NOTE TO USERS

Landcare in Australia:

Is it an effective means of achieving sustainable land management?

David Hammer

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ABSTRACT

Landcare in Australia: Is it an effective means of achieving sustainable land management?

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The twentieth century has forced Australians to finally recognize the disastrous effects that various forms of land degradation are having on their country's soil and environment. Two centuries of poor government policies based on conflicting support for both local initiatives trying to halt land degradation and international goals of trying to compete within a competitive global market economy drove Australians to focus on management practices that maximized short-term production with little regard for, or understanding of the damage being done to the biophysical make-up of the land.

As global support for the concept of sustainable development grew throughout the 1980s, the concept of Landcare was established in Australia. Landcare was conceived as a bottom-up, grassroots movement dedicated to developing social cohesion among individual farmers, landholders and individuals, all of whom had a common concern for the environment. Landcare's objective was to help create sustainable land management initiatives that would be based on both government policy and public support.

Has Landcare's objective been achieved, or has it yielded to the forces of economics and misunderstanding? Landcare's importance in creating awareness and providing education and training about land degradation and how to combat its resulting effects has been very effective. Its ability to move beyond simply being an information movement has yet to be decided. Landcare's ability to become active in policy discourse and to become a political issue holds the key to its future success.

ACKNOWLEDGEMENTS

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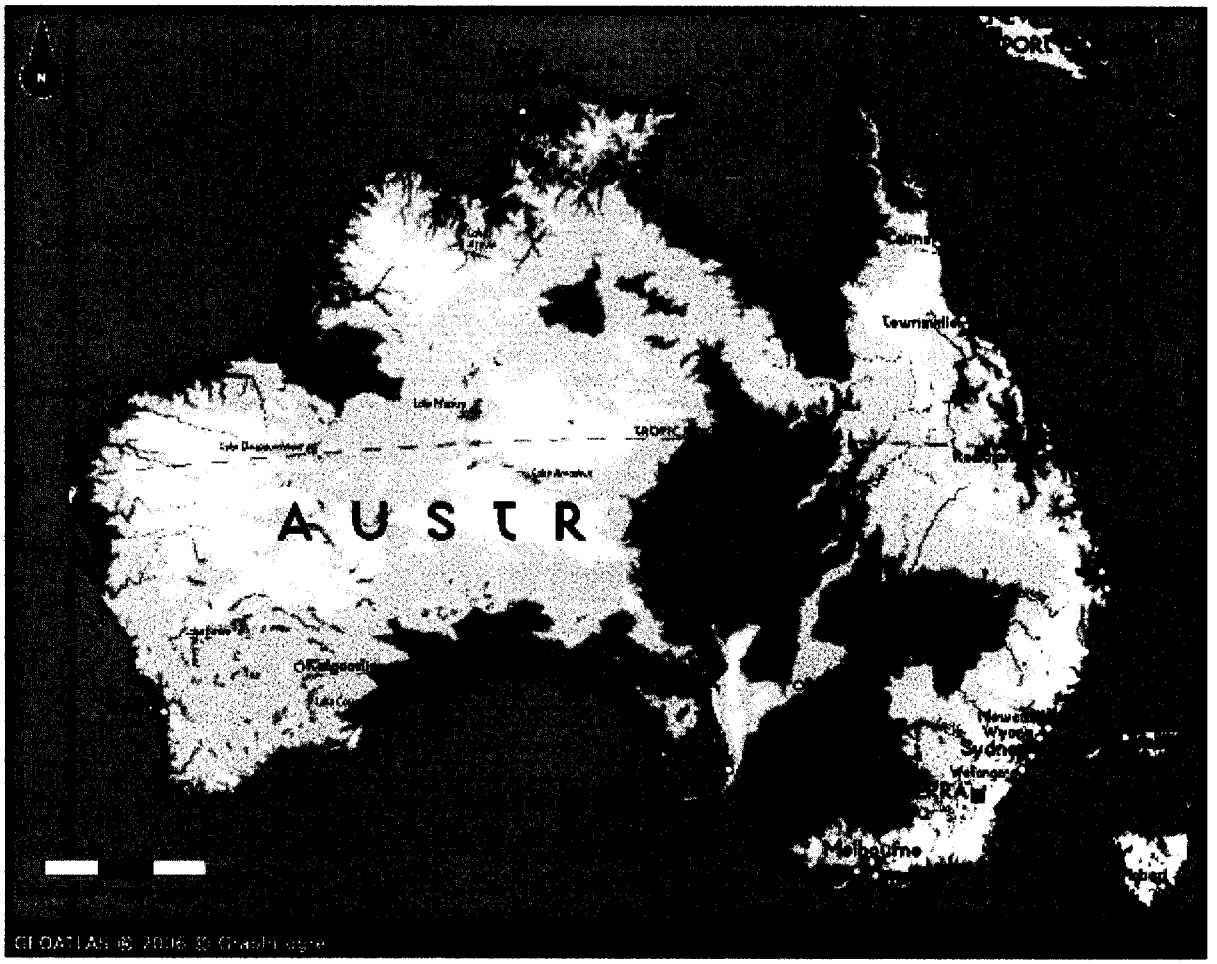
I'd also like to thank the Geography department at Concordia University; the completion of this thesis marks the end of a long and interesting relationship. Most of all I'd like to thank Professor Alan Nash and Annie Pollock. If it weren't for your patience, commitment and most of all your support to keep me on track I would not have completed this paper. Annie, if it weren't for your help over the years, my time at Concordia University would have ended a very long time ago. Thank you!

MAP OF AUSTRALIA



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CHAPTER 1: INTRODUCTION

Overview

The purpose of this master's thesis is to present a clear picture of the socio-economic and environmental conditions that have led to the establishment of Landcare, and to analyze the role that Landcare has played in Australia. For the most part, European settlement in Australia has led to serious environmental degradation of the land, which in turn has cost billions of dollars in lost productivity and has often led to the loss of cultural identity in rural society. As the government became desperate and tried to intervene with poorly researched policies and unrealistic management schemes, the groundwork was laid for the creation of a concept that could address the country's crisis. This concept, Landcare, involved the farming community as more than just pawns in a government-driven scheme to increase yields. They were given the opportunity to speak out about how to manage their land in a sustainable way, thereby securing their livelihoods. In order to understand how effective Landcare has been in achieving sustainable land management across the country, we need to understand the factors that have led to the degree of land degradation that Australia currently faces.

The literature upon which this thesis builds focused on the environmental history of the country from its first settlers in the 1800's and their refusal to recognize aboriginal land management practices. It includes a literature on policy failures throughout the twentieth century that led to a country that was reeling from the effects of multiple droughts, extensive land degradation and ecosystem failure. A second set of literature focused on the country's land degradation crisis and the creation of the Landcare movement, specifically addressing the country's ability to harness social capital, establish a volunteer pool and create a sense of pride and community obligation. This thesis takes into account yet a third set of literature based on policy-focused research material. This stream of thinking argued that Australia's desperate situation was based on poor policy planning; a lack of public consultations; mismanaged objectives and expectations between national, international and local-level groups; and a general lack of understanding of Australia's environment.

I argue that in order for Landcare to change the direction of Australia's land management, it needs to act quickly to take advantage of the momentum and public support it has gained up to this point. As a movement, Landcare has the ability to grow and help shape and implement sustainable land management policies across Australia, but first it must join forces with policy makers and enforce sustainable practices within communities, despite facing opposition by those parties, both individual and political, who don't support the movement.

In order to properly argue the results that the Landcare movement has had in Australia, I conducted much of my research through interviews, involvement in projects and meetings with different Landcare groups, visiting various sites that are experiencing degradation, and observing the positive on-the-ground work being done. Throughout this thesis, many of my arguments will be defended or proven based on my own primary research, which includes collecting and analyzing literature dealing with various Landcare topics. This literature, although readily available in Australia, was non-existent in Canada. It was only in the few years leading up to my trip to Australia that literature on the subject became readily available in Australia, until then most research about Landcare and the actions of Landcare groups was never properly documented, apart from a few newsletters and pictures in local newspapers.

As I introduce specific arguments throughout this paper between policy development and land degradation in Australia, I will show throughout chapter 5 (Research and Methodology) how many of the individuals surveyed and interviewed have answered questions and discussed their own personal feelings as to where they feel the problems of land degradation have originated from. While maintaining a focus on the question of Landcare's effectiveness in achieving sustainable land management, I hope to also present through my research, a number of points surrounding the factors for and against the adoption of the concept of Landcare and a change in land management schemes, as well as, the types of attitudes that exist towards the idea of sustainable land management and Landcare.

Specific topics such as political motivations, government involvement and financial factors to implementations of sustainable management techniques are discussed throughout my thesis as a source of background information for the evolution of

Landcare. I presented this information for the purpose of discussing in a more empirical sense the results I gained from the surveys I performed, as well as one on one interviews I conducted with state agency coordinators actively involved with Landcare. By dissecting the results from questions surrounding (1) the demographics of Landcare members, (2) hindering factors to involvement with Landcare as well as (3) motivational factors, I will be able to thoroughly answer the question that I have introduced as my hypothesis. These three areas of importance hold the key to the future of Landcare and I will base many of my concluding remarks on the points that emerge, specifically; the structure of the Landcare movement, its political importance, the benefits of its grassroots status and the necessary role government needs to play to ensure stronger adoption of viable sustainable land management schemes.

Much of the research presented, specifically my photos, surveys and interviews and the results of those surveys that will be highlighted in chapter 5, were collected during a six week visit to the Newcastle region of New South Wales, Australia during the spring of 2004. At that time with the aid of the Hunter Landcare network and a local state agency representative named Joe Thompson, I was able to conduct several meetings with important Landcare members, visit several field projects conducted on farmland to help reverse the effects of different forms of land degradation and participate in current field projects. I was also fortunate to have access to the University of Newcastle's library which helped in acquiring a large quantity of my secondary research material. Much of the literature that I used was not available in Canada and very difficult to navigate on-line, access to this library proved invaluable.

This chapter will review and analyze some of the literature dealing with Australia's land degradation and the Landcare movement. It has been organized by subject topic to reflect the organization of the main body of the thesis.

Land Degradation and Australia's Environmental and Political History

In his book *Still Settling Australia*, Dovers asks the question of whether environmental history is a useful contributor to contemporary debates about sustainability, and about resource and environmental policy and management and

concludes that, yes, it is. He argues that policy learning over a given time span is widely advocated but poorly conceptualized, and in a country that experiences rapid institutional change, as is common in many western democracies, the prospects for memory are not good because re-election is always a focal point for concern. He states that, "Learning from the past has its limits and frustration with current policy might just be a diversion therapy for the impatient" (Dovers, 2002, p.4).

Dovers argues that governments have failed to ensure that Natural Resource Management (NRM) programs package information in such a way that gives communities and landholders access to it and to communication tools that will allow them to deal with technical and strategic issues. He feels that there is undeserving criticism directed at Landcare for not fixing these problems because there has been a lack of involvement from state agencies to guide this process and help facilitate change.

Dovers champions the argument that the cure for the ailments of the present is locked in the ability to address the failures of the past. His research over the years within the framework of Australia's environmental history has portrayed a dark and gloomy future for Australia if governments and individuals alike fail to adopt a sustainable NRM program.

Whatever amount of blame Dovers lays on government policies, he acknowledges that the path to a sustainable nation requires the involvement of many different stakeholders in order for success to be achieved, demonstrating his ability to build a strong, cohesive argument. With this in mind, Dovers shows an impartial point of view when expressing his feelings toward stubborn landholders' who refuse to acknowledge the need for cooperation and change (Dovers, 1994).

In his paper *Sustaining Rural Australia: A Political Economic Critique of Natural Resources Management*, Woodhill agrees with Dovers' argument that governments need to assume responsibility for previous policy failures (Woodhill, 1999, p.3). Devolving responsibility for land conservation to farmers and local communities without delivering the proper resources, including technical advice, funding and relevant experience, does not constitute an empowerment of the people.

Woodhill links the effects of land degradation and its causes to scientific, political, economic and normative institutions of modern industrial society. Specifically,

the causes of land degradation are divided into (1) direct causes, involving the biophysical character of natural resources, types of land use and management, and a lack of farmers' knowledge about how to farm sustainably, and (2) structural causes, including the impact of globalization and trade policy on the prices of agricultural commodities, technological development, and the ability of farmers to invest wisely (Woodhill, 1999, p.3). Woodhill argues that if the structural causes of land degradation are not controlled, the direct causes will not be fixed.

Although controlling the structural causes is often met with objections by farmers and communities, Woodhill's "institutional response to Landcare", implying the role Landcare needs to play as the greater social institution that it is, argues that Landcare must experience more implementation and action in order to survive.

Land degradation is a problem that has reached a critical point in Australia. One of the factors contributing most to the current problem is the agricultural industry, both in the past and the present. With the co-operation of communities, farmers and the government, however, a solution may be at hand in the form of an idea called Landcare. Today, Landcare has developed from a program into a movement that allows people who live in the same catchment area (an area in which water is naturally collected to a particular point such as a lake, also referred to as a drainage basin) to work together to develop sustainable solutions for combating land degradation. Of course there are still many challenges ahead, such as how to ensure that Landcare remains a strong bottom-up grassroots movement that is facilitated by the government, instead of becoming a centralized top-down program, but overall the movement has proved to be very promising.

The Landcare Movement

The question of how to control the causes of land degradation is an issue lacking in the current literature. There is no suggested framework for how Landcare can evolve beyond spending the majority of its funding on awareness and education. Another course is to instead focus on implementation of sustainable land management to control the causes of land degradation. Land degradation is widely acknowledged, so it does not

require the awareness campaigns it once did, which frees up funds that could be diverted towards project implementation.

In *Landcare in Australia: Does it make a difference?* Curtis and de Lacy agree that Landcare has helped educate the public and create awareness about land degradation, but this knowledge is not given any direction to produce a viable solution to move forward (Curtis and de Lacy, 1996, p.136). These authors have done their own empirical research and they see no significant differences in the ethos of Landcare and non-Landcare participants. They suggest that to the extent that Landcare focuses on changing individual behaviour rather than societal barriers to rural development, Landcare is open to the criticism that it places too much responsibility on the individual landholders.

Woolcock, who wrote *Social Capital and Economic development: Toward a theoretical synthesis and policy framework* and who is famous for his work with the World Bank, asserts that without bridging social capital, communities will not be able to succeed (Woolcock, 1998, p.151-208). Social capital refers to the value of social networks, including developing bonds between similar as well as diverse people, with norms of reciprocity. The concept of social capital has been the key to delivering continuity to Landcare across its ranks. It brings together the norms and networks that facilitate collective action for the benefit of the entire community (Woolcock, 1998, p.151-208).

The findings from Black and Reeve, as discussed in *Participation in Landcare groups: The Relative Importance of Attitudinal and Situational Factors*, indicate that Landcare group members may be more prepared than non-members to accept some decrease in farm profits in order to protect the environment. Yet during difficult times, such as droughts, they are less likely to see the farming 'way of life' as adequate compensation. Black and Reeve's research also found that Landcare group members will tend to focus more on Landcare helping to deliver a more sustainable future rather than on rectifying the damage from the past (Black and Reeve, 1993, p.51-71). Black and Reeve conducted their own research surveys and used rural landholders and farmers as their sample group. They are both professors and experts in the field of farm management practices.

As Byron and Curtis stress in *Maintaining Volunteer commitments to local watershed initiatives,* their paper on volunteer commitment based on their primary research at Charles Stuart University, a noticeable trend was developing within rural communities. They discovered that the burden of repairing degradation damage was leading to considerable community concern about burnout in volunteer participants and the potential loss of work on projects. According to the two authors, this burnout is a great threat to Landcare's ability to maintain and implement successful endeavors and could undermine Landcare's effectiveness (Byron and Curtis, 2002, p.59-67). After seeing the government's willingness to hand over the responsibility of sustainable land management to individuals, the view of these authors tends to side with the rural community.

Part of the sense of burnout that Byron and Curtis discuss stems from a low sense of personal accomplishment if projects are met with failure or a state agency's involvement becomes burdensome. How is this avoided? This is a question that future research needs to address in order for Landcare to develop from a movement that creates environmental awareness to one that takes concrete and broad action.

In his paper *Landcare: Approaching the Limits of Voluntary Action,* Curtis expands on his previous discussion on the role of volunteers and bases his arguments on his own primary research that was done by surveying Landcare groups in Victoria. His feeling is that Landcare is getting caught in a Catch-22 situation that stems from government agencies that are advocating higher levels of participation to manage burnout without providing any of the support that would be required to sustain any increase in activity. State agencies emphasize the need for greater involvement by Landcare groups, but have failed to provide any clear and realistic expectations, which are a critical organizational factor (Curtis and Lockwood, 2000, p.61-73).

If Landcare were to develop an even stronger sense of community and social cohesion, this shared sense of involvement would be an important factor in reducing burnout because it would minimize the feeling of depersonalization. Based on their own experience and on their research, Curtis and De lacy feel that there needs to be a stronger commitment to Landcare from state agencies. Because Landcare has traditionally been

delivered by these state agencies, there is a lack of programming initiatives that are allowed to develop out of community Landcare groups.

Campbell, author of *Landcare: Communities Shaping the Land and the Future*, argues that the role of Landcare was to act as a catalyst and create a demand for change. He believes that without complementary policy changes in the wider political and economic environment, the goodwill and commitment fostered by Landcare groups is likely to wither.

In *Land Degradation: Problems and Policies,* which he wrote in Landcare's infancy in 1987, Chisholm had the foresight to ask, "Why has a wealthy and developed society allowed extreme rates of land degradation to continue? Is there not sufficient scientific understanding of these ecological processes for degradation to be prevented or at least minimized?" (Chisholm, 1987, p.45).

Most of the authors who deal with the subject of Landcare and land management agree that rather than expecting Landcare groups to reverse land and water degradation, state funding should be directed towards acquiring the right personnel within each community to pursue Landcare's fundamental goals of sustainability. Another common view found throughout the literature is that the micro-scale concerns of Australian farmers need to be aligned with the macro-scale concerns of the country, or there is a risk that the land and rural society will be eroded away by global market tendencies. Most authors agree that so far that determinants for adoption from the government perspective are less about the conservation value and more based on the economic factors involved. What has resulted is a mismanagement of future objectives and unwillingness by authors like Curtis, de Lacy and Byron to discuss the role that politics, nepotism, demographics and progressive marketing have played with respect to funding and power displacement within the Landcare movement.

There is a gap in the literature that this thesis tries to fill. The literature on this topic seems incapable of answering the question of how to develop an integrated program and subsequent policies that harness the strength and social capital of Landcare with sustainable NRM schemes, while at the same time providing a role for individual members of society to play at the policy-creation level and developing more proactive on-the-ground projects. How should Landcare be organized structurally as it moves

forward in order to ensure its success? I address the question of whether it should remain as an apolitical laterally organized and regionally unique movement, or is it time to develop a political platform. Do Landcare groups need to not only demand but ensure a seat at the table for any new NRM programs or can they continue to operate with a business-as-usual attitude. Landcare as a movement is beginning to stagnate: Its lack of organized structure allowed for its success as a grassroots movement now needs to evolve in order for the movement to have a real impact. Landcare has been successful in creating an understanding of why sustainable land management is necessary, but it continues to do so as a disjointed, apolitical movement.

Through my own research, I heard different arguments from both sides if politicizing the movement is a move in the right direction. During one Landcare network meeting, it was quite obvious that the members wanted to maintain the set-up of their network and the projects that they undertake and were not overly interested in expanding their own roles and moving forward within a political ring. However, other networks gave open invitations to other groups or networks that had similar characteristics to come and discuss how they could work together and how, based on their similarities, overall agendas could be developed. As a movement, Landcare has yet to discover a leader that can pull it together across the country. With over 4000 groups to date, it still lacks the true cohesion across the country that it needs to become a strong citizen's movement that will not only demand change, but, with its sheer force and size, will ensure that truly sustainable land management schemes are adopted and are cohesive across all levels of government and society.

Landcare has been successful at creating mass awareness of land degradation and involving people at the community level, but policymakers need to take advantage of Landcare's momentum and take definitive action *now* if the program is going to be successful and reduce the environmental damage that has occurred.

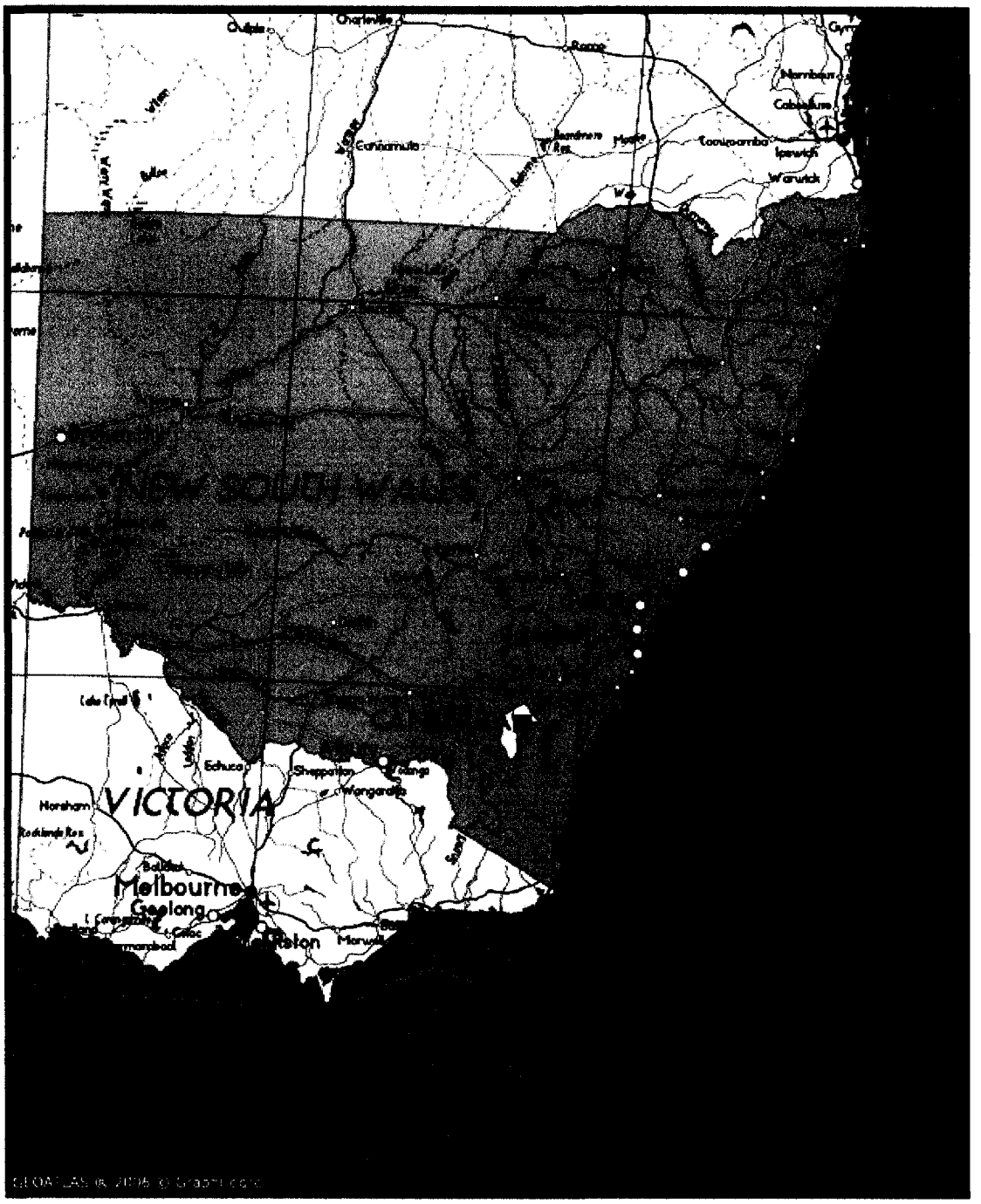
To fully grasp the importance of Landcare, it is important to fully understand the meaning of land degradation and how it has been impacted by Australia's environmental and policy history since the time European settlers arrived.

There is a great overlap of historic and socio-economic factors that all play a role in the development of Landcare. While the next couple of chapters will provide a

background on the current environmental conditions facing Australia, they also introduce the factors that have led to a strong Landcare movement. The effects of land degradation have been and will continue to be a major concern for Australia. Social differences between rural and urban communities and between farmers and state agencies have experienced a great deal of friction over the last century and continue to do so, even with the success of Landcare. The problems of Australia's past are still the problems of its future; the difference today is that Landcare is attempting to provide not only a solution, but a framework for a stronger sustainable future.

Figure 1.1 below shows a map of New South Wales (NSW), the state in which all my field research was conducted. This map should provide the reader with an idea of different areas and a perspective of relative distances and place associations as they are mentioned and discussed throughout this thesis.

Fig. 1.1 Map of New South Wales



http://www.map-of-australia.co.uk/map-of-new-south-wales.htm *

All dollar amounts in this document are in Australian dollars, unless otherwise indicated.

CHAPTER 2: WHAT IS LAND DEGRADATION?

The term "land degradation" can be misleading. Although it is most often considered to be a problem that humans inflict on their environment, it is also a natural process. As a natural process, it is the manner in which biophysical cycles rejuvenate themselves and reinvent the geographical zones that they influence (Yencken and Wilkinson, 2000). For the purpose of this paper, however, the term land degradation will be used to refer to damage that has been done to the land as a result of human activity. The main effects of this negative type of land degradation in Australia occur in the form of water and wind erosion, salinization and the clearing of native vegetation.

Land clearing causes many of the problems associated with land degradation, including the following:

1) soil erosion causing loss of topsoil from wind and run-off from rainfall,
2) physical deterioration and nutritional exhaustion,
3) weakening of stream and river banks due to decreased soil compaction,
4) disturbance of water systems due to sediment overload, destruction of spawning beds and diminished water quality, and localized salinization due to rising water tables.

Assessing the Risk and Degrees of Degradation

Land is at risk from degradation any time there is a significant change in land use, such as a change from sheep grazing to wheat cultivation, or the implementation of irrigation systems. In the case of irrigation, the soil in a semi-arid region is unable to adapt fast enough to the newly increased levels of water saturation, and valuable water flow to other areas is reduced because of the water being diverted for irrigation.

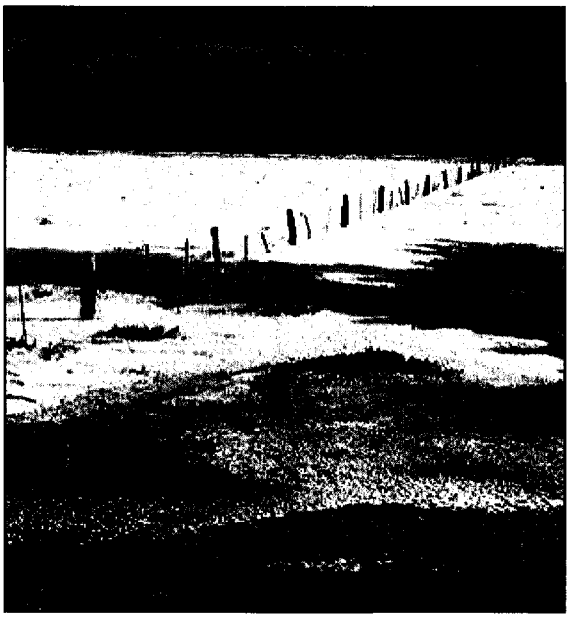
Where reactionary forms of land management are lacking is in their ability to properly assess the degree of risk to an area prior to its settlement. Once an area of land becomes settled, it will undergo demands on its resources from human settlement and pastoral practices such as land cultivation and water diversion (Chisholm and Dumsday, 1987, p.18-24).

Technological advances, economic demand and atypical weather patterns have all enabled cultivation to extend into what would otherwise be considered marginal land for agriculture. The damage typically becomes excessive when economic and weather factors deteriorate, and the problem is compounded when the focus is on economic and social survival rather than on the environmental conditions. In these situations, farmers will increase fertilizer use to increase production. This form of reactionary management fails to incorporate historical soil and climate conditions in the area and focuses on a more immediate band-aid remedy of using chemicals to increase production levels during unfavourable climatic periods (Woodhill, 1999).

The lack of recognition of previous land management techniques and a lack of knowledge of the environmental history of the area ultimately create a situation that will prevent a farmer from returning to the practice of managing the land according to weather cycles. Instead the farmer becomes dependent on increased fertilizer use and is vulnerable to unfavourable market conditions and future droughts. For example, irrigation water drawn from another area within the same catchment now affects the land in two ways. First, the irrigated land becomes susceptible to over-saturated soils, rising water tables and salinization and, second, the area that has had water diverted from it becomes susceptible to erosion and requires increased fertilizer use to replace the nutrients previously supplied by the diverted water (Woodhill, 1999). As Figure 2.1 illustrates, the effects of a rising water table can be catastrophic. The salt that rises to the surface effectively kills the surrounding low-lying vegetation.

As this example illustrates, technological advances can be a farmer's best friend or his worst enemy, depending on what is considered more important: long-term sustainability of the land or short-term productivity and survival. Land management and conservation strategies play an important role in the degree to which land degradation occurs. Strategies that are based solely on productivity will only have economic goals in mind, but when strategies are based on conservation, choices are made in the best interest of the local environment.

Figure 2.1 – Effect of a rising water table. ***Central West, NSW.***



(Source: Dept of Land & Water, NSW, 2002)

Effects of Land Degradation

SOIL EROSION

Soil erosion refers to the loss of topsoil in a specific area, and is usually caused by wind and water erosion. Soil erosion will occur much more quickly than soil will form, which happens when organic matter decomposes and is converted into nutrient-rich soil. In the case of agricultural land, soil erosion is often magnified by the removal of stabilizing vegetation such as trees and other deep-rooted vegetation that would otherwise prevent the wind and water from sweeping away the topsoil. By international standards, Australia has extremely high rates of soil erosion, often resulting in the following effects:

1) a reduction in the productivity of the remaining topsoil layer that is now shallow and sterile, and
2) the sedimentation and turbidity of adjacent waterways from the exposed topsoil layer (Chisholm and Dumsday, 1987).

Figure 2.2 illustrates the destructive nature of land clearing, as I observed in the central western area of NSW. The erosion has caused massive rilling and topsoil loss, exposing the poorer soils to the surface.

Figure 2.2 – Soil erosion causing massive rilling. ***Central west of NSW.***

(Source: David Hammer, April 2004)

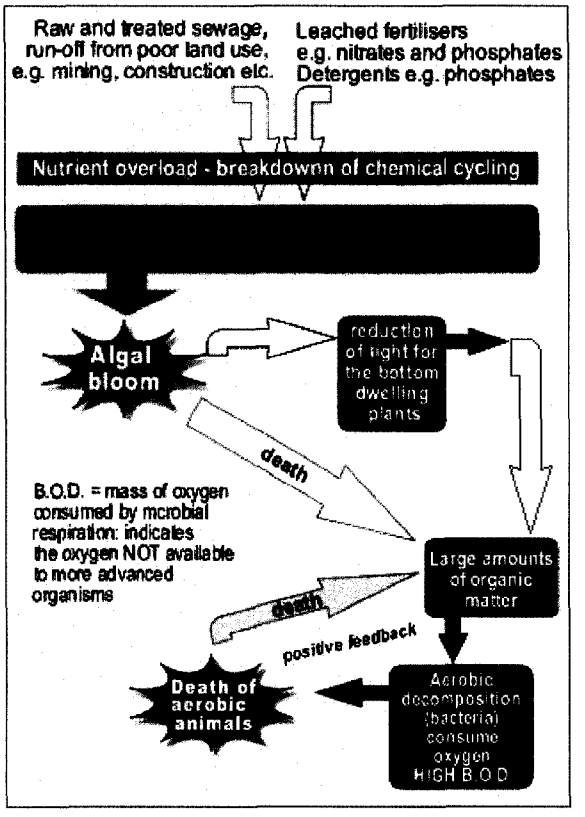
The sedimentation of waterways has a major impact on water quality, as well as on the biotic systems within those water systems, by stunting aquatic vegetative growth. The effects are also felt on the health and public infrastructure of communities that are immediately adjacent to the affected waterways, as poor water quality often leads to health issues because water used for personal consumption can become tainted. Dried up waterways are evident throughout rural Australia and are a result of poor land management, as Figure 2.3 shows. This field would be considered an otherwise healthy paddock.

Figure 2.3 – Dried up waterway.

(Source: David Hammer, April 2004)

The effects of soil erosion also impact areas that are indirectly connected to the affected waterways by clogging natural drainage routes, which eventually stagnates or alters the direction of water flow. Heavy silt deposits eventually suffocate aquatic vegetation and ruin spawning beds for fish species that lay their eggs along the riverbeds. When surface run-off carries remnants of fertilizers, the result is the eutrophication of waterways, which suffocates the water source because overgrown aquatic vegetation absorbs all the oxygen in the water through photosynthesis (Chisholm and Dumsday, 1987). (See Figure 2.4 below.)

Figure 2.4 - Eutrophication



(Source: http://www.beep.ac.uk/content/338.0.html)

Eutrophication is a common occurrence throughout rural Australia, mainly in tributaries, ponds and lakes that are vulnerable to run-off from farm land. In Canada, the best example of this is Lake Erie during the period from 1969 to 1996. Lake Erie was considered "dead" at one point in the 1980's from eutrophication. Once the use of fertilizer on land immediately adjacent to the lake was stopped, Lake Erie eventually regained much of its life (Ludsin et al, 1999, p.731–746).

SOIL NUTRIENT AND STRUCTURAL DECLINE

Soil nutrient and structural decline is primarily caused by machinery and animals that compact the soil from cropping and overgrazing. This decline is most evident in cropping areas, where machines are used to harvest, seed and manage the land. The constant impact from the tractor's tires compact the soil, making it more and more difficult to till the land for planting seeds. Overgrazing by hoofed animals such as cattle can have the same compacting effect. The results of the soil decline include significant drops in yield, increased fertilizer use, poor water infiltration, increased erosion and

decreased wheat protein levels. This problem alone is estimated to be costing over $200 million a year to Australia's GDP (LWRRDC, 1995).

SOIL ACIDIFICATION

Soil acidification, measured by a decline in ph level, is often caused by the over-use of phosphate fertilizers and the growth of sub-clover pastures that are grown to allow the soil to rest and become productive again. Acidification can also be associated with the release of manganese and aluminum ions released by tilling clover pastures and the subsequent change from crop rotation that affects the soil at levels that are toxic to certain plants, including most cultivated crops. As a result, higher acid levels also lead to lower crop yields. The use of sub-clover pasture is somewhat of a Catch-22; it benefits the soil by reintroducing depleted nutrients and minerals, but it gradually leads to a decrease in ph levels, which further contributes to the fragility of Australia's light-textured soil. The slight increase in acidity will have an effect on the capability of the soil to support vegetation over a 50- to 100-year period. The current acidification occurring in Australia is the result of (1) the natural process of acidification and (2) the initial effects from sub-clover pastures that were planted as part of crop rotation in the earlier parts of the twentieth century (WM Porter, 1981).

Figure 2.5 shows the effects of soil acidification in the pasture lands of central NSW. This land, once cleared for grazing, has now lost all of its nutrient value and is incapable of supporting vegetation.

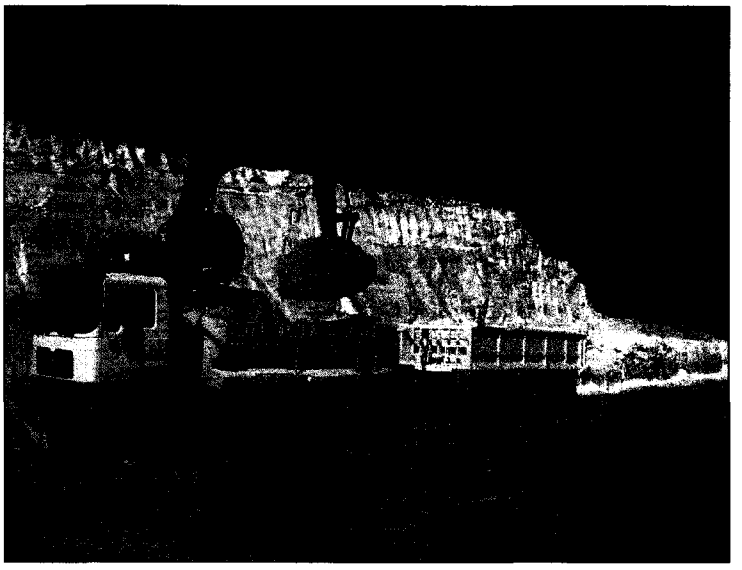
Figure 2.5 – Soil acidification. ***Central NSW.***

(Source: David Hammer, April 2004)

One preventative measure is the use of agricultural lime or gypsum, a soil additive containing limestone that increases the soil's ph (see Figure 2.6 below), but in areas of extremely high acidity the deep placement of lime and fertilizer may be required to maintain and sustain plant productivity. As acidity penetrates deeper into the soil, the use of lime needs to be adjusted and geared towards the type of crop being planted, as each crop has different levels of tolerance for changes in ph levels in the soil (Porter, 1981).

It is estimated by Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) Division of Plant Industry in Canberra that 24 million ha are currently affected by soil acidification across the country (Prince, 1999). The Australian Industry Commission estimates that over the last two decades that the opportunity cost of low production ranges from A$134–A$300 million per year (MDBC, 1997).

Figure 2.6 – Loading gypsum and lime for use on agricultural land.



(Source: www.limeplus.com.au)

RURAL TREE DECLINE

Rural tree decline is the progressive and rapid decline and death of native trees, especially on farmland.

The decline of these trees leads to a loss of shelter for other species and decreased soil stability and in certain areas can lead to secondary salinization. There are three major factors contributing to rural tree decline, including the following:

1) the clearing of existing forests and the prevention of regeneration imposed by current management practices,
2) the natural death of rural trees due to old age, and
3) the premature death of rural trees, a phenomenon known as *rural dieback* (Chisholm and Dumsday, 1987, p.42). (See Figure 2.7 below.)

Figure 2.7 – Rural tree decline in Australia.

(Source: David Hammer, April 2004)

The severity of rural tree decline is considered to be a legacy of poor management practices resulting from thoughtless government policies over the last two centuries. As remains to be the case, the condition of most remaining woodlots has declined to such a degree that any new destabilizing effects, such as periodic increases in insect populations, may lead to their rapid destruction; particularly if additional stresses like fire or drought occur (Chisholm and Dumsday, 1987, p.42).

Clearing and Prevention of Regeneration

According to Heatwole and Lowman, the dieback syndrome in the Hunter River region of Australia is considered to be one of the most severe tree declines worldwide (Heatwole and Lowman, 1986). Over the last 100 years, dramatic alterations in land use and agricultural practices have resulted in a landscape devoid of living trees, and also devoid of seedlings. Australian rural holdings in the Hunter River district were initially cleared in the late 1800s for purposes of sheep and cattle grazing. The climate conditions (cool winters and dry, warm summers) were ideal for grazing livestock, specifically sheep, and allowed for a vibrant wool industry. For obvious economic reasons, land owners aimed to maximize the number of sheep per acre, and the landscape underwent

dramatic alterations: extensive tree clearing, application of fertilizers to the soil, plowing and planting of non-native grasses. These changes led to biological imbalances in the numbers of trees, insects, birds, and subsequently of herbivores in relation to their host plants (Heatwole and Lowman, 1986). (See Figure 2.8 below).

Figure 2.8 – Rural tree decline in the Hunter region

(Source: www.greeningaustralia.com*)*

During the 1970s, farmers became alarmed at the lack of tree cover on their pastures. They raised funds to support research by scientists to determine the causes of the region's dieback crisis. This generous donation of money from the private rural sector gave the dieback crisis heightened media coverage, and served to generate interest in tree regeneration throughout Australia. Today, Australia has a national program aimed at planting 1 billion trees by the mid-1990s; an ambitious goal, but necessary to replace those trees lost to clearing or to the dieback syndrome (Huettl and Mueller-Dombois, 1993, p.307).

Dieback in regions throughout Australia's southeast is an ecological illness of great magnitude and enormous complexity and is the result of a variety of causes. It was not deliberately brought about by human activity, but in many cases the pattern and intensity of land use appear to be the major causes, extenuated by secondary factors such

as defoliation by insect infestation. The course of environmental changes that accompanies agriculture (in the case of grazing, this included increased numbers of stock, trampling of soil, consumption of seedlings by stock, clearing of trees, ringbarking of trees by cattle, aerial spraying of fertilizers (especially superphosphate), alterations of the water table, planting of non-native grasses for winter feed supplements and plowing of pastures for crops) were all factors that prevented trees from regenerating naturally (Huettl and Mueller-Dombois, 1993). The changes in soil that accompany clearing and agriculture create conditions conducive for epidemics of certain scarab beetles, sawfly larvae and other defoliators. Due to clearing, fewer trees remain as food sources. It is difficult, however, to implicate insects as the major cause of dieback. It may be a chicken-and-egg situation: which comes first, the insect defoliation leading to tree decline or the environmental stresses on a tree leading to increased defoliation? Other studies have indicated that the stress comes first. In addition to the stress of defoliation, insects have other deleterious effects on eucalyptus: scarab beetle larvae (and other soil organisms) fed on tree roots, and can remove over half of the root system of a dying eucalyptus (Huettl and Mueller-Dombois, 1993, p.318).

Rural Dieback

The extent to which the original tree cover is modified is a major factor that influences the severity of rural dieback throughout Australia's eastern states. Healthy remnants of native woodland are characterized by a wide diversity of plant and animal species (Nadolny, 2002, p.4). Woodlots experiencing rural dieback, on the other hand, exhibit very little diversity, while stress on the remaining species from grazing insects is severe and sustained. Once dieback begins, the affected woodlot tends to regress rapidly through a series of unstable biophysical states until it becomes treeless grassland. A similar phenomenon in Canada is called "succession," which is the transition from a forest to a swamp and eventually to a pond. During succession, trees will rapidly die off as the roots become waterlogged from a rapidly rising water table, often caused by the natural re-routing of existing streams.

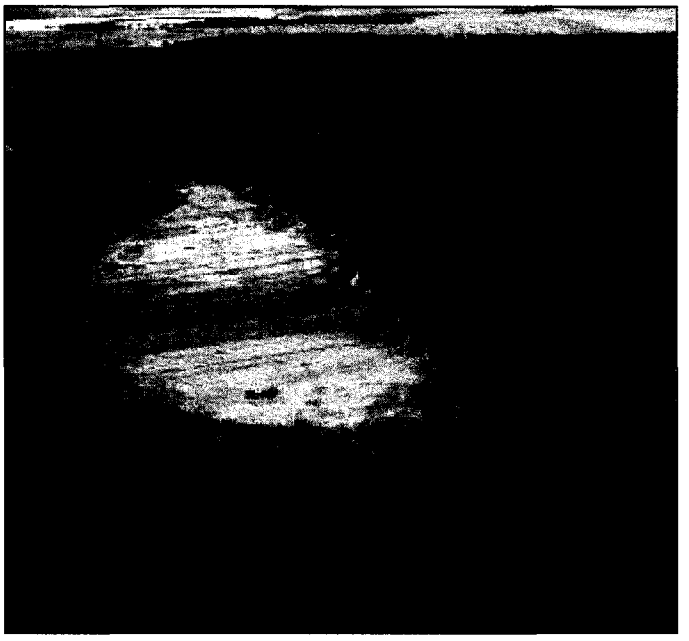
SALINIZATION

Salinization is the most destructive problem facing Australia. There are two distinct types of salinization: dryland salinity and irrigation salinity.

Dryland Salinity

Dryland salinity occurs as a result of clearing native, deep-rooted vegetation such as eucalyptus from the land. Once these plants are removed, the water table begins to rise because it is no longer being absorbed by the deep roots of these native plants. As the water tables rise, the land becomes waterlogged and the natural salt content of soil deep in the ground rises to the surface. Once the salinized water reaches the surface, it evaporates and leaves salt deposits, preventing the growth of any type of salt-intolerant vegetation like cereal crops and exotic tree species (Chisholm and Dumsday, 1987; Nadolny, 2002; Woodhill, 1999, p.34). (See Figure 2.9 below)

Figure 2.9 – Effects of dryland salinity on a macadamia plantation. ***Hunter-Central rivers catchment.***



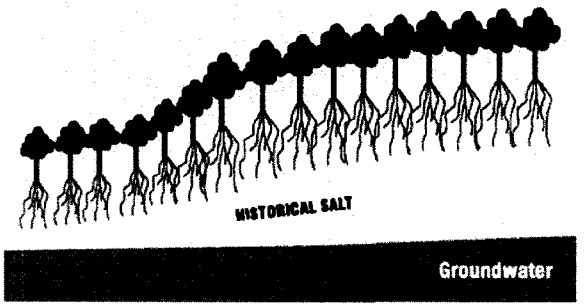
(Source: David Hammer, April 2004)

The removal of native plants also decreases the amount of water retention in the soil, which greatly lowers its nutrient levels and decreases its strength and stability, leading to soil erosion.

Irrigation Salinity

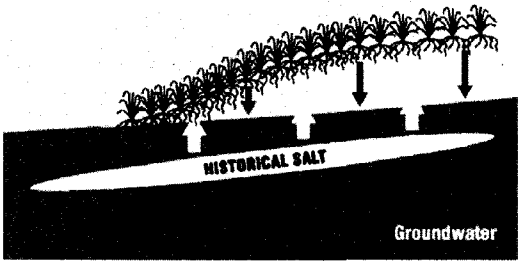
Irrigation salinity is caused by rising water tables that are the result of re-routing natural waterways. As water is redirected into areas without a natural water source, the soil is incapable of absorbing all of the excess water, so the water level rises until the salt in the soil saturates the water and percolates to the surface. Poor drainage and seepage from irrigation canals can also result in waterlogging the soil and salinizing the water. Thirty percent of irrigated areas are likely to be seriously affected by salinization, as water tables are continually rising in these vulnerable areas of Australia (Chisholm and Dumsday, 1987; Nadolny, 2002; Woodhill, 1999, p.34). Figures 2.10 and 2.11 illustrate the effect of a rising water table.

Figure 2.10 – Before water tables rise (salt remains in the soil and has minimal effect on vegetation)



(Source: www.napswq.gov.au)

Figure 2.11 – Effect of poor land management (salts are in the water and spread out due to a rising water table, caused by poor irrigation and planting shorter-rooted crops)



(Source: www.napswq.gov.au)

Perceptions of Land Degradation

How does the perception of land degradation differ from one landowner to another? What is considered degradation to one landowner may be seen as restoration to another. For example, a farm reverting to natural bush cover might be considered 'degradation from a farm income viewpoint, but may be seen as rejuvenation from the viewpoint of a hobby farmer or environmentalist (Dovers, 2000).[1]

Land clearing is another example of a definition that can be misleading. A farmer clearing his land does not see this as a form of degradation. His goals of replacing bushland with new crops is simply a transfer in land use, yet our discussion of land degradation states that land clearing practices are a primary cause of direct human-induced degradation (Chisholm and Dumsday, 1987; Dovers, 2000; Yencken and Wilkinson, 2000). Land experiencing degradation can be more clearly defined as land that is losing its economic as well as its biophysical productivity.

FAO/UNESCO Criteria for Degradation or Desertification

The following criteria have been established by FAO/UNESCO to assess the degree of degradation or desertification for the purposes of research programs. By establishing a set of criteria, it is possible to comparatively assess and map desertification on a worldwide basis. In Table 2.1, the FAO/UNESCO criteria have been applied to the Australian rural landscape.

[1] This point that Dovers, 2000 makes is something that I found to be one of the hindering factors to accepting changes to management schemes under Landcare, when dealing with attitudes surrounding more economic-based attitudes. (see chap. 5 –pg,100)

TABLE 2.1 – FAO/UNESCO Criteria

	Current Status	Rate	Risk
Vegetation	- productivity of canopy cover - % productivity - woody shrub invasion - biomass - production of fodder and biomass/rain	- range trend line - forest trend line - cereal crop trend line - shrub invasion	- increased arable dryland - livestock production - overgrazing - annual unit growth rate - climatic index for biological degradation - potential for reclamation
Wind Erosion	- loss of topsoil - type of topsoil - type of erosion - Aeolian formations	- states "as listed in FAO 1984"	- erosivity - wind storm frequency - days of wind storm/year
Water Erosion	- type of erosion - loss of topsoil - surface alterations - soil deposits and organic matter decline	- soil loss - soil removal - soil deposition	- slope - precipitation - weight of soil loss - rainfall factor - soil erodibility - topographic factor - biotic index - erosivity index

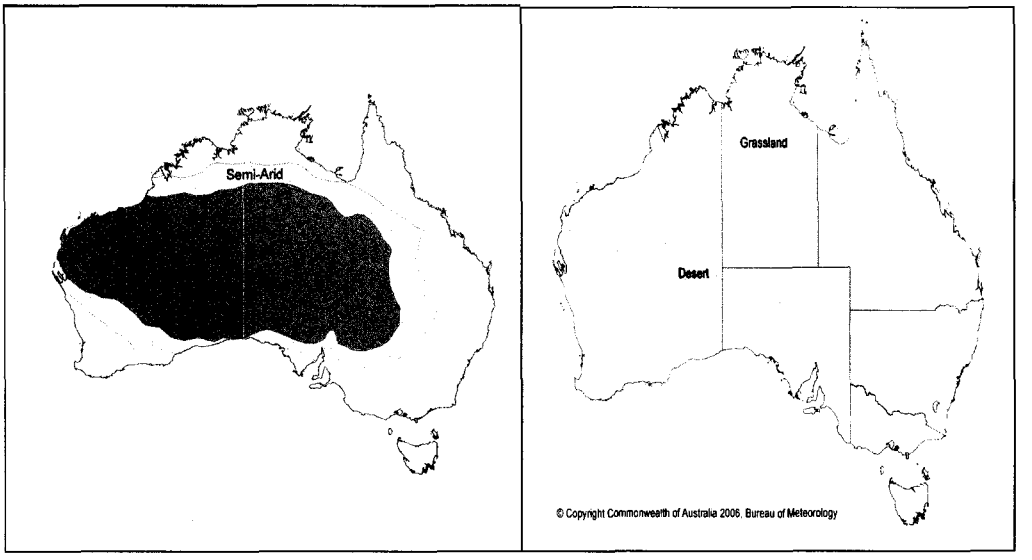
(Source: Chisholm and Dumsday , 1987)

CHAPTER 3: – AUSTRALIA'S ENVIRO AND POLITICAL HISTORY AND THE EFFECT ON LAND

Regions experiencing the highest occurrences of land degradation in Australia are those with marginal agricultural value and limited ability to support pastoral practices because they are also the semi-arid and arid regions of the country. These areas make up the majority of the land mass of Australia.

Much of the land degradation that has occurred since the 1800's has been caused by (1) the occupation of semi-arid and arid pastoral lands by European settlers over the last 200 years, and (2) government policies that have been based around economic goals and were meant to maximize production through excessive land clearing, water diversion and the over-use of land for an extended period of time, including during inappropriate growing conditions (Dovers, 2000). (See Figures 4.1 and 4.2 below)

Figure 3.1 - Map of Australia's semi-arid and arid zones, deserts and grasslands.



(Source: http://www.desertknowledgecrc.com.au/desert_information/desertmaps.html)

Social History

Understanding the environmental history of Australia from a social and physical point of view is an important step in establishing a management system that supports environmental sustainability. History has always provided a record of what has happened and what needs to be done going forward. Jane Lennon, a noted expert on heritage conservation in national parks and natural areas, as well as a member of the Australian Heritage Commission, notes that historical research is an essential component of natural resource planning and management. Her view is that the danger with current environmental reforms is the lack of willingness to make changes that recognize the environmental history of a region (Lennon, 2006, p.1-9).

The greatest errors that Europeans made when they settled in Australia over two hundred years ago was misreading the local environment and discounting the aboriginal knowledge that was readily available to them.

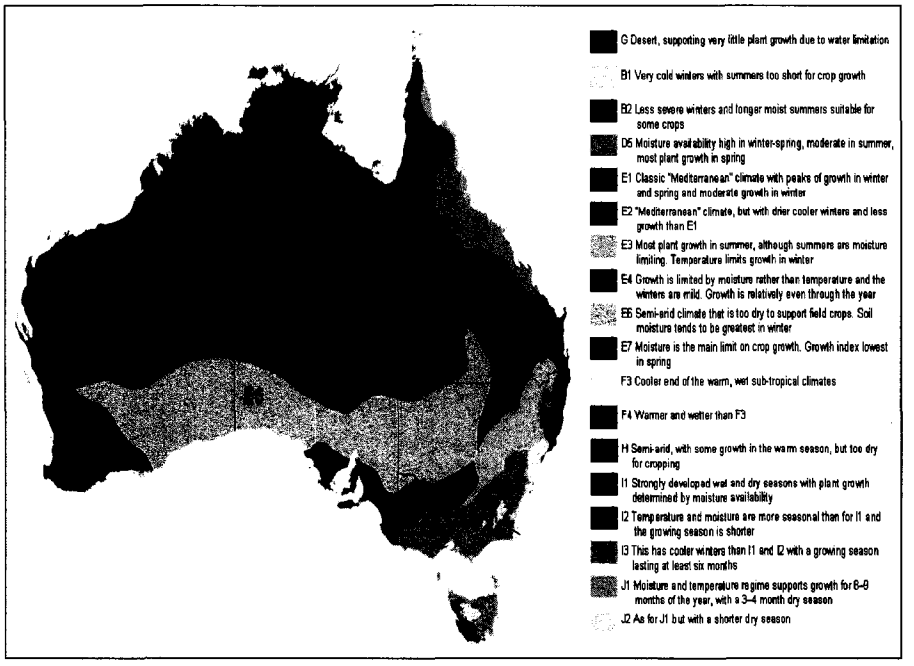
As settlers made their way across the country, they built settlements with little foresight or understanding about the climate conditions and composition of the land. Their judgment was skewed by the vastness of the land they were crossing and by the opportunity of a new beginning and new wealth (Chisholm and Dumsday, 1987; Dovers, 2000; Yencken and Wilkinson, 2000). For 200 years, these settlers have worked hard to

make the land adapt to them, and each time they feel that success is imminent, the climate and the land remind them of the fragility of their environment. The Aboriginal people learned this lesson a long time ago.

The Eurocentric attitude of the settlers was based on their belief that since the Aboriginal people had never cultivated or permanently settled the land, their experience was not considered relevant (Dovers, 2000). It was never apparent to Australian policy makers that the Aboriginals actually worked *with* the land instead of trying to make the land work *for* them. Over the last 50,000 years, the Aboriginals learned from the mistakes that they and their ancestors had made and adapted a functional land management approach that allowed them to survive (Yencken and Wilkinson, 2000).

They learned to ensure their survival by constantly moving their habitations and by using unique harvesting techniques. Their footprint on the land was minimal: they had discovered that the most effective and sustainable way to harvest the food they ate was not through planting crops or herding animals, but by foraging, hunting and gathering, and by using fire as a harvesting tool. Although there are documented instances where fire grew to uncontrolled levels, it was nonetheless the main tool the Aboriginals used to harvest food in this semi-arid and arid landscape (Dovers, 2000). They learned to understand the patterns of weather cycles and to comprehend that cyclical conditions could not be judged seasonally and that survival was based on accepting the notion that droughts and rainy periods would simply happen inconsistently, with no defined pattern of time. They learned valuable skills, such as how to judge approaching rainy periods by analyzing cloud formations and changing wind directions, and using that knowledge to initiate fire regimes that would allow edible greens to sprout (Dovers, 2000). Much like Jack Pine in Canada, most of the plants in these semi-arid and arid areas need fire to germinate.

Figure 3.2 – Australia's agro-climatic regions



(Source: http://www.desertknowledgecrc.com.au/desert_information/desertmaps.html)

Once Europeans arrived in Australia, however, the knowledge the Aboriginals could offer for settling the land was disregarded. The Europeans displayed great arrogance and even greater unwillingness to accept indigenous knowledge for land cultivation, management and settlement (Dovers, 2000).

The settlers declared the land *terra nullius* based on the imperialistic assumption that inhabited and settled land would show signs of settlement either through permanent dwellings or cultivated fields (Yencken and Wilkinson, 2000). Land inhabited permanently and temporarily by the Aboriginals showed no signs of cultivation and only vague signs of settlement.

The emergence of anthropocentric land degradation is a story of complex interactions between biophysical, socio-cultural and political factors. Cocks, author of *Use with care: managing Australia natural resources in the twenty first century,* points out that spectacular misjudgements were made about the impact of newly introduced species, the carrying capacity and yields of the land, the impact of widespread native

vegetation removal and irrigation, the susceptibility of soil to erosion and the consequences of fire, flood and drought (Cocks, 1992, p.3-4). As a result, the knowledge and rights of the Aboriginal people were ignored and the continent faced the consequences of the imported ideological, technical, political and practical approach by the European settlers. Much of the history and present policy surrounding Australian rural resource use reflects the consequences of this approach (Dovers, 2000, p.2).

During the nineteenth century, Australia experienced a massive movement to build settlements and occupy land west of the Great Divide, which separated the tropical coastlines of Eastern Australia from the semi-arid and arid interiors of the Outback.

Early views on the suitability of the interior land for growing crops and grazing livestock gave an unrealistic sense of opportunity to settlers. At the time, countries like Canada and the United States were experiencing similar migrations to the interior of their countries with similar hopes of developing new communities and a legitimate farming industry. The prevailing political and economic rationale for these internal migrations in Australia was that populating the interior would be good for the economy and for building the nation. Australia's State governments claimed tenure over the majority of it, and naturally assumed the role and responsibility of principle landowner (Chisholm and Dumsday, 1987; Dovers, 2000; Yencken and Wilkinson, 2000). During this time, Australia lacked a comprehensive settlement policy that incorporated land values such as the vulnerability of soil, the proximity between settlements, the allowable size of livestock and quantifiable limits to land clearing. The stage was set for the extent of degradation that would occur over the next 200 years.

Walters and Hilborn, experts on integrated land management, have identified two contrasting approaches to ecosystem and land management. These two approaches can be applied to the situation in Australia to illustrate what the general response to land management was before Landcare was introduced. The approaches are outlined below.

1) *Deferred action* presumes that ecosystems cannot be correctly managed until they are completely understood. This approach permitted unmonitored settlement of the semi-arid and arid territories in the early periods of westward migration in Australia. The accepted notion that farmers need to be living on the land and managing it in order to understand the vulnerabilities and the

intricacies of its specific soil cycles is an unacceptable approach for Australia's varied ecosystems.

2) *Passive adaptive management* is based on the best understood model available, while using conservative management strategies where mistakes are expected. In the 1980's, prior to the acceptance of Landcare-based principles, the current plan for monitoring land degradation was episodic. It was resorted to only in times of crisis and was allowed to lapse during periods of optimal climate and growth conditions (Chisholm and Dumsday, 1987).

Few land management policies prior to the introduction of Landcare incorporated adequate resource evaluation or monitoring procedures for long-term study and enforcement. Both of the approaches discussed above failed to include proactive measures and relied on the belief that a reactionary response was a reasonable management strategy to pursue.[2]

Environmental History

From the beginning, European settlers have disregarded the vast differences in climate, geography and geology between Europe and Australia. The climate in most of Europe is characterized by four distinct seasons. A country's geographic location will determine the extent of extremes for each season, but there are four seasons nonetheless. For this reason, farming in Europe demands an intensive management plan to take advantage of the short growing season before fall and winter bring the replenishing precipitation necessary to repair the damaging effects of intensive agricultural production (Woodhill, 1999; Yencken and Wilkinson, 2000).

The winter season, however, never completely replenishes and repairs the land, so farmers depend on chemicals for extra growth.

In Australia, the climate is completely different. There are only two seasons; wet and dry, and fluctuations between them are rarely consistent. In many parts of the country drought can be experienced for years, not months, and many manipulations of the land

[2] While I was doing my research in Australia, a new handbook for the monitoring and evaluation of on ground works was being introduced in the Hunter region by Michelle Wark, (appendix 4).

need to be performed in order to ensure a steady supply of water for crops. Australia also remains temperate all year, creating a situation where farmers must till their land all year round in order to remain financially viable (Campbell, 1994; Cary, 1998; Gumley, 2001). Since many parts of Australia lack a consistent and productive wet season, diverted water sources and intricate systems of irrigation and drainage have been introduced to help offset the lack of rain, which in turn harshly affects the fragile soil. The environmental problems caused by these changes are not contained by land boundaries and will affect everyone within the catchment area.

The Australian geography is a unique combination of inconsistent climate cycles, poor soil, unique wildlife and incredibly integrated watersheds. The interconnectedness of Australia's ecosystems is an incredible example of how lifeforms adapt to their environment in order to survive.

Two marsupials provide interesting examples of these animal adaptations. As Tim Flannery explains in his book *Chasing Kangaroos,* kangaroos have evolved over time to become a soft-footed animal that hops on its back feet and typically travels in mobs (groups of 6 or more). When travelling, they almost never hop in a straight line unless forced to do so by the terrain. They are always spread out from each other, regardless of who is leading the mob, and their hops are rarely of consistent length. This adaptation has helped prevent them from damaging and compacting the soil and from causing long-term top soil erosion from their constant traffic. Consider this in contrast with cattle and sheep, which typically travel in large groups and in close proximity to each other. Their hard hooves place constant pressure on the soil they walk over, and as they graze they compact the soil, causing poor root growth and soil erosion (Flannery, 2004).

The koala is another example of animal adaptation. Koalas feed on species of Eucalyptus trees that are native to the koalas' local environment. Being such slow-moving creatures, they feed on only four or five trees at a time. This ensures that they don't eat themselves out of food, since they will die if they cannot find the leaves of their own specific species of eucalyptus tree (Flannery, 2004).

One of the unique features of Australia, and a major catalyst for the severe extent of land degradation that has taken place, is its soil. Australia has been cited as having some of the most deficient soils in the world, which are lacking in phosphate and other

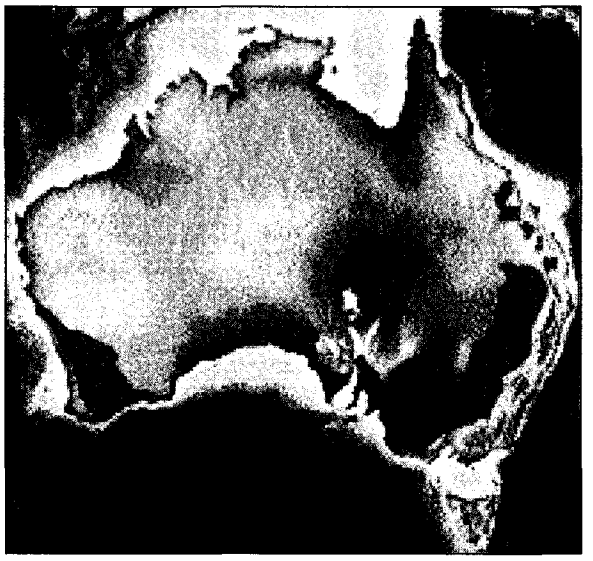
nutrients that are imperative for healthy development of vegetation, including planted crops (Yencken and Wilkinson, 2000). The native vegetation has managed to adapt to these conditions through unique control systems that function within the range of seasonal and long-term climatic variances, such as extended dry periods. The same cannot be said with regard to the introduction of plant species and crops that are not native. Problems arise when exotic crop species are introduced from a different climate zone (Chisholm and Dumsday, 1987; Yencken and Wilkinson, 2000). Geologically, Australia is a very old continent that has never fully experienced the rejuvenating effect that glaciation has had on other continents. Nor has Australia experienced the impact of alpine glaciation or the fertilizing effect that volcanic ash has on soil. The result has left Australia with much older, more sterile and eroded sediments, especially as compared with North America or Europe. Australia's soil has little binding capability once the soil has been disrupted through agricultural processes or by grazing (Porter, 1981). Ultimately the soil is in a vulnerable state and constantly at risk from degradation the more that its conditions are not treated and respected with care.

HISTORY OF AUSTRALIA'S LAND DEGRADATION

Since the arrival of European settlers, there has been a continuous trend of clearing native vegetation so that massive amounts of cropland can be tilled in an attempt to maintain a strong agriculture industry and to compete within the global grain market. This trend has continued without much public resistance. In some areas, however, such as Western Australia, central New South Wales (NSW) and Victoria, this trend has met with legal and political roadblocks from both conservationists and concerned landholders (Yencken and Wilkinson, 2000).

Because of previous government policies, such as Western Australia's Clearing of a Million Acres policy in the 1980's, massive land clearing has occurred in three major areas of the country; in the southwest (otherwise known as the Wheat Belt), the southeast and the northeast.

Figure 3.3 – The Australian wheat belt



(Source: http://archive.amol.org.au/discovernet/tales/wheat.asp)

The effects on the landscape have been so drastic that well over half of the land in the southeast has lost its original flora content. Well over 600,000 km^2 now support only imported crops and grazing pastures (LWRRDC, 1995).

Tillage is another aspect of cultivation that leads to severe degradation. A 28-year study of crop rotations in Wagga Wagga, NSW showed that land cultivated on an 8% slope had as much as a 30% reduction in wheat yields due to soil erosion. While it has been proven that erosion from overland water flow can be reduced using contour control banks, similar to the concept of terracing, this solution has rarely been implemented on commercial-sized farming operations (Cary, 1998). A positive finding from the study was that regular pasture and crop rotation is the only way to maintain any structural stability in the soil. Although practices like crop rotation do not always result in substantial increases in organic matter, they have been found to increase soil stability, enhance water filtration and drainage and maintain or improve crop yields (Cullen, Williams and Curtis, 2003). The issue of soil vulnerability is widespread and has been compounded since the introduction of heavy machinery to till the land. This machinery has been a major cause of soil compaction, restricting root growth, impeding drainage and reducing yields because of waterlogged soil during the wet season. .These factors, combined with already decreased levels of organic matter in the soil because of land

clearing, result in poor crop growth and an increased need for chemical fertilizers (Dovers, 2000).

OFF-SITE COSTS OF LAND DEGRADATION

Assessments of off-site costs of land degradation are usually oriented around water quality and quantity and impacts on the landscape. Surface run-off and salinization of nearby land are the most common examples of poor water quality. They are defined as off-site costs because they occur at a different location than where the cause of the degradation occurs. For example, irrigation practices on one farm may lead to salinization on neighbouring land and may eventually affect land that has never been used for farming purposes. Surface run-off into a river is an off-site cost to everyone downstream from the cause of the run-off.

The off-site costs of soil erosion are estimated by the Department of Agriculture to be $100 million per year across Australia, and the social costs for the communities involved are equally disturbing (Yencken and Wilkinson, 2000). Health costs associated with poor water quality can debilitate a community, damaging its productivity and ability to survive in the area. Human migration patterns in Australia during times of severe drought lead towards urban centers, which can create enormous burdens on social programs and assistance (Dovers, 2000).

Upstill and Yapp, experts on the effects of land degradation from off-site causes, stress the need for broad estimates of the off-site costs of land degradation as a basis for making policies regarding land use.

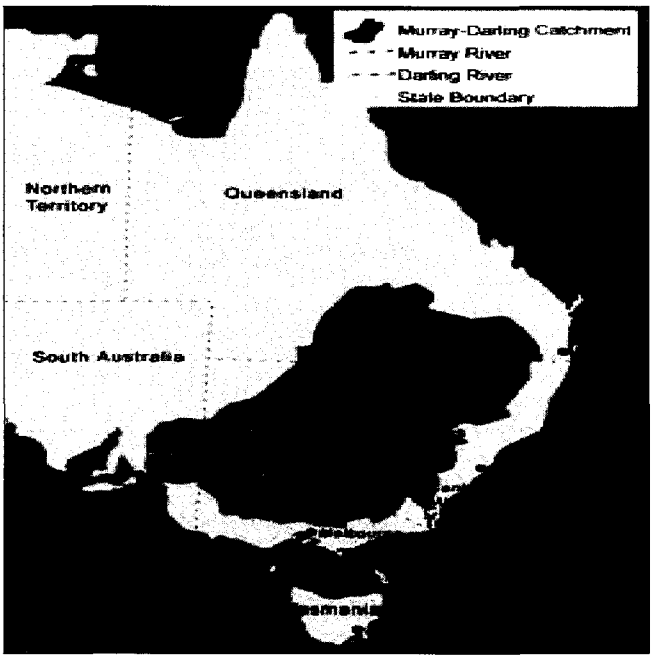
Salinization

In the Murray-Darling river basin, crop losses due to salinity were estimated at $44 million in 1990. The cost to clean the water and provide alternate sources since then has been approximately $65 million per year in South Australia (MDBC, 1997). The Murray-Darling Basin, a watershed area that comprises almost half of four separate states, has also seen the most severe irrigation problems. (See Figure 4.4 below).

The importance of this watershed to Australia is equal to that of the Great Lakes water system in North America. It is the lifeline for almost half of the country. The problems in the Murray-Darling Basin became paramount following a 1984 report by the

Community Advisory Committee of the Murray-Darling River Basin indicating that 1,400 km^2 of the Murray-Murrumbidgee river basins were already affected by salt and a further 4,000 km^2 were potentially salt prone (Chisholm and Dumsday, 1987). Currently, 2.5 million hectares of land across the country are affected, with 10 million hectares at risk. Estimates of the cost of lost agricultural production alone vary from $200 million to $450 million (LWDRRC, 2006).

Figure 3.4 – Map of the Murray-Darling River



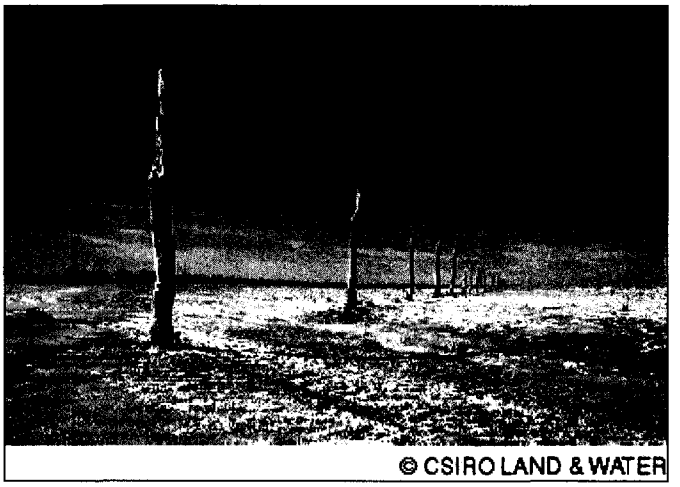
(Source: MDBC 1997)

Irrigated agriculture adds approximately $6 billion annually to Australia's GNP, but the off-site impacts of salinization on infrastructure, soil regeneration and water quality have high economic costs that could also be in the billions of dollars (LWDRRC, 1995, p.19). When the costs of salinization damage are added up, it is difficult to determine whether the contribution to GNP is worth the costs.

Salinization clearly illustrates the connectedness of Australia's ecosystems. Landholders can see that the environmental issues such as run-off and salinization do not adhere to property boundaries. They are not only immune to problems plaguing their neighbours, but they could very well be the root of those problems. With such large watersheds, drainage basins that span several states and many landholders using the same

water source, it is essential that landholders work together to combat the problem, rather than trying to find individual solutions (Curtis and De Lacy, 1996).

Figure 3.5 – Effects of salinization along the boundary of two abandoned properties. ***Central west region of NSW.***



(Source: CSIRC Land & Water)

The benefits of Landcare give landholders an important reason to come together to pursue a common purpose (Campbell, 1994).[3]

ON-SITE COSTS OF LAND DEGRADATION

Blyth and McCallum, experts on land degradation, both discuss the difficulty of creating an appropriate method for evaluating the on-site costs of land degradation is an inhibiting factor in acknowledging the damage being caused by current land management practices, and national studies have not given proper on-site cost estimates that are useful to policy makers. (Chisholm and Dumsday, 1987). According to them, these studies either estimated the gross costs of restoring land to its pre-degraded condition or the opportunity cost of the loss of maximum production achievable from the land in its pre-degraded condition. Neither of these measurements are useful to apply to land that will continue to be used for agriculture and that may not ever return to its pre-degraded condition.

Instead, Blyth and McCallum argue that the relevant policy variables are those that impact farm income over the long run. Ironically, the cost of agricultural production

[3] This finding was something that I encountered frequently in my primary research (see table 5.1)

works as a double edged sword: when a farmer increases productivity, the rate of land degradation is also increasing.

Blyth and McCallum make two important points. They state that the common public belief, as a result of inaccurate studies, is that (1) the on-site costs of land degradation on freehold farmland are those that affect the farmer's income and (2) little is known of the physical relationships between land degradation and agricultural productivity. In reality, on-site and off-site costs go beyond monetary costs to cover the environmental impact of land degradation, and a great deal is known about the direct relationship between agricultural production and land degradation.

Policy History: the Institutional Response

In the 1980s Chisholm, author of *Land Degradation: Problems and Policies*, raised the question, "Why has a wealthy and developed society allowed extreme rates of land degradation to continue? Is there not sufficient scientific understanding of ecological processes for degradation to be prevented, or at least minimized?" (Chisholm and Dumsday, 1987, p.45)

Although enough is known to effectively remedy the effects of land degradation and reverse the process, the reason this has not happened is three-fold:

1) government policies hinder, rather than promote, movement towards sustainable land management;
2) the cost of implementing new management techniques is high; and
3) traditional attitudes have been trapped in a mindset of short-term economic gain (Gumley, 2001).

Many believe that the blame rests both with the individual landholders who have primary responsibility to do what is best for their land and with governments who have had the responsibility both from a legislative and ethical perspective to ensure adequate conservation of natural resources (Woodhill, 1999)[4].

[4] This point was discussed frequently in interviews conducted with Landcare coordinators as well as in the survey results, based on peoples opinions of what the obstacles were towards Landcare (see chapter 5).

At the end of the day, however, it has been government policies that effectively shaped the way land has been used, regarded and discarded. The majority of policies up to the end of the twentieth century have failed to achieve any satisfactory results regarding conserving and sustainably managing Australia's land resources.

The 1980's brought a change in the direction of policy development towards sustainability. During this time, most of the country had been experiencing drought and reeling from the effects of intensive production, water diversion and land clearing. Melbourne suffered an unprecedented dust storm and farm land across the country was drying up. Farmers were forced to use excessive chemical-based fertilizers and pesticides to generate crop growth so they could compete in the newly formed global economy, which was driven by high profit margins of cash crops in third world countries. Most farmers in western nations, regardless of government aid subsidies, were facing disappearing profit margins. Thus began the decline of the rural communities in countries like Canada, the United States and Australia.

These problems forced the Australian government to look at the issue of managing natural resources with a new perspective. Jim Woodhill, the current head of the Social Economic Department at the International Agricultural Centre (IAC) in Wageningen University Research Centre (WUR), is a Netherlands-trained agricultural scientist who has worked extensively on natural resource management schemes throughout Australia. He states that the emerging institutionalist era began to see natural resource management (NRM) as an issue that required community participation as a fundamental element (Woodhill, 1997, p.180). This new approach increased the number of participants in environmental assessments and led to facilitation, community empowerment and community learning. The interested public had now become the involved public.

The issue of NRM was redefined in terms of a society that lacked a "Landcare ethic" and farmers that lacked the knowledge and skills to manage their land in a sustainable way (Yencken and Wilkinson, 2000). This was harsh criticism for Australians, but it delivered a message that initiated the change that was required in order to survive.

Governments soon saw the benefits of a better-educated public and began to provide funding to encourage more community-based groups, to support facilitation, to raise awareness and to provide assistance in farm and catchment planning (Curtis and Lockwood, 2000). Government agencies finally began to understand that economic success could be achieved by localizing issues and by allowing problem-solving to be put in the hands of those individuals who will actually implement change in their communities. "Local change" became NRM's catch phrase and it put Australia on the path towards establishing the Landcare movement (Campbell, 1994).

Despite the success with community involvement, the government still lacked a policy change at the national and international levels. Market forces of a global economy failed, and still fail today, to adequately attach value to natural capital. Conflict, confusion and poor coordination between and within Australia's three levels of government led to this change. Cutbacks to the technical support provided by government agencies led to inappropriate legal frameworks and grossly inadequate resource management information systems (Yencken and Wilkinson, 2000).

The policies and participation that happened at the community level throughout the 1980's and 1990's was unable to take hold at the national and international level, placing more of the onus on farmers to make the necessary changes with their own funds. Unfortunately, the cost of implementing sustainable practices far exceeded any expected income. The choice between what was right for the land and the future of Australia was once again at risk of being compromised to sustain the livelihood of Australia's farming communities in the immediate future.

POLICY IMPLEMENTATION

A trend in policy decisions that creates conflict between production growth and international trade policies has surfaced over the last several years. The overlapping duties and operational mismanagement of state agencies has prevented an integrated approach from being introduced. The work of these agencies often results in failure because there is no communication between groups or integration of information

(Woodhill, 1999)[5]. For example, when soil observations are cross-referenced with water tests, as well as with farm management practices, an integrated solution can result.

For this reason, communities need to have a stronger role in public policy decision making and policy makers need to recognize the validity of community knowledge, views and identities. Communities also need some form of access to policy decisions and management processes.

In order for this to work, management approaches must be used that are capable of recognizing and incorporating the history and identity of the community. This way, communities are given the ability to link their sense of environmental and social change over time with current environmental issues. The importance of achieving this cannot be understated. Previous experience on the land that would otherwise have been poorly documented, such as treating the symptoms of environmental problems instead of backcasting to discover the initial causes of the problem can be used advantageously instead of being forgotten or misunderstood (Dovers, 2000, p.165-168).

The push towards effective community participation at the policy level has had successful results in Australian policy history. The following is a list of important policy initiatives that were based on community involvement:

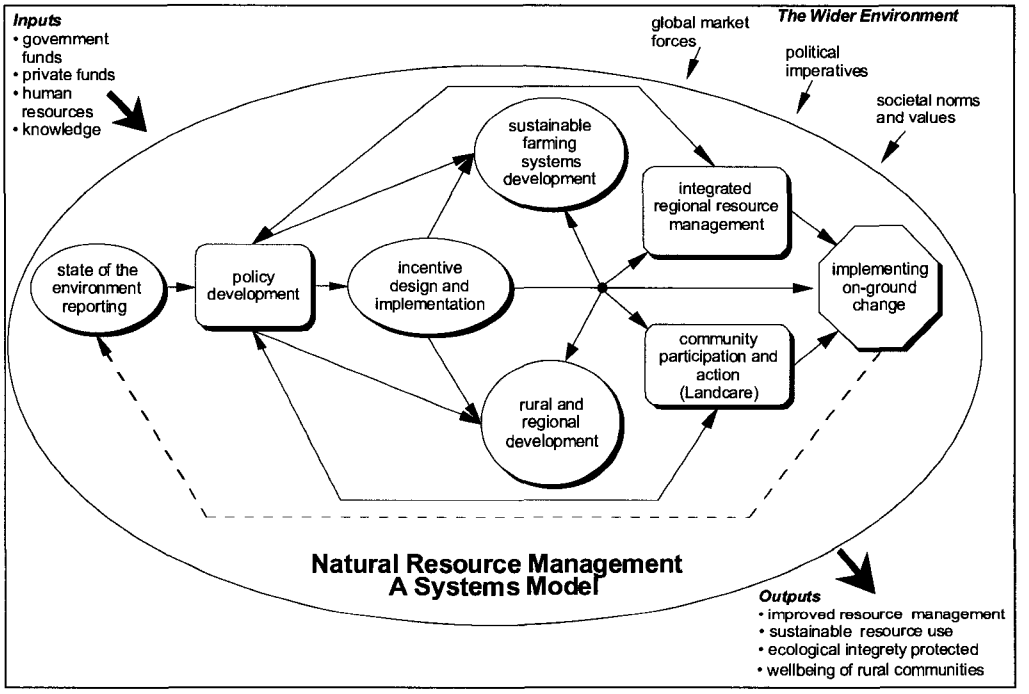
1) 1968 - Continental Shelf (Living Natural Resources) Act;
2) 1970 – moratorium declared on reef drilling;
3) 1973 - Sea and Submerged Lands Act;
4) 1974 – Report by Access Economics Pty Limited for the Great Barrier Reef Marine Park Committee of Inquiry into the National Estate, concluding that the Great Barrier Reef is a major concern and a priority;
5) 1975 - Great Barrier Reef Marine Park Bill is tabled and passed;
6) Early 1990s - formation of Coastcare, Waterwatch and Landcare groups that required the involvement of local communities, a focus on local catchments and environmental problems, and an interaction between communities and agencies within a given area (Woodhill, 1999, p.43).

[5] An example of this can be seen in questions 13, 45 and 47, where differing attitudes underline communication as a factor in slower progress. (see table 5.1)

The newfound success of community groups such as these has been rooted in their ability to combine the support of local scientific expertise and community involvement with government cooperation (Woodhill, 1999, p.44). This cooperation means that governments must give feedback to the community about the exact ways community input has been used. Community involvement means governments and management agencies must listen to what communities have to say.

The State response can be seen in the changes made to government policies that deal with community development and management. An example of these policy changes is the teamwork between policy makers and local communities, and the inclusion of the community not only in decision-making, but also in the planning processes and the long-term implementation of environmental management programs. Figure 3.6 is Woodhill's conceptual model of how he sees the flow of communication and decision-making taking among the different stakeholders involved in Landcare.

Figure 3.6 – Woodhill's conceptual model for natural resource management in Australia.



(Source: Woodhill, 1999, p.108)

TIMELINE

The institutional response to land degradation throughout the twentieth century can be categorized into four time periods:

1) 1900–1930
2) 1930–1980
3) 1980–1990
4) 1990–present

1900–1930

The first period was marked by little recognition or response to the threat of land degradation in south-eastern and western portions of the country. Settlers had already experienced the drought of the 1890s and agriculture, especially the livestock market, was a growing and successful industry across the country. With a new booming economy, environmental legislation such as the Western Lands Act was being disregarded. Early warning signs of degradation were ignored, allowing for severe land degradation to occur once more in the 1930s, while at the same time much of North America was inundated with similar droughts during the period of the great dust bowls (Chisholm and Dumsday, 1987; Dovers, 2000; Woodhill, 1999).

Policies during the 1800s encouraged settlements that were too small with excessive rent demands, forcing farmers to focus solely on production, with no room for consideration of sustainable production (Dovers, 2000). The crisis that ensued in the late part of the century as drought occurred in the eastern portion of the country brought about a new understanding, although only temporary, of the fragility of the land. Eurocentric land-use led not only to a financial crisis for individual farmers, but to drought and evidence of severe and widespread environmental degradation that threatened the structure and stability of the entire agriculture industry (Chisholm and Dumsday, 1987). To encourage settlement in the barren middle of the country, the Australian government offered lease tenures to settlers. Lease tenures, which originated with the Imperial

Wastelands Act of 1846, gave the commonwealth an element of control over the rapid settlement of Crown land.

The result, however, was control over lease expansion, allowing the government to benefit financially from the success of the agriculture industry beginning in the 1860s (Chisholm and Dumsday, 1987).

The severe drought of the 1890s affected most of Australia, particularly the southeastern part of the country. Luckily, the warning signs of severe soil erosion raised enough of an alarm that by the end of the century new policies had been put in place to govern settlement and the classification of semi-arid and arid regions of the country (Chisholm and Dumsday, 1987). Even these policies, however, lacked the ability to substantially change the European settlers' perspective of the environment.

Prior to the crisis of the 1890s, the government of NSW recognized the potential problems that could result from improper land use. In 1884, the government delineated a boundary known as the Western Division, which divided a third of NSW from the eastern portion of the state (Dovers, 2000). The boundary reflected the transition from semi-arid to arid land, thereby recognizing that different conditions of occupation were required in the arid part of the state.

Administering the Western Division, however, was a daunting task, as pastoral holdings in this area conflicted with the preference for more intensive settlements that were typical of the eastern part of the state.

The project was successful in stimulating dialogue between government and landholders, and brought about the Western Lands Act of 1901. This Act was also part of a commitment to reform the administration of pastoral leases that had led to the crisis of the 1890s, and was an important moment in government policy because it took past errors into account (Woodhill, 1999). The Act continued to regulate land use according to the Western Division, allowed the terms of pastoral leases to be extended and pushed to increase the size and number of settlements. The Act attempted to give greater meaning to the idea of sound ecological principles, but when the drought of the 1890s broke, the budding relationship between pastoralism and the environment began to lose momentum (Woodhill, 1999).

In 1900 the commonwealth laid out its Royal Commission into the Condition of the Crown Tenants, which was initiated by the Commonwealth and State government of NSW to reverse some of the damage caused by previous settlement policies. The commission concluded that the viability of pastoralism depended upon the careful maintenance of the physical environment and that new land use policy with regard to the Western Division needed to clearly reflect this co-dependence. (Dovers, 2002, p.249) This was a first step towards major change in government policy.

1930–1980

The beginning of the second period was marked by the great dust storms of the 1930s, which happened primarily in mid-eastern Australia. Australians were once again in a period of rural despair that called for desperate measures to offset a collapsing agriculture industry and massive urban migration. During this second period, government played a greater role with more emphasis on implementing legislation for NRM functions of state agencies to better control soil erosion (Woodhill, 1999).

During the drought and dust storms of the 1930s and the predominant problem of soil erosion, there was also a growing concern about rising water tables and the risks of soil salinization brought on by mismanaged irrigation practices.

In the late 1930s, the Soil Conservation Service (SCS), a program that offered extension services to landholders, became the new model for the technically oriented state agencies that the government needed to manage the development of the agriculture industry (Woodhill, 1999, p.43). Although its establishment coincided with the worst dust storms and soil erosion to date in mid-eastern and south-eastern Australia, the SCS's mandate lacked a firm environmentally conscious attitude. SCS officers would develop a farm plan for the landholder showing where conservation measures were necessary. Once agreed to, work would be carried out through a subsidized government program that the landholder would be accountable for financially. The approach was technically oriented and lacked any real grasp of the biophysical conditions and requirements of the land. These types of programs were being developed at a time period when research and extension services resulted in major increases in agricultural production and there was strong confidence in their ability to solve problems associated with degradation

(Woodhill, 1999). In short, landholders entrusted the outcomes of conservation measures to the solutions of these SCS officers, regardless of what their criticisms might have been at the time because state agencies in all fields of NRM had gained significant importance and had established their *modus operandi* as the status quo for soil conservation.

Following WWII, the intentions of these agencies shifted towards maximizing production, paying little regard to the environmental consequences of the measures they were implementing (Chisholm and Dumsday, 1987; Dovers, 2000; Lockie and Vanclay, 2000; Yencken and Wilkinson, 2000). Land management policies during this time were oriented around massive land clearing schemes across the country. These policies were seen as a means to use the full productive capabilities of the new, technologically advanced machines. This period also marked the beginning of a global market economy fueled by more accessible energy sources, the growth of international travel and transportation, and the implementation of wartime technologies into the civil market. The resulting growth in world trade happened at such an accelerated pace that in order to maintain a strong position within this global economy Australia had to focus on two things: technology and production (Chisholm and Dumsday, 1987; Dovers, 2000; Lockie and Vanclay, 2000; Yencken and Wilkinson, 2000). This was the era of the Technocrats, advocates of Technocracy, a social movement that emphasizes progress based on science and the use of technology.

In the 1970s, scientific evidence about the effects of salinization in irrigated and dryland areas, a decline in nutrient and structural status in soils and the negative impacts of weeds and feral animals led to renewed concerns about the health of the Australian environment. After decades of intensive, high-yielding agricultural practices in the south-eastern quarter of the continent, the Australian agriculture industry was teetering on the brink of failure. Salinization and soil erosion were the most pressing environmental issues to date within Australia's agriculture industry (Chisholm and Dumsday, 1987; Dovers, 2000; Lockie and Vanclay, 2000; MDBC, 1997; Nadolny, 2002). The realization that different forms of degradation did not occur independently of each other meant that land management required an understanding of the complex interactions between land use and ecosystems (Chisholm and Dumsday, 1987; Dovers, 2000; Lockie and Vanclay, 2000; MDBC, 1997; Nadolny, 2002; Woodhill, 1999).

The limitations of past approaches to achieve sustainable growth in NRM were becoming better understood. Following the recommendation of several commissioned studies, the government was called on to address the limitations that had led to the narrow focus on soil erosion. The conclusion was that previous policies had fragmented NRM into separate, uncoordinated state agencies responsible for soil conservation, water resources, agriculture, forestry and national parks. The almost exclusively technical approach to these problems had ignored the social, economic and political dimensions and perpetuated the disregard for community consultation and participation.

1980–1990

The third period, the 1980s, began as the full extent of land degradation became widely recognized not only by farmers and residents of rural communities, but also by urban Australians. The approach to land conservation shifted from a predominantly technical and government-led response to a new emphasis on community participation.

Environmentally and economically sustainable principles and better involvement of the community in the decision-making process, among other things, became re-introduced in the late 1980s. Noxious plants and animals, overstocking, excessive debt, small holdings and large amounts of settlements all resurfaced to bring about the changes that are still taking place today. During the 1980s the economic goals and objectives held by national governments and international trade organizations were in direct contrast to the more localized movement of stronger community-based initiatives that were gaining momentum (Dovers, 2000; Lockie and Vanclay, 2000; Yencken and Wilkinson, 2000). The Australian government's paradox became evident as it pursued policies centered on "economic rationalism," policy formulation based solely on economic factors. While the government preached a neo-liberal attitude towards implementing sustainable mechanisms, they saw these mechanisms as cost-ineffective and a hindrance to the overall economic growth. The government's goals were to make Australia more competitive in the global market by improving economic efficiency through trade liberalization (this was the birth of the free trade era), reducing government expenditures and enhancing productivity of all sectors of the economy (Lockie and Vanclay, 2000).

The Government's NRM policy developments transferred responsibility from the government to the community and the private sectors, causing the operational costs of individual farmers to increase dramatically, their market shares to decrease dramatically and the decision to invest in new technology to mediate the over-use of the land to be forced solely onto the community. As a result, the progress towards a more sustainable regime became difficult for social, economic and political reasons (Dovers, 2000; Lockie and Vanclay 2000; Woodhill, 1999). The price would be paid by the environment.

Evolution of Regional Management as a policy directive

During the 1980s NSW developed a regional, technically oriented approach to land conservation by introducing steps to formalize a catchment management structure. This was done under the title of Total Catchment Management (TCM), established in 1984 by an inter-departmental state committee. It was not until the following year that the state government commissioned a background paper on the options for implementing TCM plans. Burton, who acted as a NRM advisor and consultant to various state and commonwealth governments, emphasized the benefits of resource management on a catchment basis, which includes the "entire basin of a major river system", and noted that:

> "Because it transcends a range of resources and management techniques, the implementation of TCM requires co-operative activity between a range of government agencies and professional disciplines. It also requires a multi-disciplinary, multi-objective approach and its success depends on a good deal of lateral thinking. Tunnel vision has no place in the TCM philosophy" (Burton, 1986, p.6).

Part of Burton's paper reviewed the existing legislative and agency structure surrounding NRM and how it would fit with the implementation of TCM. He emphasized the importance of how TCM would operate within the context of state planning legislation, the role of community involvement in catchment plan preparations and the importance that any TCM structure should be established under official legislation to achieve the best results.

Under the Catchment Management Act of 1989, TCM is defined as:

> "The coordinated and sustainable use and management of land, water, vegetation and other natural resources on a catchment basis so as to balance resource utilization and conservation" (Woodhill, 1999, p.50)
>
> **Note: This act was repealed by the state of New South Wales in 2003*

Following Burton's proposals, NSW introduced legislation on TCM in 1987 that resulted in the formation of Catchment Management Committees (CMC) for all major catchments in the state. Following intense lobbying by the NSW Farmers' Federation, these committees were comprised mainly of landholders, with representatives from different government and non-government agencies acting as facilitators.

With the help of state agencies the following were set out as typical responsibilities of the CMC's:

1) developing regional or catchment strategies
2) coordinating the activities of state government agencies
3) coordinating the activities of natural resources users and other stakeholders
4) setting the regional funding priorities
5) assessing funding applications for state and Commonwealth funding programs
6) promoting catchment management
7) monitoring the natural resource status and evaluation NRM programs and projects (Woodhill, 1999, p.50).

Communities were now defining what was needed and the best way to achieve them; it was now the role of state agencies to listen and help with the facilitation and the implementation of different approaches. This new approach gave added importance to NRM because; (1) the capacity to invest in land conservation is closely linked to rural prosperity and thus important for economic development, (2) there has always been a need to make resource management and economic development better integrated, and (3) regional development initiatives offer useful lessons for regional NRM (Cary and Webb, 2002; Curtis and Lockwood, 2000; Sobels, Curtis and Lockie, 2001; Woodhill, 1999).

1990–present

During this period, the National Landcare Program was established. The severity of the environmental situation up to this point was undoubtedly a key catalyst for the coming of Landcare. The compounding evidence of escalating land degradation coupled with general and worldwide concerns for the environment, led to new institutional responses to oversee, administer and adapt current political situations at both community and national levels to incorporate environmental issues (Woodhill, 1999). Catchment management mechanisms were developed in most states and there was a rapid expansion of Landcare groups.

This time period will be discussed in more depth in the following chapter, *History of Landcare.*

Concluding remarks

Attempts to prevent, reverse and ameliorate land degradation are often compounded by the intricacy of human relationships, especially when social, economic and political factors are considered. It is often the case that negotiation is required between the ideal technical solution and what is socially, economically and politically acceptable.

The inability of Australians to retain a memory of past environmental issues impeded the ability of management, adjustment and reform from being a concrete guideline throughout the twentieth century (Dovers, 2000). Had that memory been maintained, some of the greatest episodes of degradation in Australia's history, including the massive land clearing in Western Australia, the effects of salinization across millions of hectares of farm land, the severe dust storms and the destruction of riverine ecosystems could have been prevented (Dovers, 2000).

Environmental issues often exist in situations where individual and collective ideals converge and where public duty and private right collide. An underlying principle needs to be developed within the realm of public policy that considers the interests of the state and that of private and community rights and responsibilities.

In his book *Environmental History and Policy*, Dovers states that, "Current market-driven reform too often denies the past, strangely, just as some modern

conservation thinking does" (Dovers, 2000, p.13). National and international initiatives still fail to compliment the types of policy work being developed at a local level. The environmental history of an area, as well as its social patterns and ecological behaviours need to be considered when creating adoptive measures of policy. Failure to address these realities will prevent policies from focusing on the real causes (not just the symptoms) of environmental problems (Dovers, 2000, p.13).

Combating the effects of land degradation involves a major paradigm shift in attitude and thought, not just amongst farmers, but among communities as a whole, and among all levels of government. It also involves a shift in land management to incorporate new ideas that may be contemporary in structure, yet conventional in implementation.

CHAPTER 4: – HISTORY OF LANDCARE

History and Development

Throughout this chapter, I have attempted to link many of the key arguments that are made by both sides on how Landcare has developed, what its weaknesses have been, and essentially how it needs to develop to ensure its future success. Much of the research literature overlaps, but I have made an effort to include many useful viewpoints from my own field research that compliments some of the authors' views.

The structure of the agriculture industry is made up of a number of elements. These include both micro-level elements, such as farm size, farm operations and farm income, as well as macro-level elements such as the globalization of agricultural production, processing and retailing.

This structure has been created by social, political and cultural factors such as settlement patterns, subsidization and regulation.

The following three global political trends have had a significant effect on rural life:

1) the transition to economic rationalist policy in the 1980's,
2) the privatization and corporatization of government and semi-government entities, and

3) the deregulation of airlines, banks and telecommunications and the removal of the agricultural monopoly marketing boards (Gumley, 2001, p.140).

Global trends such as the three above have led to larger commercial farms, smaller family farms and a fewer number of farms overall. Furthermore, open trading markets have allowed commodities from developing countries, produced at significantly lower costs, to compete against the same commodities produced in developed countries.

With local farmers feeling the negative effects of these trends, Landcare and the message it brings has grown in importance. While large commercial farms continue to manipulate the rural hinterland, both physically and socially, it is the local farmers and their communities that continue to prove the importance of maintaining a social cohesion amongst landholders and community members to maintain their way of living.

It is therefore clear that farmers do not make their decisions entirely independent of this social context. However, it is also important to note that their decisions are not just the product of structural factors such as regulations.

While structural factors have a strong effect on the nature of agriculture (Lockie and Vanclay, 2000, p.10) they are not deterministic. They do not limit farming to a single style. The set of farming styles in a particular region and for a specific commodity are a composite of normative and strategic ideas about how farming should be done (Lockie and Vanclay, 2000, p.11).

Throughout the twentieth century, extension services have consisted of the application of scientific knowledge spawned through scientific research agencies and extended, diffused and transferred to farmers through the state agencies that housed those scientists (Campbell, 1994; Curtis and de Lacy, 1996; Curtis and Robinson, 2003).

This barrier to achieving success only grew larger throughout the 1970s and 1980s as bureaucratic procedures consumed more time and funds than were being delivered to the land, leading to a greater crisis in land management. The formation of Landcare politically defined this paradox as being an ideological clash between the professed ideologies of Landcare and the way it actually functions. The ultimate result of this conflict is the continual existence of a severe contradiction between the bottom-up

philosophy of Landcare and the top-down control exerted over the corporate identity of Landcare.

One of the underlying themes of Landcare is the social netting that is required in order for it to be effective. Vanclay, a noted expert on social impact assessment, maintains that the main reason for the actions of individual farmers is that those actions are consistent with the farmer's idea of what is locally considered to be "good farm management". To oppose that mentality makes the farmer subject to peer pressure and influence and rejects the concept of community obligation that Australians, especially farmers, so strongly adhere to.

As the Australian government shifted the financial responsibility of NRM onto those directly "benefiting" from the programs, landholders grouped together to find solutions. They called for financial aid to offset the damaging effect of an increasing financial drain spurned by drought, cheaper market prices and increasing technological costs. The commonwealth government relinquished those demands to the State. The common perception was that the federal government was too engaged with trying to compete in a new global economy to be overly concerned with the growing instability of the nation's rural communities.

In 1986, under the leadership of Joan Kirner, then Minister for Conservation, Forests and Lands, the Victorian government introduced a program of direct funding for voluntary land conservation groups (Campbell, 1994, p.23-27). The model created by Kirner inspired the critical alliance between two non-government organizations, the National Farmers Federation (NFF) and the Australian Conservation Foundation (ACF).

The NFF was a group made up of farmers representing their own interests in the community and the economy. They were directly involved with both the problem and the solution of land degradation. The ACF was a group made up of conservationists, with a long history of involvement at the legislative level to ensure the greater protection of Australia's threatened landscapes.

For example, in 1980 in Western Australia a land clearance program was initiated to clear 100,000 ha each year for cropland for upwards of thirty years. The ACF helped expose the poor economics of the proposal and the probable degradation that would occur.

Their work was important because it developed their credibility and provided logical, straightforward arguments about the lack of wisdom of the proposed program.

The NFF and ACF banded together at a time when Australian news headlines were filled with stories of dust storms, massive areas of salinization, ruined waterways and devastated communities. The effect this had on public opinion toward the rural sector was damaging; it portrayed farmers as not having any deep concerns towards the environment and land degradation was merely an effect of agricultural production.

There were two genuine concerns that prompted the next step: (1) mounting concerns about productivity levels threatening the carrying capacity of farmland, and (2) the need to acquire as much government funding as possible to help farmers manage and control land degradation on a voluntary basis (Campbell, 1994; Cary and Webb, 2002; Dovers, 2000; Lockie and Vanclay, 2000; Yencken and Wilkinson, 2000). In 1989, the NFF and ACF jointly submitted a proposal for a National Land Management program to the commonwealth government; within the proposal was the framework for a voluntary, community-based approach that would draw on the emerging experience of land care groups in Victoria and Western Australia (Lockie and Vanclay, 2000, p.30). The result was a success. The Commonwealth Government announced plans to establish the next ten years as "the Decade of Landcare" and allocated an initial A$340 million for Landcare and conservation-based activities throughout the 1990s.

Early Years of Landcare

THE DECADE OF LANDCARE: THE GOALS OF THE COMMONWEALTH

The Decade of Landcare was announced with the following goals:

1) making the whole community aware of the problem of land degradation and the benefits of sustainable land use;
2) continuing development and implementation of sustainable land use principles and practices;
3) ensuring all public and private land users and managers understand the principles of sustainable land use and apply them in their land use and management decisions;

4) encouraging all Australians to work together for sustainable land use; and
5) Putting effective and appropriate economic, legislative and policy mechanisms in place to facilitate the achievement of sustainable land use (Campbell, 1994).

Following the adoption of these strategies, the Natural Resources Management Act (Financial Assistance) of 1992, was enacted to allow several programs to develop under the umbrella of the newly created National Landcare Program (NLP or Landcare). One of the fundamental goals of the program was to provide direct funding to local Landcare groups. This, in itself, was a considerable element in the restructuring of the relationship between state agencies and the community.

In order to attain the desired flow of communication, two strategies were adopted: the establishment of a National Landcare Advisory Committee, now called the Australian Landcare Council (ALC), and the appointment of a National Landcare Facilitator.

Vanclay and Lawrence have described five criticisms of traditional top-down methods of extension, which include the following:

1) extension services have uncritically accepted the agro-industrial agriscience and agribusiness products and has simply promoted those products;
2) the uncritical acceptance of these products and their adoption by farmers has led to considerable social and ecological impacts;
3) the adoption-diffusion model is based on commercial innovation and does not cater to environmental innovations;
4) farmers' local or indigenous knowledge has been marginalized, trivialized, subordinated and ignored by the techno-centric discourse that has dominated farming; and
5) extension services have only used a psychological model of individual decision making and have ignored the social, political, cultural and historical context of both agriculture and adoption behaviour (Lockie and Vanclay, 2000).

In order for Landcare to succeed, it was paramount that the bottom-up community-driven nature of the program be complemented with strong communication between various levels of government and the affected communities. This was the foundation for the vision of Landcare that Kirner had envisioned.

The Commonwealth Government's secession of influence over land management decisions to the community is not without its ulterior motives. The high degree of government-supported publicity has a three-fold reasoning: to gain wide community support for Landcare and to generate a "Landcare ethic", to attract corporate sponsorship of Landcare projects and to reap the political benefits of a highly successful program. Much of the effort behind the public relations campaign has come from Landcare Australia Limited, a company set up by the Commonwealth to specifically promote Landcare across the country and to gain corporate sponsorship. One of the highlights of this effort has been the establishment of the National Landcare Awards that are held bi-annually at Parliament house in Canberra. There is, however, the criticism that it is far easier and cheaper for the government to run a promotional campaign to raise awareness than to tackle the fundamental causes of land degradation.

Upon acceptance of his role as the first National Landcare Facilitator, Andrew Campbell asked Australians to:

> "Imagine a country in which one person out of every four belongs to a conservation group, actively seeking ways of improving their local environment. Think about the possibilities of this scenario for issues such as waste management, water quality, transport, urban design, food and fibre production, and wilderness management. In rural Australia this is already happening" (Campbell, 1994, p.1)

The tug of war that has occurred throughout the short history of Landcare between extension agencies and community Landcare groups has raised a very important question: what is the meaning of Landcare? Campbell said that farmers tended to understand the meaning of the term Landcare very literally, as "caring for the land, controlling land degradation and working cooperatively" (Lockie and Vanclay, 2000, p.35). Government agencies, on the other hand, had expanded the notion of Landcare to programs and activities that had previously gone under terms such as soil conservation, conservation farming, farm planning and revegetation. Campbell looked at the elements that made up both sides and rather than seeing conflict he saw each side complimenting the other. He believed that what Landcare brought to these programs was the underlying

notion of cooperation of a partnership between governments, communities and businesses[6].

Within the context of NRM, however, the responsibilities of CMCs at the regional level led to more confusion amongst Landcare groups and catchment authorities. Where Landcare was expected to operate on a local, voluntary basis, regional catchment authorities approached the issue of resource management with a broader strategic overview involving economic and political factors and acted as an instrument to assist coordinated approaches.

The confusion caused by this relationship illustrates the macro vs. micro relationship between the two parties. In many areas of Australia, catchments are ill-defined or non-existent some catchments are so large that they become unmanageable and there is little community identification with the catchment. Also, while catchments are important from a biophysical perspective, they unfortunately do not follow the patterns of settlement that have been experienced (Lockie and Vanclay, 2000).

Approaching land degradation issues at a regional scale was important; it soon became accepted as fundamental for resource management based on the following criteria (Woodhill, 1999, p.51).

1) Australia is regionally diverse, so it is difficult for state or commonwealth governments to know what will work in an entire area. For a solution to be effective, it needs to be regionally specific.
2) In terms of NRM, the regional scale, particularly when defined in terms of catchments, is the scale at which it makes sense to deal with landscape interactions and down-stream impacts. It is also the scale at which "on-ground" actions need to be coordinated.
3) The rapid pace of change in today's world requires decentralized decision-making that is responsive to change. Regions are of a scale at which effective human resource development can occur.
4) A regional approach allows for the benefits of economies of scale without losing touch with the needs of the local community.

[6] A great example of this occurring within a network is in the Lake Macquarie Landcare Network. (see pg.93)

As the Landcare movement became established in rural society, the ideal of a cooperative partnership was weakened by the role in which the government saw itself playing. Landcare groups and state agencies began to differ, refueling the tug of war between bureaucratic tendencies and concrete efforts to combat land degradation (Lockie and Vanclay, 2000). Andrew Campbell's plans closely adhered to those initially set out in the "Decade of Landcare". These original plans stressed that Landcare was community-based program focused on sustainable land use and stressed the importance of cooperation. The commonwealth quickly changed its decision on being an equal partner on this and made it clear that, while the nature of environmental problems were related to previous land management policies, it was ultimately the responsibility of individual landholders to do something about them. This effectively removed government responsibility from issues stemming from land degradation.

Landcare groups, however, did not agree. Many farmers considered the current predicament of Australian agriculture to be a direct result of past state policies. The government appeared to be disclaiming responsibility for any of the past failings (Baker, 2004; Cary, 1998; Dovers, 2000; Lockie and Vanclay, 2000; Rogers, Sinden and De Lacy, 1997; Woodhill, 1999; Yencken and Wilkinson, 2000).

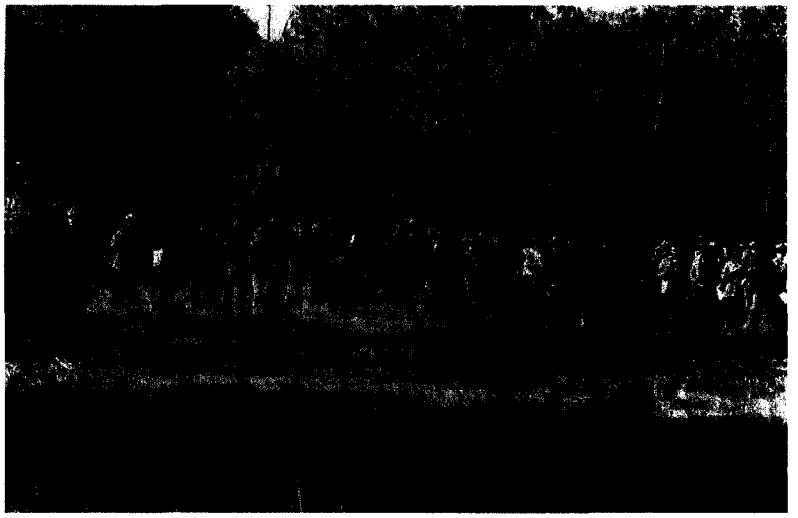
Peterson, an expert on the concept of "the Precautionary Principle," supports the commonwealth policy by stating that removing responsibility from farmers for environmental damage provides them with powerful tools to justify continued damage, even where alternative practices have become available (Rogers, Sinden and De Lacy, 1997).

This shift in understanding Landcare as a program that supports community groups to something more diffuse, the Landcare movement, had obvious implications for the way in which participants wanted to see Landcare run. On one side there was the desire to institutionalize the programmable aspects of it, and the other side was a desire for direct action for tangible change (Lockie and Vanclay, 2000, p.136).

Participation

The motives for starting a Landcare group have been typically mixed and varied (Carr, 1994, p.133-184). Concern for ongoing environmental degradation occurring in a local area is usually the driving catalyst, but there are others such as the availability of funding as a reaction to a perceived threat from Greenies and having a social relationship with others in their community. The general attitude that forming a group in your local area is "the right thing to do" harnesses the power of a community's obligation to its people. One thing that truly defines the evolution of Landcare and the subsequent role of community participation is its focus on groups of landholders coming together to discuss and learn about their own problems with agency staff playing a facilitating role or providing technical assistance at the request of the group. From my firsthand experience while attending various network meetings, I noted that this role, previously played by extension officers from state agencies, involves Landcare workers from neighbouring groups (see Figure 4.1 below). The role has shifted from being a provider of technical advice to being the facilitator and offering advice as to what and how are the best means to utilize government funding.

Figure 4.1 – Group of Landcare members (learning about measures against rural dieback in the Hunter-Central rivers catchment)



(Source: David Hammer, April, 2004)

In the Hunter region, the main facilitator for the region in 2004, a gentleman by the name of Joe Thompson, assumed this role. His prior experience of being a Landcarer and being an older gentleman gave him credibility he needed to deal with individual

groups in the area that were typically made up of members above the age of 40, and to work on maintaining cohesion not just within groups, but more importantly within the network. Meetings that were held were organized, well-attended and educational by providing hands-on training about new farming techniques and measures that were showing success in fighting land degradation (see Figure 4.2 below). These meetings were also coupled with site visits of existing projects where neighbouring landholders worked together with local Landcare groups. Local businesses, such as the winery in Wollompi, were also directly involved with their community and its Landcare groups, because it was understood that a local rural community needs a strong economy to survive. (See Figures 4.2 and 4.3 below).

Figure 4.2 – Wollompi winery project (checking the eucalyptus stock prior to planting them in areas surrounding the vineyards)

(Source David Hammer 2004)

Figure 4.3 – Hunter Landcare network monthly meeting. *Cessnock, NSW.*

(Source: David Hammer, April 2004)

Landcare and its systems of communication have allowed farmers to have a voice and to provide their own meaningful knowledge of what is necessary to repair the land.

Extension officers working with community Landcare groups are now learning the valuable skill of listening and learning to understand and work within group facilitation and community development to bring forth a more holistic approach to natural resources management (Carr, 1994, p.296-308)[7].

As Landcare groups grew to number in the thousands during the 1990s, the ALC took an important step to strengthen the ability of Landcare groups in similar areas to better communicate with each other. The establishment of Landcare associations became a necessity to correspond about the on-site projects that were being initiated by Landcare groups (Lockie and Vanclay, 2000). The strength that could be harnessed from multiple groups involved in an association developed an even stronger role for Landcare in the decision making and land management processes. These Landcare associations allowed groups to come together to share resources, exchange information and give a more powerful voice to Landcare.

The structure of these associations have tended to be thin, and their success often depended on the ability of the network coordinator to build a cohesive relationship among the different groups, an often difficult task, as it brings with it a sense of bureaucratic organization that is the antithesis of what a Landcare group represents. Groups shy away from organized power structures because they bring with them too much dialogue and not enough action, as my field research demonstrated. Some of the meetings I attended, specifically in the Wollompi wine region, were clear examples of a group of people not at all interested in developing complicated organizational structures. They wanted to learn more about their land and how to improve it and do it together.

The foundation of Landcare is its ability to function from the bottom-up to diffuse ideas and systems that offer solutions to problems facing a local community (Campbell, 1994). These were constant arguments among the different networks, and each facilitator expressed the same opinion. The desire to remain unstructured, to maintain their grassroots in many cases as I was witness to, will have a tendency to take over a meeting. Therefore, in many cases the facilitator has no other option but to step back and let the

[7] In the Karuah-Great Lakes, this can be seen happening as the coordinator, Col Freeman, takes a different approach to his network, which is one centered around listening and developing a greater understanding of the networks needs.(see pg. 94)

group for the most part work out their differences. Any involvement at this point from an extension staff would not be received well.

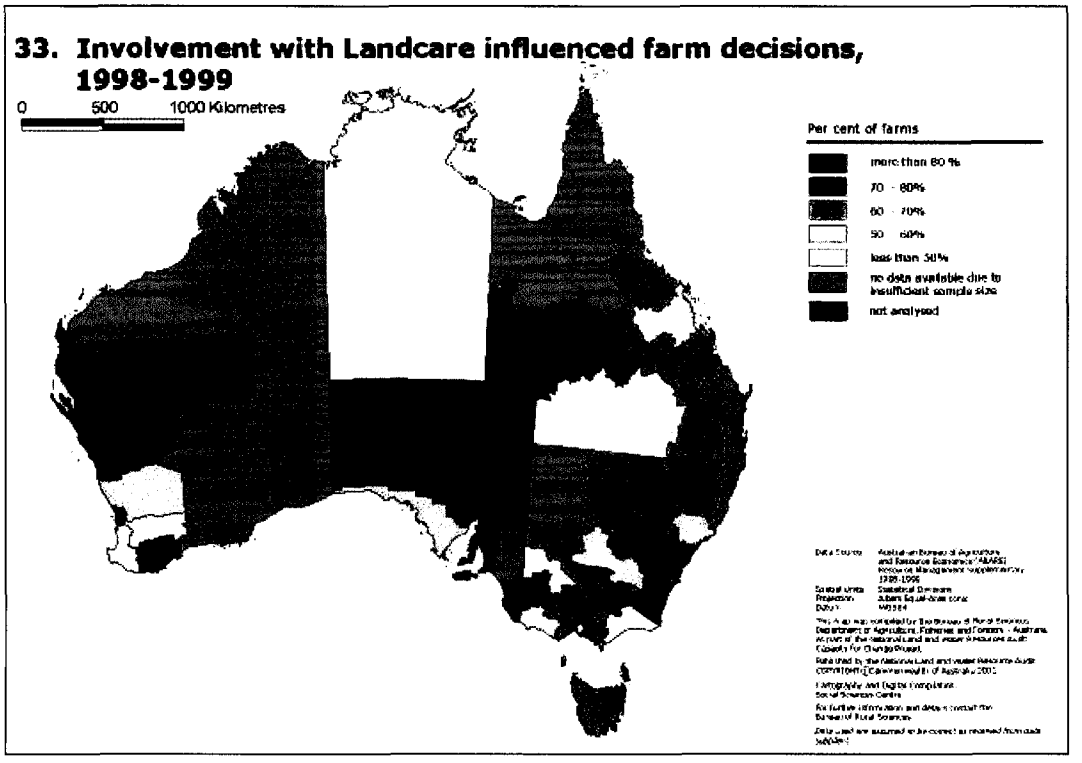
Similarities and Differences between Communities

The social basis of farming knowledge and how these farming subcultures function is at the root of the Landcare model. Each farming community is distinct in their crops, their land and their backgrounds are all different, which creates many uniquely integrated knowledge bases. From the point of view of an extension officer, the fundamental flaw that occurred in the past was not realizing that extension will not work simply by telling landowners what to do. They must be included in the decision making process.

Part of this feeling of entitlement that farmers have stems from their considerable knowledge about their own farm. They know the local history and conditions and they use that information to manage their farm. Extension staff are attempting to better understand this concept to help them deal directly with Landcare groups (Sobels, Curtis and Lockie, 2001). The organization of Landcare groups within communities evolves from an understanding of the problems and solutions they deal with on a daily basis. Realizing that one landholder's problem is not endemic to their land is the first step in developing successful projects. In the past the historic point of conflict has always been due to a state agency staff member telling the farmers what they have to do.

The following map (Figure 4.4) shows the percentage of farmers that have made important land management decisions based on their involvement with Landcare and the support that has given them. As is evident from the map, where Landcare is strong more than 50% of farms have made Landcare-influenced decisions.

Figure 4.4 – Landcare involvement and Landcare-influenced farm decisions.



(Source: www. audit.ea.gov.au)

It has been an important objective of the Landcare movement to refrain from making value judgments about farmers and their environmental management practices, because many of today's problems are the result of practices promoted in the past. Historically, government-sponsored scientists would be telling farmers how to manage their fields in order to get the best production levels out of it, and government-sponsored policies promoted the clearing of land to make room for crops in order to achieve economic success (Campbell, 1994, p.230). None of these past attempts worked, and even today Landcare groups face a constant struggle between what is an acceptable environmentally oriented policy and what is not. For this reason, Landcare groups are constantly promoting local knowledge and sharing that knowledge with groups in other regions. Because these groups have similar problems, they also have a shared

understanding and a basis to work together, which allows the influence of "community obligation" to work at its best.

Land Literacy

In 1992, Terry White referred to the understanding farmers have of their land as "land literacy". He argued that people need to be able to read the land because it is telling us about its health and about the health of our society and production systems. The concept of land literacy stimulated much debate because of the manner in which farmers perceive their land.

One of the roadblocks in changing farmers' perceptions of land degradation has been their lack of belief in the scope of the problem at hand. The media displays images of land degradation as a means of garnering public support for stronger sustainable land management initiatives. Due to the dramatic nature of these images, a lack of understanding from the farmers results, because they do not see the same extent of degradation on their own land so they do not perceive a problem. Farmers need to develop an understanding of sustainability, land degradation processes and the causes that lead to land degradation so that they are able to recognize signs of degradation as they occur on their land. It is similar to the cause and effect scenario. Farmers see the effect of degradation through these images and do not see comparisons to their land, because they have not seen the causes that lead up to those images. Otherwise, by the time land degradation has become so pronounced that it is noticed by the casual observer, it is usually too late for any type of immediate preventative management to be put in place.

The way farmers perceive their land has been termed the "farmer's gaze". This term is based on the notion that the farmer's viewpoint was usually socially conditioned. Tovey expands on this point by stating that the farmer's gaze is not based on objective scientific observations, but instead has to do with the way the environment is experienced, organized, produced and valued by farmers (Tovey, 1994, p.209).

Therefore if perception is socially perpetuated, then degradation is only perceived as such when it is not filtered out by the farmer's gaze'. For this reason, Landcare plays an important role in raising awareness of land degradation and providing education about sustainable farming.

Acknowledging this role is only the initial step. Changing this point of view that farmers have can lead to major conflicts. The point of view is often based on a lack of knowledge of the environmental and degradation processes involved in farm management and an unwillingness (which stems partly from a general rural attitude of aversion to change) to incorporate environmental issues into their perception of their land. Landcare needs to not only acknowledge the existence of various farming styles, but also accept that each style potentially has its own related gaze. Attempting to enhance an understanding of the environmental processes occurring on farms and recognizing early warning signs of degradation is essential.

There is evidence that positive changes are occurring, although they are happening for different reasons. From my own research it was clear that some farmers clearly see the benefits of changing their management regimes voluntarily, while others are coming under environmental and political pressure to do so. Nonetheless, changing perceptions is important and is part of the continuing role that Landcare can play.

An early premise of Landcare stated that in order to improve environmental management in agriculture, an extension program to raise awareness and provide education about the problems facing the land was needed. Within Landcare, attempts to educate the public and create awareness of the problems associated with traditional agricultural management have been typically initiated by extension staff whose roles are assigned by state agencies. This is often met with distrust by the community Landcare groups because bringing in these additional members is reminiscent of past failed government schemes within agricultural communities.

To help counter these criticisms, the model for Landcare was designed to offer a new method of social organization and problem solving that could be used in other contexts, not just those surrounding land management. The same model used for Landcare can be used for other community initiatives. There have already been many spin-offs from Landcare that involve other environmental issues; Bushcare involves establishing more protective bushlands, Rivercare involves protecting more river ecosystems, and Coastcare involves protecting foreshore areas around new beachfront developments. They all use the same foundation by harnessing the strength of numbers to

demand, force and activate change within a community. A voice with force behind it ultimately causes governments to take action and pave the way for change to occur.

Participating in Landcare demands a change in perspective to alleviate the pressures brought on by unsustainable farming methods. Creating a desire to adopt new technologies and management styles will reduce the overall impact of agricultural land use. This fuels the questions of why (apart from the lack of funding) farmers do not adopt practices and technologies that are able to achieve sustainable results.

Vanclay states that if it really did make sense for a farmer to adopt a new technology, and a commitment to that innovation existed, then a way would be found to adopt it. Where non–adoption occurs, a real commitment to the innovation does not exist.

Vanclay and Lawrence provide a list of 13 reasons for possible non-adoption of sustainable management policies. These reasons are listed below in Table 4.1.

TABLE 4.1 – Possible reasons for non-adoption

Reason	Explanation
Complexity	The more complex the innovation, the greater the resistance to adoption. Complexity makes the innovation more difficult to understand and generally requires greater management skills. This increases the risk associated with the innovation.
Divisibility	This allows for partial adoption. Farmers can adopt that part of an innovation that they like or that is consistent with other existing farming objectives. Under the traditional model of adoption of commercial innovations, partial adoption is thought to inevitably lead to complete adoption.
Congruence	The change is incompatible with farm and personal objectives. Farmers are more likely to adopt innovations that are compatible with other farm and personal objectives.
Loss of Flexibility	Many new environmental management practices reduce a farmer's flexibility. Farmers like flexibility because it means that they can change commodities in response to market and climatic conditions. Perennial pastures lock farmers into grazing. Zero-tillage systems, with chemical control of weeds, restrict the range of crops that can be grown and the rotation of those crops.
Economics	There is a strong view in extension circles that farming ought to be regarded as a business and that the primary motivation of farmers is and should be profit maximization. The sociological position being expressed here is that economic considerations are neither the main motivation in being a farmer, nor a large factor in the decision about whether to adopt an innovation or not. Furthermore, all farmers know that it takes a few seasons to iron out all the bugs and

	achieve maximum benefit, so there may be a few years of lowered income. Because of the economic situation of many farmers, they simply cannot afford such down time.
Implementation Costs	Capital Outlay: In addition to the economics of the innovation, it is also necessary to consider the capital required to adopt the new technology. In the current period of farm financial crisis, many farmers are suffering negative cash flows, and with declining farmland values and equity levels, many farmers have no borrowing power. Most banks regard farm investment as high risk and charge high risk interest rates, meaning that farmers may be paying five to ten percent more for their farm loans than the average loan.
Implementation Costs	Intellectual Outlay: Farmers may have to learn new ways of doing things. Many of the new recommended farming strategies require much more knowledge about cropping systems and chemicals that are used in modern agriculture.
Risk and Uncertainty	Risk is usually associated with commercial innovations because it refers to farmers' concerns that the capital and other resources invested in adopting the technology will not result in any benefits. Farmers could expend resources adopting a new technology, buying new machinery and altering the management of the farm in order to farm more sustainably, only to find that the new technology fails to solve the environmental problems it was intended to solve.
Conflicting Information	No new technology, especially that designed for conservation purposes, is free of debate about its applicability and effectiveness. Farmers receive information from numerous sources and those sources often contradict each other.
Environmental Perception	Considerable research has shown that farmers are likely to adopt environmental management techniques when, among other things, they consider themselves to be personally at risk from environmental degradation. When degradation is dramatized, the result tends to be counter-productive. While this portrayal makes farmers aware of the issue, they do not believe they have a problem because they do not see the same degree of degradation occurring on their own land.
Physical Infrastructure	Agricultural commodity production requires certain physical infrastructure, such as handling facilities to enable the crop to be marketed. Current concern by government to increase production of higher-value crops, and a perception about the reluctance of farmers to grow new crops, should be tempered by consideration of the history of agricultural production.
Social Infrastructure	Except for a few maverick farmers, no individual farmer wants to be the only one doing a particular activity because they would have no social support to discuss their problems.
Farming Subculture and Farming Styles	Social infrastructure maintains a physical conceptualization of how social factors might be important in the form of a physical barrier to adoption.

(Source: Vanclay and Lawrence, 2000, p.18)

Although historically farmers agreed in principle with sustainable practices in agriculture, they did not have the financial means for these changes to occur. In addition, the instability of production levels and market prices required a major injection of government funding. Farmers would make the necessary changes immediately to implement sustainable land management if it was affordable to them, but they could not afford to make these investments if they won't see a return on their investment until ten years down the road. The lending community (the banks) simply would not permit it (Cary, 1998).

Foundations for Dialogue

With the creation of Landcare came one of the biggest improvements in government and community relationships. Landcare was intended to make the involvement of the community in land management decisions paramount to any decision-making process instead of just filling token roles as it had done previously (Curtis and de Lacy, 1996; Lockie and Vanclay, 2000; Sobels, Curtis and Lockie, 2001). However, there is still little real evidence that participation delivers tangible differences to outcomes, other than simply satisfying participation requirements established through the political process.

Clearly one of the biggest obstacles faced by Landcare advocates in the beginning and continuing today was the farmers' perception of these 'advocates'. A highly volatile situation was created when city people with an academic background in environmental-based issues and little hands-on experience, known as "Greenies" took it upon themselves to tell the farmers what they must do to fix their land. Although the farmers were taking the blame for the many problems surrounding the degradation of the land and ecosystems, it became apparent that the farmers were not antagonistic towards the environment; they were defending themselves against interference from Greenies.

Rather the opposite seems to have occurred in many situations involving discussions between state agencies, corporations and farming communities. It often seems that those chosen to represent the farmers are seldom the majority on any committee. What results is a corporate discourse put into motion in order to subordinate

landholders who, upon becoming comfortable with the corporate discourse, become "bureaucratized" and accept the hegemonic corporate agenda, thereby failing to represent farmers at all (Lockie and Vanclay, 2000, p.227). Within any catchment, there are at least three different agencies assigned to deal with on-the-ground initiatives, training and funding: the regional catchment authority, the responsible state department and the local Landcare network. The involvement of all three groups is one of the fundamental problems that has persisted with regard to Landcare. The time consumed by paper work and meetings has often led to the burnout of many facilitators and coordinators (Curtis and Byron, 2002). They have to address the demands of farmers by putting time and money into on-the-ground initiatives projects as well as address the demands of state agencies that feel education, awareness and having the proper policies in the hands of government officials is a priority.

The current question is whether the future role of extension will support a bottom-up oriented process within Landcare, or if the program will eventually fail. For extension to have a successful role in the Landcare movement it needs to legitimize and publicly recognize that farm management practices are physical manifestations of cultural expression and that they are not solely technical This is a common argument shared by many of the leading authors on Landcare, including Curtis, De Lacy, Lockie and Vanclay. The objective of the farmer is to adhere as closely as possible to the concept of "good farm management" that prevails in each community. This reinforces the importance of expanding the role that the farming community and individual farmers play in developing specific land management strategies.

Extension agencies must move away from a narrow-minded scientific role and recognize that traditional farming knowledge has at least an equal part to play when discussing management objectives. Farmers' attitudes are not the cause of non-adoption of new management practices. On the contrary; farmers' attitudes are generally positive about environmental issues. The negativity arises as a result of individuals and groups creating points of contention (Campbell, 1994).

The Constitution of Power in Landcare

Power has been of central interest to both Landcare practitioners and commentators. "Empowerment" and "community ownership" have been central motifs of the Landcare program and have inspired descriptions of Landcare as a "catalyst for a profound rethink of the future of Australian agriculture" as well as a basis for "communicatively" integrated forms of resource management (Lockie and Vanclay, 2000, p.45).

Neo-liberal governments will always maintain an element of social responsibility where 'citizenship is to be active and individualistic rather than passive and dependent'. In this sense, neo-liberalism represents a type of degovernmentalisation of the state where State deliberation focuses more on those mechanisms which enhance self-regulation, rather than considering the substantive issues facing society (Woolcock, 1998). This tendency is seen in the relative absence of mid-level coordinating institutions and of monitoring and evaluation mechanisms at broader spatial scales (the latter of which is now being implemented throughout the Hunter river region by the Regional Catchment Authority (RCA) (Healthy Rivers Commission, 2002).

The goal of the State is to support Landcare groups through the provision of financial resources for community initiatives, by undertaking research and by assuming a coordinating and facilitating role, rather than a centralized planning role or a coercive legislative role. Ultimately, the commonwealth has felt that bottom-up development should guide and direct Landcare, with a focus on consensus, co-operation and "community and government working together" (Cary and Webb, 2002). While it may appear that the role of coordinating and facilitating can easily be an alternate definition for centralized planning, it is not. The role will maintain organization and flow of resources at and from the local level, rather than trying to influence a community's decisions with nationalized ideas inconsistent with localized needs (Campbell, 1994). It is no longer in the Government's economic interest to be actively involved, as the costs are too great and to date the outcomes unsustainable.

But is this effective? Unfortunately governments will always be run by people who like to have power and, regardless of what the optimal results of bottom-up development may be, community Landcare groups will always be dealing with some

form of bureaucracy. Therefore, the metaphor of power in this situation as something that can be given away or shared, also informs those individuals who have been more circumspect about the extent of power devolution in Landcare, and who cite examples of how government agencies are able to directly manipulate participatory activity and or impede its progress (Lockie and Vanclay, 2000, p.46). These concerns have been voiced in numerous complaints from farmers about the bureaucratization of Landcare and the heavy-handedness of collaborating state officials and extension workers.

From my own experience while working in the Hunter river region, the tendency for Landcare to be enveloped in bureaucracy was frequent. At the time of my visit, the new regional catchment authorities who would act as the local state agency were being put in place. My interviews made it obvious that this authority would contain many of the same attitudes and faces as previous agencies (Please see Chapter 5: Primary & Field Research).

Private Land Ownership and Landcare

In order to better understand land ownership in Australia, Bromley's work on private and common property as institutions shows us how national and state control affects the access of community members to natural resources. Focusing on Australia, Bromley, an expert in private and common property regimes, observes that the private ownership of land can be regarded as a collection of entitlements defining what actions the land owner may or may not undertake on that land and what liability and compensation rules apply where other individuals are affected by the landholder's actions (Bromley, 1978). This is a very important observation to reflect on, especially with respect to the history of government policy in Australia. State agencies up until the 1980's played a major role in what types of physical developments occurred on agricultural land and for the most part these agencies would control on-the-ground projects, leaving the landholder to deal with the potentially negative outcome.

Certain landholders have a feeling of entitlement, and these landholders have a much different perspective of their land than a farmer who is open to the idea of change. Many landholders presume the right to undertake particular actions such as land clearing and will continue to do so until changing social norms or common or state law require

otherwise (Bromley, 1991). Bromley believes that institutional arrangements allow certain farmers to do as they pleased on their land. With resources varying from one farm to the next, it does not help to conflate resources and institutions with terms like "common property resources", which refers to resources managed under "open access regime" where anyone can use the resource and nobody can be prevented from allowing others to do so. The attitude of certain farmers that they can do what they want on their own land, regardless of the consequences to their neighbours, was and in many cases still is at the root of much of the land degradation that has occurred. Bromley further states that the community obligation that provided guidelines for resource use and sanctions against transgressions of these guidelines are no longer effective. Once again the role of Landcare has moved in a direction that attempts to avoid social breakdown by creating an atmosphere where farmers sharing a common environment learn how to work together to keep their land healthy.

The state's failure to interfere in this type of land ownership has resulted in the exploitation of land under the open access property regimes on which agriculture is dependent. Lockie and Vanclay provide two examples of this:

1) dryland and irrigation salinity, whereby the resource is the soil contaminated by rising water tables and is "replaced" by measures to lower the water tables (in this case, the rights of land ownership confer a presumptive entitlement to consume the resource, and any one landowner under the present institutional arrangements does not have the means to prevent other landowners causing the water table to rise); and
2) soil resources on private land are exploited over time and future owners are unable to prevent the present owner from exhausting the resource (Lockie and Vanclay, 2000).

The creation of this type of land management system has shown a great deal of inadequacy on behalf of the state. It showed an unwillingness to disrupt the current format of presumptive entitlements for fear of the political backlash that could befall any politician that tried to bring this to legislation. At some point, however, the state must take steps to address these problems and bring all landholders to the same level of entitlement.

When state agencies addressed land management in the past, they emphasized monitoring, research, planning and education. This contained strong scientific undertones which were rarely understood by the farmers (Dovers, 2000; Tovey, 1993; Webb and Cary, 2002; Woodhill, 1999). During the 1970s and 1980s, the State's approach to land management was that environmentally friendly innovations that did not adversely affect profitability could be promoted by appeals to the morality of landholders not exploiting common resources. This was the only approach by which the State can increase the adoption of agricultural practices that meet environmental objectives without confronting the power of private property rights of landholders (Lockie and Vanclay, 2000; Woodhill, 1999). The major fault in this approach was the State's inability to clearly deliver this view, so their efforts were seen as a top-down approach to land management that often met with apprehension until the emergence of more locally-oriented efforts such as Landcare.

From an institutional perspective, Woodhill (1999) sees the activities of the state agencies amounting to bargaining presumptive entitlements away from landholders in ways that may impose externalities on current or future generations, such as promoting sustainable agricultural practices that are as, if not more, profitable than current practices and offering financial incentives through Landcare, supported by its philosophy of collective action for the common good of the community that it represents.

The current degree of land degradation has forced ecosystem functions to take on the role of transmitters of harmful externalities, such as pesticides and other chemicals, between landholders. Under these conditions, the concept of private property rights now becomes abused and resources that include regional biodiversity, the nutrient capacity of water sources, and the space between saline water tables and the ground surface are exploited as common property and are frequently degraded (Dovers, 2000).

This ultimately creates an argument between participatory and individualistic ideals, between public and private interest and between rights of land use and rights to environmental quality (Black and Reeve, 1992). State agencies attempt to give ownership of the problems to farmers without answering the important question of whether the farmers recognize land degradation as a problem. Perhaps the approach that Landcare uses, although it glosses over fundamental tensions, may actually be necessary to the

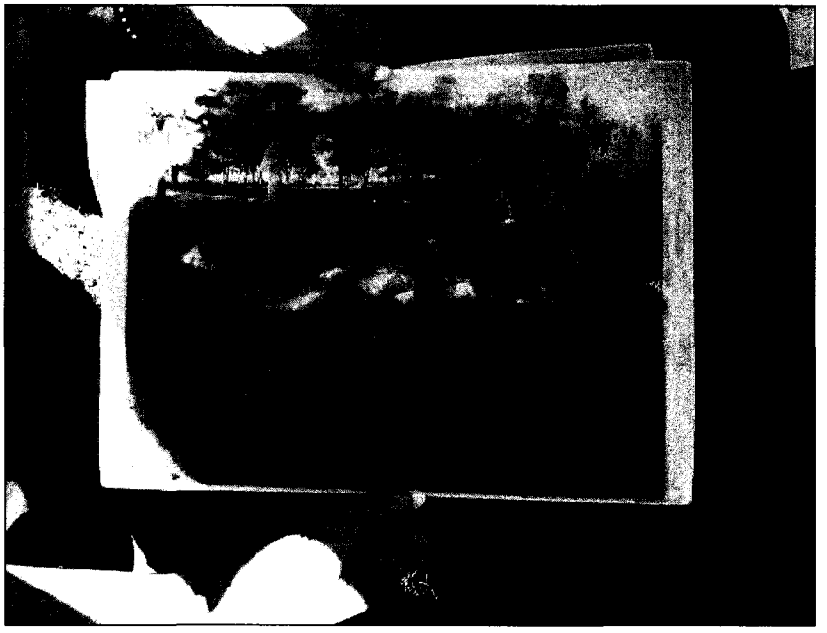
continued functioning of state land management agencies and to further achievements in reducing land degradation (Lockie and Vanclay, 2000).

With the exception of the introduction of Landcare, government planning to date around resource management in Australia has not been sufficient to bring about any significant reduction in land degradation (Lockie and Vanclay, 2000). As Woodhill points out, even though Landcare and ICM approaches involve many of the same requirements for sustainable common property regimes, these approaches are often rendered ineffective by those private property owners who are skeptical of changing their methods. These individuals feel they are protecting their property rights, and feel that an intrusion by state agencies will do more harm than good (Bromley, 1991; Woodhill, 1999).

Landcare groups' efforts to avoid becoming an institutionalized movement have been a common theme throughout their evolution. As a result, hundreds of networks across the country have been formed to keep Landcare groups organized and focused on their goals and objectives, and an element of bureaucracy has been developed from within the structure of Landcare. At the same time these networks have become an easy medium for state agencies, in the form of regional catchment authorities, to maintain constant discourse with Landcare groups within their region (Lockie and Vanclay, 2000; Sobels, Curtis and Lockie, 2001; Webb and Cary, 2002; Woodhill, 1999). Attempting to influence methods of management through any open dialogue that would occur appears to be a new constant in the relationships between groups, network coordinators and regional catchment authorities. This type of dialogue can be between individuals, or through group meetings or farm field days. (See Appendix 1: Total Field Days)

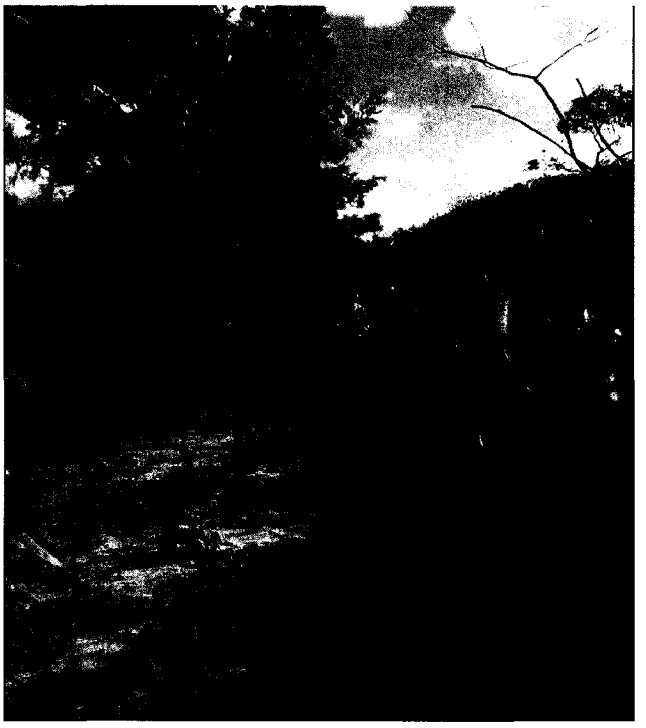
Landcare has made major progress in educating landholders about the damaging effects that land degradation on one farm can have on neighboring farms. So much so, in fact, that many on-the-ground projects are undertaken on several properties at a time. Riverbed erosion is a great example of the positive effects of these projects. From my own on site research it has been seen that projects such as fixing an eroding riverbank on one property helps prevent erosion of riverbanks further downstream and helps prevent poor water quality resulting from sediment overload by maintaining a consistently healthy riverbank along the course of the river (See Figure 4.5 to Figure 4.7 below).

Figure 4.5 – Photo of river embankment prior to Landcare remediation project



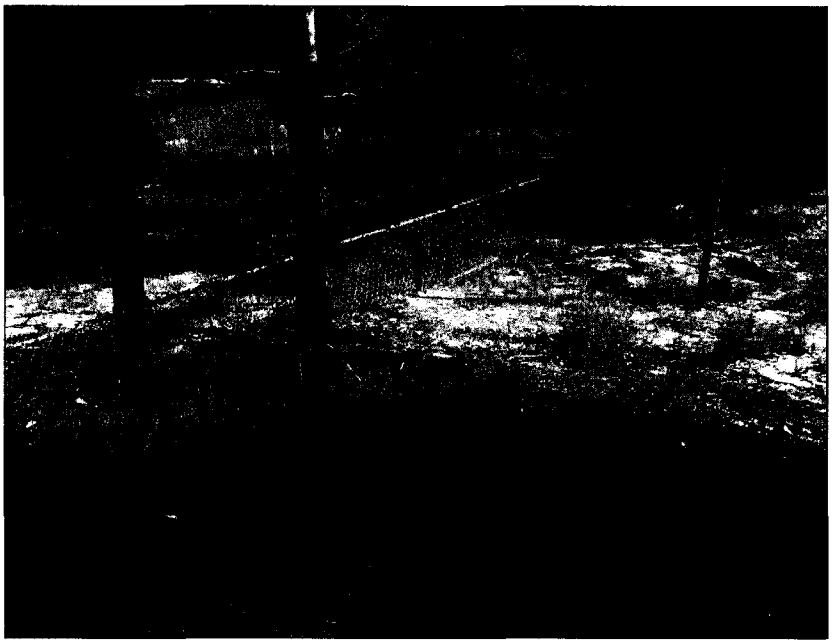
(Source: David Hammer, April 2004)

Figure 4.6 – Joe Thompson and myself (discussing the effects of land clearing and erosion on this embankment and the planting efforts to combat degradation)



(Source: David Hammer, April 2004)

Figure 4.7 – A fence to prevent erosion in Wollompi region (the fence will help stop erosion by allowing root development to continue)



(Source: David Hammer, April 2004)

Before a project can begin, negotiation and communication skills are required in addition to the appropriate technical skills. To date, Landcare has had success meeting all of these requirements because of its bottom-up approach and its focus on community-based initiatives (Healthy Rivers Commission, 2002). Yet even offering new methods of integrated resource management to private landholders is often met with resistance, especially when those individuals have established their own sustainable management regimes. In many farming circles these individuals are seen as being on the cutting edge of technical and land management innovations. Lockie and Vanclay (2000) found that sustainably-oriented common property regimes had the following characteristics:

1) individuals who have rights to access the resource have clearly defined rights, and the boundaries of the resource are clearly defined;
2) there is congruence between the rules for access to the resource and the dynamics of the local economy;
3) most individuals affected by the rules for accessing the resource are able to participate in collective decisions about setting the rules;
4) those who monitor compliance to the rules are those who use the resource or are accountable to those who use the resource;

5) there is a set of sanctions applied to those who transgress the rules, graduated according to the seriousness of the offense;
6) resource users and officials have rapid access to low-cost conflict resolution mechanisms;
7) the rights of resource users to devise their own institutions are not challenged by external government authorities; and
8) where resources are part of large systems, appropriation, monitoring, enforcement, conflict resolution and governance activities are organized in a nested hierarchy where the scale of governance is matched to the scale of the resource and associated externalities (Lockie and Vanclay, 2000 p.89)

Unfortunately not all farmers are open to these types of regimes because they are often done purely on a volunteer basis. The stigma of being institutionally oriented continues to impede Landcare groups from breaking through to certain stubborn landholders and changing their belief that anything involving a state agency is not necessary and is not desirable (Curtis and de Lacy, 1996; Curtis and Lockwood, 2000; Lockie and Vanclay, 2000). The concept of presumptive entitlement creates a sense of self-righteousness among those farmers who believe that they are their own governors. The State's reluctance to enforce those regulations has been well documented and publicized yet has had little effect on changing attitudes (Lockie and Vanclay, 2000). The chronic land degradation illustrates that the state, as resource governor, faces difficulties in eliminating open access regimes because this would require modifying the presumptive entitlements inherent in the existing system of private land ownership.

Corporate Involvement

Landcare Australia Limited (LAL) is a company set up by the Commonwealth to specifically promote Landcare across the country and to gain corporate sponsorship. Many people argue that if Landcare has indeed become such a powerful brand, LAL is placed in a correspondingly powerful position with the ability to decide who may attach the Landcare logo to their activities or products. LAL understands that there is potential for criticism of their role as a corporate body involved in fundraising for a supposed

"social movement". To help address this type of criticism, LAL stresses the benefits of being involved in Landcare to all participants through sponsorship and marketing.

Landcare provides companies with the opportunity to develop their relationship marketing strategies throughout Australia. Landcare is seen as the 'middle of the road' environmental movement that enhances the company's image with the community. Landcare Australia tailors projects to meet corporate marketing objectives and ensures widespread promotion of the company both through authorized use of the Landcare Australia logo and the volume of media generated. (Lockie and Vanclay, 2000 p.35)

As the Decade of Landcare evolved, the nationwide Landcare symbol (shown in Figure 4.8 below) became a desirable resource to which the corporate sector could attach their name and products.

Figure 4.8 – Landcare symbol

(Source:www.landcareonline.com)

This symbol quickly grew in popularity throughout Australia's mainstream population as well. As corporate interest grew, LAL's role developed and its primary purpose was to organize the National Landcare Awards and to raise corporate sponsorship for Landcare activities by licensing the use of the Landcare "caring hands" logo (Campbell, 1994; Lockie and Vanclay, 2000). One of the main objectives of LAL was and still is to ensure a strong sponsorship and fundraising campaign for Landcare initiatives from the private and corporate sectors, while maintaining a clear stance that they do not control the activities of community Landcare groups (Campbell, 1994; Lockie and Vanclay, 2000).

With farmer participation in environmental discourse legitimized through Landcare, good farming practices are no longer being defined by an isolated part of society. State agencies and agribusinesses are now actively promoting sustainable models of farming throughout the country. Other positive results have been Landcare's use as a

discursive tool to strengthen associations between particularly high input policy development, farming practices and good farming practices (Campbell, 1994; Lockie and Vanclay, 2000).

The benefits that LAL provides for community groups are sponsorship for projects and ongoing political support for Landcare. By assuming this role, LAL has to maintain political and social integrity to ensure that there is no conflict of interest between what a community Landcare group is trying to achieve and what a company or corporation might be doing to negate those projects indirectly (Campbell, 1994; Lockie and Vanclay, 2000). Ideally, a company that offers sponsorship is following through on their commitment to social responsibility with the products that they are making. But what if a company's products or services have a negative effect on the environment or on the community? Has this possibility been thoroughly analysed? LAL maintains that involved industries are (Campbell, 1994; Lockie and Vanclay, 2000).

Unfortunately, this is not always the case. For example, a Tasmanian logging company was a recipient of a corporate Landcare award, despite the fact that they were engaging in the clear-cutting of native tree stands, which were being replaced with exotic pine plantations for commercial use. The change of tree species had massive environmental implications on the surrounding ecosystem, and soon led to soil acidification from the pine needles that fell to the forest floor (Lockie and Vanclay, 2000, p.35). Lockie, an expert in NRM and its social implications within common property regimes, asked why the environmental and social accountability that LAL requires for community Landcare group members does not apply equally to those who acquire the Landcare logo through sponsorship. If Landcare has become such a good marketing investment, shouldn't sponsoring companies be held accountable for their management of natural resources and local environments? It makes no sense to promote social responsibility of precious land resources if the people funding the promotion are unwilling to participate in that social responsibility.

LAL holds a lot of control in regards to choosing whose support it will accept. By no means does it need to open its doors to any entity that is interested in sponsoring Landcare. Overall, LAL has been very successful (in a very short period of time) at ensuring that a steady flow of corporate dollars will always be available. That being said,

many critics argue that involving corporations with a dubious background in the Landcare process will do more harm than good. LAL needs to have a stronger and more transparent list of guidelines and requirements that corporations and individuals must meet in order to be accepted for sponsorship or support

CHAPTER 5: PRIMARY AND FIELD RESEARCH

Overview

In 2001 a social survey of New South Wales (NSW) Landcare groups was jointly undertaken by the Department of Land and Water Conservation and the NSW Landcare Working group to assess the role that Landcare has played in building communities and its effectiveness in achieving sustainable initiatives and attitudes. In April 2004, in order to find an appropriate sample area I used the same distribution list as the 2001 survey. This distribution list contained individuals familiar with being a part of a survey and had displayed willingness in 2001, which would make it easier for my survey to reach an appropriate sample size. In 2001, a series of 61 questions were asked to a sample of 66 across 6 catchment areas in the state. My survey included those questions that I deemed relevant, plus 16 of my own questions directed at individuals as well as 4 specific questions to 12 local businesses in the Hunter region (see appendix 1.3). The survey questions were sent out to recipients by mail throughout the region and the local businesses were surveyed by me directly. To maintain the survey focus on the backgrounds and common thread linking individuals to communities, state agencies and business I have included only 35 of the 61 questions. The objectives of the survey were to:

- understand how Landcare involvement has benefitted these communities and the variables that have helped guide its development into a working environmentally based social network;
- determine the motivations and reasons for people joining and participating in Landcare, and what methods have been used to attract new members;
- measure the social benefits of Landcare involvement to supplement government statistics and on-ground data that measure the success of Landcare;
- illustrate the value of Landcare beyond the benefits of natural resources and how wider community support has been obtained; and

- analyze the involvement of different stakeholders working at different levels within the framework of the Landcare movement.

In order to analyze the role of Landcare within communities, the survey and my field research had to be approached in a manner that allowed each stakeholder to be observed in their own environment. The survey also examined how stakeholders function to achieve the Landcare sustainability goals that have been established for them.

With the primary focus of this survey on central NSW, parameters were established for researching the different stakeholders through a series of different methods that were relevant to the criteria pertaining to each one. The stakeholders were separated into three groups which would be analyzed in the following manner:

6) community Landcare groups and individuals – survey, direct participation in on-ground activities and interviews,
7) Landcare networks – participation in regularly scheduled meetings and interviews, and
8) government agencies and private institutions – one-on-one interviews.

The first two groups are made up of community individuals who have volunteered their time to be part of not just Landcare groups in their respective communities but, in some cases, have accepted roles in Landcare networks that involve representatives from different Landcare groups and from different regions within specific Landcare networks. While Landcare groups and individuals were interviewed and surveyed from a range of different regions, the Hunter River Landcare Network and government agencies in the Hunter River Catchment region were interviewed to represent the second and third categories, respectively.

The aim of analyzing Landcare groups was to survey and gather information on a comprehensive cross section of on-going projects associated with individual Landcare groups spread out through several regions. The following table shows the regions that were surveyed and the number of surveys completed.

Region	Surveys Completed
Murrumbridgee	20
Murray	7
Sydney	7
Mid-North Coast	3
Central West	3
Hunter	26

Six Landcare networks were studied and they comprise the main focus of my empirical research. The research survey involved a series of questions surrounding the environment, as well as social, economic and attitudinal factors that affected the involvement of these networks within Landcare. The majority of my survey questions were asked and answered in the Hunter region and Murrumbidgee, two places that I spent a considerable amount of my time and developed a greater understanding of how Landcare has impacted the area. While the survey results are a central part of the completed primary research, the balance of the research was collected through informal conversations with various community members and personal observations from hands-on participation in community activities. Throughout different chapters of this thesis, I have included my own opinions, based on those interviews as well as other sources of empirical evidence that I gathered. Instead of discussing each survey question in detail here, I have limited my discussion to those sections most pertinent to my observations in the field.

Some of the various activities that I involved myself in included participating in local on-ground projects, attending land management education sessions, meeting with community members including farmers, private landholders, merchants and local politicians. This cross-section of community members gives an understanding of the role that Landcare plays in achieving sustainability and affecting attitudes towards environmental issues facing Australia. My field research included the following activities:

- two network meetings in the Hunter and one in Lake Macquarie (see Appendix 3);
- four different field activities and events including a site visit to a rehabilitated river embankment stretching across several properties, a

planting project at a local winery, a run-off diversion project in Newcastle, and a golf fund-raiser taking place in a farmer's paddock;

- meetings with local farmers about implemented sustainability initiatives in the central western regions of NSW;
- participation at a Tocal Field Days event; and
- visiting sites throughout rural NSW that have experienced different forms of degradation.

The ultimate research objective was to determine whether Landcare initiatives have been effective in reaching the sustainability goals the Landcare program has set out for itself. Reaching this conclusion involves examining the role that Landcare initiatives have played in each of the six surveyed regions, specifically whether Landcare has aided or hindered the local environment, local communities and local economies of these areas.

Observations have been based on three components. The first component looks at the types of on-ground projects being initiated, whether they are conservation- or commerce-oriented, whether they are being performed on public or private lands, and whether the land is used for agriculture or whether it is privately or publicly owned and experiencing some form of degradation. The second component investigates issues around funding, such as the level of funding being provided to local Landcare groups, whether it is government funds or corporate donations, and the level of personal investments that have been made by private landholders when projects are being carried out on private lands. The third component looks at the level of social capital involved in each area. Social capital, as defined by Woolcock, is the level of volunteerism that makes up the community group, in this case Landcare networks, to what degree volunteers involve themselves in the actual delivery and technical components of an on-ground project, and to what extent outside help is sought after, such as scientific and technical advice (Woolcock, 1998).

One of the fundamental tenets of Landcare emphasizes the importance of having a localized, bottom-up approach to how projects are analyzed, coordinated and acted upon. The success of each region's initiatives is based on the understanding that each region is unique and may require a unique solution. This localized approach provides (among other

things) an aspect of community partnership and helps to sustain the element of social capital that is necessary for Landcare projects to be possible.

Survey Research

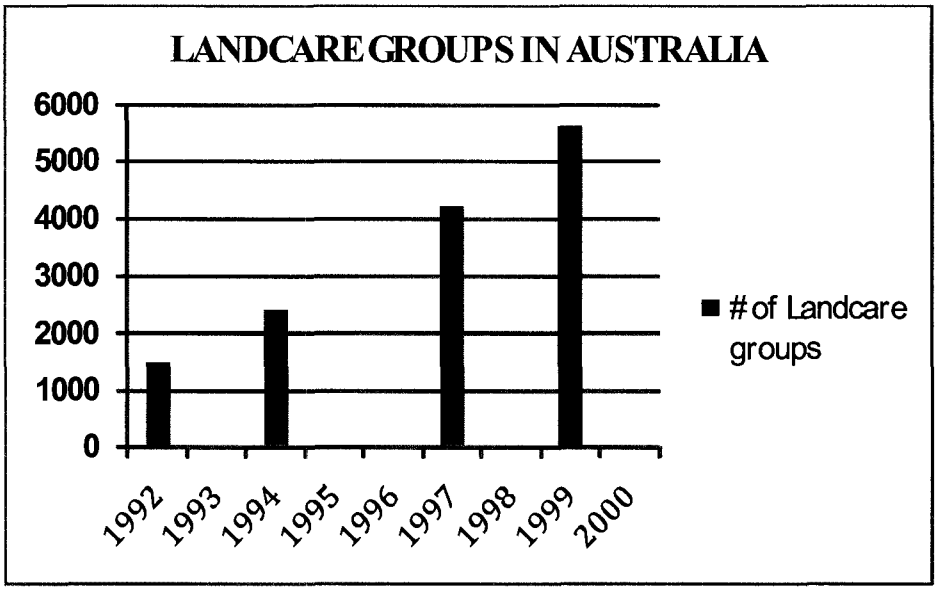
Understanding the environmental history of a region is essential and goes hand-in-hand with strong community involvement. By providing historical input about past problems and solutions, the community gets a better understanding of the variability of their environment and the potential effects of any proposed changes.

In order to conduct a research survey to analyze whether a group or project has achieved effective sustainable management, each region needs to be analyzed according to its unique conditions. Each region should have different indicators to evaluate its social, economic and environmental conditions. For example, an area that primarily produces wheat, such as the Murray region, will have different criteria for achieving sustainability than an area that is used to extract natural resources, to graze cattle and to grow vineyards, such as the Hunter region. By accounting for the differences in each region, the survey can better assess the successes and failures of Landcare.

My understanding that each catchment has its own needs, issues and methods of management came from field experience that made it evident that each area is made up of different types of people: in the Hunter region I dealt with urban landcarers, hobby farmers, and small scale farmers involved predominantly in livestock and vineyards. In the Kahrua region, where I met with the local Landcare network facilitator Col Freeman, the farmers were involved in their own types of land management projects and although they considered themselves members of Landcare, they saw it more as an opportunity to express their opinions about how to care for the land by making the necessary changes and then showing them to those who wanted to learn more. In Lake Macquarie, the Landcare network was very urban-based; it was the area that showed the greatest government influence and control, as well as having the most organized implementation structure and strategy. Each of these three areas will be discussed in greater detail.

These differences are common throughout Landcare across NSW and the country. However, as Figure 5.1 shows, Landcare's membership has continued to grow despite these differences.

Figure 5.1 – Number of groups involved in Landcare, from 1992 to 1999



www.environment.gov.au

The survey that was developed focuses on a set of questions regarding land use, land degradation, economic and social effects of degradation, economic and social effects of Landcare initiatives, and awareness through education, information sessions and the media.

The questions were similar for each region; what differ from region to region are the types of criteria being observed.

The following survey provides an overview of the following elements (DLWC 2004):

- the types of people that join Landcare groups,
- their reasons for joining,
- benefits of Landcare to the community and to individuals,
- how Landcare has changed people's attitudes,
- whether Landcare has influenced other movements,
- how the local community values and supports the work of Landcare groups,
- the social activities of Landcare groups,
- whether Landcare has met expectations,
- the role of local state agencies and the level of support they provide, and

- the effect Landcare projects have had on the three spheres of sustainability.

The following are a list of survey questions asked by the Department of Land and Water Conservation (DLWC) and the NSW Landcare Working group and used by me in the following survey.

Table 5.1 – DLWC and NSW Landcare Working group survey questions

(Sample size n=66)

1.	How long have you belonged to your specific Landcare group?	Average = 6 yrs
2.	How long has your specific group been in existence?	Average = 7.7 yrs
3.	What was your main motivation for joining a Landcare group? (single response)	23% Wanted to work with their neighbours, to improve the natural spaces and the local environment of their Landcare area. 18% Wanted to help with a specific environmental concern in the area. (eg. Weed infestation, embankment erosion, and salinization.) 17% Wanted to improve the sustainability of their land management practices on their land. 12% Were interested in learning new skills about environmental and farming activities.
4.	How would you describe your contribution to your Landcare group? (multiple response)	65% Good understanding of the local environment. 61% Manual labour. 61% Organizational skills 50% Project management 39% Local community knowledge
5.	Has your Landcare group contributed to the community in any of the following ways? (Multiple responses)	83% Improved environmental activities and awareness. 73% Improved farming and NRM practices 59% Bringing the community together.
6.	How has being involved in a Landcare group had a positive effect on you as an individual? (multiple response)	83% Better environmental knowledge 44% Better understanding of their community from a social perspective. 42% New or better skills. 30% Improved sociability and socializing skills 29% Increased personal confidence
7.	What, if any negative effects has being involved in a Landcare group had on you as an individual? (multiple response0	20% Increased exposure to conflict 20% Creation of difficult work obligations 17% Increased personal stress or anxiety.
8.	As a result of your involvement in Landcare, have you changed the way you think about or relate to any of the following? (multiple responses)	64% Change in the way you think about the environment in your local area/region 61% Change in the way you think about land use practices in your local area. 41% Change in the way you feel about specific places in your local area. 41% Change in the way you think about or relate to your local council

		36% Change in the way you think about or relate to your local community.
9.	Have you joined other groups that are not environmentally based?	18% Yes
10.	Since your involvement with Landcare have you joined any other similar groups or organizations?	46% Yes
11.	What other types of groups have you joined?	30% of respondents answered this question and there was a fairly even spread of responses between: community service; business; sporting; social; and education.
12.	Is your Landcare group provided with free assistance and support from your local community council?	71% Yes
13.	If yes, what type of support does your Landcare group receive? (Multiple Responses)	57% volunteers 32% Information 23% Promotion/advertising 23% Access to other resources
14.	Do you think the local community values your group work?	79% Yes

Attitudinal Questions:

Response (Sample size n=66) (Scale= SA –Strongly Agree, A-Agree, D-Disagree, SD-Strongly Agree.)

15.	"Most people who join a Landcare group have an interest in land management and protecting the environment."	98% A or SA
16.	"There is a high level of skill and knowledge-sharing within our Landcare group."	92% A or SA
17.	"People from different cultural and ethnic backgrounds would feel comfortable in our group."	92% A or SA
18.	"Within our Landcare group we make decisions democratically."	91% A or SA
19.	"Our Landcare group has expanded the skills of its individual members."	85% A or SA
20.	"Most people join Landcare to solve community issues."	68% A or SA
21.	"Our Landcare group interacts a lot with other community groups and people."	63% A or SA
22.	"Our Landcare group can always get help from the community if we need it."	59% A or SA
23.	"Because of our Landcare group, our local community is now better able to respond to change."	56% A or SA
24.	"Our Landcare group gets involved in other local activities and projects, not just environmental works."	50% A or SA (44% D, 6% SD)
25.	"Being involved in Landcare helps to resolve local conflicts."	48% A or SA (46% D, 6% SD)
26.	"Responsibility and participation within our Landcare group is shared equitably."	44% A or SA (48% D, 8% SD)
27.	"A lot of our Landcare projects are more important to the community than to the environment."	29% A, or SA (59% D, 12% SD)

Demographic questions:

Response (sample size n=66)

28.	Main source of household income?	55% Business 32% Wages and Salary 8% Pensions or Benefits
29.	What industry do you mainly work in?	71% Agriculture/forestry/fishing/hunting
30.	Are you male or female?	60% Male 40% Female
31.	Which of the following age groups do you belong to?	24% 35-44 years old 26% 45-54 years old 23% 55-64 years old
32.	Which of the following income brackets does your total household income fall into?	30% earned over $60,000 per year 25% earned $40,001 - $60,000 16% earned $30,001 - $40,000 20% earned $20,001 - $30,000
33.	What is the highest level of education you have completed?	Just under %50 of all survey respondents had completed a university or CAE diploma, degree or higher degree.
34.	In which of the following do you live?	Almost 60% of respondents lived in a rural area.
35.	How long have you lived in your local area?	Average – 23 years

The following are a list of survey questions asked by myself in combination with the previous survey questions.

Table 5.2 – David Hammer general survey questions

36.	Are you aware of the land degradation issues affecting your land, or potentially affecting your land?	75% Yes 15% Have a general idea 10% No
37.	Are the problems affecting your land contained to your property, or are they spread to neighbouring properties.	55% Spread to neighbouring properties 30% Contained to my property 15% Not sure
38.	Are you a member of a Landcare group? If yes: A) Prior to becoming a member did you ever initiate any preventative measures to fight degradation issues on your own? B) Did you ever combine your efforts with neighbouring landholders? C) Were your efforts successful in combating those problems? How so?	90% Yes, of those who answered 'Yes' a) 65% yes 45% no b) 45% yes 35% No 25% Tried with no success c) 55% No 35 % Yes 15% Still trying
39.	Have you participated in Landcare projects on your property? (multiple response) a) What have been the results from an environmental perspective?	85% Yes, Of those who answered "yes" 65% Healthier crops 30% Less dependence on fertilizers and pest management.

		70% Higher water quality 75% Healthier soil structures
40.	What have been the results from an economic perspective? (single response)	25% Stronger financial benefits from healthier crops. 60% Increased implementation costs have led to escalating financial problems. 15% Positive long-term economic outlook
41.	What have been the results from a societal perspective? (multiple responses)	85% Developed better relationships with neighbouring landholders. 80% Greater transfer of information between landholders on land issues and successful management techniques. 55% Increased health issues associated with poor land & water quality. 15% No noticeable change from Landcare.
42.	Has your land been affected by neighbouring landholders? If yes, how? (multiple responses)	70% Yes, of those who answered 'Yes' 65% Increased soil erosion 45% Increased salinization 30% Increase in frequency of pest-related problems
43.	What measures if any did you take to solve the problem?	45% Work directly with neighbouring landholders 25% Involved third-party negotiator 30% Did not take any measures
44.	As a member of a Landcare group, has your participation made it easier to acknowledge and combat landholder conflicts?	90% Yes 10% No
45.	Previous to your involvement in Landcare, what has been the greatest hindrance to combating land degradation issues? (multiple responses)	75% Government policies 65% Proper training and technology 95% Money 40% Neighbour and community support 90% Production costs vs. Implementation of new technology.
46.	What is your greatest fear as a farmer with regard to your property? (multiple responses)	100% Crop Failure 75% Inability to meet the costs associated with government policies 65% Lack of manpower to implement sustainable measures.

47.	Has being involved in Landcare met your expectations?	88% Yes, Of those who answered "yes" 25% more environmentally aware/knowledgeable 15% Has improved the environment 15% Need more resources/ more support 15% Need more involvement /members 5% Funding issues

The following are a list of questions asked to 12 different businesses currently or previously involved in Landcare projects.

Table 5.3 – David Hammer business survey questions

48.	How has your company been involved in Landcare projects? (multiple responses)	45% Direct funding 55% Support through supplies, equipment, technology, etc. 70% Volunteering on different Landcare activities
49.	Have your intentions for funding and participating been,	65% Philanthropy-based 80% Tax-incentive based
50.	What has been the outcome of your company's involvement with Landcare?	80% Better, positive publicity in the community 45% tax-incentives 40% New customers, clients
51.	Has involvement in Landcare changed your company's and employees attitudes towards implementing sustainable initiatives?	80% Yes 20% No

Interviews and Community Participation

Many of the interviews in the Hunter and surrounding regions were conducted with coordinators of different Landcare networks. Figure 5.1 below shows the land included in the Hunter-Central river catchment areas.

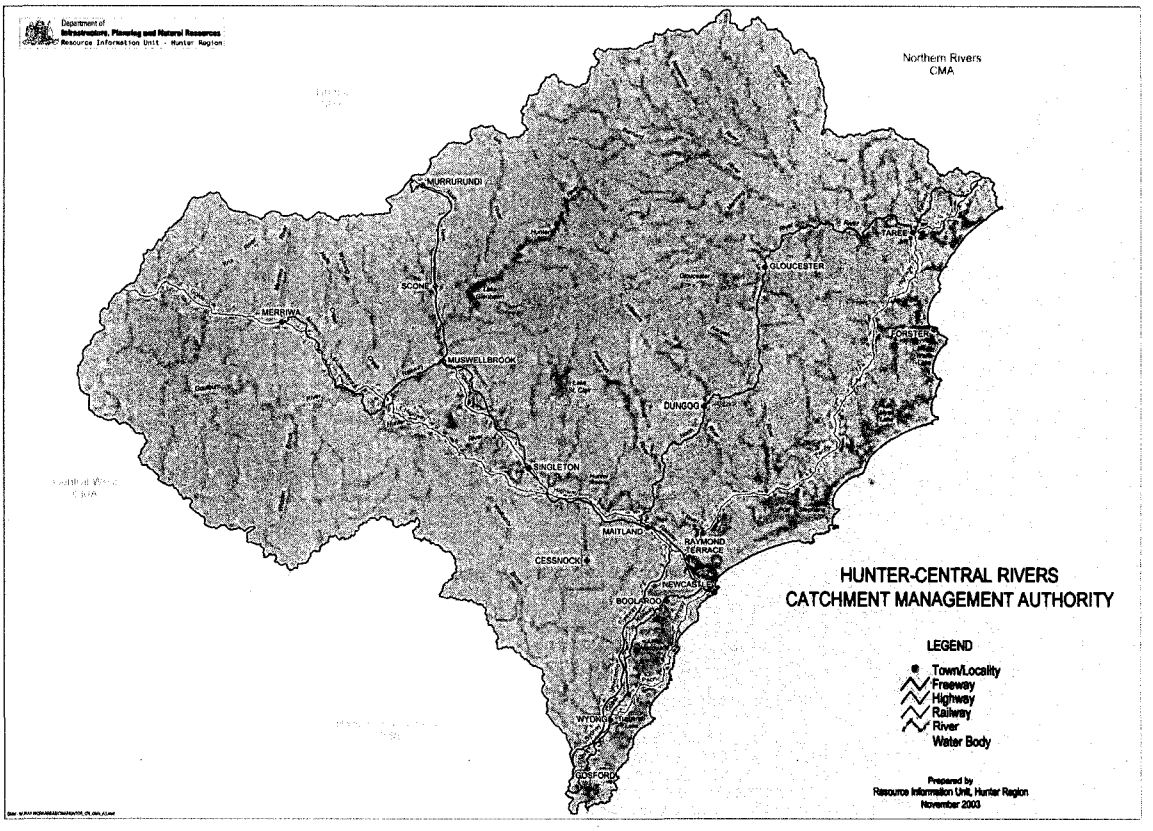
These coordinators act as liaisons between members of specific Landcare groups and the state agencies that provide them with support. They are hired as facilitators by local catchment authorities (not by the Landcare groups) and their role is to maintain the control systems and the flow of communication that has allowed Landcare to develop into the program it is today. In order to fulfill this role, the coordinators take on a lot of

administrative responsibility, and require a lot of networking, communication, and diplomacy skills.

The following is a summary of the main discussion points from interviews with the network coordinators from Lake Macquarie, the Kahrua-Great Lakes and the Hunter River. The interviews were conducted separately with each individual, were recorded on tape and were later transcribed to notes.

The interviews consisted of several informal questions that covered topics including the perceived effects of their involvement in Landcare networks, the difficulties faced when trying to change mentalities and make changes on the ground, and suggested changes to the structure or dynamic of the way Landcare operates.

Figure 5.2 – Map of Hunter-Central rivers catchment (this is the catchment where the majority of my field research was conducted)



(Source: Dept. of Infrastructure, Planning and Natural resources)

LAKE MACQUARIE (LML) – Summary of Discussion with Suzanne Pritchard, Landcare Network Coordinator

The LML supports 160 Landcare groups within the city. They have strong local government support, with an annual budget of $250,000.

With a 'Green Team' of volunteers who go out to various sites throughout the week under the supervision of a qualified bush regenerator, these groups have a constant presence in the community which helps to promote Landcare as a positive influence for environmental change in this urban area.

The LML network is a good example of a well-functioning partnership with the local council. The two groups engage in a constant exchange of resources that has helped exemplify the success of urban Landcare. This LML network is viewed as a model throughout the State for how local governments can work with people-powered groups, and as a successful way to environmentally manage urban bushland.

There are, however, a number of fears that Ms. Pritchard addressed; fear that the government will try to influence the type of projects that are undertaken and the manner in which volunteers are used, fear that the sense of enjoyment will ultimately become tainted when local residents can no longer do the types of projects that they want to do and these members will consider participation as a burden and fear that the role of the community coordinator will be used to persuade local groups to take on government-initiated projects.

The LML network is very organized, very bureaucratic and the projects are well-defined and supported by the local council. The projects are usually undertaken by teams of volunteers or by hired eco-specialists.

This network in particular has a special relationship with its town council. The council sees the network as a viable solution to maintaining and achieving success with the local environment. In Lake Macquarie the fear of Landcare becoming overly bureaucratic is relatively minimal. Landcare was established by the local people, and they have involved themselves only as they wished. Any influence that the CMA might try to exercise will have a minimal effect on acceptance by the public and maximum effect on the overall success of Landcare.

The Landcare program gives its members a sense of ownership and control over the use of greenspaces in their communities. Pritchard states that, "An intelligent community makes decision-making by politicians a much more thought-provoking event!" She continues by saying, "The transparency of the success of Landcare in this area has shown how growth comes simply from being visible in the community and letting success speak for itself."

While at the LML site, I sat with Pritchard's team as they promoted their ideas and their methods to a neighbouring Landcare network. The LML achievements have become role models for other urban Landcare networks. During our meeting, discussions about how to maintain public interest, how to maintain volunteer pools staffed and how to continue to pursue their own projects of interest were all discussed. There were, however, no discussions of the politics of Landcare and what its role was, but they were open to discuss the impact that bureaucracy has on pushing through agendas.

KARUAH-GREAT LAKES (KGL) – Summary of Discussion with Col Freeman, Landcare Network Coordinator

KGL is predominantly in a rural area and involves farmers and landholders in the region. Their attitudes are progressive, even cutting-edge, and they exhibit a strong desire to implementing sustainable change to their land management schemes. They refrain from using any type of structure base and use the Landcare network as a way to share information and promote the type of changes they are initiating on their land.

There is a strong cohesion among the various groups, a willingness to participate in events and a commitment to organized projects with other landholders. Yet this network does not meet on any type of regular basis and has no firm organization. Mr. Freeman meets with the groups when he is asked and organizes events when it is requested of him.

Freeman believes that the only way to achieve sustainability in Australia is through Landcare because it allows for recognition of what works and what doesn't work in a specific area, and demonstrates how the land can be sustainable for the long-term. This can only be done through the people that work on the land. It cannot be done through any other type of agency because it doesn't involve the people the way Landcare does. The key to sustainability is to have the people on board and willing to take a

chance, to give up some of the luxuries in their life and replace their old methods with new ones. This cannot be done through government demand. As with those who have volunteered to join Landcare, it needs to be adapted and adopted by the initiative and accord of its members.

Within Karuah, Freeman recognizes his role to help guide those 'early adopters' in the move toward sustainable land management through the channels of bureaucracy. Farmers and landholders in this area did not need a movement to understand the communal obligations that each one shares for the well being of the other's land. Because of this simple sense of understanding of a logical manner of caring for the land, Karuah has earned the respect of neighboring regions and a reputation of being a solid role model for rural Landcare on the coastal side of the Western Division of NSW. As Freeman stated, "The community surrounding Karuah is strong both economically and socially and this has parallel effects on its ability to be healthy and motivated to do what's right for their land, their environment and the future generations that will inherit it."

HUNTER RIVER – Summary of Discussion with Julie Power, Landcare Network Coordinator

There are about 400 Landcare groups in the Hunter River catchment, including two other networks that fall under the umbrella of the Hunter. The Hunter Landcare network, however, focuses more on groups situated along the actual Hunter River and on urban Landcare groups in the different towns, including Newcastle, which is situated along the river. As a result, this Landcare network has a strong division between rural and urban groups.

Ms. Power was placed in the position of network coordinator by the local CMA without any real training or proper education on the groups or the area she was supposed to facilitate for. According to her, her job description remained very ambiguous, and because of her newness to the role, she was made to feel unnecessary by the Landcare groups she represented.

The difficulties of Power's role stem from the involvement of the local catchment group who often places itself between many Landcare groups and the network office. My time in the Hunter region gave me a first-hand look at the relationship between state

agencies and Landcare. Joe Thompson represented the Catchment Authority in this region and as a well-respected member of the community and former facilitator himself his presence in the community tended to encourage groups to bypass Power and go directly to the state agency. In this region, Landcare is very ambiguous and does not work within the parameters of bottom-up development, preventing it from ever being able to gain real momentum as a citizen's movement. Within Newcastle, Landcare groups seem more like active gardening clubs than anything that creates real change in land management practices. In the more rural areas, full-time landholders and farmers contest with hobby farmers and weekend landholders that have a more urban attitude towards the needs of the environment. As a region, the Hunter has very diverse forms of land use, ranging from mining to agriculture and rural-urban development, all of which result in many disputes arising from conflicting political ideas.

There are, however, some substantial highlights in this region, namely the development of a Landcare curriculum at the local Tocal College in Patterson, NSW. Tocal College focuses on agriculture management and is what Canadians would define as a technical school. Students can choose to enroll in a Landcare curriculum and learn encouraging new methods of farming that they can initiate on their own farms. In 2004, this course had one of the highest participation rates at the school. During my time in the Hunter region, I was invited to Tocal to speak to a group of teachers and students in the Landcare and sustainable land management program. We discussed similarities between our two countries and we all left with a greater understanding of each others' rural situations. This was my first experience in the Hunter region and it provided a strong basis for the experiences that followed.

Although the Hunter region also organized numerous field days throughout the year that helped generate interest in Landcare, this region is ultimately defined by its rural/urban associations. Power noted that both urban and rural areas have Landcare groups that are based either in the neighborhood, on the street or in the community. Members often know each other and frequently join forces to help out on environmental tasks. The difference in the Hunter region between urban and rural groups is the basis for projects. Urban Landcare projects usually have no direct link with commercial gain or for the financial survival of their property. In rural areas, however, member farmers join

forces to help each other improve the condition of each others' property or common land areas such as river embankments and water sources.

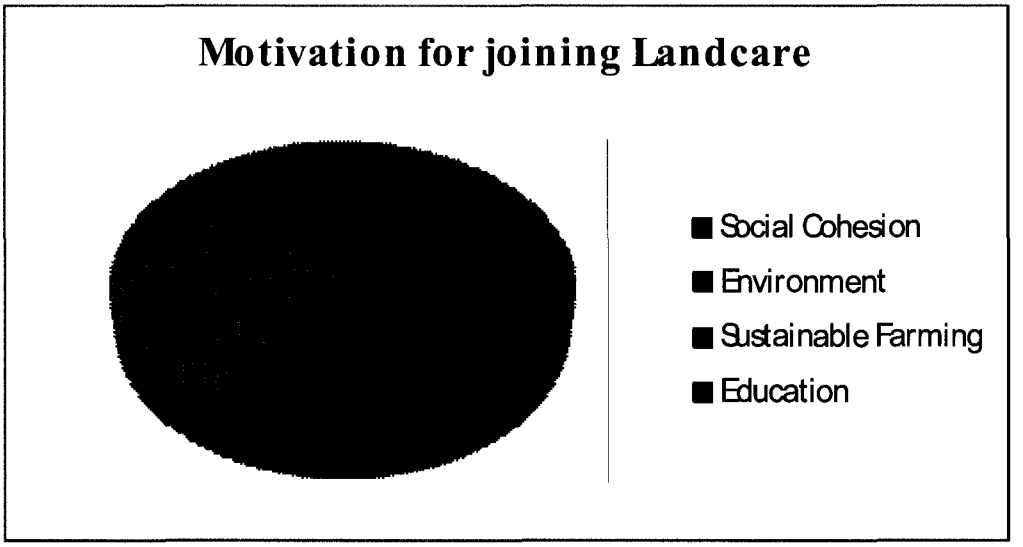
One of the strongest attributes of the Hunter region is its mix of both rural and urban groups, as well as having a strong academic influence from the local college and the University of Newcastle. Many strong policy initiatives to better the monitoring and evaluation process of on-the-ground activities have been developed at the university. One in particular was an innovative strategy developed by Michelle Wark on monitoring and evaluation processes (see **Appendix 4)**; the other was part of the "Hunter Initiative" that was developed to help guide groups through initiating partnerships and developing strong programs and activities. One of the key measures of the initiative was the "S.W.O.T Analysis," a method of analyzing strengths, weaknesses, opportunities and threats of various projects (see Appendix 5). This tool has given many members of the network a means of empowerment in the decision making process.

Discussion

After experiencing first-hand the actual workings of a Landcare group and its networks, it is obvious that it lacks the components needed to be a strong and vocalized political group. With few similarities between networks, and for that matter within greater political boundaries, reaching the original goals that Landcare set out to achieve in the late 1980's will become increasingly more difficult.

Based on the survey results, there were a number of key points that I would like to address regarding how Landcare appeals to the Australian people. It is these attributes that Landcare displays that are integral for its ability to persuade individuals to have an open mind, appreciate their environment and show a willingness to make small, yet important sacrifices that will have lasting effects. As Figure 5.3 illustrates, the reasons for joining Landcare encompass four main areas; social cohesion, care for the environment, a willingness to be better educated about land degradation and a desire for more sustainable land management to provide for future generations.

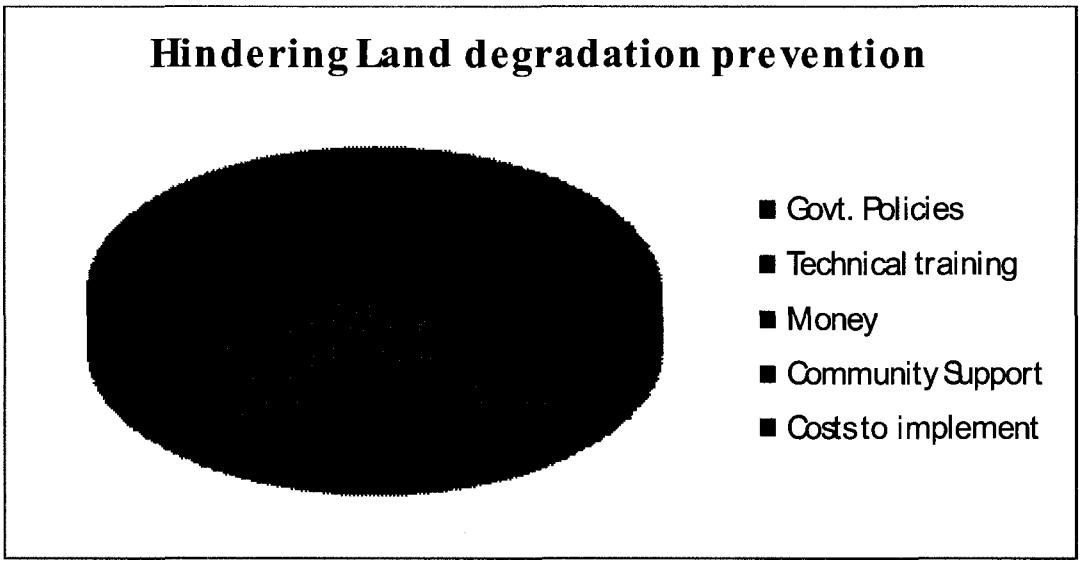
Figure 5.3 – Motivation for joining Landcare



(Source: David Hammer, 2004)

During my field research, it was necessary to try to interpret people's perception of Landcare and the role of state agencies. One of the main methodological weaknesses in gathering information was breaking down the basis of people's opinions and due to great distances that needed to be covered, interpreting people's impressions and situations in a manner that crossed cultural boundaries. With so much ground and information to cover, taking a broad perspective had its faults. It prohibited me from delving deeper into the needs and desires of the individuals that I met and forced me to rely more on secondary literary research to explain ideas such as volunteer burnout, ideological differences between rural and urban groups, true political intentions and the forces that individuals worked against in achieving success against degradation. Figure 5.4 illustrates the top five factors that impede sustainable land management.

Figure 5.4 – Top five barriers to sustainable land management



Source: David Hammer 2004

It became obvious through discussions with individuals that small events such as neighbours getting together to improve the parks in their community, or farmers working together on each others' land, is an inherent trait in the Australian social environment. The tradition of "community obligation" runs through the core of this society and it allows for an easier understanding of Landcare's success in creating a momentum for change towards a sustainable future that originates at the community level.

However, Landcare cannot stop here. It must go beyond ensuring that a river embankment will be protected from erosion by one farmer and must use policy development at the government lever to ensure that everyone is responsible for preventing further land degradation.

The next step for Landcare, according to the three network coordinators that were interviewed, is to become more active in the decision-making process that occurs at the state government level. Many groups are attempting larger on-ground projects and are being more vocal through workshops, field days and conferences. The strength of these groups is owed to the success of a movement that was considered, especially in rural areas, to be an obligation, but that was never a forced commitment.

Australian students have now been given new choices in education to include curricula that include the concept of sustainability and community land management,

thanks to the success of Landcare. As these students gain a stronger and louder voice, they will be better equipped than the previous generation to introduce change not just in how they manage their land, but in how governments enact policies to maintain and demand those changes throughout all of Australia's catchment areas.

Can it be said that settlers came to Australia to one day perfect the sustainable management their land and resources? Perhaps. In many ways, Australians faced one of the most difficult challenges of any European settlers due to the age and fertility of the land they settled. They did not have the advantage of the replenishing powers of seasonal change, they did not have moderate climates, and they did not have forgiving conditions that would accept over-use and poor management of the land.

Australians are starting to realize that there is far greater success to be achieved when they work with the land and acknowledge its carrying capacity with regard to agriculture. To move forward, Australians needs to continue to become more aware of why the land is in the state it is in, rather than trying to superficially alter the conditions. Australia is unique, and cannot continue to use a euro-centric perception of economics, agriculture and environmental understanding.

Landcare's message is that we are all obliged to help one another, to take care of our land and to live with the understanding that the environment is not at our disposal. Landcare helps achieve an ethos that could have only happened under the conditions in Australia. It needed the right political environment (democratic thought) to allow people to reject traditional land management policies set by previous governments, and a biological environment that requires protection because it is so fragile and prone to chronic droughts, floods, fires and other hardships. The social and political climate that had resulted from a growing desperation in Australia's rural regions gave birth to Landcare, and today Landcare has established the right conditions for the next phase of environmental change to take place: legislation. It's now up to Landcare members to push this next phase forward.

CHAPTER 6: CONCLUSION: THE FUTURE OF LANDCARE

Timeline Summary

Below is a summary of past institutional responses to land degradation:

TABLE 6.1 – Institutional responses to land degradation, *(Woodhill, 1999)*

1800 to 1980	South Australia Thistle and Burr Act (1862)
	South Australia Rabbit Destruction Act (1875)
	Western Australia Sand Drift Act (1889)
	New South Wales Soil Conservation Act (1938)
	South Australian Act (1939)
	New South Wales Soil Conservation Service established (1938)
	Western Australia Soil and Conservation Act (1945)
	Hunter Valley Conservation Trust established (1950)
	Victorian Soil Conservation and Land Utilisation Act (1958)
	ACT Soil Conservation Ordinance Act (1960)
	Northern Territory Soil Conservation and Land Utilisation Act (1969)
	Commonwealth-state collaborative study on soil conservation (1975-1977)
	First Commonwealth funding for National Soil Conservation Program (NSCP) 1974-1975 (A$1.75M over three years)
1980 to 1990	NSCP is reintroduced with approximately A$1M per year (1983-1984)
	Greening Australia established (1984)
	Queensland Soil Conservation Act (1986)
	West Australian Soil Conservation Act Amended with provision for Land Conservation District Committees (LCDCs)
	Landcare program established in Victoria (1986)
	Land and Water resources Research and development Corp. (1990)
	TCM legislation introduced in NSW (1986)
	ACF and NFF alliance and the National Land Management proposal (1989)
	Decade of Landcare announced along with A$320M of Commonwealth funding (1989)
1990 to present	NSCP restructured as the National Landcare Program (1992)
	Rapid expansion of Landcare groups
	Development of catchment management mechanisms in most states
	Introduction of regional development and expansion of regional organizations
	Development of Landcare associations
	Establishment of the Natural Heritage Trust (1997)

The Reality of Landcare

Since the beginning of Landcare, there has been an element of ambiguity around its establishment and planning. Campbell provides an example of this confusion by describing one of the individual plans in the NSW Decade of Landcare plan (Lockie and Vanclay, p.132). The plan is an impressive document that lays out a detailed action plan, specifying goals and objectives and who needs to undertake those actions. There is, however, a lack of direction. There are no details about where the financial or personnel resources will come from. More importantly, the mechanisms that will ensure the plan's implementation are always missing.

The lack of a concrete mission plan for Landcare leads to disorganization and a lack of leadership from the government. This is ultimately passed on to those individuals who are involved in Landcare. It creates animosity towards the bureaucratic tendency to write meaningful policies that result in meaningless action. Although this is an aggressive stance to take, it is not entirely untrue.

Today, the objective of the commonwealth is to maintain a more external position and accept the role of facilitator rather than initiate action. This comes on the heels of learning from the mistakes of a century of over-involvement in land management decisions. The commonwealth government has slowly moved away from policies that actively promoted full agency control over on–the-ground projects; they have decided that it is more worthwhile, productive and progressive to sit back and listen, which has had an immediate effect on the funding process. Today, funding from the commonwealth government flows directly to the state level for use by local Landcare and regional management groups and state agencies. While the government still maintains control over the dispersal of funds, this arrangement allows for much greater flexibility in how those funds are allocated. Calls for funding are typically made on an annual basis, with proposals by community groups and government agencies vetted, prioritized and reviewed by two separate panels; Regional Assessment Panels (RAPs) and by State Assessment Panels (SAPs) (Lockie and Vanclay, 2000).

As I have stated before, a revolution of change does not happen overnight or even over a decade, but the roots and foundation of the revolution does become evident. The number of people and groups operating under the umbrella of Landcare is only one example of the changes that have occurred over the last decade. Education and awareness of land degradation and its effects on society as a whole is another example. While the success of these two examples cannot be given enough praise, there are still no easy answers as to what is or is not ecologically sustainable development or sustainable natural resource management. As a global entity, we have tried to truly define what sustainability means in order to stimulate change. The Bruntdland commission brought attention to the concept of sustainability in 1987 and we have been trying to properly define it ever since.

Today, the role of Landcare groups and networks, working alongside state agencies, is to analyze the failed policies of the past, which were initially established to combat the environmental degradation occurring across Australia, and replace them with action. These groups must decide whether following the same old patterns will lead to even greater problems in the future. The idea that as members of democratic institutions we are typically more able to achieve results as members of these 'Institutions' holds true on the basis of democratic decision-making. By encouraging open dialogue with all parties, Australians hope to integrate knowledge from the past and present and use it to approach the future and, through a combined effort, achieve a successful land management initiative.

Fortunately, the idea of community involvement in caring for the environment through Landcare has struck a chord with a wide constituency, including those who do not necessarily see themselves as either environmentalists or conservationists. Landcare has provided a powerful discursive tool to ride the groundswell of environmental concern that has emerged in Australia since the late 1980s and to help organize this concern into a concrete program of action (Cary and Webb, 2001; Curtis and De Lacy, 1996; Lockie and Vanclay, 2000). The underlying notion that people can get involved and make a difference without excessive government interference has been of great importance in securing the participation of so many people in community Landcare groups.

With the government maintaining power at some level within the Landcare network, people have questioned how they will maintain the objective of bottom-up planning and local empowerment without attempting to control all aspects of Landcare in all regions. The strongest influence of state agencies is centered on education and awareness, and stems from the desire to maintain these aspects at the top of the priority list. Governments, and to some extent certain Landcare bureaucrats, feel that educational strategies are aimed at developing subjects that complement the external, political and economic environment (Webb and Cary, 2002). Part of the problem with overall public acceptance of Landcare is the fear of what exactly these agencies want farmers to accept. Many farmers feel that the Landcare initiative is simply an attempt to convince them of the value of government policy. Those from the school of thought that the Landcare movement needs to become politicized, would state that the movement needs to align itself with political objectives, to ensure a more productive success of its goals. Which way is correct must be decided by individuals, and having extension officers, facilitators, and coordinators attempting to manipulate opinions may be seen as interference from the government.

Landcare is considered a community process that is based on a learning group, and intervention by a Landcare specialist is understood within the context of certain group knowledge and organizational behaviours (Campbell, 1994). When that Landcare specialist attempts to take too much control and hold too much influence over the group, the balance of power and decision-making authority will be too much in favour of the government. To prevent this imbalance, intervention techniques and exercises can be deployed to help group processes and allow communities to move towards ownership of their own problem (Campbell, 1994; Lockie and Vanclay, 2000). A facilitator or coordinator should help the group identify their own clearly defined problems, goals, leaders, plan and boundaries (Campbell, 1994; Lockie and Vanclay, 2000).

A constant theme throughout Landcare is its ability to maintain a depoliticized position. Through its desire to achieve a stronger role in local decision making, however, it has nevertheless entered the political stream. Throughout history, all successful movements have evolved to include a political aspect. In order for Landcare to advance to the next level of success, participants must understand the importance of bringing

Landcare to the forefront of political debate. Understanding that political objectives are met through an alignment of apparently disparate social norms, strategies, knowledge and techniques that provide for congruence between the self-regulating capacities of subjects and the external political-economic environment will only give the movement more strength to succeed where it may have previously failed (Cullen, Williams and Curtis, 2003; Lockie and Vanclay, 2000).

While it has remained outside the political ring, the problems that Landcare brings awareness to, namely rural land degradation, have typically been a cooled political debate among politicians. Graham Richardson, the Federal Environment Minister during the 1990s, was often quoted as saying, "It's just not a sexy issue!"(Campbell, 1994).

The previous disadvantage of placing rural land issues into the political ring, as was the case prior to introduction of Landcare has slowly become an advantage, because the basic concept of what is trying to achieve is not politically controversial and has the ability to be desired by both sides of the political fence. The commonwealth government sees the importance in maintaining a popular view of Landcare across the country, while inputs towards the individual farmer may be open for criticism. When it comes to openly promoting Landcare, they remain the biggest supporters. It would do more harm not to support Landcare, especially when so much time and money has been invested. Despite the difficulties evaluating the overall impact of Landcare, few people have openly questioned its success. At the same time, some environmentalists see the program merely as a source of good publicity for the commonwealth government (Woodhill, 1999)

Obviously, issues of resource management as they pertain to private property rights cannot be dealt with overnight, but starting the process to legislate change in how we deal with degradation that overlaps private boundaries is a necessary start (Lockie and Vanclay, 1999). This is a prime example of how the participative and integrative emphasis of Landcare appears to be moving in the right direction towards coordinated collective action that is necessary for common property regimes.

Margaret Bailey, a state Landcare coordinator for New South Wales from 1993-1995, asked herself the question "Is Landcare transforming Australia?" After reflecting on her experiences she concluded that, "Landcare is often so captivated by its own myths that it is failing to be the real force for the transformation it could be!"(Lockie and

Vanclay, 2000 p.129). She compares the direction that Landcare is taking to that of entering the realm of mythology: the story of a people and their struggle to achieve a balance in their use of land and their attempts to survive amid massive land degradation. Lockie and Landcare Vanclay, 2000 p.129)

The source of many of the problems with Landcare is the goals and objectives that were laid out at the beginning of the Decade of Landcare. These were a set of plans, as Bailey describes them, "written by the bureaucracy for the bureaucracy". The goals for Landcare were as follows:

1) to make the whole community aware of the problem of land degradation and the benefits of sustainable land use;
2) to continue the development and implementation of sustainable land use principles and practices;
3) to ensure all public and private land users and managers have an understanding of the principles of sustainable land use and how to apply them in their management decisions;
4) to encourage all Australians to work together for sustainable land use; and
5) to put effective and appropriate economic, legislative and policy mechanisms in place to facilitate the achievement of sustainable land use (Lockie and Vanclay, 2000)

Landcare: Moving forward

Have these been realistic goals? There have been many criticisms of Landcare, specifically that Landcare groups lack the capabilities to achieve the goals mentioned above. Much of the blame lies with government processes; achieving these goals needs the complete support of government—both within and between each level of government. This was a major principle in the original framework of objectives when Landcare was formed by the NFF and ACF. As Alexander stated in *Critical Landcare;* it is a reflection of the degree of failure to achieve these objectives that the need for this approach had to be emphasized six years after the creation of Landcare in the 1995 National Landcare Facilitator's report (Lockie and Vanclay, 2000 p.131).

Many people feel that the period of awareness during the decade of Landcare needs to be immediately followed with major on-the-ground accomplishments and physical displays of what Landcare has the potential to achieve. There can only be so much discussion, so many conferences, so many networking meetings before people grow tired and disillusioned by the whole process, and the potential for physical action will be lost completely. As growing disillusionment occurs amongst those who have been the biggest advocates for Landcare or who have maintained significant roles, such as Bailey, now is the time for action.

People will always make excuses why an initiative cannot be implemented. Landcare has been described as too complex, or too long-term. This is true, but so are many other accepted facets of social institution. Does this mean that this is a viable excuse to allow failure to take hold? No, but it is an easy way of avoiding implementation. However, if there is one thing that everyone within Landcare can agree on, it is that information on how Landcare works is easily available and has been publicly discussed many times.

What Landcare needs to build on is the powerful driving force it has become for hundreds of thousands of people. It cannot let this driving force be weakened if it wants to take action and address one of the most fundamental issues for Australia. What also must be addressed are the disparities between certain groups. Farmers need to understand the importance of having strong support from urbanites and not feel that they are fighting against them. Landcare groups also need to develop a stronger independent voice.

The bottom line is that Landcare is considered to be a movement trying to change attitudes about farming and to encourage sustainable land management that operates with a sense of ecological awareness. The widespread change in attitudes, followed by change in physical, political and social practices, is a goal that cannot be expected to be reached in the mere span of a decade. However, Landcare has succeeded in creating a sense of awareness about the issues of land degradation that Australians have never witnessed.

Landcare has had an influence on the Australian public, especially the rural public, like no other movement before has done. It has helped change, for the better, the role that the public has been allowed to play in the decision making about community development and environmental management. It has set the foundation for the public to

gain the strength needed to make governments at all levels listen to them and make the changes that are being demanded (Campbell, 1994). Members of Landcare need to understand their influence and the role they play in transforming not only the land, but the rules that govern how the land can be used. When the decision makers are not only the legislators, but the actual users of the land, the pieces are in place for change at an impressive magnitude. This idea is taken very seriously by the over 4,000 Landcare groups across the country that are committed to change the way they look at and work the land, and it has helped to bring awareness to those who had not yet seen those possibilities (Cullen, Williams and Curtis, 2003; Sobels, Curtis and Lockie, 2001; Webb and Cary, 2002). To not take advantage of this strength and use it as fuel to further politicize the environmental movement would and should be considered a waste.

Landcare is about giving the communities involved a sense of control and ownership over the issues of land degradation and how they affect them. Its resulting delegation of power by state agencies or its devolution, depending on the inherent outcome of funding opportunities has typically been delivered a positive reception. However, along with giving power comes the need to accept power and the need to respect power. Regardless of the meaning, the commonwealth has taken important steps in its diffusion of roles and responsibilities directly to the users of the land. This sense of empowerment when undertaken by newly formed 'institutions' must heed to the powerful forces that abusive tendencies can stoke when in control of that power and must now take responsibility for future actions. During the last century, environmental management in Australia has evolved through stages of uncertainty, complexity and stretched temporal scales in natural systems. Now, through Landcare's evolution, we see increased community participation and emerging multiple interests begging for new approaches to land management and challenging older arrangements that contributed to land degradation. The next stage of environmental and Landcare evolution is to include these integrated frameworks and approaches such as adaptive management; ecosystem management and total catchment management. Developing a more active role in policy development, implementing more productive on-ground works projects and beginning the steps to move beyond the majority of emphasis being on education and awareness, is what taking the next step for Landcare is about.

Concluding Remarks

Despite the progress made by Landcare in the last 15 years, the questions still remains whether it is merely a band-aid remedy that will be used until the land and environment improves, or has Landcare been able to make permanent changes to the knowledge Australians have about the importance and fragility of their environment?

Too many times has the Australian government repealed strict environmental policies because short-term solutions have been found. This was the case at the turn of the twentieth century with the Western Lands Act, during the 1930s with the creation of the Soil Conservation Service and again during the 1960s with the advent of products and technology geared towards delivering maximum production yields.

History and my own research show the skepticism and mistrust that Australians have when it comes to understanding their environment. The results of my survey show a willingness to become better managers of the land, but an underlying mistrust towards government, making farmers unwilling to change their methods when direction comes from outside influences. There has historically been, and there continues to be, a lack of support from the upper levels of government in the form of strong economic policies to help persuade more farmers to develop sustainable farming plans to compliment the work being done in the field. However, it is hard to solely blame the federal government, since they are looking out for the well-being of their country in a very competitive global market.

As I have shown in my results on factors hindering the success of Landcare, survey respondents listed their apprehension of government involvement and policies as part of the ingredients that have led to mistrust. These policies lack clear concise goals as stated by those interviewed to make the path towards adoption of sustainable practices more accommodating.

My time in Australia showed me that there is a true willingness, regardless of government involvement, to move forward and develop a better way to farm, one that addresses the unique needs of Australia's environment; unfortunately, only a minority of individuals are able to carry the financial burden associated with a move towards more sustainable land management. There are also other difficulties. As in many western countries, building a strong rural community is a difficult task. Farmers, in the truest

sense of the word, are a dying breed; those entering into a career in agriculture need to be well-educated and have an understanding of the world beyond their community and beyond their country's borders.

Those same results on hindering factors from table 5.1 also showed the lack of desire to endure the heavy financial burden that could be felt from adopting new techniques and utilizing newer equipment, but as those same results show; education is becoming more effective in teaching a new school of thought, one which younger generations adopting a career and a livelihood centered around the farm are learning and enjoying success at. Better education and awareness towards sustainable land management as we have seen developing throughout Australia has also played a major role in limiting the negative historical attitudes of farmers toward change and have replaced it with a more encouraging perspective on the benefits of change for individual farmers, the community and their land as I have stated from first hand research in the Karuah Great Lakes network.

My experience participating in Landcare groups showed me that although the bureaucratic structure of Landcare resulted in a lack of commitment from upper levels of government, the Landcare groups themselves were indeed well-organized and structured in such a way that allowed information to flow freely. The state agencies involved in Landcare see this as well and are trying to move away from the role of deliverers and initiators of service, to that of delegators and facilitators. The reason for this is two-fold: on one hand, they want to reduce the cost that is associated with active on-the-ground extension support, but on the other hand it is an attempt at creating partnerships with different Landcare networks so that together they can create the fundamental tenets of a well-structured policy for sustainable land management. State agencies want to put citizens in a position of power; they don't want to just lead them towards the necessary changes anymore. This coincides with the fundamental principle of Landcare that it is not forced upon participants, but chosen by them. Through my participation, typically in the Hunter and Lake Macquarie, I saw in too many instances that hand-holding was part of the job description of the state-hired facilitator. If Landcare is to survive, it needs to assume control of its destiny, it needs to become politicized and it needs to remove itself as much as possible from its dependence on government handouts, as long as it can avoid

falling into the sphere of corporate influence. The willingness of networks like the Hunter and Lake Macquarie need to have more interest in assuming these greater controls that will allow them to be less hand held and in return for the hands of Government to make individuals more included in decision-making. Whether members in regions like the ones I spent time with want this type of control today, it will be a desired "Right" of future generations pursuing a stronger and more sustainable future in agriculture.

The success Landcare has had in building its army of environmentally conscious citizens has shown what can be accomplished when people work together to address problems, encourage change and adopt positive plans of action. Survey results have showed that a greater understanding of the environment has been one of the key benefits of being apart of a Landcare group among others things. Yet, the biggest obstacle to making Landcare a long-lasting entity in Australia is the inability of policy makers to put a plan of action into legislation that would create complimentary policies at a national and international level. Australia's government needs to understand the long-term benefit of providing the capital to make these changes happen. Cheap food from a third-world country is not a stable market to invest in; the rural economies of Australia are. Giving people a reason to stay on the farm, to live in those rural communities and to continue investing in future generations need to be at the top of any government's domestic agenda. These are the factors that need to stimulate and persuade groups like the Hunter network from dropping their unwillingness for entering a political debate and removing the structure in place that has made their network similar to an old boys network and replace it with a willingness to act. This most likely requires a change in group dynamics. In this particular instance, the need to have a more active coordinator, might mean having someone who truly wants the job campaign for it, instead of applying for it. Having an elected network coordinator will strengthen the voice of networks across the country and help pull together Landcare in a much more structured and powerful network. Obviously, this is something the Commonwealth would rather not see; the voices of hundreds of thousands of people coming together in a unanimous voice, demanding a better balance of micro and macro economic policies and land management policies directed at focusing on the state of the individual farmer and their existence before deciding on how to place Australia's footprint with the global economy.

If Landcare doesn't succeed, this lack of initiative will be its downfall. The voice of all Landcare members across the country needs to be strong enough and loud enough to encourage future generations to acknowledge the significance of their footprint on their country's fragile soil. They must have the tools to continue to create a sustainable environment for their crops to grow, their rivers to run clean and their soil to remain healthy.

In conclusion, Landcare is an incredible movement, one that has harnessed the emotions and values of Australia's citizens to create a sense of community obligation. Each Australian owes it to themselves and their fellow citizens to play their part in ensuring that their environment, their rural communities and their economy stays strong. The fact that Landcare's membership reaches into the hundreds of thousands is testament to this sense of community obligation. But like any movement, how it evolves will ultimately decide its fate. What Landcare lacks is a strong leader with a willingness to push involvement to the next level and to make the political statements that will make the environment a truly political topic. Landcare has the opportunity to take the shift in attitudes and opinions it has already achieved and use them to spur Australians (both individuals and policy makers) into action to implement sustainable practices and to demand environmentally responsible policies. If Landcare's members really want to have a long-lasting, far-reaching impact, they need to finally force the general public into action. The public must decide whether or not to support Landcare as a political issue and when that time comes, Landcare's destiny will begin to unfold.

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APPENDIX 1A – Copy of My Survey Questions

Achieving Sustainability in the Hunter Valley:
A case-study on the effectiveness of Landcare as a sustainable initiative.
By David Hammer Master's Student

This questionnaire forms part of my research for my MA thesis at Concordia University (Montreal, Canada) and is being conducted according to my University's guidelines regarding research ethics. These guidelines assure those interviewed have the right to anonymity (should they so choose) and to terminate an interview at any point. Concerns should be directed to my supervisor, Dr. Alan Nash (Nash@vax2.concordia.ca)

Questionnaire

1) Are you aware of the land degradation issues affecting your land, or potentially affecting your land??

   a) Yes

   b) No

   c) Have a general idea

2) Are the problems affecting your land contained to your property, or are they spread to neighbouring properties?

   a) Spread to neighbouring properties

   b) Contained to my property

   c) Not sure

3) Are you a member of a Landcare group? If yes:

   D) Prior to becoming a member did you ever initiate any preventative measures to fight degradation issues on your own?

   E) Did you ever combine your efforts with neighbouring landholders?

   F) Were your efforts successful in combating those problems? How so?

4) Have you participated in Landcare projects on your property? What have been the results from an environmental perspective? (multiple response)

   a) Healthier crops

   b) Less dependence on fertilizers and pest management.

c) Higher water quality
d) Healthier soil structures

5) What have been the results from an economic perspective? (single response)
a) Stronger financial benefits from healthier crops.
b) Increased implementation costs have led to escalating financial problems.
c) Positive long-term economic outlook

6) What have been the results from a societal perspective? (multiple responses)

a) Developed better relationships with neighbouring landholders.
b) Greater transfer of information between landholders on land issues and successful management techniques.
c) Increased health issues associated with poor land & water quality.
d) No noticeable change from Landcare.

7) Has your land been affected by neighbouring landholders? If yes, how? (multiple responses)

8) What measures if any did you take to solve the problem?

9) As a member of a Landcare group, has your participation made it easier to acknowledge and combat landholder conflicts?

10) Previous to your involvement in Landcare, what has been the greatest hindrance to combating land degradation issues? (multiple responses)

11) What is your greatest fear as a farmer with regard to your property? (multiple responses)

12) Has being involved in Landcare met your expectations?

13) How has your company been involved in Landcare projects? (multiple responses)

14) Have your intentions for funding and participating been for philanthropic or tax-incentive reasons?

15) What has been the outcome of your company's involvement with Landcare?

16) Has involvement in Landcare changed your company's and employees attitudes towards implementing sustainable initiatives?

Thank you for you participation

David Hammer

APPENDIX 1B – Copy of Survey Questions Asked by the DLWC NSW

Landcare's role in building communities

BACKGROUND

A social survey of NSW landcare groups was undertaken in 2001 to assess the role that landcare has played in building communities. The objectives of the survey were to:
Understand what the community has gained from landcare, to guide its development.
Determine the motivations and reasons for people joining and participating in landcare, to attract new members.
Measure the social benefits of landcare involvement to supplement government statistics and on-ground data that measure the success of landcare.
Illustrate the value of landcare beyond natural resource benefits, to obtain wider community support.

The Department of Land and Water Conservation (DLWC) and the NSW Landcare Working Group have collaborated to evaluate landcare's 'social capital'. This was funded jointly by the Natural Heritage Trust (NHT) and DLWC.

RESULTS

Background landcare information **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
How long have you belonged to your landcare group?	Average = 6 years
How long has your landcare group been operating?	Average = 7.7 years
What was your main motivation for joining landcare? *(one response)*	23% - to work with neighbours to improve their district's long term environmental health 18% - because of a specific environmental concern 17% - to improve the long term sustainability of their farm management practices 12% - interest in gaining new skills about environment/farming activities
How would you describe your contribution to your landcare group? *(multiple response)*	65% - understanding of local environment 61% - manual labour 61% - organisational skills 50% - project management 39% - local community knowledge
Has your landcare group contributed to the community in any of the following ways? *(multiple response)*	83% - improved environmental works or awareness 73% - improved farming/natural resource management practices 59% - bringing the community together

Landcare and individuals **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
Has involvement in your landcare group changed you positively as an individual? *(multiple response)*	83% - new or better environmental knowledge 44% - new or better community/social knowledge 42% - new or better skills 30% - improved sociability and socialising skills 29% - increased personal confidence
Has involvement in your landcare group had any negative individual effects? *(multiple response)*	20% - increased exposure to conflict 20% - creation of difficult work obligations 17% - increased personal stress or anxiety

Landcare and change **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
As a result of your involvement in landcare, have you changed the way you think about or relate to any of the following? *(multiple response)*	64% - change in the way you think about the environment in your local area/region 61% - change in the way you think about land use practices in your local area 41% - change in the way you feel about specific places in your local area 41% - change in the way you think about or relate to your Local Council 36% - change in the way you think about or relate to your local community
Would you describe these changes as 'mostly positive' or 'mostly negative'?	96% - 'mostly positive'

Landcare and other movements **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
Have you joined any other similar groups or organisations as a result of your involvement in landcare?	46% - 'yes'
Have you joined any other community or local action groups that are not linked to the environment as a result of your involvement in landcare?	18% - 'yes'
What other types of groups have you become involved in? *(multiple response)*	30% of respondents answered this question and there was a fairly even spread of responses between: community service; business; sporting; social; and education
In what way do you think involvement in landcare led you to other group involvement?	Most answered: through increased awareness and concern of other local issues (sample number too small for percentages)
Because of your work in landcare, have you found yourself doing more of the following 'informal' activities? *(multiple response)*	58% - socialising with different people 20% - assisted people with their work outside landcare

Landcare and links to the community **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
Does your landcare group get free assistance or help from the local community?	71% - 'yes'
If your landcare group gets help from the local community, what type of help is it? *(multiple response)*	57% - volunteers 32% - information 23% - promotion/advertising 23% - access to other resources
17. Do you think the local community values your group work?	79% - 'yes'

Social Activities **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
18. Does your landcare group organise social activities?	57% - 'yes'
19. Who organises the social activities most of the time?	58% - individuals within the group 35% - the group as a whole
20. What is the main purpose of your organised social activities? *(one response)*	30% - sharing knowledge 20% - relaxing 18% - promotion or education

Attitudinal questions (indication of agreement level) SURVEY QUESTION (in response order)	RESPONSE (SCALE = STRONGLY AGREE | AGREE | DISAGREE | STRONGLY DISAGREE)
25. "Most people who join landcare have an interest in land management and environmental protection"	98% - Agree (A) or Strongly Agree (SA)
30. "There is a good level of skill and knowledge-sharing within our landcare group"	92% - A or SA
34. "People from diverse cultural backgrounds would feel welcome in our group"	92% - A or SA
29. "Within our landcare group we make decisions democratically"	91% - A or SA
32. "Our landcare group has expanded the skills of its individual members"	85% - A or SA
27. "Our landcare group includes a diversity of people with different abilities, backgrounds, ages, cultural and political affiliations"	83% - A or SA
24. "Most people join landcare to solve community issues"	68% - A or SA
31. "Our landcare group interacts a lot with other community groups and people"	63% - A or SA
37. "Our landcare group can always get help from the community if we need it"	59% - A or SA
38. "Because of our landcare group, our local community is now better able to respond to change"	56% - A or SA
35. "Our landcare group gets involved in other local activities and projects, not just environmental works"	50% - A or SA (44% D, 6% SD)
26. "Being involved in landcare helps to resolve local conflicts"	48% - A or SA (46% D, 6% SD)
28. "Responsibility and participation within our landcare group is shared equitably"	44% - A or SA (48% D, 8% SD)
36. "A lot of our landcare projects are more important to the community than to the environment"	29% - A or SA (59% D, 12% SD)
33. "Our landcare group has attracted members from diverse cultural backgrounds"	25% - A or SA (64% D, 11% SD)

Open ended questions SURVEY QUESTION	RESPONSE (SAMPLE SIZE = 66)
39. Do you think there is a role for landcare in your community? *(multiple response)*	98.6% - 'yes'. Of these: 32% - to promote environmental awareness/education 27% - to coordinate/ share resources/provide a forum for participation 27% - to improve the environment
40. Has your landcare group changed or influenced your community, or people in your community? *(multiple response)*	78% - 'yes'. Of these: 40% - by promoting environmental awareness 20% - by improving people's attitudes to the environment 20% - by bringing people together
41. Has the work of your landcare group had any social or community effects? *(multiple response)*	72% - 'yes'. Of these: 50% - brought the community together 25% - promoted environmental awareness 15% - improved attitudes to the environment
42. Through your landcare work, have you or your group become aware of any local non-environmental issues?	34% - 'yes'
43. What did you think landcare would deliver for you? *(multiple response)*	41% - environmental knowledge/awareness/education 23% - an environmental improvement 16% - community spirit/involvement

	7% - financial support/assistance
44. Has it met with your expectations? *(multiple response)*	92% - 'yes'. Of these: 25% - more environmentally aware/more knowledgeable 15% - has improved the environment 15% - need more involvement/more members 15% - need more resources/more support 5% - funding issues
45. What does your landcare group need to move ahead? *(multiple response)*	27% - support/coordination/technical advice/motivation/commitment 23% - more members 18% - financial aid

Demographics **SURVEY QUESTION**	**RESPONSE (SAMPLE SIZE = 66)**
46. Main source of household income?	55% - business 32% - wages and salary 8% - pension or benefits
47. What industry do you (mainly) work in?	71% - Agriculture/forestry/fishing/hunting
48. Are you male or female?	60% - male 40% - female
49. Which one of the following do you (mainly) work in?	67% - self-employed or freelance
50. Which of the following age groups do you belong to?	24%: 35-44 years old 26%: 45-54 years old 23%: 55-64 years old
51. Are you of Aboriginal or Torres Strait Islander origin?	None of the respondents were Aboriginal or Torres Strait Islanders
52. In what country were you born?	97% - Australia
53. Is English your first language?	English was the first language of all but one respondent
54. Which of the following best describes your household?	83% of respondents lived in a household comprising of a couple or family
55. Are there any children aged under 16 years who usually live in this household?	40% - 'yes'
56. Which of the following income brackets does your total household income fall into (income of all household members aged 15 and over before tax)?	30% earned over $60,000 per year 25% earned $40,001 - $60,000 per year 16% earned $30,001 - $40,000 per year 20% earned $20,001 - $30,000 per year
57. What is the highest level of education you have completed?	Just under 50% of all survey respondents had completed a university or CAE diploma, degree or higher degree
58. In which of the following do you live?	Almost 60% of respondents lived in a rural area (population below 3000)
59. How long have you lived in the local area?	Average - 23 years
60. Do you own land in the local community?	92% - 'yes'
61. Which of the following best describes the property you live on?	50%: 201 - 5,000 hectares

APPENDIX 2 – Copy of Meeting Agenda, Showing Myself as a Participant

Hunter Region Landcare Network

Seaham Region Meeting Agenda - Saturday 17th April 2004

Picton Hall, Bryce

Time	Item	Lead role
8.30-9.00am	Coffee, tea	
9.00 START	1. Welcome, Apologies	Chair
9.05 -9.10	2. Agenda Check & Adoption of Previous Minutes	Chair
9.10-9.20	3. Business Arising from Minutes Action 1: Julie to forward previous minutes to Rod Fletcher Action 2: Julie to email members regarding TAFF meeting to HRLN Action 3: Joe to include the methodology of Newell's project to be included in minutes Action 4: Stephen and Julie to write a letter to Ministers and relevant people to raise concerns over potential loss of expertise in the area with skilled staff not being permanent staff in new CMA structure Action 5: HRLN to include a HRLN flyer in mailout to when Joe updates directory to advertise network to existing groups Action 6: HRLN to send media releases on Cattle meeting and to Indigenous Men and concern over potential loss of skills with new CMA structure	Chair
9.20-10.20	60-Day Action Plans 4.1 Review of Previous 60 Day Action Plans	Follows Strategic Plan 60-day Action reporting proforma
10.20-10.30	General Business	
10.30-11.00	5.2 HCC Environment Award partnership	
11.00-11.20	Morning tea	
11.20-11.40	5.3 HRLN newsletter- workshop ideas	
11.40-11.50	5.4 Ops Committee news	Chair
11.50-11.55	5.5 Treasurer's Report-	Treasurer
11.55-12.10	5.6 CSO updates	CSO
12.10	5.7 LGA reports [illegible]	LGA rep s
12.10-12.20	6.1 Other Business- [illegible]	Chair
12.20-12.30	David Hannager	
12.30-1.00	Lunch Provided	

APPENDIX 3 – Copy of Monitoring & Evaluation update by Michelle Wark

Community Monitoring, Evaluation and Reporting Framework

Implementation Project UPDATE

17th April 2004

Framework Review

The Framework has been revised over the last two months to try and improve its usability. This has been done in conjunction with the community support officers who I have spoken with individually and then incorporated their suggestions into the framework. It is being adapted for use in a range of areas including grant application processes, group action planning, project planning, work planning and evaluation of past projects.

The Framework is essentially a planning structure and its purpose is to improve the way projects are planned. If projects are set up using a logical structure with serviceable objectives and clearly defined outputs and inputs, then suitable monitoring processes can be identified at the beginning.

Consideration of monitoring and evaluation needs to be an integral part of the whole project cycle from the planning phase through to looking back on what was achieved and what can be improved.

Trials of the Framework

1. Workplan for my position
2. Williams River Small Scale Project Devolved Grant
3. Action Planning with Wetland Landcare groups
4. Project planning for a rehabilitation project at the Dap with an indigenous group from Mudgee
5. Retrospective assessment of some Williams Landcare projects and also the implementation of their Riverbank Plan

Monitoring Techniques

A range of monitoring tools have been identified from simplistic and user friendly through to scientifically rigorous. It is envisaged that a suite of techniques will be recommended and groups/landholders will choose the approach that is most suitable for them.

- Rapid Assessment techniques which a landholder would be capable of undertaking e.g. the Hunter Bushland Health Assessment, Save the Bush Kit, Community Rapid Assessment & Monitoring Checklists.
- Photopoints – simple and effective for gauging general improvements
- Landholder observations – a valuable source of information about project progress
- Project Diary to record details of activities e.g. how many hours go into a project, budgeting information and general project observations.
- Detailed surveys – for landholders with the time, ability and interest to carry out more in-depth monitoring of their project sites. There is also an opportunity to link interested landholders with students from the University of Newcastle and TAFE.

Monitoring and evaluating various sized projects

Different sized projects have different requirements in terms of monitoring and evaluation. It has been agreed by the steering committee to link the thresholds for this with the financial value of the project. This will result in three categories that have varying requirements in terms of monitoring and evaluation, technical input and payment structure. As the value of the project increases so too do the accountability requirements and the expected results of the investment, thus the need for more comprehensive monitoring.

If you would like to know more about the project or have any questions please contact me on 4930 1030 or m.wark@hcmt.org.au

APPENDIX 4 – Copy of SWOT Analysis of the Hunter Region Landcare Network