

Tragic consequences for conservation of mis-defining the term 'community'

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ABSTRACT

A milestone in community participation in environmental management in New South Wales was the introduction of the *Catchment Management Act 1989*. To oversee the strategic planning and implementation of natural resource management, the Act provided for a network of committees across the State composed of agency staff, stakeholders and community representatives. In the selection process for this network, the focus of stakeholder and community participation has been on ensuring appropriate representation, rather than merit, and in rural areas the term 'community' has been synonymised with 'land holder/land user'. This definition of community has frequently resulted in environmental management being placed in the hands of sectional interests. In this paper the potential problems of this approach are discussed and examples provided.

Key words: natural resource management, Total Catchment Management

Introduction

Community and government partnership

In the last decade, governments have increasingly recognised the need to include the community in decision-making processes (Cullen 1997). In New South Wales, a major milestone in this regard was achieved with the introduction of the *Catchment Management Act 1989*. It embodied the concept of 'community and government working together' in an integrated approach to natural resource management (Anon. 1994-95).

For the purposes of the Act, total catchment management was defined as the 'coordinated and sustainable use and management of land, water, vegetation and other natural resources on a water catchment basis so as to balance resource utilisation and conservation' (Anon.: P. 3 1989).

The Act provided for a network of Catchment Management Committees and Catchment Management Trusts¹, coordinated by the State Catchment Management Coordinating Committee. The composition of these bodies included agency personnel, land holders/land users and representatives of lobby groups including local government and environmental interests. No scientific expertise was sought. Within a specific catchment, the functions of the Catchment Management Committees were to:

- promote and coordinate the implementation of total catchment management policies and programs;
- advise on and coordinate the natural resource management activities of authorities, groups and individuals;

¹ In mid-2000 Total Catchment Management changed from a focus on catchments driven by Catchment Management Committees to a more regional focus driven by Regional Catchment Boards. As with Catchment Management Committees and Trusts, the Regional Catchment Boards are representational in structure and stakeholders include agency, local government, indigenous and conservation representatives. The Act remained unchanged, although there are plans to modify it (Burgin 2000).

- identify catchment needs and prepare strategies for implementation;
- coordinate the preparation of programs for funding;
- monitor, evaluate and report on progress and performance of total catchment management strategies and programs;
- provide a forum for resolving natural resource conflicts and issues;
- facilitate research into the cause, effect and resolution of natural resource issues; and
- such other functions relating to total catchment management as are directed by the Coordinating Committee (Anon.: P. 8 1989).

The objectives of the Act included coordination of catchment management-related policies, programs and activities; achievement of active community participation in natural resource management and promotion of its sustainability; and, in addition, provide stable and productive soil, high quality water and protective and productive vegetation cover (Anon.: P. 3 1989).

Discussion

Definition of community

In the context of the Act, in rural areas 'community' representation has frequently been synonymised with 'land holder/land user' and, all too frequently, interpreted as 'farmer' representation. The term has not, therefore, encompassed a more widely understood definition, that would include all non-government individuals. This definition, together with a focus on stakeholder representation (rather than merit), has often focused natural resource management and associated conservation efforts in the hands of sectional interests, without necessarily having any ecological input. Consequently, the scientific community has been largely excluded. If the desired outcomes were to enhance productivity or plant trees within urban environs for aesthetic purposes, the approach would be laudable. However, if the intent was also to address conservation, for example enhance biodiversity and/or conserve wildlife, without appropriate ecological input, the outcomes may be sub-optimal.

In parallel with the acceptance of the catchment management philosophy, government departments have reconstructed, downsized and rationalised. A consequence has been the loss of many knowledgeable extension officers and other technical specialists in the field: the people who have historically provided advice to land holders and trained the next generation of technocrats. In their place, catchment management committees (now Regional Catchment Boards), dominated by community and other stakeholder representation, have emerged as the strategic planners, decision makers and advisers to government (Burgin 1999). This approach has potentially tragic consequences for conservation, due to the failure to appropriately interpret the full meaning of the word 'community'.

With such a narrow definition of community, individuals charged with decision making frequently have little understanding of ecosystem functioning and the ecology of the animals and plants that are their component parts. As a consequence, in terms of conservation, restoration efforts may be flawed. This is because the body of scientific knowledge amassed by scientists, together with the scientists who have collected the data and acquired the intellectual ability to predict ecological outcomes based upon their theoretical knowledge, have been largely excluded from the decision making process². The result may actually be a contribution to the demise of biodiversity and associated ecosystem functioning, rather than its restoration.

Detrimental aspects of the 1990s funding focus

The problems involved with ensuring real, long term gains for the environment have been exacerbated by the change in focus of funding in the 1990s. Soon after the Total Catchment Management Act was in place, land and water research corporation funding was segregated from the community components of natural resource management. In the early 1990s the New South Wales Environmental Protection Agency introduced Environmental Trusts to cover research, education and restoration, but within a few years funds ceased to flow from the Environmental Research Trust. The most recent blow to informed decision making for conservation has come with the roll-up of community natural

² In the time since this paper was presented there appears to have been a growing recognition that science has been missing from much of the debate on natural resource management in New South Wales and there appears to be a much greater demand for scientific input than ever before. It is to be hoped that the swing does not go too far in the other direction.

resource funding into the Natural Heritage Trust, its deliberate focus of 'works on the ground' and a further move away from planning and research as a component part of resource management. During the 1990s, therefore, research and community restoration have continued to drift apart. As a result there is now limited cross-fertilisation between the two.

However, community funds are not handed out at random. Governments demand regional and catchment-based strategies (now more focused on regional strategies), partnership agreements and a 'proper' assessment process that includes Regional Assessment Panels. With the documentation in place, all funding applications have to fit within these strategies. There is, therefore, the need to consult with the formulators to ensure that proposals are acceptable. In the past this group also organised the assessment of the projects and was responsible for any monitoring and evaluation. In the later part of the 1990s, Technical Assessment Panels were introduced for some programs and these included scientific input. However, the Panel's assessment was often used only as a guide for the Regional Assessment Panels. As a result, although the score from the Panel may form part of the overall score when ranking was considered, their recommendations have, on occasions, been dismissed if they did not conform to the Regional Assessment Panel's assessment. This process provided the means for technically excellent projects to be dismissed and fundamentally flawed ones to be supported. Such an outcome is not surprising, if there is a deficit of appropriate skills on the Regional Assessment Panel. This is because the implications of proposed activities may not be foreseen by those without an appropriate knowledge base. The resulting activities may, therefore, be funded to proceed with the potential to create environmental problems in the longer term, despite aesthetically pleasing short-term outcomes.

Consequences of lack of appropriate expertise in ecosystem restoration

Without high quality scientific and technical advice, potential problems may not be addressed at a point where they can be overcome efficiently. Instead, obvious problems tend to be selected as priorities and subtle changes and warning signs ignored. If, by default, this achieved long-term conservation goals then the outcomes would be excellent. However, the obvious problems are

frequently too immense for community efforts to overcome (e.g., feral species eradication), despite considerable expense in terms of time, effort and funds. As a result resources are expended on poorly placed 'band-aids' while more manageable problems (e.g., potential feral problems) are ignored.

An additional problem may occur when projects lack an experimental basis. Such outcomes cannot be used as a firm basis for future conservation decisions and consequently inappropriate practices, in terms of nature conservation, may become normative. Encouraging input from individuals with appropriate expertise could provide for more suitable solutions, especially when the procedures are based upon interpretation of the most recent scientific knowledge. When data are lacking and appropriate expertise and experimental design are utilised, the efforts could enhance knowledge. The alternative is to continue with the *status quo*, modifying details on an *ad hoc* basis, without a clear indication of the outcome's usefulness. The consequence of such an approach is a tendency to 'reinvent the wheel'.

An appropriate experimental basis is also necessary for meaningful monitoring and evaluation outcomes. Without such an approach the conclusions are, at best, an 'educated' guess.

Potential for tragic consequences

To this point I have been talking largely in abstract terms, without examples. Let me now turn to two vignettes to illustrate my point: biodiversity conservation and the flurry of tree planting activities, particularly in the name of connectivity of habitat, although a range of other assaults both aquatic and terrestrial, could be used as illustrations.

Biodiversity conservation

Biodiversity is the latest 'buzz-word'. A large number of applications in the 1998 round of National Heritage Trust funding addressed conservation of biodiversity (approximately 75% from one inland catchment). It appears that everyone wants to conserve it...but what is biodiversity? What does the term mean? Ask most members of the community to define biodiversity and the answer will almost certainly include discussion of diversity of plants and animals. In other words, some interpretation of community level biodiversity. This is the concept that is most readily and clearly embedded in the

layperson's mind. However, when this common perception is used as the basis of decision making for biodiversity conservation, the result is generally aesthetic but frequently of dubious conservation value (Burgin 1998).

Understanding the processes involved in conserving biodiversity requires at least some rudimentary understanding of genetic inheritance. It is only when biodiversity is considered at the gene pool level that the outcomes have real meaning in terms of long term biodiversity conservation. This is because there is the potential to create more problems than will be solved by biasing the genetic make-up of a specific population. This most commonly occurs as a result of either introducing foreign genetic material or by swamping the gene pool of a particular species with the progeny of one, or a relatively small number of individuals. In terms of aesthetic outcomes the results may be equivalent, but the biodiversity may well be diminished and species exposed to potential extinction, in the face of environmental challenge (Burgin 1998).

When the activity is to plant trees as corridors the outcome has the potential to have an even greater impact on biodiversity.

Corridors for conservation

A drive along any rural highway will provide evidence of the popularity of corridor planting. Many of these corridors are little more than a few trees wide and, frequently, kilometres long. Such plantings may provide for shelter belts, beautification, reduced salinity and/or lower groundwater. The outcomes may, therefore, be beneficial in enhancing on-farm productivity and/or the aesthetic appearance of the area. Their impact in terms of reconstruction of ecosystems or the restoration of biodiversity may be less beneficial.

While corridors can have positive benefits for conservation, there are also potentially negative consequences including (Simberloff & Cox 1987; Simberloff *et al.* 1992):

- they may act as convenient passageways for animals to move, but this includes feral species;
- predators (often feral species such as foxes) may take up residence in corridors, lured by easy prey, funnelled into the corridor as they move through the area;
- corridors may provide increased habitat for feral species, for example introduced birds such as the Indian myna *Acridotheres tristis*

and European starling *Sturnus vulgaris* prefer such habitat to closed forests and may aggressively exclude some endemic species;

- frequently, degraded areas are ripped to introduce seedlings and, as a consequence, native vegetation and associated communities are removed, or at least further disrupted, to provide way for the aesthetic tree plantings, placed in neat rows.

As a result the outcome may be enhanced degradation of biodiversity, rather than its conservation. Such outcomes are readily predicted by ecologically trained people, although little understood by most of the community involved in restoration and related resource management decision making.

Less predictable are the impacts on the animals of the ecosystem. However, the composition of species such as arboreal arthropod and bird populations will change. Planted areas, managed to maximise establishment and minimise maintenance, frequently result in an emphasis on planting later successional species, rather than shrubs and understorey species. Such plantings tend to favour introduced or widely foraging species, at the expense of the smaller, more sedentary animals, which may prefer understorey cover. Recent studies have demonstrated that even in areas where the disturbance to the woodland occurred, upwards of 100 years ago, reptile diversity and abundance at the edge of even small bushland remnants may be half that at the core (Jelbart 1998) and arboreal arthropod abundance and diversity in woodlands may take years to return to equilibrium after perturbation. This is based on the observation that twelve months after spraying trees with a knockdown insecticide, arthropod numbers had more than doubled (seasonal blips removed) but species composition was different from the original assemblage (Azarbayjani *et al.* 1999).

Observations of changed bird composition and presumably changed predation patterns, a reduction in the number of abundant vertebrate species (i.e. the skinks which feed on insects and are in turn utilised as prey by the carnivorous birds) and the changes in invertebrate abundance, provide a context in which to understand the frequently encountered problems of dieback in planted areas. A knowledgeable ecologist could rationally predict such outcomes.

Conclusion

It is time that conservation ecologists and related scientists took stock of the situation and began to determine the longer term implications of not influencing the way conservation is practised. Scientists have had a voice in our country's history: Banks, Cook and Solander were

scientists. It was a result of their lobbying that Europeans settled Australia (Steven 1988). I cannot help but wonder what they would think of their contemporaries who are content to sit by and watch from afar the tragic consequences for conservation of mis-defining the full meaning of the term 'community'.

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QUESTIONS & ANSWERS

SUE BRIGGS: Shelley, it's not our fault. Don't blame us. You couldn't try harder and I have tried - I know we're being taped so I won't mention any names of any agencies, but they won't let you do it. I'll talk about it in my talk. They will not let us engage. They are terrified of scientists. By "they" I mean bureaucrats. I don't mean the RAPs. I have sat on the Loughlin RAP and I will defend them. I actually think the RAPs are fine. Sorry, for those who don't know I'm talking about regional assessment panel for National Heritage Trust projects. They want scientific input. The problem does not happen within New South Wales.

DAVID WILKS: First of all, your talk gave me some hope because the council I work for is actually doing a lot of the things you say that people are not doing. I guess it's possibly because we're in an urban area, but we do have some scientists working for us. I've got an ecology background and our council actually employed me to do some of the things you were talking about, so there is some hope there. I don't know about the rural areas, but I think Sydney is possibly a special case there.

You were talking about corridors and how negative they are, and I guess in some ways they are, but is that because only trees are planted? If we were planting them, we would tend to include the other layers - shrubs, forbs and all

those plants as a part of the corridor - rather than just straight trees.

SHELLEY BURGIN: I'd like to begin with a point of clarification. I didn't mean to suggest that no scientists are playing a role. I am a trained scientist; Sue is a trained scientist and I can see various other members of this audience who are trained scientists that are working in catchment management. My point is that we need more people to actually keep pressuring government. I agree with Sue, although not totally. I think that some of the problems in New South Wales are certainly problems at the federal level. However, I don't run away when someone says, "I don't want you here," if I think that by persevering I can make a difference.

It is not that there aren't trained people working within the government/community partnership but often these 'trained' people are graduates. Some I have trained. They are generally not people with established scientific careers with many years of experience. They are graduates. At best, they are honours graduates. Over time, provided that they have appropriate mentors, they can become excellent scientists. So, too, can people who have no formal training.

Now let me move to answer your question. It is desirable to decide what you are trying to achieve with planting corridors. It is not enough to plant a linear strip and assume that you have somehow magically supported biodiversity. But it seems that this is seldom thought about. It is desirable to mimic the natural genetic composition of the area with plantings. This may seem like an impossible task, however, all ecologists should be able to provide advice on how to collect and unbiased sample of seed from a given population. It is fundamental to good experimental design.

I believe that when planting corridors we should concentrate much more on early successional species, rather than the later successional species. Ultimately, the later successional species (the trees we are so keen to plant) will regenerate when the earlier successional phase plants provide appropriate habitat for them to invade. These early successional phase species are generally short lived and will tend to be lost from the ecosystem over time. Hence we provide a situation for nature to take its course.

The problem with our general approach is that we think in short timeframes, rather than the long-term. I was asked to do some work recently and the managers wanted to ensure that they had the bushland back within 12 months. From bare ground to nature in 12 months?

With that focus you are not interested in conserving biodiversity. You can make the area aesthetically pleasing or you can screen out nasty areas. That's fine. There is a place for that sort of gardening, but don't tell me you are conserving biodiversity or you are reconstructing ecosystems. Tell me that you are improving the aesthetics of the area. If you are truly looking to biodiversity outcomes, then you need to understand what biodiversity means. I'd suggest that it would require some ecological knowledge to really understand what the term means.

PHIL COLEMAN: I have been a member of the RZS for 50 years. I have just retired from the Australian Museum but perhaps more importantly, I am the Deputy Chairman of one of those dreaded committees called a catchment management committee (CMC). I was a little concerned at some of the comments being made. I can only speak for the Sydney Northern Beaches CMC and I am sure that there are quite a lot of others like mine which have, as one of our core concerns, the bridging of the area between local government and state government agencies. That was one of the reasons for catchment management committees to be set up.

We certainly didn't plan to take over. In fact we are just as concerned as you are at the dropping out of the science fraternity within local research areas. I know my committee is pushing as hard as possible to try to get as much cooperation from as many scientists as possible. I think you need to cover your concerns about catchment management committees and say, perhaps some of them. Some of them are like some government departments. It depends on who is in charge. Its not so much the input that we make, its the person who makes the decision at the top that can very quickly change your attitude towards some of our catchment management committees.

SHELLEY BURGIN: I would make the comment that I am aware of your committee and I am aware that it is an excellent committee. I have been on the State Catchment Management Coordinating Committee since the legislation was enacted 1989. In the last 12 months I have been elected deputy chair of that committee. I have also worked closely with the Hawkesbury/Nepean Catchment Management Trust.

As I see it there is a problem with the way the Act is written with its focus on land-user/land-holder. This has, in turn, been interpreted to mean that appropriate representation is far more important than appropriate skills.

I have sat on selection committees for catchment management committees. I have seen that there is a bias across the state towards landholders/landusers playing the major role in the government/community partnership. You are right that some committees have more scientific representation than others. In the cities, where there are more scientists, and we are part of the community, it is more likely that the scientists will be represented. It is not the case in every catchment management area across the state.

Some rural CMCs have excellent people working on them. I am not denigrating anybody. It is the philosophy of the Act that I have a problem with, not the hard working community members who have representation. My problem is the focus on representation, rather than merit.

There are many non-scientists that are making a brilliant contribution and catchment management is not only about conservation. This conference, this talk, just happens to be about conservation and I am talking about that aspect of catchment management. If I stood up to talk about improving productivity on farms, then I would have an entirely different slant on what I was saying.

I am trying to encourage scientists to have some input into this government/community partnership, rather than sitting back and seeing catchment management as something that is for others. Something we have not part of.