Community-based research: where are the rewards?

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ABSTRACT

In this paper we advocate community-based research, that is, the integration of community knowledge and support into research programs aimed at solving conservation problems. The rewards for researchers include obtaining an economical source of data, including historical information, access to private lands and a high impact of research results when the community supports and helps to implement the recommendations. For the community, the rewards are that its concerns are taken into account by researchers, that management actions are more likely to succeed, and the community will gain a better understanding of the findings of the ecological research. While this appears to be a mutually beneficial partnership, there is a conflict. Some researchers do not accept that community knowledge can contribute to scientific endeavour and will not consider incorporating community information into their programs. Thus, a major aspiration of involving the community in biodiversity conservation will not be fulfilled. By the same token, some communities are rejecting the inclusion of scientific research when dealing with conservation problems. The Natural Heritage Trust (NHT), for example, receives massive funding which is, in our opinion, being allocated by the community to the community without any obligation to involve research scientists. This matters because the NHT is by far the biggest pool of funding for a better environment for Australia in the 21st Century. The consequence is that the gap between research scientists and community groups working on biodiversity issues will widen to an unbridgeable gulf unless both parties acknowledge the clash of paradigms and work to overcome them, rather than entrench them.

Introduction

There is a fundamental difference – a clash of paradigms – in the way in which researchers and community groups regard nature conservation issues. The gulf arises in the models, patterns and ideals in contemporary thinking about biodiversity conservation, and the difference is so deep-seated that it is causing major problems for conservation by fracturing the links between specialists and managers, land-owners and government agencies, and community groups and researchers. It is also widening the rural-urban divide by locking out city-based university and government specialist researchers and leaving vital matters such as planning, experimental design and long-term monitoring to local project managers on short-term funding. The Natural Heritage Trust (NHT) and similar funds have become so anti-intellectual and partial in their recognition of issues and solutions that the funding bias has itself become a threatening process in biodiversity conservation.

The importance of research to biodiversity conservation

Research is fundamental to understanding the processes of decline in biodiversity because it defines the problem and proposes options for management, as well as assessing the effectiveness of management programs, extracting the principles and applying the results elsewhere. The proper identification and management of threatening processes, such as land clearing, fire, logging, pollution, water extraction, over grazing or housing development are not possible without research, which involves a rigorous design of the study, an informed interpretation of the results, and a clearly expressed report of the work.

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If one implements a biodiversity management strategy and wants to know whether a conservation goal has been achieved, it needs to be measured in a way that has been identified at the outset, and both the time-frame and the area under investigation must be precisely identified. Having achieved a result in one location, a research scientist extracts the principles and applies them to another until eventually they begin to form a pattern across the country. If we do not take a research approach, we shall not know if the work done has been effective, and we are in grave danger of losing the generality of particular findings.

The importance of community input to biodiversity conservation

Community input is required to highlight local conservation issues, provide detailed local information and ensure the implementation of management decisions. The community might be a Catchment Management Board (CMB), a shire council, a local environment network, a Landcare/Dunecare group, or any other group of individuals.

When researchers visit a location for the first time they need to find out what has been happening in the last year, the last decade, or the last hundred years. It is the local residents who have much of the local information. By studying the concerns of local communities in particular locations researchers can proceed to map a pattern of change across an entire landscape.

When a researcher comes up with a conservation solution, and thinks this ought to be a key element of a management strategy, it is not likely to work unless the local community is willing to implement it, or support its implementation. Communities are often the ones who are left to manage the land after the researcher has left.

Integrating community input with research

A researcher can work with a group of local people through a program of community-based research, that is the integration of community knowledge and support into a research program aimed at solving a conservation problem. The crucial point is that the work is conducted within a research framework. The research program sets the framework for thinking about the problem, designs the data collection (a part of which is community-based information), interprets the results, and then writes it up for a scientific journal as well as for the local community, and usually for the funding agency as well.[1] The community group has input into the research and takes the leadership of the on-ground outcomes. There is much to be gained for both communities and researchers in such a partnership.

Rewards for researchers in taking a community-based research approach

The rewards for researchers can be identified as obtaining an economical source of data, including historical information, access to private lands and a high impact of research results when the community supports and helps to implement the recommendations (if this last point were not achieved it would rarely be worth the effort).

We regard community-based research as a cost- and time-efficient source of obtaining some data and relevant historical information. To give an example, in a study in Port Stephens we produced and distributed a community-based questionnaire and map to locate koalas, determine local attitudes and uncover historical records. We received 3000 questionnaire returns yielding 5000 map records of koalas across the shire. Anyone who has looked for koalas up trees will remember the neck strain and the length of time it takes to find a few koalas. In our case, the local information just flooded in, and our job was made that much easier because of the support of the then chief planner in the Port Stephens Shire. Our next steps were validation of the records by a scientific field team which searched for koala scats under randomly selected trees in a stratified sampling regime, an interpretation of both data sets against a shire-wide vegetation map prepared specifically for this study, and publication of the results (Lunney *et al.* 1998). These results were combined with a detailed historical study (Knott *et al.* 1998) and the results of the survey of community attitudes (Lunney *et al.* 2001) to provide the basis for a draft shire-wide plan of management for koalas which was completed in September 1994 (Callaghan *et al.* 1994), and in turn became the model for all NSW shire-wide plans under a new legal instrument – *State Environmental Planning Policy Number 44,*

[1] This last document is all that most programs manage to achieve, and the shelves of some funding agencies are bent heavy with these reports. They are rarely read, but they ought to be rewritten for publication so that a wide audience gets the benefit of the outcomes. In fact, the demonstrated capacity to publish the results of research should become a score in favour of an applicant receiving a future research grant, and those groups/individuals that do not submit a final report should attract a demerit point for further funding.

Koala Habitat Protection (SEPP 44) – which was promulgated in January 1995.

Access to private lands becomes most important when researchers deal with shire-wide problems. It may appear trivial to start with, but in our studies it was a major consideration because most of the remnant vegetation on the fertile lands, principally the flat, well-watered valley country, was and still is in private ownership. Indeed, it is *this* vegetation on *these* lands that is most preferred by koalas, which is why koala conservation needs to be community oriented for any chance of success. So if we are to conserve the koala (along with a considerable group of other species dependent on these poorly conserved vegetation types), it must be in the habitats selected by the koala, namely the private lands. However, approaching the landowner or manager as a state government researcher and saying, "I'm here to do research" is likely to meet with failure because of a fear that the land may be reserved or its uses constrained to conserve biodiversity. We propose a solution.

One option is to involve community groups in any program whose outcome is not to take the land for reservation but to manage it for its biodiversity values for the community in the long term. Since access to private land is a vital issue for the long-term outcomes, researchers need to present their project clearly at the outset and to involve the local landowners, as well as other people in the community, in the program. Support from the local council may also be essential. Although local councils have the right to enter private land, other government agencies such as the NPWS may not. For our koala studies we worked with written permission from council to enter private land.

One of the things that a conservation biologist looks for is a good conservation outcome for the effort. This can be at least partly achieved when the community understands and is motivated to implement the targets of the program. With this in mind, we initiated a program in Coffs Harbour in 1990 to map the distribution of koalas using community-based surveys and to validate the results through a field-based survey. This project was conducted in parallel to the one in Port Stephens in an endeavour to find common threads and to identify the impact of local conditions, especially the concerns of the council planners and elected councillors. The outcome for Coffs Harbour was the first comprehensive shire-wide Koala Plan of Management (Lunney *et al.* 1999) under SEPP 44 and the conservation of thousands of hectares of remnant bush on the fertile lands on private property. Further, as Coffs Harbour City Council is the land-use authority which has responsibility for managing the plan, the National Parks and Wildlife Service is spared the near impossible task of managing the archipelago of tiny patches remaining in private ownership. As a vital step, our economic study of the koala plan demonstrated that the plan would produce positive financial benefits to the shire and as a result it received local endorsement as a positive biodiversity plan (Hamilton *et al.* 2000). However, for us as researchers the project proved to be a high-risk exercise and we were impelled to write about it so that others would understand the cost to us as researchers as well as the tangible rewards to the community (Lunney *et al.* 2002a). To explain briefly, if we had been aiming to define the habitat of an inconsequential species, rather than an icon species like the koala, or any other threatened species which has special legislative clout, the project would have only taken a year or so. The work on Coffs Harbour koalas, however, took 10 years, and included a plan of management and the necessity for us to assist in producing a *National Koala Conservation Strategy* (ANZECC 1998) as well as a NSW state legal instrument (SEPP 44) (Lunney and Matthews 1997). Ten years is a long time to get through one local study but as it now has practical application across the country we feel it was worth the effort.

Rewards for the community in accepting a community-based research approach

There have to be rewards for the community in a partnership with researchers. We identify three areas: community concerns are taken into account by researchers; community-based programs provide greater certainty that management actions are likely to succeed; and there is an enhanced interpretation of biodiversity outcomes or, in other words, the community will better understand the findings of the research and the ecological principles that underpin them.

Researchers can define problems to satisfy their scientific curiosity, then leave the research site. They can also walk away from a project if there are too many problems. However, the community has to live in the area so sound ecological solutions to conservation problems are needed. To solve local issues, the community should really

involve every skilled group that has something to offer, and that can include a research team from a university or a government department. If, as a community representative, you are contributing a lot of money and/or time for a biodiversity project, whether you are a project manager, organiser, a mayor, a CMB chair, a land manager, or you run a committee or are a volunteer team member, you would probably want to be as certain as you possibly can be that your program is going to be effective. So how are you going to do it? The best way is to use measures of effectiveness that are reliable and will stand the test of time, and in this regard, researchers have much to contribute. Also, if you are aiming to restore local habitats, you will probably want to maximise the benefit of the project for biodiversity and not simply revegetate certain sites. A community benefit of working with researchers would be, for example, their advice on how to replant strategically to recreate habitats for a raft of animal species as well as to recreate a green strip, how to clear weeds in a pattern that did not expose the fauna before the growth of new vegetation, and how to choose plant species that produce a flowering sequence throughout the year for fauna, rather than produce mass plantings for show. Further, an assessment of the utility of adding fauna to revegetation projects can be gauged by careful research. This can include community input, as it has for koalas on the Iluka Peninsula at the mouth of the Clarence River in northern NSW, where we were able to generate a Population Viability Analysis (PVA) based on 10 years' data with principles that were applicable in the international arena (Lunney *et al.* 2002b).

If community-based research appears to be such a mutually beneficial partnership for both communities and researchers, why is it so rare?

The conflict

Some researchers do not accept that community knowledge can contribute to a scientific endeavour. They believe that there is a bias in community reporting which is so great as to be uninterpretable and they will not accept the results of scientists who have incorporated community knowledge in their studies. In our view, this need not be the case. In the validation of our community-based surveys of koalas, we found that our independent field program arrived at a similar distribution to the intensive community-based survey for each of the three well-populated areas where both methods were used (Lunney *et al.* 1996, 1998, 2000). We have obtained the same outcome with another icon species, the platypus, in the Bellinger Valley. At issue is the design of the work and the interpretation of the results. It is possible to poorly design a survey then misinterpret the data obtained, but that is not a problem peculiar to community-based projects and therefore it is not an *a priori* reason for dismissing the approach. Experimental design and appropriate analysis and interpretation are crucial to all research projects.

Regrettably, some editorial committees of scientific journals refuse to send a paper out for refereeing because the data in the paper were obtained from the community irrespective of the fact that the study was designed, interpreted and written up by scientists. The implications are that researchers will be unwilling to incorporate community information in their programs. The consequence is that the gap between research scientists and community groups working on biodiversity issues will widen to an unbridgeable gulf.

Although some researchers do not accept community participation in conserving biodiversity, what is more damaging is the fact that much of the community is rejecting research and researchers when dealing with conservation problems.

A major aspiration of all the biodiversity strategies is that the community is vital to any success. If the two groups – specialist researchers and local groups – cannot work together, then a fundamental component of all biodiversity strategies (the international, national, state and local) fails. We shall then be undermining one of the cornerstones of all the biodiversity strategies. A community program that rejects a research-based approach to conserving biodiversity is generating great problems by increasing the risk of failing to achieve anything lasting, as well as being irrelevant to national issues. There is another danger here too. The group that either allocates or receives the funding is likely to leave the other party out of the picture. In this respect, the Natural Heritage Trust (NHT) has failed to meet this test. Its massive funding is, in our opinion, being allocated by the community to the community and there is no obligation to involve research scientists. This matters because the NHT (at about $1.25 billion), which claims to be aimed at achieving a better environment in Australia for

the 21st century, is by far the biggest pool of funding for biodiversity projects in Australia and, as such, it is consequently shaping the way the environment is treated. The public understanding of biodiversity in Australia thus rests on which particular projects are funded under the NHT, and since the NHT has largely bypassed researchers, especially those in state government departments, community groups also bypass researchers in their turn. This new paradigm in conserving biodiversity is likely to be destructive of the very things it is meant to conserve. Giving community groups all the cash and suggesting that research is irrelevant to the process is a vast social experiment with a massive risk. If the $1.25 billion experiment falls short of its aims, then we have lost much of what we set out to do, lost time and created class divisions that did not previously exist. In recent years we have seen great quantities of cash being allocated by community committees to community projects while research and researchers have been sidelined from the process with explicit encouragement from the Commonwealth Government ministers. As researchers, imagine being advised not to put the word "research" into an NHT application that is trying to conserve Australia's biodiversity. That was the advice from our colleagues after their discussions with their counterparts in Environment Australia. It exposes a fundamental flaw.

To further illustrate the point, in 1997 in New South Wales there were about 400 applications on the native vegetation initiative – Bushcare – which is one of the NHT programs. We looked at the list of programs. Of the top 40 ranked by a technical committee, 15 did not get funded under the program, although over 60 projects were funded. So, over one-third of the cream of those with technical merit for conserving biodiversity did not get funded. We were dismayed by a process in which community-dominated committees and Commonwealth ministers could bypass so many projects of technical proficiency. One of our projects was among the 15 and it had been ranked equal first. Inquiries regarding unsuccessful applications elicit guarded answers if at all. We are critical of this lack of formal feedback. It gives little encouragement or guidance. One of our other applications received the comment that we were trying to "sneak through a research project on bats" under the guise of a community program. There seemed to be no point saying that so little is known of bats in mangroves that their conservation requires a robust research approach to assist a local conservation group conserve its mangroves under threat from development and degradation arising from tourism and local industrial development projects. In relation to another application, we were advised that our proposed project location in the middle of a forest was too far from people, and that the community was not interested in the effects of logging, fire and drought on fauna on public lands. These are messages that show a lack of appreciation of the initial intent of the NHT funds, and a deplorable ignorance of how biodiversity conservation might be achieved. We were, to our loss apparently, researchers in a state government department. The problem is that the only major pool of funding has, in our opinion, a bias in its selection of projects.

We have continued to apply for NHT funding, and met with some modest success, so we do not reject the value of the community initiatives, but we do reject the principle of barring research-driven projects, or establishing committees which include members who are determined to exclude government departments and researchers. Just one or two voters around a committee table of 12 that assign a score of zero can sink a project below a level where it is competitive. Those people giving a score of zero to research-based projects were doing so on the principle that government departments should not be getting what they saw as community funding. Others have stated clearly that they do not need more study as they know what to do to conserve the environment and simply require NHT funding to get on and do it. This is misguided thinking to put it mildly. This process is killing the very thing it is trying to save.

The implication is that the NHT is inadvertently – we say inadvertently, there was no explicit attempt to exclude researchers from the process that we can discern – bypassing research as a means of trying to conserve biodiversity. Thus, the operational arm of the grant procedure is in fact scuttling the policy of long-term conservation. As a consequence, there has been, in our view, an over-emphasis on tangible restoration programs – tree planting, fencing, weed control – at the expense of many other, and, we would argue, more effective ways of conserving biodiversity.

Independent criticism of NHT

The NHT mid-term review process was beginning during the RZS forum on *A Clash of Paradigms* (September 1998). Under the headline "Heritage Fund Wasted: Report", journalist Lindy Edwards (*Sydney Morning Herald* 7 February 2000) stated that, "The Federal Government's $1.5 billion Natural Heritage Trust for the environment has directed millions to piecemeal projects while failing to tackle big environmental problems, a report to government says". (The midterm review consists of a series of reports undertaken for the Comonwealth government and they are available on the Environment Australia website.) It was a relief to see that the exasperation we sensed at the outset of the NHT program was justified by the mid-term reviews. Let us consider some of the reviews, starting with the Bushcare program, the largest of the NHT programs with $348 million to distribute over five years.

Firstly, we note that the mid-term review assesses the program only against its own objectives, rather than the objectives of conserving biodiversity, such as those identified in the *National Strategy for the Conservation of Australia's Biodiversity* (Commonwealth of Australia 1996) or in the 1992 international treaty from the Rio Summit to which Australia is a signatory (Quarrie 1992). The second limitation is that the review only considered the "successful" programs, that is, those selected for funding. In our view, the review needed to assess the process of selection, and thus the lost potential of those not selected. If it had done this, it would have been able to answer some of its key findings, such as, "The program will have very limited impacts on addressing loss of biodiversity because of the generally small scale and scattered distribution of on ground projects in relation to the scale of the problems". The review also noted that, "The level of understanding of biodiversity and ecological systems and key principles which govern them at a project level is mixed. Those in charge of some projects appear to have an excellent understanding…But many project managers appear not to display this understanding. Consequently, some potential benefits from Bushcare are not being fully realised". This is a sorry statement when one reads how the review summarized a major element of the program: "Bushcare has a heavy concentration of effort on 'on ground' works with particular emphasis on tree and woody shrub plantings and protection of remnant vegetation for biodiversity conservation and intrinsic ecological value. From our analysis, it is estimated that over the two years to January 1999 the total area revegetated by projects receiving Bushcare funding was 10,341 hectares".

The pressing questions are whether a mere 10,341 ha of revegetation was the national priority in biodiversity conservation, whether a lack of knowledge of ecological processes by project managers was a major impediment to success, and whether the lack of ecological knowledge in the selection committees contributed to the problem since the review committee's conclusion was that the program would have very limited impact on addressing the loss of biodiversity. This failure to conserve biodiversity is exacerbated by the finding that "Bushcare needs to pay more attention to monitoring and evaluation. Many projects and some states are not taking this seriously".

The review found that, "Bushcare has made an important contribution to raising public awareness of the importance of native vegetation management". This was the only one of the four Key Result Areas to score an A. The review, however, did not question whether this program was the most efficient way to conduct this awareness raising, so we are left with the conclusion that there is an increase in public awareness but a failure to conserve biodiversity and that the projects themselves are neither monitored nor evaluated. What is unacceptable to us is that this program was funded at the expense of researchers. The cost of the alternative foregone – research in this instance – is a basic element in economic analyses, yet it was not undertaken by this midterm review.

This line of criticism appears elsewhere in the mid-term reviews. In the "Urban Environment Theme Review" a series of recommendations was aimed at increasing the appropriateness of programs and projects. These recommendations include phrases such as "greater investment in analysis", "better-designed", "scientific basis", "recording baseline conditions" and "appropriate spatial and temporal scales". Collectively, these matters fall within the domain of a sound research project. How will the NHT fulfil these recommendations without taking on a research-oriented audit? What is really being recommended by this mid-term review is that standard research procedures be adopted as part of project design, approval, conduct, monitoring and evaluation.

The review of the administration of the NHT

stated that: "The *Natural Heritage Trust of Australia Act 1997* established the Natural Heritage Trust of Australia Reserve to conserve, repair and replenish Australia's natural capital infrastructure". It then points out that: "Natural Capital is defined in *State of the Environment: 1996* as the 'stock of productive soil, freshwater, vegetation, clean air, ocean and other resources that underpin the survival, health and prosperity of human communities'". Biodiversity is not explicitly mentioned, but the review of the Bushcare program was explicit in its statement of the objectives as being "to work with all levels of government, industry, landholders and the broad community towards the conservation and ecologically sustainable management of Australia's biological diversity…". The Bushcare review targeted "Four Key Result Areas", which were "environment; sustainable production; people and community capacity building; and institutional reform, information and integration". The Bushcare review then concluded with Bushcare's achievements for each of the Key Result Areas as "People A, Institutions B, Environment C, and Sustainable production D". This is a terrible result for the environment. The headline, "Heritage Fund Wasted", in the SMH article of 7 February 2000 seems justified.

In August 2000, the NHT published "The Response" to the mid-term review. We noted that the Natural Heritage Trust is now subtitled : "Helping communities helping Australia". The subtitle suggests that the Key Result Areas gaining a low score are not going to be addressed in an intelligent manner, whereas the Area with the high score is going to continue to attract even more effort. Another way of reading this new subtitle is that the NHT has been captured by the people issue, or worse, captured by some people with a particular view of priorities and how to achieve them.

In its response to the reviews, the NHT accepted some of the criticism, but reiterated its stand in such statements as, "It is important to acknowledge and stress that a great deal has been achieved in a very short time", and "The Trust has been successful in raising community awareness and empowering communities to create new social networks to facilitate activity across regions". It adds that, "In devolving funds and responsibility, it will be important to continue to empower community groups". This reads like an endorsement of the initial thrust of the implementation of the NHT program and it has ignored, or more likely, misunderstood the politely worded criticism in the mid-term reviews that the whole NHT program is in danger of failing to conserve biodiversity because it does not follow some well-tested rules of effective conservation. The appalling message that it is sending to the community is that ecology, research and government (and by association, university) scientific specialists can be ignored, and even worse, they are an impediment to getting on with the job of restoring Australia's biodiversity.

The biodiversity strategies are explicit that research is a key element

A major aspiration of the biodiversity strategies is to include research. The *National Strategy for the Conservation of Australia's Biological Diversity* (Commonwealth of Australia 1996) states under Principle 4, "Improving our Knowledge" that … "there is a need for significant increase into research into biological diversity at the genetic, species and ecosystem levels" and "Major research initiatives are required in the areas of compilation and assessment of existing knowledge, conservation biology, rapid assessment and inventory, long-term monitoring, and ethnobiology." The strategies are explicit on this point, yet this element is likely to fail because of the NHT process. We think public funding policy needs to ensure an equitable partnership between researchers and community interests. One practical means of doing so is to ensure that all future funding applications require high scores for scientific merit as well as community preference. If there is to be input from the community and from research, and both are important, then the partnership has to be equal and explicit, such as a guaranteed percentage of funds both to research and to community projects. Also, scientists need to acknowledge that biodiversity strategies include the community and should incorporate community interests and knowledge in any conservation research programs. Those judging such programs need to bear these legitimate interests in mind. Scientists who reject colleagues who work with community groups are in fact aggravating the position instead of recognising that it is a legitimate community aspiration in which researchers should be involved. In turn, a community group has to acknowledge that to be effective in most conservation programs, researchers have to be integral members of that team.

Conclusions

The failure to tackle many of the conservation issues as a question of ecological research leads to decisions to support small projects that do not consider the large picture, such as the totality of a catchment, a coastline, the future of Australia's forest fauna or bold ways of conserving rangelands, such as by replacing sheep with kangaroos. Such an attitude excludes an ecological approach to many conservation matters from the meetings at which many important decisions are made. This leads to a primary aim of this paper, namely to suggest reframing the imperatives of conservation, particularly as seen by local groups, into scientific questions, specifically ecological questions, that are amenable to investigation, funding, implementation and critical evaluation.

While we applaud the empowerment of communities, and those scientific specialists who work with community groups, we regret the exclusion of research ecologists from the NHT funding process. Our nation's environmental losses are compounded by keeping research ecologists on the benches instead of in their position as key mid-field players in the struggle to conserve our biodiversity. Since the clash of paradigms has now reached new levels in this process of overlooking researchers, we not only advocate a separate funding arrangement for research into biodiversity, but also a revamp of community projects that raises the demands for ecological/scientific rigour at least to the level identified in the mid-term review of the NHT and the *National Strategy for the Conservation of Australia's Biological Diversity*. There are many other lines worth exploring, such as Commonwealth postgraduate grants which not only requires academic excellence, but also an industry partner, including government departments like the NSW National Parks and Wildlife Service.

As research ecologists, we see opportunities for great rewards by working with community groups, but under the current funding and an almost anti-science regime there are too few rewards to attract or hold us. We are forced to seek funding elsewhere, but these pools are small so the output from research ecologists will fall short of the potential to see and solve problems in conservation. Ultimately there will be little reward for the Australian community because the opportunities to conserve biodiversity are being undertaken in a sub-optimal way. We urge others to acknowledge the clash of paradigms and work to overcome them, not entrench them.

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QUESTIONS & ANSWERS

MARTIN DENNY: There are three points I would like to raise. The first one is that this application for funding that you are talking about is really quite a game, as we all know. The academics follow whatever happens to be the current trend. I remember, say, about 5 years ago when you were applying for funding for Landcare for the individual farms where everybody was to plant trees. That didn't get you anywhere. What you had to do was to put in some sort of educational component. You would put in for funding to buy trees and you would also add one day in the field with a bus where you have six people going out and having a look, and you'd get your funding. Now, the way today to get your funding through these Landcare groups is to mention the word "biodiversity" and also just to make sure that you chuck in a shovel as well to say that you are planning something and you can still go ahead and do that research if you can pitch it in that way. It's a game that's been played for centuries and it hasn't changed, I don't think, these days.

DAN LUNNEY: My comment on that, Martin, is you have not applied for a grant recently, you have not filled out an application form, because the shovel is irrelevant. What is relevant is the funding review process which is dominated by community groups who are not interested in academic games.

DENNY: I don't need those grants. I get it from other places. The second thing was that there are many local governments, as was pointed out here, that do bring in scientists in various ways. I note that Pittwater Council does, so does Hornsby Shire Council. Now, most of those scientists are using consultants. I'm not particularly advertising my own trade, but usually these consultants are well qualified.

LUNNEY: Mount King Ecological Surveys [Martin Denny's consultancy].

DENNY: Thank you very much for that. So they go ahead and do a good job; there is an incredible scientific component in it. There are also the vegetation management committees, which at the moment are being established, and all of those have got at least some environmental or scientific component. There has been a big rush among the non-government conservation areas to ensure that all of those management committees have got some sort of scientist, ecologist, or environmentalist on those committees and they've done a great effort. I don't know how much has come from the academic world, but I know that

outside the academic world there has been a lot of that going on.

The third thing is that in the early 1990s Mount King Ecological Surveys undertook a survey of the koalas for the Hastings Shire Council. It took us a year to do that. We came up with a plan of management, which was accepted by council. A lot of the recommendations were adopted by council and are in place. The actual plan of management was never accepted and was completely opposed by the National Parks and Wildlife Service because they presumably had not done it and wanted their 8-year survey time to do it.

We did a similar type of study in Maclean Shire, which took less than a year, it took 6 months. It came up again with a whole lot of recommendations in terms of koalas and koala habitats. That was done outside of the mainstream. It was done by consultants, who are also qualified scientists.

LUNNEY: I am not disagreeing with anything you've said, Martin, but that still does not address the thesis that I was discussing. You can pick on a couple of groups that do have good scientists in them. The issue is that unless that is made uniform by policy there is no use picking out a couple of examples unless you can show that all the committees have an equal balance of science and community groups. Of course, there are some excellent groups. What we are pursuing is different. The researchers should be part of it. I think your argument from one example is flawed. What you did with the Hastings koalas was great. The reason it was difficult for your work to be accepted is because what you were pushing was the issue of conservation on private land. This push helped get State Environmental Planning Policy No. 44 – Koala habitat protection (SEPP 44) across the line in 1995. To say you were opposed by National Parks and Wildlife Service is wrong, I supported you. I said, "Martin Denny is a wonderful chap and of course he should be allowed to do it." I can't imagine who you were talking about, but there are different people with different views in National Parks and Wildlife Service. Port Macquarie, where you were working, is one of those locations where there have been some interesting community conservation and council clashes. You were working in a hot spot where urban development is pushing hard and koalas are the symbol of urban expansion that was crushing a native fauna population. So, of course, you are going to be in the middle of a conflict zone.

DENNY: Yes, but the basic point I did make was that you worked in the community, did community-based surveys. Our work was done in a fairly low key way. We didn't need 8 years to do it. What I'm getting at is that you can bring research people in but you don't have to necessarily look at the universal standards which are the implied costs of research over a long-term study. Some of these things can be done in a far shorter time.

LUNNEY: You drew on a very good community base of information with Jean Starr's Port Macquarie group – the Koala Preservation Society for NSW, which is a Port Macquarie group.

DENNY: Yes.

LUNNEY: They had done a huge amount of work and you drew on that, and that's great. What you did was excellent.

DENNY: They were community-based.

LUNNEY: Yes. I commend it, and it did take longer than a year too.

DENNY: We only got funded for 6 months, so we stretched it out.

LUNNEY: Yes, we stretch our funds too. I agree that a year would be enough for a survey with recommendations if the local community group was of the high standard that supported you. The eight years refers to the time it took to get a draft management plan written and out for public comment, not just recommendations. [We have now reviewed the effort and rewards of our 10 year project which achieved the first ever shire-wide plan, Lunney *et al.* 2002.]

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GEE CHAPMAN (University of Sydney): Dan, I think that the relationship between community groups and their use of science is even more invidious than you have made out. I shall give a couple of examples. There is a council in the extreme north of Sydney that applied for funding and one of the reasons we believe that they got the funding was that they had a scientific committee set up with relevant scientists to advise them. They never once met. They never once advised them. They never once looked for advice. They used the scientists to get the funding and then used the funding in the manner it wasn't given for in whichever way they wanted to do.

LUNNEY: Gee, I agree with you, and the point I am making is there should be an obligation on the form. When the initial money is being handed over and the accounts are being audited, someone should tick all the boxes, such as: did the scientists involved at the beginning continue to be involved when the work was done, and when it was written up and finished. Unless that can be shown, then the final cheque should not be handed over.

CHAPMAN: Or they should give it back.

LUNNEY: The point that I am making is the same as you are making. There is currently a mechanism for involving the scientists at your convenience, then walking past them when you don't want them. I think that is inherently embedded in the funding policy, which in turn is undermining the strategies for biodiversity conservation. It is likely to make the next State of the Environment report a fatter volume instead of a thinner one because of the lack of successes of a non-ecological, non-research approach to conserving biodiversity.

CHAPMAN: Absolutely. My second example was when I was actually given an application to review and I discovered I was the scientific adviser on it and I had never seen it before in my life.

ROD KAVANAGH (State Forests of NSW): Good day, Dan. I think you made a couple of good points about the values of community surveys, particularly in relation to access to private land when those are the main conservation issues and also the impact of research, but I'm one of these people that are concerned about the bias involved in community surveys and I can point to two areas, both involving koalas: the south-east forests and the Coffs Harbour area. The south-east forests is an area which is extensively forested and really only populated by people in one major river valley system and lo and behold that's where all the koalas were found. I don't think there's been any really decent indication of what the distribution of koalas really is in the south-east because of the concentration of people in certain areas. Secondly, the Coffs Harbour area. Last month I saw your predicted map of koala distribution in the Coffs Harbour area and, surprisingly, it shows very few animals at all in the State Forests around Coffs Harbour. They are pretty much concentrated in the valley areas where most of the people are. There are substantial numbers of koalas in the surrounding area but I don't think your map indicated any extent of koala habitat in those areas. I think that while the major issue no doubt is still on private land, from a scientific point of view, the overall perspective that you need in conservation planning is to know the full story. I do not think that community surveys can really provide that.

LUNNEY: If you had looked not only at the map for Coffs Harbour, but also the caption, it would have said that this is a plan for identifying the koala habitat and is for a SEPP 44 – the lands over which councils have authority. It does not include State Forests. We were quite explicit about that in the text, which accompanies the map that is currently on public display. There is an issue for koala conservation in State Forests in Coffs Harbour. When we put out the initial survey, we approached the then Forestry Commission. The local staff were delighted to participate, so some questions in relation to State Forests were included in the community survey form. We have collated those and all parties have a copy. The issue of how to manage the land for koala conservation across land tenure

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boundaries was discussed with the District Forester and his view was that such a cross-tenure plan was premature at this stage. This is a major issue in neighbour relations, knowing that 42 per cent of the land within Coffs Harbour Shire is in fact State Forest. There will need to be a council/State Forest neighbour relations agreement in the long run; I agree with you. Further, the issue of where these koalas are in those State Forests ought to be dealt with. However, the plan is for the lands on which council can make such decisions, such as whether land goes from farmland, zoned as 1a land, through to housing development, 2a land, to environmental protection, zone 7 land, and what the constraints on the land would be for each zone, and which lands are the subject of the current plan under SEPP 44. That is why the koalas in State Forests were not depicted. Further, since the local decision by State Forest managers was to stay out of the SEPP 44 process, the major field study we undertook to validate the community-based data did not include State Forests. The koala distribution is the distribution of koala habitat, which is what is conserved under planning instruments, and it was obtained from the modeling procedures using both community and field data. [Both the SEPP 44 plan and the distribution of koala habitat on which it was based can be seen in Lunney *et al.* 1999, 2000.] Thus your observation of the map was correct, State Forests was a blank, but your conclusion in relation to the value of community-based surveys was not. We agree, it is a new approach to survey, it has problems of bias in the distribution of records, but it has a value that needs to be added to our tool kit of survey techniques.

Whereas the koala matters in Coffs Harbour in relation to State Forests, National Parks and Wildlife Service and Coffs Harbour City Council were done through negotiation, and there is more to do, the south-east forest koala issue has been vexatious. There was a bitter local debate in 1990 over whether koalas occurred in State Forests. The 1988 Forestry Commission EIS stated that there were no koalas on State Forests' land, therefore koalas were not an issue for conservation, nor was there a need to do anything about them. A local community group said there were koalas in Tantawangalo State Forest. The District Forester argued in the local newspaper saying it was day of shame for conservationists. Then a koala was found, its photograph appearing in the local newspaper, and the editorial said that this is a serious issue [see Reed and Lunney 1990]. The two relevant ministers involved said that this should not be a fight and they wanted the National Parks and Wildlife Service and the Forestry Commission to cooperate. We did that, and the approach taken was to go to the community, via a postal survey, and ask where have you seen a koala. It was an excellent exercise that formally involved both government departments with valuable participation from Harris Daishowa (the export woodchip company), the local logging contractors, Service and Commission staff, and community groups, including those who were steadfastly opposed to woodchipping. The map that we published [Lunney *et al.* 1997] showed the distribution of all those sightings interpreted against vegetation patterns. While there may well be a bias of where people are, I think the next step is – as we've said before – to go and find the distribution from independent field-based surveys. I do not agree that the work done so far is flawed. It moved the debate clearly away from the bitter argument that was there in 1990 because we openly involved all parties. It was a breakthrough. I think we are ahead, and not behind, from using community-based surveys, although to say that the work is finished is of course not true. We did not make that claim. So we are both right on that point.