worth noting that this study revealed a high degree of confusion around such terms as 'naturalness' and 'wilderness'. Naturalness was defined by participants in several ways. Occasionally it was used to refer to 'what was meant to be here' (itself an issue of some uncertainty), but equally commonly it was used to refer to that which was self-generating rather than constructed. Consequently, for one participant, a view of the spring bulbs emerging annually in Hagley Park was a 'natural scene'. Rarely was it used to exclusively refer to indigenous biodiversity rather than exotic vegetation. 'Wildness' also varied in meaning from unmanaged landscapes (such as a stream overgrown with willows) to something approaching what would be found in national parks or on the West Coast of the South Island. Wildness in an urban environment was not universally objected to as might be thought by those who receive complaints about poorly managed park areas. It was deemed useful as a departure from constructed landscapes, particularly for children's play, but generally preferred 'in its place'. The levels of tolerance to what was perceived as a wild area also appeared to vary according to the location. Those in areas with greater security risks had more reservations about adding a biophysical 'wilderness' to a place already seen as a 'social wilderness'.

Ecology is the fundamental science at the base of biodiversity restoration in the urban environment, so of equal interest to restoration projects is the community understanding and appreciation for ecological concepts. Overall this was poor and limited to loose ideas about connectivity. Few of those who took part in the study believed that planting of indigenous species significantly contributed to their notion of an ecosystem. With a limited understanding of aspects of urban ecosystem health and the role of indigenous biodiversity, the decision to select indigenous over exotic species appears a matter of personal choice, preference and conviction. This uncertainty of the role indigenous vegetation plays in an urban ecosystem was expressed even amongst the group selected for their degree of environmental awareness.

This exposure of the general confusion over naturalness and the value of biodiversity in the urban environment serves to illustrate the likely

[2] In the study a focus group was made up of adults associated with a Kōhanga reo (a Māori language pre-school) to gain information on issues of concern to those with an involvement in urban Māori culture.

distinctions in language, values and concerns between proponents of restoration projects and the communities who such projects are likely to affect or are indeed aimed at influencing. However, there are a number of positive values that were expressed towards vegetation in the urban environment which are also useful to understand. These include:

- Knowing what was once there
- Respecting heritage
- Having a say
- Being listened to.

Participants in the study were shown a number of photographs of vegetation types within the Christchurch area. A common view expressed (particularly relating to the photograph of the Port Hills) was uncertainty in how to value the scene based on whether it was 'meant to be there'. The biogeographic history, particularly of the city, was an important element to people, although they frequently expressed a great deal of uncertainty around it. This respect for and interest in heritage extended to the inner city and in particular was at the basis of concerns around replacement of long-standing, even symbolic arrangements of exotic vegetation found in the major parks and river ways. Of importance to participants across all groups was the ability to contribute to decisions affecting their local and wider environment and to be clear that their views had been treated as valued contributions. Notably, participants who had had positive experiences in designing plantings with their local authority were much more likely to feel confident that they would want to, and be able to, contribute in future.

In a city like Christchurch, increasing indigenous biodiversity to any significant degree ultimately implies a change to the overall character of the landscape. Landscape changes are commonly met with concern and resistance and there is a strong tendency to view the new landscape more critically than the old and familiar (as evidenced by the greater concerns expressed regarding the environmental impacts of new forestry schemes that replace the largely unchallenged agricultural landscape). Participants in the study expressed some common core values relating to how they appreciated the Christchurch city landscape and more particularly about how they responded to change. Ownership, expressed through meaningful consultation and facilitated participation, was a common ingredient that participants identified influenced their willingness to accept changes and even to actively support those changes. Similarly the need to deal openly with expressed concerns and for authorities to 'lead while looking behind' was also articulated. The importance of local identity through distinct vegetation associations throughout the city was another element common across groups as was the recognition (with gratitude) of the forethought of earlier generations that had provided public spaces and protected and enhanced important areas.

CONCLUDING COMMENTS

These aspects raised by the study are of particular importance to the design of processes to achieve biodiversity restoration in urban environments. The importance of the issues of ownership, participatory leadership, providing for local and personal 'sense of place', and building on the recognised need for thought for future generations strongly support the importance of incorporating collaborative approaches to biodiversity restoration that recognise and facilitate these goals.

In choosing to undertake the restoration of biodiversity in an urban setting proponents are consciously or unconsciously pursuing goals oriented towards changing the relationship between the human community of that area and the environment they live in. Acknowledgement of the social goals of biodiversity restoration is important because in clarifying the purpose of the activity it becomes apparent that the design of the process of restoration must address how these social objectives are to be achieved. Communities have wide-ranging but significant values they attach to the vegetation and public spaces of the city. Rather than working to adjust these values to fit those of a proposed biodiversity restoration initiative through advocacy, it is useful to consider these the working ingredients of the current and future relationship that the community has with its

environment. Values such as the importance of heritage, the desire to contribute to change decisions, and the appreciation of the need to plan for the future become aspects of the social fabric that a collaborative restoration project can work with and gain from.

The benefits of a collaborative response to landscape change in the urban environment include more shared effort, long-term care and value of the new landscape, and the potential to move away from traditional conflicts between agencies, interest groups and the general public over land management decisions. Such approaches have the opportunity to enhance community relationships with their environment thus ensuring the achievement of the core social goal for biodiversity restoration in the urban environment.

REFERENCES

Cairns, J. 2000: Setting ecological restoration goals for technical feasibility and scientific validity. *Ecological Engineering 15*: 171–180.

Ehrenfield, J. G. 2000: Defining the limits of restoration: the need for realistic goals. *Restoration Ecology 8*: 2–9.

Ehrenfield, J. G.; Troth, L. A. 1997: Restoration ecology and the ecosystem perspective. *Restoration Ecology 5*: 307–317.

Forrest, J. 2003: Protecting ecosystems on a changing planet. Washington DC, World Resources Institute. Available at http://www.earthtrends.wri.org/features/view_feature.cfm?fid=47&theme=7.

Helford, R. M. 2000: Constructing nature as constructing science: expertise, activist science and public conflict in the Chicago wilderness. *In*: Gobster, P. H.; Hull, R. B. *ed*. Restoring Nature. Perspectives from the social sciences and humanities. Washington DC, Island Press. Pp. 119–142.

Hull, B.; Robertson, D. 2000: The language of nature matters: We need a more public ecology. *In*: Gobster, P. H.; Hull, R. B. *ed*. Restoring Nature. Perspectives from the social sciences and humanities. Washington DC, Island Press. Pp. 97–118.

Kilvington, M.; Wilkinson, R. 1999: Community attitudes to vegetation in the urban environment: a Christchurch case study. *Landcare Research Science Series No. 22*. Lincoln, Manaaki Whenua Press. 38 p.

Kilvington, M.; Taylor, R.; Allen, W. 2000: Restoration and the City: looking for a framework for social and ecological restoration. *In*: Stewart, G. H.; Ignatieva, M. E. *ed*. Urban biodiversity and ecology as a basis for holistic planning and design. Proceedings of a workshop held at Lincoln University, 28–29 October 2000. *Lincoln University International Centre for Nature Conservation Publication No. 1*. Christchurch, Wickcliffe Press. Pp. 72–79. Available at http://www.landcareresearch.co.nz/research/social/restorationandthecity.asp.

Light, A. 2000: Restoration, the value of participation and the risks of professionalisation. *In*: Gobster, P. H.; Hull, R. B. *ed*. Restoring Nature. Perspectives from the social sciences and humanities. Washington DC, Island Press. Pp. 163–181.

Meurk, C.; Hall, G. 2000: Biogeography and ecology of urban landscapes: ecological principles and causes of vegetation patterns, their importance to wildlife, opportunities and barriers to dispersal establishment and succession, and how to accelerate positive trends. *In*: Stewart, G. H.; Ignatieva, M. E. *ed*. Urban biodiversity and ecology as a basis for holistic planning and design. Proceedings of a workshop held at Lincoln University, 28–29 October 2000. *Lincoln University International Centre for Nature Conservation Publication No. 1*. Christchurch, Wickliffe Press. Pp. 34–45.

Parliamentary Commissioner for the Environment (PCE) 1998: The cities and their people: New Zealand's urban environment. Wellington, Office of the Parliamentary Commissioner for the Environment. 89 p.