



THE VALUE OF COMMUNITY

LANDCARE:

A LITERATURE REVIEW

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When the earth is spoiled, humanity and all living things are diminished. We have taken too much from the earth and given back too little. It's time to say enough is enough. Today's announcements won't solve everything. But with the right mix of political commitment and community support we can ensure that our country is simply the best in the world. This is our country, our future.

- **Bob Hawke launching the 'Decade of Landcare', 20 July 1989**



Abbreviations & Acronyms

- ACF** – Australian Conservation Foundation
- ACIAR** – Australian Centre for International Agricultural Research
- ANU** – Australian National University
- ABS** – Australian Bureau of Statistics
- CBNRM** – Community Based Natural Resource Management
- CPR** – Common Pool Resources
- CBP** – Current Best Practice
- CMA** – Catchment Management Authority
- CSU** – Charles Sturt University
- DAFF** – Department of Agriculture, Forestry and Fisheries
- DAWR** – Department of Agriculture and Water Resources
- DEE** – Department of Environment and Energy
- ESD** – Ecologically Sustainable Development
- LAL/LA** – Landcare Australia Limited
- NFF** – National Farmers’ Federation
- NHT1** – National Heritage Trust
- NHT2** – National Heritage Trust Extension
- NLAC** – National Landcare Advisory Committee
- NLN** – National Landcare Network
- NLP** – National Landcare Program
- NRM** – Natural Resource Management
- QWALC** – Queensland Water & Land Carers
- R&D** – Research and Development

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I have conducted a survey and review of literature on the value proposition of community Landcare in Australia. A wealth of literature over the last 35 years has explored Landcare's value from many respects, and this review seeks to sketch a picture of this literature and some key points.

Additionally, I have spoken to individuals of different perspectives and backgrounds in various parts of Landcare and Australia's NRM system including government agencies, other regional bodies or from R&D to identify important publications. This has also been useful for gaining deeper insight into both what literature and what messages are most salient at this point in time for Landcare. Their contributions and insights have been reflected in the direction and composition of this review.

I have structured this report to illustrate how Landcare works (through social capital, community capacity and extending knowledge), and then what it achieves (its environmental, economic, and health values). I have also included a brief description of Landcare's history and later a review of Landcare's place in the broader picture of Australian NRM and the Australian NRM model. The series of case studies appended, from across Australia reveals just some of diversity and benefits Landcare yields in different places and communities.

1. Note on the name Landcare

First, it is important to be clear on what this review refers to in using the name 'Landcare'. The term 'Landcare' has enjoyed various meanings and definitions. From being an 'ethic' or philosophy of stewardship and action against land degradation; to a grassroots movement encapsulating this philosophy; to a national model of NRM involving a network of bodies and groups; and even broadly to describe any action addressing issues of land degradation, whether by communities, individuals or even corporations.¹ Some have distinguished between Landcare ethic, Landcare movement, and the Landcare model (GHD 2013, 6). Others have distinguished between the government (NLP), community, and the grassroots movement aspects of Landcare (Cary & Webb 2000). Scholars such as Stewart Lockie have highlighted the attractiveness of

¹ When describing the landcare 'movement' some prefer to use the lowercase or small 'l' spelling of 'landcare' over the uppercase 'L' Landcare which is associated with the National Landcare Program.

the 'Landcare' label, and subsequent incentives to associate with it (which can have negative consequences) (1994; 1999). This review focuses on the network of local community groups across Australia made up of volunteers, landholders, as well as paid professional staff. These groups, in partnership with government and regional bodies and institutions, work to create more sustainable systems of land use and management (Campbell 1997, 145). As this review will demonstrate, community Landcare is, does and achieves much more than this.

Over three decades, a large and diverse body of literature developed exploring Landcare. This literature ranges from formal monographs, academic articles, and research papers, to reports produced by government, private contractors, and Landcare bodies. It includes a considerable body of 'grey literature'. This review attempts to collate all the existing and relevant literature and provide an overview up to this point. Of course to cover the enormous body of grey literature is infeasible and this review mainly concerns itself with broader literature, reports and assessments. In doing this, it hopes to provide both a conceptual understanding of Landcare's community value proposition as well as an evidence base of compelling information and data.



Figure 1. Rehabilitation of escarpments previously infested with serrated tussock and rabbits in the Barrabool Hills near Geelong with Landholder and student volunteers (Photos courtesy of Kaye Rodden, see Figure 16 for before and after).

A number of scholars have afforded Landcare significant attention in their work. Professor Andrew Campbell, currently CEO of the Australian Centre for International

Agricultural Research has written extensively on Landcare and Australia's NRM for more than three decades. Campbell assisted Rick Farley and Philip Toyne in developing the draft for the 'Decade of Landcare', becoming the first National Facilitator of Landcare (1989-1992). Distinguished Professor Stewart Lockie completed his doctorate on the social aspects of Landcare and has also written frequently on the topic. Allan Curtis from Charles Sturt University has written prolifically on Landcare and NRM in Australia, undertaken several reviews of Landcare, and is an active member in his local Landcare group. Lisa Robins from the ANU Fenner School has also written on Landcare and topics such as recent Australian NRM history, and community capacity. Other scholars such as John Cary, Trevor Webb, Erlina Compton, Bob Beeton, Frank Vanclay, Katrin Prager, Jonathon Sobels and others have also made repeated contributions which will be evident in the review below.

Over the years, many reports and documents have been produced with the explicit aim of elucidating the many and complex benefits of Landcare. This includes for example a 2013 report by GHD on the *Multiple Benefits of Landcare and Natural Resource Management* commissioned by the Department of Agriculture (GHD 2013). GHD analysed Landcare's educational, social (health and wellbeing, and social capital), economic, cultural and resilience values (2013). Landcare NSW has similarly produced reports such as *The value of Landcare to the Australian community* (Henry et al. 2016), and *Landcare NSW regional data snapshots: Impact of supported Landcare in NSW* (2018) attempting to quantify and articulate the value and impact of Landcare. A 2008 discussion paper by Allan Curtis, David Lucas, Mike Nurse and Max Skeen, for Charles Sturt University and the Department of Sustainability and Environment called *Achieving NRM outcomes through voluntary action: lessons from landcare* summarises the value proposition for future investment in voluntary approaches to NRM, and uses Victorian Landcare as an example (2008). Andrew Campbell's 1994 monograph *Landcare: Communities Shaping the Land and the Future* was a powerful early attempt to articulate the complex and broad value of Landcare, and a result of his time as inaugural National Landcare Facilitator and his numerous visits to Landcare groups all over the country.² A 2009 report by the Department of Agriculture, Forestry and Fisheries (DAFF) under the Caring for Our Country program, titled *Making a Difference: A Celebration of Landcare*, like Campbell's 1994 book, attempted to provide a

² Another source has been the unpublished draft by John Gavin from Remarkable NRM: Remarkable NRM. *The Value proposition for national investment in Natural Resource Management*. 2016.

broad and comprehensive range of Landcare case studies. These reports and works have defined the essential values of Landcare, and as a result lent some structure to this review. In spite of these numerous efforts, there continues to be a need for rearticulation of Landcare's value proposition.

2. Note on Evidence & Limitations

One reason why Landcare's value proposition demands rearticulation is because, partly due to its complexity, measuring the value of Landcare is often fraught with difficulties. Some benefits of Landcare are measurable and can translate into tangible economic or environmental terms. Others, such as its social, cultural and welfare benefits, are less obvious, tangible and quantifiable. Even where measurable, there sometimes exists a paucity of readily available data. One reason why is that the benefits of positive NRM change are often only evident after longer periods of time and measuring them must take this into account. Another reason for this is that landcarers, often-unpaid community volunteers, are not generally good data collectors.

The data and research that is produced (and there exists a wealth of data as this review demonstrates) tends to mirror the decentralised and multifaceted nature of Landcare: produced by a whole gamut of different organisations and bodies, at different scales, and siloed and dispersed in different places. This review identifies and draws upon review papers.

More than merely explaining the value of Landcare, the literature illuminates both when and how Landcare has provided Australia the most value. It suggests how exactly 30 years since the first 'Decade of Landcare' was announced, this unique and powerful piece of Australia's NRM and civil society should and can be reinvigorated and rejuvenated.

Figure 2. Victorian Farmer Federation's Heather Mitchell and Joan Kirner launch first Landcare group in Victoria 1986.



3. Short History

The history of Landcare has been treated in numerous works (Campbell et al 2017; Youl et al 2006; Robins 2007; Robins & Kanowski 2011). Australia's recent NRM history and history of Landcare has been divided by scholars into distinct phases, largely distinguished by different funding regimes (Compton et al. 2009; Robins 2007).

Phase 1 – (1986-1996)

Youl et al (2006), Robins (2007), Kerin (2017) and Campbell (1994) provide good accounts of Landcare's emergence in the 1980s. It emerged during the 1980s as increasingly apparent land degradation, particularly pertaining to soil issues, international competition and the withdrawal of the state in many spheres of society and the economy, left communities and governments grappling for new solutions. The first Landcare groups emerged in Victoria in 1986 under the state government and Minister for Conservation, Forests and Lands (later Premier) Joan Kirner. By the end of the decade, Prime Minister Bob Hawke was unable to resist the 'unholy alliance' of conservationists and farmers presented by Rick Farley and Philip Toyne's joint proposal for national endorsement of Landcare (Campbell et al 2017, 409; Campbell 1994). In 1989, Hawke announced a 'Decade of Landcare' and endowed a national program with \$340million.

Figure 3. One early Landcare group established in Queensland, was the Dalrymple Landcare Committee, a producer driven group aimed at improving producer awareness and understanding of land management in the Burdekin Rangelands (Photo courtesy of QWALC)



Phase 2, NHT (1), (1996-2002)

The second phase of Landcare began with the ascension of the Howard Government and the creation of the National Heritage Trust (NHT or NHT1). Following the return to office of a Liberal-National Coalition Government and the partial sale of Telstra, the Government established the NHT committing an investment of \$1.25billion over five years (1997-2002) to the management of natural resources, with requirements for matching State funding, representing an even greater allocation than in the past (Robin

2007, 305-306). The NHT1 formed an umbrella for all national NRM programmes including the NLP.

These first two phases of Landcare (1986-2002) were characterised by enormous enthusiasm, rapid growth, and minimal intervention (Compton et al. 2009). The success and momentum exhibited itself in the establishment of more than 5000 groups across all Australian states and territories before the turn of the century including more than one third of Australian farming households (Campbell et al 2017, 410). Landcare's success was such that it was exported overseas to more than a dozen countries including South Africa, the US, the UK, Canada, and the Philippines (Catacutan et al 2009; Cramp 2005; DAFF 2009, 177-180).

Phase 3, NHT2 & the Regional Model (2002-2008)

The third stage began in 2002 with the formalisation of 'regionalism' as a national approach to NRM, involving 56 NRM regional bodies. The approach appealed to policymakers for its greater capacity to address local issues and circumstances, while more efficiently delivering nationally coordinated programs (Robins 2007, 306; Powell 2003, 51). Two national programmes, National Heritage Trust Extension (NHT2) and the National Action Plan for Salinity and Water Quality (NAP), drove the formalisation of NRM regions across the country (Robins 2007, 306-307). These changes involved a greater focus on delivering NRM resources and policies through these regional NRM bodies, and their distinctive regional plans and strategies.

Regionalisation was driven by need for a balance of devolution of NRM with greater coordination at a catchment and landscape level. As Paton et al write, the 'regional model did not begin with Landcare, but it was the successes and limitations of Landcare that hastened the move to regionalisation' (2004, 259). Landcare demonstrated the importance of devolved local NRM, however it also highlighted that local groups with limited resources were also unlikely to affect landscape or regional level change.

Figure 4. Map of 56 Natural resource management (NRM) regions (DEE).



The

Evolution of these three phases of NRM policies varied as enormously from region to region as regions differed themselves. In as much, experiences within each phase, particularly in the third phase and greater emphasis on regional delivery were diverse. In some regions, Landcare groups had developed alongside regional bodies, or Catchment Management Authorities (CMAs) over almost a decade, thereby functioning productively and cooperatively. In other cases, the introduction of the regional delivery model did not integrate so smoothly with Landcare groups, and has drawn criticism.

Compton et al. (2009) and others (Darbas et al. 2009; Farrelly 2009; Paton et al 2004) have dealt with these criticisms and appraisals in more depth. They reveal a mixture of both praise and criticism for the new regional model. In particular, they found funding volatility, demands for greater accountability and control by regional bodies, resulted in waning of enthusiasm and energy from volunteer groups (Prager & Beeton 2009). Moreover, some regional bodies have seen themselves more as service deliverers rather than community facilitators, and have thus tried to bypass Landcare groups in their programs and activities (Compton et al 2009). Their findings provided insight to how the two developments of NRM in Australia, voluntary Landcare and the regional model, could be reconciled proceeding into the future.

Phase 4 (2008-2013/2014)

In 2009, Compton et al identified a 'Fourth Phase' of Landcare and NRM, with the election of the Rudd Labor Government in 2007 and the announcement of a new federal NRM program replacing the NHT2 and NAP, the 'Caring for Our Country' (CfoC) program. The Caring for Our Country program, established in 2008, constituted a dramatic overhaul of the previous NRM regime, attempting to consolidate many programs into one single program. Nevertheless, CfoC quickly drew significant criticisms.

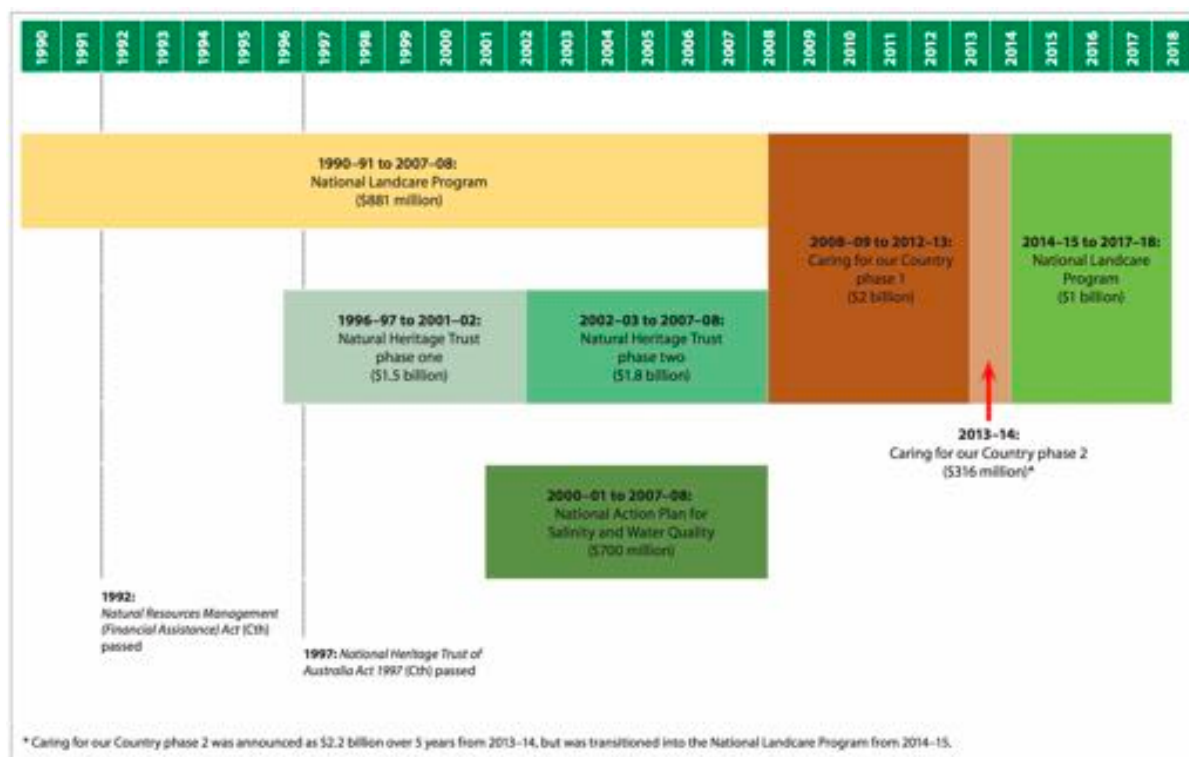
For example, Robins & Kanowski (2011) outlined eight different ways that CfoC undermined Australia's regional model of NRM, and eroded gains made under the NHT and NLP. By narrowing the agenda; more centralised control; focusing on simple outputs; compromising state and territory buy-in; reduced and constrained funding; high transaction costs; widening the gap between local and regional groups; and R&D withdrawal; rather than addressing weaknesses of previous programs and learning from past experiences; CfoC put Australia's NRM position in grave danger (Robins & Kanowski 2011, 102).

In 2009, Andrew Campbell characterised the previous two decades of Australian NRM as consisting of three major developments: 1) voluntary, community-based Landcare; 2) the evolution of a regional scale delivery model based on catchment management organisations; 3) and a more recent push for more evidence-based investment and reporting (2009, 31). Each is essential, Campbell says, and ideally the three approaches should proceed in parallel, reinforcing one another (2009, 31). Unfortunately, there has been a tendency to see them as sequential developments, with a 'been there done that' mentality. All three are complementary and must build on one another and learn from previous mistakes. Just as Landcare is vital, so too is the regional framework, giving a more strategic approach with a landscape or catchment scale, a more integrative approach across different issues, while maintaining a community base (Campbell 2009, 32). We need to take the time to get the regional framework right, says Campbell, and 'not undermine it before it has a real chance to deliver' (2009, 32).

Phase 5

The change of government in 2013 again heralded changes to the Australian Government's NRM funding and programs. The Caring for Our Country program was replaced with a new National Landcare Program under the National Heritage Trust (DEE & DAWR 2017). Again, there remained an emphasis on evidence-based investments, and on specific outcomes and projects.

Figure 5. Australian Government investment in NLP and predecessors since 1990 (DEE & DAWR 2017, 5).



4. Community Capacity, Social Capital & Empowerment

As ANU academic Lisa Robins wrote in an account of NRM developments in Australia, the emergence of the Landcare movement can be considered a 'paradigm shift from focusing on the individual farmer and their property to sponsoring local community groups, and building relationships and networks at the local community level' (2007, 307). What represented a 'paradigm shift' was the recognition that by empowering and strengthening the social capital and community capacity, communities would be empowered to tackle their own NRM challenges and circumstances.

Overcoming the formidable NRM challenges involves confronting immense collective action problems. Garrett Hardin's famous (1968) scenario, the 'tragedy of the commons'

demonstrated the dilemmas that common pool (or property) resources (CPR)³ present to societies. Solutions to this collective action problem presented by natural resources often include the ‘Leviathan state’ and the market. More recently emphasis has been placed on ability and effectiveness of communities to address these concerns. By developing the health and effectiveness of community networks and relationships, communities themselves can overcome collective action problems and manage their natural resources in an effective and sophisticated manner.

One of the most insightful ways of appreciating this ‘paradigm shift’ to a community driven ‘Landcare’ model is through reference to the concept of social capital or community capacity. The idea of social capital, notably developed by Robert Putnam and others, is that social networks have value, analogous to how a screwdriver (physical capital) or a university education (human capital) have value (2000, 19). Social capital involves features of social organisation such as networks, and norms of reciprocity and trust that facilitate coordination and cooperation for mutual benefit (Putnam 2000). It recognises that these features, such as networks and norms, often determine the productivity of groups and individuals. Social capital plays a central role in the healthy functioning of communities, economies and democracies, and is an important component in development. Thus, Landcare has been understood in light of the concepts and literature of social capital, and community and rural development.

Social capital exists in as diverse forms as physical capital, and two main types of social capital have been defined in the scholarship: bonding (exclusive) and bridging (inclusive) capital (Putnam 2000, 20). Bonding capital tends to be inward looking, reinforcing exclusive identities and group homogeneity. Individuals and networks with bridging capital tend to be outward looking and inclusive to diverse groups and individuals. Bonding capital tends to be effective at mobilising group solidarity and internal reciprocity. Bridging capital by contrast can enable links to external assets, information diffusion and foster broader and more inclusive social identities. Putnam analogises bonding capital to a ‘sociological superglue’ while bridging capital constitutes the ‘sociological WD40’ (2000, 21). Both forms of social capital exist often simultaneously in any given group in differing amounts.

³ Elinor Ostrom and others have observed that using the term ‘common property resources’ confuses two concepts – one which negates rights of ownership, and the other ‘property’ defines ownership. The concept of ‘common pool resources’ CPR is thus preferred.

The social capital aspect of community Landcare has attracted considerable attention from academics and a body of literature has developed on the subject (Compton et al 2009; Curtis; Sobels et al 2001; Lockie; Cramp 2006).

In a study, supported by the Australian Centre for International Agricultural Research (ACIAR), R.A. Cramp (2006) highlighted how Landcare groups in the Philippines facilitated the adoption of soil conservation practices through strengthening bridging capital. Increasing bridging capital facilitated community members to mobilise, then identify and procure the knowledge and skills needed to address the soil erosion problems facing them. Social capital provided them the capability to identify and solve their own problems.

Using data from the Holbrook Landcare Network and the Woody-Yaloak Landcare Network, Jonathon Sobels, Allan Curtis and Stewart Lockie (2001) argue that top-down government stimulus can be a catalyst for bottom-up community development. This presents one way of countering major social, economic and natural resource challenges faced by rural communities.

Social capital in Landcare does not always work in favour of positive change and transformation towards more sustainable use of natural resources. Erlina Compton and Bob Beeton (2012) demonstrate how some Landcare groups with strong bonding capital and weak bridging capital can be resistant to change, thus work towards maintaining the 'status quo'. Nevertheless, groups with 'the presence of strong bonding and bridging social capital when combined with aspects of human capital and particular active individuals or agents can lead to rapid progress and significant action for the common good' (2012, 159). This study was carried out in response to criticisms that Landcare sometimes supports prevailing practices and realities, or the status quo, rather than spearheading revolutions in land use systems like many claim.

As Compton et al. have said (2009), things such as 'community development' require different tools to measure success: 'It is much more process-oriented and long term, and empowering communities necessarily infers that other instances have to share their power' (2009).

Another danger with voluntary approaches to NRM that Australia has relied on in recent history, and afforded considerable attention in the literature, is the concept of burnout. Campbell highlighted the danger of 'burn-out' in Landcare in 1992, furthered by Curtis & Van Nohuys in 1999. Burnout is defined as a syndrome characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment (Byron & Curtis 2010, 315). Building on previous anecdotal evidence with extensive surveys and interviews throughout Victoria, Ian Byron and Allan Curtis warn against danger of 'burn-out' in the Landcare movement unless a more coherent, professional and better-resourced policy arrangement is adopted (2010). Work such as this might suggest there exists a market failure in the optimum provision of Landcare, highlighting the role of government in stimulating and supporting community Landcare groups.

Many scholars, such as Erlina Compton, Katrin Prager and Bob Beeton (2009), have explored the effectiveness of Landcare through empowerment theory. They have drawn on work by American social scientists Marc A. Zimmerman and Julian Rappaport whose work on psychological empowerment provides insight to when, and when not, community action and participation functions most effectively. Psychological empowerment is a process of how individuals, communities and organisations gain mastery over their own issues (Rappaport 1987; Zimmerman 1995). Empowering processes are those when people create and or are given opportunities to control their own destiny and influence the decisions that affect their lives (Zimmerman 1995, 583). The state occurs when individuals achieve critical understanding of their socio-political environment, are actively engaged in their community, have a proactive approach, and perceive personal control over their affairs (Zimmerman 1995, 581). Compton et al suggest this description of empowerment closely characterises the early period of Landcare, where individuals and groups were given control over their own destinies. However, as the theory suggests, when significant control and power is transferred to regional bodies or central and state government, community Landcare groups feel disempowered. This is borne out in reduced participation, activity and effectiveness. Empowerment theory provides insight into how government and other regional bodies can best harness community groups such as Landcare to effect change and achieve desired outcomes. When balancing other concerns such as financial prudence and accountability, community and volunteer-based organisations must be treated and dealt

with in a way that empowers while providing direction, and that supports initiative and independence while coordinating and encouraging greater efficiency.

5. The Role of Knowledge in Landcare

Much of the literature highlights the significance of community Landcare as an instrument of extension, knowledge dissemination, sharing and social learning.

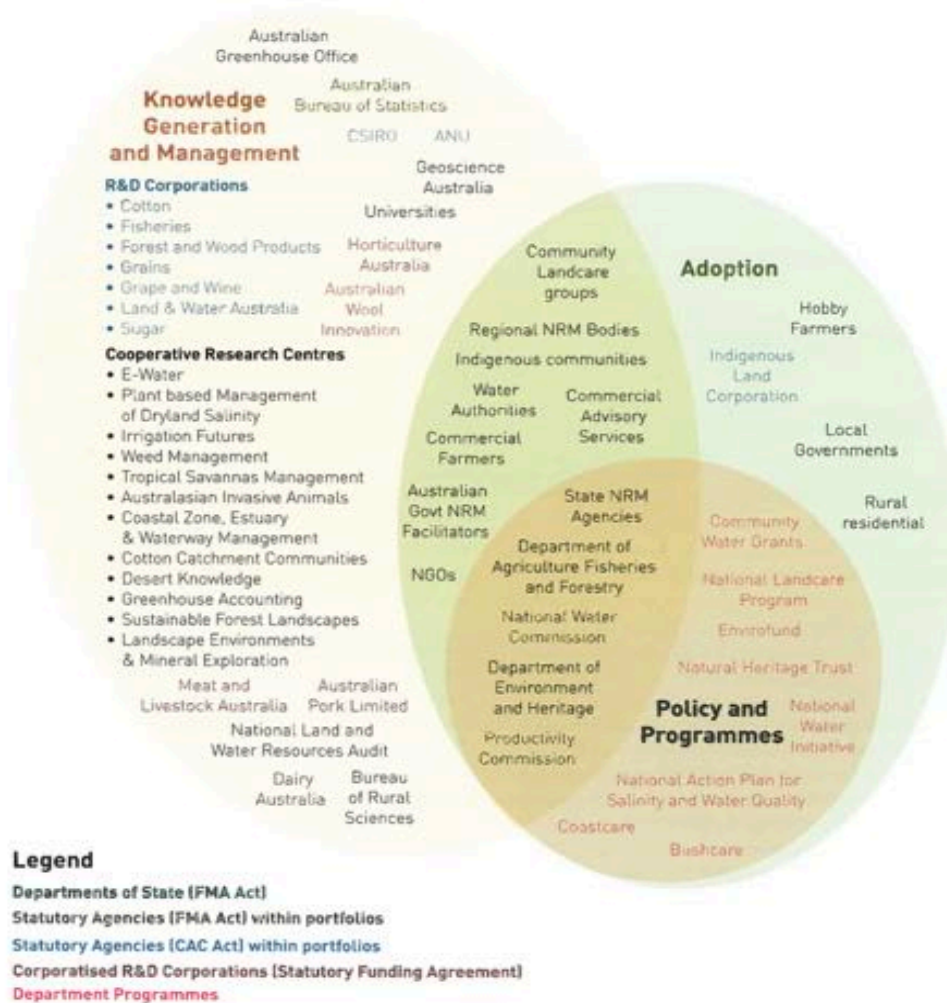
Andrew Campbell has written extensively on the knowledge qualities of Landcare and NRM (1994; 2006; 2009). Knowledge is central to natural resource management. Campbell identified it as one of three key ingredients for more sustainable management of natural resources – people need to know what to do and how to do it; they must want to do it; and they must be able to do it (2006, 4). Knowledge, commitment and capacity are all essential to effect changes towards more sustainable use of natural resources.

Campbell has written about the existence of an Australian ‘NRM knowledge system’ – a network of formal and informal, public and private knowledge (2006, 4). The purpose, cohesion and function of this system determine whether and how quickly new knowledge is created, disseminated and adopted. Problems that plague knowledge systems include inefficient linkages preventing information from being accessed and thus adopted efficiently across a system and systemic amnesia resulting in continuing and inexorable erosion of knowledge. One way of improving a knowledge system is through investing in organs and institutions that create and develop new knowledge. Universities and R&D organisations are examples of institutions that develop and create new knowledge.

A well functioning knowledge system also facilitates the access and diffusion of knowledge across it and mitigates the inexorable amnesia that afflicts it. While a knowledge system may generate new and valuable knowledge, through R&D and other means, this does not mean this knowledge will diffuse into widespread adoption and practice. In these areas, Landcare functions crucially as a conduit or structure to share and diffuse knowledge across the system, and to cultivate and harness, and preserve local knowledge and memory. Though as Campbell writes, there are no ‘magic bullets’ that will deliver immediate and immense improvements across the system (2006, 4). No

single component of the system can achieve outcomes by itself. Without a mechanism for extending and diffusing knowledge that R&D organisations develop, there will be little success with knowledge adoption. Similarly, without good R&D institutions or universities developing new knowledge and practices, frameworks like Landcare can only achieve incremental progress in raising practices and knowledge.

Figure 6. Key components of the Australian NRM Knowledge System (Campbell 2006, 18).



It is here that the Landcare model differs from more traditional theories of 'diffusion of innovations' and linear technology transfer (Campbell 1994, 194). These theories assumed that following R&D, simple agricultural extension would facilitate smooth technology and knowledge transfer to a largely homogenous group of farmers with a propensity for adoption (Campbell 1994, 194-5). By engaging and empowering communities, developing networks and relationships, Landcare moves beyond often-crude 'top down' and linear diffusion of innovation and technology transfer theories. In the real world, where farmers are sometimes sceptical of government bureaucrats and scientists, more horizontal and community driven extension is more effective.

There are of course a plethora of different types of knowledge: formal and informal, scientific and cultural, codified and tacit, general and local. Landcare is often lauded for the way it respects local knowledge, while also acting as a conduit and instrument for the dissemination of new scientific knowledge and research. While some problems are universal with general solutions that can be applied in any place or time, some knowledge is relative, local and cannot be codified (Campbell 2006). The devolution of NRM to the local, and the community level (that is CBNRM and Landcare) recognises that locals often possess a unique understanding and insight into their distinct circumstances, and thus know better what solutions are needed than the central government.

Anna J.L. Carr has explored the importance of landholder community groups, such as Landcare, in the process of information exchange (1997). In a 1997 study, Carr found that landholder groups exhibiting certain characteristics - a sense of community, a sense of place, a local knowledge system, and empowerment - were effective in information exchange (Carr 1997, V). Government could cultivate and support landholder groups to be more effective through supporting the employment of facilitators and coordinators in encouraging collective learning, diversity of group composition, opportunities for interaction, a network or bank of experts and sources (Carr 1997, V). Carr also highlighted the opportunities for using landholder and community groups to play a greater role in R&D activities themselves through collaboration with R&D bodies and through their own R&D (1997, 32-42). Landholder groups, such as Landcare groups, constitute a ripe platform for experimentation in new practices, if properly supported to do so.

Another way of understanding the knowledge value of Landcare is through the concept of 'land literacy'. Campbell has also written on Landcare's role in cultivating 'land literacy' or 'eco-literacy' in Australia – helping people 'read, listen, learn and appreciate the signs of health (and ill health) in a landscape and to understand the condition of and trends in the environment around them' (1996). By facilitating greater sharing of current best information, and respecting and preserving institutional memory and local knowledge, Landcare cultivates an improved 'land literacy'.

Another contribution of Landcare to improving Australia's NRM knowledge system (to use the terminology of Campbell) is through preserving collective memory. The concepts of institutional memory or corporate memory are examples of this. As Campbell articulated, a perennial problem to any knowledge system is amnesia (2006). Campbell argues we need to do better at tapping into the knowledge of elders, fostering networks and recording knowledge. The corrosive amnesia that afflicts the system is indeed inexorable. However, measures can be taken to minimise and slow it. Landcare groups are adept at harnessing local expertise, in particular the expertise and knowledge of elders, facilitating information exchange and providing the structure for retaining memory.

Through collaboration, inclusion and respect of Indigenous land managers and traditional landowners, Landcare also provides a platform for sharing knowledge between new and traditional land systems. Indigenous NRM knowledge and practices that has existed since pre-European arrival in Australia are still being discovered (Gammage 2011; Pascoe 2014) and opportunities for greater cooperation and knowledge sharing exist and are occurring. Similarly, Landcare presents opportunities for sharing and extending current best knowledge and practices to Indigenous land managers. Landcare constitutes a forum where knowledge of all types is respected and can be shared in all directions.

Figure 7. Expert John Chandler demonstrates the use of drones for ecosystem monitoring to the Ngadju Conservation Ranger Team. Based at Norseman, Ngadju Conservation has worked with the Gondwana Link program to establish conservation based management over 4.4 million hectares of the Great Western Woodlands (Photo: Keith Bradby, CEO of Gondwana Link & Chair of WA Landcare Inc.).



6. Culture

As illustrated above, one of Landcare's most valuable characteristics is its ability to empower and mobilise communities, diffuse knowledge and drive significant changes of practices. This capacity to drive large-scale behavioural change has often been portrayed as 'cultural change'. Commonly associated with the name 'landcare' are concepts of a 'land restoration ethos' and a 'stewardship ethic'. One definition of Landcare is tied to ideas of a Landcare 'ethic', philosophy or culture.

Campbell et al. (2017, 405) have lauded Landcare for its role in the 'rising culture of landscape restoration' which has had a profound effect on the 'nation's relationship with our continent'. This 'cultural' change as they characterise it, involving changing norms and practices, and knowledge and understandings about people's impact and place in the environment, is instrumental to landcare's value proposition and long-term success (Lockie 1998, 21). Stewart Lockie defines this cultural change as two-part: (1) the shift from the individual landowner to communitarian approaches (the paradigm shift Lisa Robins refers to) and (2) the development of understandings of good farm and land use practices (1999, 21).

Scholars such as Allan Curtis have provided a more nuanced understanding of Landcare's effect on changing culture and practices. Curtis and De Lacy (1998) and Vanclay (1986; 1992) have argued that participation in Landcare has little bearing on instilling 'stewardship' in landowners, as it is often equally strong in non-participants. Curtis and De Lacy further this point, arguing that it is not the existence of stewardship that determines adoption of more sustainable land practice behaviour, but scarcity of resources, and knowledge and training (1998, 75). What the Australian Government should focus more on, and what the message should be, is more about raising awareness and increasing training and capacity so that landholders can direct their stewardship ethic to the appropriate goals (Curtis & De Lacy 1998, 75). It is in this way Landcare is effective, it 'has mobilised community participation in natural resource management on an unparalleled scale in Australia and has been a catalyst for important changes in landholder awareness, understanding and behaviour', despite being limited in its potential by 'shoe-string' funding (Curtis & De Lacy 1998).

Model of the program logic for community landcare in Australia up to 2000

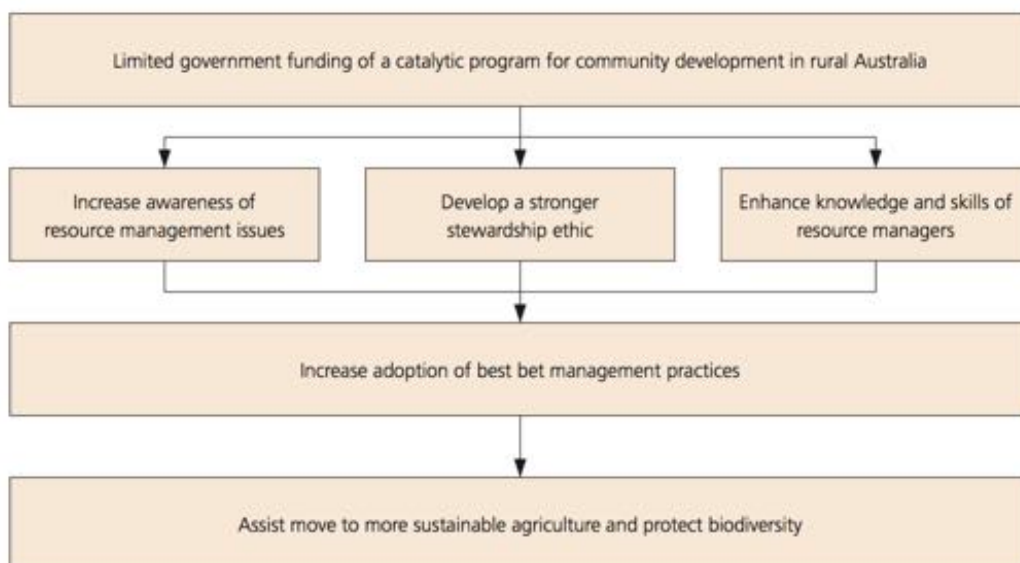


Figure 8. Model of the how Landcare leads to more sustainable agricultural practices and protection of biodiversity (Curtis & De Lacy 1996).

Landcare's ability to drive cultural change is intimately connected with and necessarily understandable by reference to its social capital and knowledge disseminating qualities. A stewardship ethic already exists in Australian landowners (according to Vanclay 1986; 1992), however, it is providing them the knowledge, resources and capacity that truly effects culture-wide changes in how we understand, relate to, treat and manage the land.

This is perhaps the most difficult value of Landcare to measure and it is also one of its most important. As Campbell et al suggest if the criterion for acclamation of Landcare has been 'hearts and minds' and 'social capital' in rural communities, and changed social norms and practices, then the program should be 'judged a resounding success' (2017, 410).



Figure 9. John Anderson, Environmental Educator with Department of Conservation, Biodiversity and Attraction's Nearer to Nature Program explains to children how critically endangered Western ringtail possums use the environment in bushland near Margaret River. Developing ecological awareness in school students inspires and builds understanding to shape and grow future environmental stewards.

Again, Campbell has also written on Landcare's role in cultivating 'land literacy' or 'eco-literacy' in Australia – helping people 'read, listen, learn and appreciate the signs of health (and ill health) in a landscape and to understand the condition of and trends in the environment around them' (1996). The 'cultural change' that Landcare contributes to can be understood in this respect. An increased understanding of and connection to land is also something that carries with it inherent value. Moreover, the concept and ethos of 'landcare' has been praised and exported as an Australian innovation (see 'The Landcare Brand' below), carrying with it, considerable esteem.

7. The Environmental & Ecological Value of Landcare

Managing and conserving Australia's natural capital is at the heart of investments in Landcare. The concept of natural capital describes a stock of natural resources – geology, soils, air, water, vegetation and living organisms. Like traditional 'capital', human capital, as well as social capital, natural capital provides people with benefits and value. The dilemma that practices and systems of sustainable development aim to overcome is how to optimise the benefits of a stock of natural capital whilst preserving or improving the condition of that natural capital.

It was the degradation of Australia's natural capital (defined below) that led to the creation of Landcare as a means to repair and better manage these resources (Campbell et al 2017; Youl et al 2006; Robins 2007; Robins & Kanowski 2011). This still constitutes the central purpose of Landcare, accompanied by the whole host of other benefits that are elucidated in this review.

With more than half Australia's landmass (51%) under the management of agricultural businesses, and even more under the management of private landholders, engaging and influencing private landholders' practices is crucial in achieving NRM outcomes (ABS, 2018). Consequently, progress on NRM objectives demands cooperation and participation from landholders and communities. Community Landcare, with its networks of social capital and its knowledge dissemination faculties, provides the framework for achieving this.

Figure 10. Friends of Bass Strait Islands hard at work in 2014 conserving and protecting the unique environment supported by Roydon Island (Photo courtesy of Landcare Tasmania).



One of the most common ways of measuring environmental and ecological value is in economic terms and through economic methods. The next section examines this.

8. The Economic Value of Landcare

Landcare's economic value has been afforded significant attention in the literature. This has usually been analysed with reference to government funding, specifically through the NLP. Due to the multi-faceted nature of Landcare's value, measuring its economic value can be difficult. Thus there exists a variety of ways Landcare's economic value or Landcare's value in economic terms can and has been judged.

Australia's environment and natural resources are fundamental to its economy and wellbeing. Australia's natural capital is the stock of natural assets such as geology, soil, water, air and all living things, from which humans derive 'ecosystem services' and which make life possible (SoE 2017, 6). Ecosystem services describe the various benefits that human beings gain freely from properly functioning ecosystems including for example, clean drinking water, the pollination of crops, and the sequestration of carbon. In June 2017, the Australian Bureau of Statistics (ABS) calculated Australia's natural capital at \$6,413 billion – a measurement of Australia's environment and its relationship to the economy. This measurement, of course, does not encapsulate the plethora of complex ecosystem services we benefit from, but it provides some indication to the value of Australia's natural environment. In 2018, ABARES forecasted the value of Australian agriculture for the following year at \$58 billion (a decline from 2016-2017) (ABARES 2018). In May 2017, there were 304,200 people employed in the Australian farming industry, accounting for 3% of the national workforce (NFF 2017, 10). In 2017, the ABS valued Australia's tourism industry at \$54.7 billion, 3.2% of national GDP (TRA 2017, 1). Australia's rich and unique natural environment is central to its tourism industry. A

2017 Deloitte Access Economics report calculated the economic value of the Great Barrier Reef, valuing it as an economic, social and iconic asset of \$56 billion, supporting 64,000 jobs and contributing \$6.4 billion per annum to the Australian economy (2017, 5). This is one pertinent example, and similar valuations are applicable to the rest of Australia's environment.

As the most recent *Report on the Review of the National Landcare Program* wrote in 2017,

‘The cost of weeds to agricultural industries is estimated at around \$1.5 billion a year in weed control activities and a further \$2.5 billion a year in lost agricultural production. Wild dogs are conservatively estimated to cost Australia's agricultural sector up to \$66 million per year and the annual cost of rabbits to agriculture is in excess of \$200 million. Feral cats have been a major contributor to the extinction of at least 27 mammals since they were first introduced to Australia. While difficult to estimate, the cost of weeds to our environment is likely to be even greater’ (2017, 16).

It is clear that effective NRM has immense and tangible economic benefits. On the question of how effective Landcare is in NRM, and its more general economic value, a body of literature has developed.

One of the most obvious and commonly cited economic benefits that community Landcare offers is volunteer labour. Various studies have attempted to measure the value of Landcare's volunteerism, most simply by allocating wage values to each volunteer hour. In 2010, Volunteer Australia calculated that 36% of Australia's adult population (6.1million people) volunteered (VA 2015, 11). This is up from the 5.2 million or 34% who volunteered in 2006, which added up to 713 million hours with a median of 56 hours per person (VA 2015, 11). These numbers, while crude measurements, lend some idea of the enormous economic value that volunteers generate, not to mention the complex social benefits to the individual and communities.

It is useful to consider to what extent there exists a market failure in regards to Landcare. Landcare activities, like any activity, produce both costs and benefits. These costs and benefits are not equally shared or apparent. Some activities directly benefit landholders, liming of soil for example, with flow on effects to the broader environment and

community. Other activities, such as riparian restoration and development on an iconic river with endangered flora or fauna deliver benefits to the broader community and even society as a whole. Many of the services that landcarers provide can be considered public goods, as they benefit the whole community and society. The central question here is whether there exists sufficient incentive for landcarers, and particularly landholders, to engage in Landcare activities in the absence of government support. Clearly for some there does exist sufficient incentives, and many landcarers and Landcare activities will continue irrelevant to funding levels (Compton et al 2009). Another question is whether there is sufficient Landcare activity (to achieve NRM and other outcomes) in the absence of government support. For many farmers, landholders and land-managers though, where the statement 'it's hard to be green when you are in the red' rings true, there is not without some compensation or support (DAFF 2008, 84). The literature surrounding social capital, empowerment and burnout, similarly suggests that there are limits to unsupported activities and there exists a threshold below which groups expend their resources merely surviving, and above which achieve significant productivity, generating considerable benefits (Byron & Curtis 2010; Curtis & Van Nohuys 1999; Compton et al 2009). Moreover, when considering the increasingly stark challenges Australia faces vis-à-vis soil, water and biodiversity degradation, it is not difficult to argue the market fails to incentivise an optimum level of practice change and landholder activity.

A number of assessments and reports have suggested that the Australian Government's investment in Landcare and CBNRM has a multiplier effect, generating further investment from industry, partner organisations and public and private stakeholders (Henry et al 2016, 13; GHD 2013). Government investment catalyses projects and processes, garnering momentum that attracts further investment and stakeholder buy-in. GHD's 2013 report on the multiple benefits of Landcare and NRM, suggests that investment in Landcare and NRM secure economic returns of 2-5 times the original investment (2013).

A 2018 study for Landcare NSW delivered by economists from Aurecon, sought to quantify the economic benefits of supported Landcare in NSW by focusing on a few specific case studies, from which generalisations could be extrapolated and providing a value amount for the whole state. Supported Landcare refers to how Landcare groups are empowered by investments made by a range of organisations and entities including

by the Australian Government, State Government, local government, industry bodies, philanthropic organisations and individuals. The support infrastructure created by them, particularly focused on is what empowers Landcare to deliver on their goals. In this case, it is the Local Landcare Coordinator Initiative LLCI driven by Landcare NSW, which has focused on as an effective program for supporting and enabling Landcare community groups (2018, 5). Aurecon analysed data from supported Landcare activities in Glen Innes, Coffs Harbour, Greater Sydney and Western networks, assessing the economic social and environmental outcomes valued in economic terms. They considered the outcome and scale of activities such as weed and pest control, tree planting, erosion control, dune restoration, and supporting biodiversity and improving community spaces, and how it differed to the outcomes of unsupported Landcare.⁴ The annual net benefit of a supported Landcare, they concluded, was significant – conservatively estimated to be \$6.5million. Extrapolating this value across the whole state using the population of the selected regions to the population of NSW, gave a rough indication of the value across NSW - \$500million per year (Aurecon 2018, 6). From this, they calculated there is a \$6 return on every \$1 invested (a benefit cost ratio of 6) (Aurecon 2018, 6).

A 2015 report by Natural Decisions Pty Ltd, commissioned by the Department of Environment and Energy (DEE), attempted to develop a systems model for estimating economic benefits of Landcare investments. It looked at the geographical areas of three different case studies: grains and mixed livestock in Western Australia; cotton in Queensland and NSW; and dairy in the Gippsland region of Victoria. Focusing on specific practices in each industry connected with Landcare investment, the systems model was able to quantify the key on-farm economic benefits including improved yields, increased incomes, and reduced costs (Natural Decisions 2015 vii). Practices included riparian management, reducing tillage, liming, and strategic revegetation for biodiversity outcomes among others (2015, xi). An excess of \$1billion market value was estimated in these three industries, of which over 90% was estimated to go directly to landholders. Higher overall national economic impact would be estimated, as the regions studied were only a sliver of Australian agriculture. The systems model belonging to the DEE could potentially be developed further to estimate national economic value that Landcare contributes.

9. The Landcare Brand

The assertion that Landcare Australia's 'Caring Hands' logo has achieved the brand recognition of Coca-Cola or MacDonal's golden arches is perhaps hyperbolic (Young & Esau 2016) but does provide some insight into the brand's enormous success and value. The great success and popularity of Landcare has brought with it tangible 'brand' benefits, derived from positive recognition of the Landcare model and name.



Figure 11. Special edition \$1 Landcare coin, minted by the Royal Australian Mint to promote the Decade of Landcare.

DAFF's 2009 report, *Making a Difference: A Celebration of Landcare*, accounts the history and process, initiated by Sue Marriot and others, of 'making landcare global' (2009, 177-180). As the report asserts: 'Australian landcare – a home grown product – is now an international player' (2009, 177).

A 2009 publication by Catacutun et al for the World Agroforestry Centre, Landcare International and Australian Landcare International, *Landcare: Local Action-Global Progress*, explored Landcare's successful international export to New Zealand, South Africa, East Africa, the Philippines and influence of an independent Landcare movement in Germany. The book highlighted how 'Landcare is being recognized as the global norm for effective natural resource management' (Catacutun et al 2009, 134). Landcare, they write, 'is thus an exceptionally precious brand' (Catacutun et al 2009, 134). In light of this, special attention should be given to preserving the value and integrity of this brand.

In the most recent review of the NLP by the Department of Agriculture and Water Resources and the Department of Environment and Energy wrote (2017, iii) concerning Landcare:

It is now widely accepted as being one of the foundations on which we can promote our clean, green credentials to world markets, and is in a position to support the development of 'Brand Australia', and its underpinning for the competitiveness of Australian agriculture.

In increasingly competitive international markets, Landcare helps differentiate Australian agriculture by highlighting sustainability and community practices. In this regard, Landcare currently contributes value, and presents ample opportunities to play an even greater role in marketing and distinguishing Australian agriculture overseas, and possibly underpinning the future of Australian agriculture.

In line with these benefits, an internationally recognised and highly successful CBNRM program such as Landcare conceivably provides Australia even broader benefits of soft power and leadership credentials.

Following these logics, supporting Landcare's success can and has helped deliver Australia broader benefits, from increased market recognition to soft power and leadership influence.



Figure 12. These photos are from the Olympic Landcare program, which saw more than 2 million trees planted around Australia. This event demonstrates the role Landcare to represent and showcase Australia's environmental credentials.



10. Resilience

A term that has gained currency in academia and policy circles in recent history is ‘resilience’. Resilience to adversity, the ability to adapt, innovate and cope, and self-reliance have come to be seen as increasingly valuable in a continent often experiencing environmental hardship.

GHD’s 2013 report on the *Multiple Benefits of Landcare* defined ‘resilience’ as a key component of the value proposition of Landcare. Resilience here is meant in various senses – ‘resilient individuals, resilient communities and resilient landscapes’ (2013).

Landcare, the report writes, recognises the interdependence of NRM, and socio-ecological systems (2013, 27). Enhancing resilience in individuals, communities and environments are mutually consistent processes through Landcare.

The Australian Government has made resilience a central concept and framework to its disaster planning and management. On 6 November 2008, the Ministerial Council for Police and Emergency Management agreed that future Australian emergency management should be based on achieving community and organisational resilience (2011, 3). The National Emergency Management Committee (NEMC) was tasked by COAG to develop a *National Strategy for Disaster Resilience* (2011, 3). The Committee defined four characteristics of community resilience:

- Functioning well while under stress;
- Successful adaptation;
- Self-reliance; and
- Social capacity.

Resilient communities are best equipped to withstand disasters and periods of immense stress. They are best able to anticipate changing circumstances and adapt to them when they occur.



Figure 13. Volunteers from ANZ, NAB, and Benalla High School coordinated by the Upper Goulburn Landcare Network help remove and replace burnt fences following 2009 Black Saturday Bushfires (See Case Study E).

In 2015, the Government reemphasised the importance of resilience, establishing the Australian Institute for Disaster Resilience (AIDR). The AIDR 2015 *Community Recovery Handbook* emphasised the importance of community development and resilience in recovery after disaster. The handbook included Landcare as an example of a community network that takes part in community development and in recovery processes (2015, 91). Landcare networks, like other community groups such as local fire fighters and religious groups, compose and promote important social capital, making communities more capable of responding to stressful situations such as disasters. Like good roads and electricity systems, they provide social infrastructure that assists in the effective and efficient delivery of disaster responses and recovery processes.

Similarly, a report by the Australian Red Cross following the second National Disaster Resilience Roundtable in 2014, titled *Beyond the Blanket: The role of not-for-profits and non traditional stakeholders in emergency management*, recognised the importance of groups such as Landcare, in not only immediate disaster response with networks of volunteers, but in longer term preparation and recovery (ARC 2014, 22-3).

Landcare's contribution to community resilience is linked with and can be understood through reference to social capital. Analogous to how increasing an individual's human capital (i.e. through education) provides them increased understanding of their circumstances, options, and capacity to adapt, likewise increasing social capital provides communities increased capacity to respond to changing circumstances. Moreover, Landcare's social learning and educational function also serves to improve the human capital of its participants thereby increasing resilience.

The National Landcare Network recognised Landcare's contribution to building resilience in a 2016 document, articulating Landcare's value proposition in this area. The NLN's vision of a resilient Australia included a few characteristics:

- 'A natural environment which is not degraded and supports the fully functional ecosystems needed to:
 - Safeguard Australia's unique and irreplaceable wildlife and landscapes.

- Protect human habitats on and infrastructure from the worst effects of extreme weather.
- Provide us with safe, clean water for environmental, domestic, industrial and agricultural uses.
- Help agricultural areas remain productive.
 - Attract local and international tourists and associated business opportunities.
- Healthy, happy and well-connected communities that support the people within them.
- A sustainable and productive agricultural system, which supplies both domestic and international markets with high quality food and other consumables.
- Aboriginal and Torres Strait Islander peoples are fully involved in the planning and execution on of land management in Australia.
- City and country people understand and appreciate one another.
- Communities and landscapes are better prepared for the impacts of a changing climate' (2016, 4).

Landcare, the NLN argued, with its social capital and extension skills provided a platform to achieve not only these outcomes but other economic and social outcomes. Strategic investment, they argue, can leverage existing capacity 'to improve the sustainability of our natural and agricultural lands, and the wellbeing of our communities' (NLN 2016, 5).

A 2016 report by National Landcare Advisory Committee (NLAC) examined *Landcare's role in building adaptive capacity and resilience*. The report emphasised the importance of building resilience and adaptive capacity now, rather than incurring higher costs from the impacts of change at a later time. Landcare successfully builds resilience and adaptive capacity in a number of ways, the committee judged, including through fostering networks, trust, and social capital, through extending knowledge, facilitating collective action, and promoting contingency planning. The report included eight case studies demonstrating a diverse number of ways Landcare groups and projects have contributed to more resilient and adaptive communities and environments. One example included the advocacy of No Till farming systems, particularly in the northern area of WA wheat belt, the SA/Vic Bordertown/Wimmera region and the NSW/Vic slopes (2016). These

practices have mitigated previously strong trends of soil degradation, declining grain yields and crop profitability, and erosion. No Till practices are constantly evolving with new information, technology and issues emerge.

More than just communities, the term resilience extends to the environment, to 'landscapes' and ecologies. This was clearly elucidated in GHD's report on the *Multiple Values of Landcare and NRM* (2013). Many of Landcare's practices are directed at making landscapes and ecosystems healthier, more robust and resilient.

Increasing resilience to drought is one often-cited co-benefit of NRM practices such as those that Landcare promotes. Researchers at the University of Canberra have conducted research into connections between NRM practices and drought resilience using datasets from their annual Rural Wellbeing Survey (Brown & Schirmer 2018). They found that some types of NRM investment are strongly associated with higher resilience to drought. Investing in helping farmers better prepare and understand options and long term processes, in weed and feral animal control and groundcover management, and improving water use efficiency and in supporting graziers build feed reserves, all confer and build greater drought resilience (Brown & Schirmer 2018, 37). Moreover, they admitted that there exist many other NRM practices that would likely confer resilience that they did not measure in their study (Brown & Schirmer 2018, 37).

Many practices that Landcare groups advocate include those aimed to protect against or develop resilience for fire. This includes raising awareness about fire; assisting in forward planning; back burning; and planting more fire resilient vegetation (See Case Study E. and the Upper Goulburn Landcare Network's response to 2009 Victorian Bushfires; GHD 2013).

11. Health & Welfare

Landcare has often been praised for its contribution to the individual and collective health and welfare of its participants and communities. There are of course strong connections between concepts like resilience and of health and welfare. Intuitively, relationships, community involvement, time spent outdoors, cleaner environments and a connection to country are all things that positively affect individuals. But health and

welfare is difficult to accurately measure and quantify, with often only subjective or anecdotal evidence available.

One of the most obvious ways Landcare and its activities supports individual and community welfare is through its promotion of social networks, relationships and interactions between community members. Particularly in regional Australia and in industries such as agriculture, characterised by isolation and adversity, the importance of things such as relationships, networks, and norms of reciprocity and trust cannot be understated.

Improvements to the environment, outcomes of NRM activities, can also translate to individual health benefits. Cleaner environments – less pollution, cleaner air, healthier waterways, and greater aesthetics – have considerable bearing on the health of individuals in those environments.

Figure 14. Revegetation of urban bush land in Canberra with the Southern ACT Catchment Group (Photo courtesy of Miranda Gardner). Volunteering as part of environmental community groups such as Landcare offers benefits to individual and community health.



The University of Canberra has been conducting research on rural wellbeing, including annual surveys on regional wellbeing, since 2013. Wellbeing here attempts to capture whether people are leading meaningful, happy and fulfilled lives, as distinct (although of course connected) to just economic prosperity (Schirmer et al 2015, ix). From the data gathered in these surveys, researchers have been able to gauge how important factors such as involvement in community NRM are to rural wellbeing. The information produced has provided insights into regional wellbeing and resilience, and the importance of community NRM organisations such as Landcare in this. Determinants of wellbeing that the surveys recognise include factors such as community liveability and resilience, financial capital, natural capital or perceived environmental health, institutional capital, social capital, sense of belonging and community involvement, self efficacy,

access to services, and equity and inclusion (2016, x-xix). Many of these determinants are characteristics of community Landcare.

In 2017, Dr Jacki Schirmer from the Health Research Institute and the Applied Ecology Institute at UC published a report in collaboration with Riverina Local Land Services on the connection between wellbeing and involvement in NRM activities and organisations. A large proportion of those surveyed had experienced involvement in community Landcare groups or activities in some form or another (Schirmer 2017, ii). Findings strongly suggest that engaging in NRM activities with Riverina LLS had positive effects on the wellbeing of most landholders involved (Schirmer 2017, 48). This was connected with the improvement of self-efficacy; improving health; and supporting the identity of farmers (Schirmer 2017, 48). The findings also suggested that farmers with less experience tended to benefit more from involvement in NRM activities, likely due to the high returns to information and networks that initial involvement provides (Schirmer 2017, 48). This is because Landcare's knowledge sharing role allows newcomers to 'catch up' to current best practices.

12. Recognising the Limits of Landcare

Many scholars as well as supporters of Landcare have stressed that while praising its benefits and virtues, it is important to be realistic about Landcare and acknowledge its limits. The enormous community momentum and support of Landcare in its first two decades drew almost universal praise and acclamation of success (Youl et al 2006; Campbell 1994). Part of Landcare's success has stemmed from its ability to capture imaginations and excite supporters. However, this enthusiasm can lead to a misunderstanding and misrepresentations of Landcare, with negative consequences.

As early as 1997, Margaret Bailey highlighted the danger of mythologising Landcare, and outlined various 'myths', which had already begun to divorce themselves from actual realities. Concerning this danger Bailey writes:

'Where the myths do less than justice to reality, genuine achievement is belittled. If this is beginning to occur with Landcare, as I believe it is, Landcare will be ill-served and weakened and it will become impossible to

determine its very real achievements or to chart its future' (in Lockie & Vanclay 1997, 129-130).

Bailey cautions against claims about Landcare that exaggerate outcomes, deny capacity for evaluations, and or portray Landcare as a mythologised community movement.

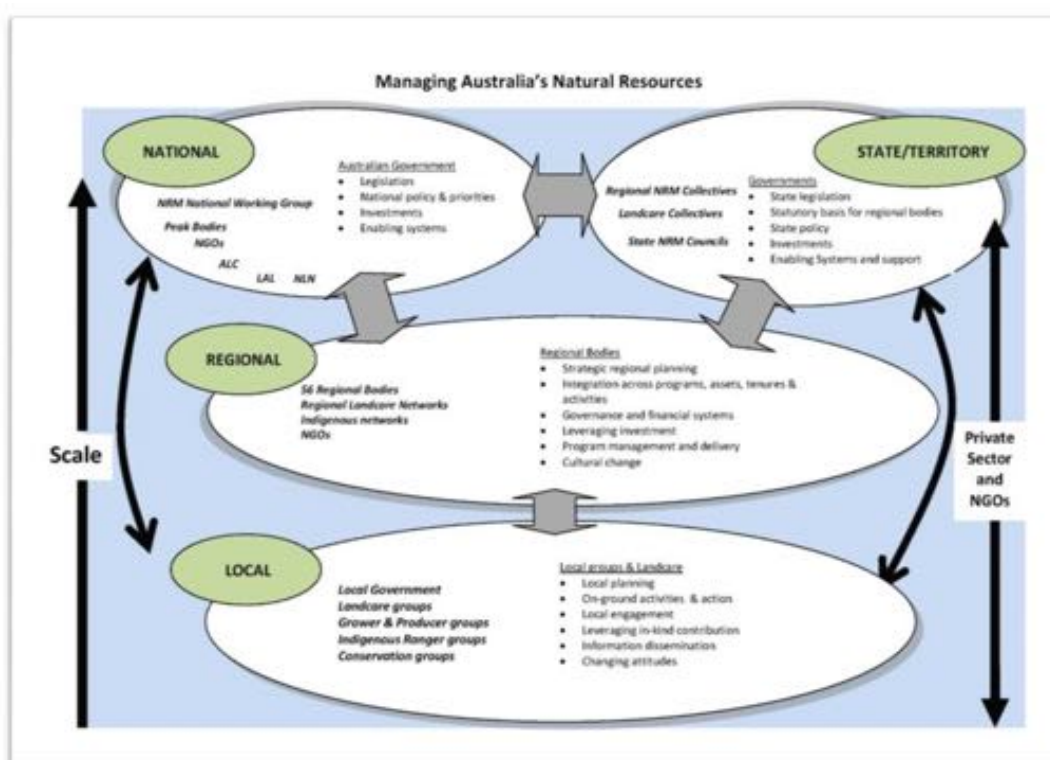
One myth that Bailey cautioned against might be understood as a myth of the *uniqueness of Landcare*. Many advocates of Landcare often emphasise the unique nature and origin of Landcare. One tendency Bailey highlighted was the characterisation of Landcare as a community movement. This distorts the fact that Landcare is also largely a government program and should be understood as such. Similarly, there is a tendency to claim ownership of Landcare as a uniquely Australian phenomenon. While certainly many circumstances of its origin were distinctive to its Australian context, many were not.

Katrin Prager and Frank Vanclay compared Landcare to its German counterpart, which contrary to claims, developed independently in Germany from early 20th century origins (2010). The harm of these misrepresentations is that they prevent analysis of the generalised aspects of the Landcare model, and thus prevent improvement and export. In this way, mythologising Landcare can in fact hamstring advocates from improving and spreading it further.

Nobel Prize winning economist Elinor Ostrom warned against a tendency to herald panaceas in NRM policy (1990, 8; 2007). Ostrom highlights how scholars, in cases of common pool resources and collective action dilemmas, often identify a single solution – the 'only' way. In the past this has usually inclined to be either government intervention (the 'Leviathan'/top down) or private ownership (the 'market'). More recently, there has been a proclivity to portray collaborative and community based approaches ('bottom up' or 'third sector') as a similar 'cure for all' (2007, 151176). As Ackoff has reflected, 'panacea proneness is a diluted form of fundamentalism' (2001, 8; quoted in Ostrom 2007). This proneness to 'panaceas' or universal remedies must be resisted as it distorts the fact that solutions are usually a complex mixture of different models – i.e. involving the state, market and community – both top down and bottom up. Ostrom and her husband Vincent Ostrom referred to this mixture of governances and systems as 'polycentrism'.

13. Landcare as part of the Bigger Picture

Professor Allan Curtis from Charles Sturt University has written extensively on Landcare and NRM in Australia for more than two decades. Curtis, a member of his local Landcare group and an expert on Landcare, has repeatedly emphasised the importance of being realistic about Landcare. As Curtis et al stated reflecting on 30 years of devolved NRM experimenting in Australia and New Zealand, ‘CBNRM [Landcare in Australia] is not a panacea that alone will address the natural resource challenges faced by Australia or New Zealand’ (2014, 194). CBNRM should be recognised for other values such as its role in ‘building and maintaining social capital in rural areas, particularly where other institutions have been in decline’ (2014, 194). However, while Curtis et al acknowledge the limitations of CBNRM, they emphasise the need for ‘complementary policy instruments’ (2014, 193). The lessons from the last three decades of devolved NRM governance suggest that a ‘coherent, capable multi-level governance approach is fundamental to progress’ (Curtis et al 2014, 193). CBNRM plays a crucial role in this



approach, ‘building and engaging social and human capital as a precursor to effecting the changes that lead to improved resource condition and building adaptive capacity that will enable communities to respond more effectively to future sustainability challenges’ (2014, 193).

Figure 15 Australia's NRM Model (NRM Regions Australia 2014, 9).

Reflecting on ‘four decades of land restoration in Australia’ in 2017, Campbell et al write, correspondingly to Curtis and Ostrom, that successful NRM requires ‘aligned government from local to the national scales’ (2017, 413). Community capacity and commitment is important, they write, but a not sufficient condition for progress in sustainable agriculture and resource management at a landscape or continental scale (Campbell et al 2017, 413). In this absence of technically and economically viable systems and practices, community goodwill cannot deliver sustainable land, water and biodiversity management at scale. Likewise, in the absence of ‘sensible, integrative regional planning frameworks, there is an increased risk of wasting both public and private investment’ (2017, 413). Moreover, many NRM issues cannot be tackled effectively at local or regional levels, but ‘demand sustained national approaches across multiple jurisdictions’ (413). Community Landcare is a fundamental component within Australia’s broader NRM model. The best model, though, involves cooperation on all levels – local, regional, and national – and in all three sectors – public, private, and volunteer/community – with neither level or sector of society sufficient to drive change without the other.

It is clear that CBNRM is an enormously valuable and necessary component of Australia’s past, present and future NRM. As Campbell wrote in 2009, exactly one decade ago, ‘If Landcare did not exist, we would have to invent it’ (2009, 31). Landcare has been invented, however; developed and invested in by governments and countless individuals and communities for more than three decades. These investments have been large, building networks of social capital across the country, developing communities and making laudable improvements to the condition of soil, vegetation, biodiversity and water. The returns to these investments – economic, environmental, social or cultural etc. – are vast, as illustrated by the literature. Landcare today is a product of more than three decades of investment, experimentation and collective learning. It is what Pretty (2001) labelled a ‘remarkable social experiment’ and Curtis et al (2014) called a ‘great experiment’. It is vital to reflect on the various developments of this ‘great experiment’, understand their value and how they work together, in order to proceed forwards and reap its benefits.

Figure 16. Before & after landscape photos following rehabilitation of escarpments, previously infested with serrated tussock and rabbits, in the Barrabool Hills near Geelong (See Figure 1. photo) (Photos courtesy of Kaye Rodden).



14. Concluding Remarks

This review has attempted to identify and summarise the literature on the value of community Landcare in Australia. In conducting this review, it became clear that Landcare contributes enormously to Australia. This value – environmental, social, economic, and cultural – is well described in the literature.

Just as important as understanding and articulating Landcare’s value is understanding when and how its value is optimised. This involves understanding concepts and processes such as social capital and knowledge extension, recognising the importance of adequate funding, and understanding Landcare’s place in a broader system of NRM in Australia.

In 2009, one decade ago, Andrew Campbell called for a rejuvenation of Landcare. For almost a decade, Landcare had, Campbell wrote, ‘no strategic attention’: its loss of momentum symptomatic of serious ‘policy neglect’ (2009, 31). One decade since Campbell’s observation and three decades since Bob Hawke launched the first ‘Decade of Landcare’, articulating Landcare’s value within the broader picture of NRM in Australia, is vitally important.

15. CASE STUDIES

Below are various case studies that demonstrate some of Landcare's different values. While there exists a plethora of possible studies, these are illuminating examples and exhibit many of the qualities that characterise community Landcare and devolved NRM. They reveal the diversity of Landcare groups and projects, reflecting the equal diversity of their distinct circumstances and local issues. The studies below have drawn on reports, grey literature, and discussions with relevant organisations and individuals.

VICTORIA

Case Study A. Demonstrating Sustainable Farm Practices 2013-2018 (Gippsland, VIC)

Between 2013-2018, an exciting and innovative project funded by the NLP in the Western Port, Port Phillip, and Yarra Catchments was trialled, enabling farmers to learn about sustainable farming methods. In over five years, the project engaged with 7,362 participants, establishing 53 demonstration sites and completed a diverse range of training courses. The program included 321 events, including field days, discussion groups, farm tours, and training workshops (2018, 7). It included a diverse range of farm enterprises or industry types such as beef and sheep farming, dairy, viticulture, horticulture, hops and agroforestry (2018, 8). Participants learnt about innovative and sustainable farming techniques including using compost under vines as an alternative to chemical fertilisers, growing pasture and grazing cattle between tree plantings using a new agroforestry design called 'multi storey farming', testing the quality of hay and silage for improved livestock cattle carcass weights, and trialling green manure crops for nutrient cycling in intensive organic horticulture (2018, 10).



Field days were run on how to farm on steep slopes, managing wet soils to minimise damage by livestock, managing tunnel erosion, and other regenerative farming practices (2018, 15). The demonstration sites recorded the data from the case studies providing valuable research studies for future data. Training workshops were held on subjects including better uses of fertilizer on farms, of trees, and on farm management, planning and mapping (2018, 19).

Discussion groups, which numbered up to 144, promoted social connections and sharing of information and experiences. This is particularly important in communities and in an industry that operates in isolation. As the project's final report says, 'The mental well-being of these interactions should not be underestimated' (2018, 25). Sharing information and experiences, participants can compare and contrast their own practices and knowledge with each other, exemplifying the way community Landcare supports networks allowing farmers to learn collectively.

The Demonstrating Sustainable Practices program demonstrates the multitude of values Landcare offers from the more obvious economic, environmental benefits, to the equally important social and cultural ones. As the program's reporters state:

'At the heart of the project was the goal to improve the management of Australia's natural resources. By engaging with the community through a diverse program of activities, the project has effected a change in farming practices that will benefit Australia's agricultural lands through more resilient and skilled farmers providing cleaner water and supporting biodiversity and healthy soil' (2018, 25-26).

It illustrates how these multiple benefits and values are connected and complement one another. Healthier and better-equipped farmers are positively related to stronger communities that are in turn connected to a healthier and more resilient environment, which supports the wellbeing of farmers and communities.

Case Study B. Mallee Dryland Sustainable Agriculture program and the Mallee Dryland Sustainable Agriculture Incentives program (Mallee, VIC)

In 2016, the Australian Government provided funding through the NLP and the Mallee CMA for a program of on-farm salinity control work and education.

Dryland salinity is a significant problem for land managers and owners in the Mallee region of Victoria. It is a relatively new problem connected with the recent large scale historic vegetation clearing, particularly of deep rooted native plants, and their replacement with shallow rooted, annual crops and summer fallow practices. The reintroduction of deep rooted and salt tolerant vegetation, particularly native species, is an effective way to stop and in some cases reverse trends of salinization and land degradation. Addressing this pressing issue requires immediate action and measures be taken, but also help land users develop new understandings and land uses.

Grants were made available through the Mallee Dryland Sustainable Agriculture program, delivered regionally by the Mallee Catchment Management Authority. Grants were extended along with education on the issue of soil salinity and which farming practices and methods delivered the best results.

Case Study C. Woody Yaloak Catchment Group

The Woody Yaloak Catchment group in Victoria (Southeast of Ballarat) is an often-cited case study in Landcare literature and discussions (Cullen et al 2003). One of the older catchment groups in Victoria and it has also enjoyed competent and proactive coordinators and members. It has both been considerably active over a long period of time and carried out valuable measurements and data. It is thus a prime case study for demonstrating some of the benefit of sustained Landcare activities.

The Woody Yaloak Catchment group have made understanding soil a central project. Between 1992 and 2012, the group conducted 1,100 soil tests on more than 106 properties (representing half the catchment). Tests looked for information on soil fertility, soil acidity, soil structure, and soil carbon. They indicate trends in soil health in the catchment and the success of innovations such as new cropping and pasture techniques, rotations, and use of lime. They indicate what successes there have been and where improvements and room for work is needed. Overall they demonstrate that the 'soil is now in a better position to sustain increasing demands for food and fibre production than it did in the early 1990s', as they comment, 'a fantastic achievement'.

In collaboration with the Department of Sustainability and Environment and the Corongamite CMA, Woody Yaloak Catchment group have also conducted two comprehensive studies, in 2004 and 2013, to gauge the health of their waterways. Testing over 170 sites, with indicators being physical form, streamside zone, water quality and aquatic life, they identified areas that had improved and areas, which had degraded. Overall waterways in the catchment had improved over the decade. This project also highlighted how by increasing awareness of degraded waterway areas, community was motivated to invest, enhance and restore poor sites (6).

Each decade the Woody Yaloak Catchment group conduct comprehensive surveys with a small number of landholders in the Catchment to understand outcomes from the decade of Landcare activity. They look at:

...changes in attitudes, knowledge and skills towards natural resource management, how this translates into investment in landcare (much of which is not adequately captured by just using grants as an indicator) and then how this effects the profitability and resilience of the farming business. 21 farm businesses were interviewed in the 2013 survey, with 13 also involved in the 2001 study.

The surveys provide insight into the health and effectiveness of the Landcare group, through looking at things such as participation, types of activities engaged in, knowledge gained, perceived benefits.

With support from the Norman Wettenhall Foundation, the Woody Yaloak Catchment group have developed a bird-monitoring program on private land within the Catchment. The program gauges biodiversity values, habitat quality and effectiveness of on ground management throughout the catchment. Birds are good indicators of general ecological condition as they are '1) sensitive to change in physical, chemical and biological properties and 2) sufficiently detectable and inexpensive to monitor' (2015, 3).

Case Study D. Strath Creek Landcare & Goulburn Broken CMA

Landcare groups in the Goulburn Broken CMA illustrate many of the multiple values of community Landcare, and how they work best within the broader NRM system. Situated in northern Victoria and part of the Murray Darling Basin, the Goulburn Broken Catchment comprises the catchments of the Goulburn and Broken Rivers and part of

the Murray River Valley. The GBCMA currently encompasses around 94 Landcare and land management groups, including the 11 Landcare groups that comprise the Upper Goulburn Landcare Network. The Strath Creek Landcare group is one of these groups.

Within this catchment run several important waterways such as the King Parrot Creek, the Hughes Creek, the Seven Creeks, and of course the Goulburn and Broken rivers. The GBCMA has made the management and restoration of these waterways, which home endangered species of native fish like the Macquarie Perch, a central strategic focus of their NRM and CBNRM activities. The King Parrot Creek, running through the Goulburn catchment and Strath Creek Valley, is a pertinent example of this.



Figure 17. Strath Creek Landcare work closely with the GBCMA on many projects including the important work at King Parrot Creek.

In close collaboration and cooperation, the CMA and local Landcare groups such as the Strath Creek Landcare Group have made a significant impact on King Parrot Creek and the surrounding landscape since the late 1990s. The CMA is able to provide overarching direction, support and catalytic funding, while Landcare groups provide the mechanism to engage neighbouring landholders and mobilise community enthusiasm. Working together, they have carried out activities particularly directed at improving the riparian zones around the river, including through riparian fencing, revegetation and weed control. Riparian fencing is particularly important in protecting riparian zones, vegetation and riverbanks from livestock, which destroy riparian vegetation, cause erosion, bank collapses, and an inundation of sediment into the rivers, suffocating

existing flora and fauna. The Macquarie Perch, the most notable fauna threatened, are a nationally endangered native fish species, the health and numbers of which provide insight to the health and state of their waterways. As Strath Creek Landcare President, Terry Hubbard says, ‘a Landcare group needs to seize on an iconic project in its area as its key focus, year to year’ (2015). They may walk away from it for a little while, ‘but they always revisit it’, over time see the positive changes, and ‘nail’ their ‘badge’ on it (2015).

Following the 2009 Victorian Bushfires, which seriously affect this region, there were significant concerns about the survival of endangered river fauna like the perch. Ash and sediment washed into waterways can deoxygenate water and suffocate plant and animal life, and the GBCMA and members of the Strath Creek Landcare Group worked together in March 2009 to remove some perch from the waterways, returning them later that year.

Case Study E. The 2009 Victorian Bushfires & the Upper Goulburn Landcare Network

Following the catastrophic ‘Black Saturday’ Bushfires, which devastated Victoria in February 2009, community Landcare groups in the Upper Goulburn Landcare Network (UGLN), were quick to respond. Groups such as Strath Creek Landcare quickly mobilised to support affected landholders, including repairing property boundary fences and helping contain livestock. Quickly, however, the UGLN noticed that a more serious and sustained responses were needed and there existed considerable desire in many parts of the Victorian community to contribute support, either through volunteering or finances. A Fire Recovery Project was set up around October 2009, and a full time Fire Recovery Coordinator, Chris Cobern, was employed to manage it. Over the next months and years, the UGLN coordinated and managed support from various parts of government, corporations such as ANZ, NAB and Ernst & Young, community groups such as the Uniting Church, Rotary Clubs, 4WD clubs, and other willing individuals.

Perhaps the most pressing issue they sought to address was the removal and replacement of burnt fencing. With a combination of skilled and unskilled volunteers, UGLN coordinated groups to help landholders repair boundary fences, often in return for morning tea. Volunteers came from as far as Shepparton, Benalla and Melbourne.

Necessary capital, including eventually a tractor, was purchased with financial support. The Lorax Project sought to revegetate affected areas to control erosion and recover wildlife, particularly those with low soil fertility, restoring shelterbelts, and wildlife corridors. They received funding for plants, stakes and other material, and volunteers from corporate and community groups. Fires also create openings for invasive weeds and pests to gain a foothold, and thus became a central concern in recovery efforts, particularly tenacious weeds such as blackberries. With State Government funding, the UGLN utilised both contractors and volunteers to attack weeds in areas of conservation significance, such as riverbanks, including on private land. It is estimated the UGLN helped remove up to 90km of burnt fencing, rebuild around 250km of fencing, planted up to 50,000 trees and shrubs, and removed weeds on up to 400ha of land.

The recovery of local wildlife also constituted another focus in the project, drawing support from many parts of the community. Establishing nest boxes is a major part of this, with local schools, Scout groups, and Men Sheds participating in constructing, installing and monitoring them. Boxes provide shelter for vulnerable mammals such as Sugar Gliders, Brush Tail Phascogales, and birds such as rosellas, the White-throated Treecreeper and Owlet Nightjar. More than 500 nest boxes were constructed in the first period of the project, which continues to this day. Remote sensor cameras and nest box inspection cameras were purchased to monitor local wildlife recovery and box use.

Figure 18. Members of Yea High School installing nest boxes at Strath Creek in the UGLN; Sugar Gliders inside one of the nest boxes installed by UGLN.

The UGLN's Recovery Project since 2009 has yielded numerous benefits. Its role in contributing to disaster resilience following the 2009 Bushfires was even acknowledged by the Australian Red Cross (ARC 2014, 23). It is impossible to quantify the positive effect on community morale that the quick and sustained local responses have in the wake of a serious disasters such as those in Victoria in 2009. On top of the strengthening community bonds, the UGLN expanded



Landcare's role and influence in the area. Many landholders not previously associated with Landcare became involved following the fire, and new Landcare groups emerged – including the Flowerdale and Cathedral Landcare Groups. Moreover, the project represented a process of collective learning, where individuals, and community are better placed to face future adversity. Procedures and practices were developed, such as that codified in the *Restoring Our Landscape* revegetation guide for fire-affected areas supported by the Caring for Our Country program. Individuals and groups gained built up experience and skills in activities such as fencing and weeding, subsequently directed towards other projects. The UGLN provide a model to be learnt from in future disaster responses and in fact, have been drawn on by Landcare and community groups following subsequent fires in Victoria and Tasmania.

TASMANIA

Case Study F. Landcare Tasmania's devolved grants model

Tasmania is one of Australia's most unique states in terms of its rich agriculture, aquaculture, environment and biodiversity. Separated from the mainland by the Bass Strait, Tasmania has developed and preserved valuable ecosystems and species. It has been largely insulated from environmental catastrophes that have affected the rest of Australia, such as the introduction of weeds and pests, including *vulpes vulpes*, the red fox. Thus Tasmanian Landcare functions with a more distinct purpose and emphasis on protecting Tasmania's unique biodiversity and environment.

Over the last decade, Landcare in Tasmania has employed a series of devolved grants programs that focus specifically on issues such as biodiversity protection, weeds and pests. Between 2009 and 2012, the Tasmanian Landcaring Grants (TLG) delivered funding across Tasmania to community groups and individuals, under the Caring for Our Country program. Small grants (up to \$20,000) were delivered supporting activities that aligned with CFoC goals. This included, for example, projects of weed removal and migratory bird monitoring on some of Tasmania's small islands such as Roydon Island and King Island in the Bass Strait, and Maria Island off the East Coast.

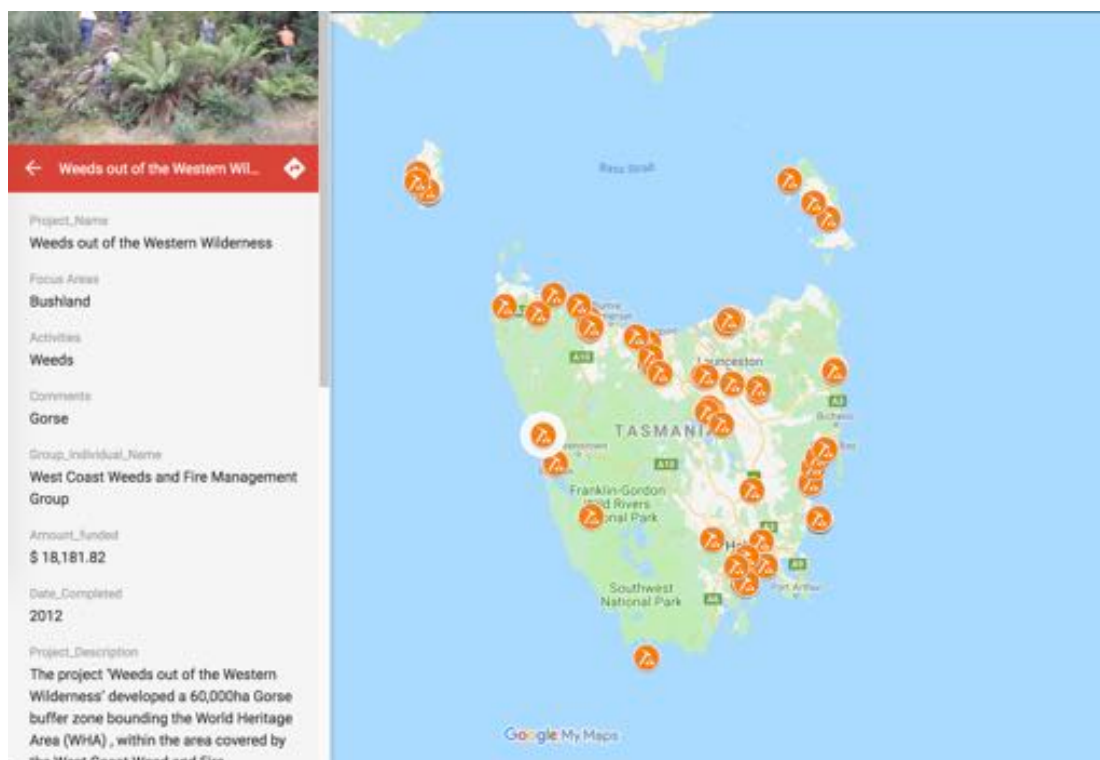


Figure 19. Landcare Tasmania’s innovative use of Google Maps displays Tasmanian Landcare Grants locations and activities across Australia.

From 2012 to 2015, funding was delivered under the Landcare Biodiversity Grants program. Utilising their extensive community networks, Landcare Tasmania’s devolved grants model demonstrates how long-term, sustainable conservation land management can be effected on a large scale. It has also exhibited efficiency, transparency and capacity to improve, through particular emphasis on assessment of project proposals, project tracking and risk management. Landcare Tasmania has even created useful tools on their website, such as an interactive map, for displaying the spectrum of projects carried out under the grants programs across the state. The oldest of Landcare’s State and Territory organisations, it has proven itself capable of delivering grants to a high standard.

WESTERN AUSTRALIA

Case Study G. South East Regional Centre for Urban Landcare (SERCUL), Perth, WA

The South East Regional Centre for Urban Landcare or SERCUL is a sub-regional NRM body operating in metropolitan and peri-urban areas of the Swan-Canning River Catchment. It came into being in 2003, naturally evolving out of a local Landcare group,

the Canning Catchment Group. After effectively developing productive relationships with local government bodies and other stakeholders in the community, the group naturally expanded its roles and territory in line with its capacity and success.

Housed in the historic Yule Brook Homestead 20 minutes from Perth's CBD, SERCUL's main focus is the waterways within their catchment, defined by the Dyarguu (the Canning River), the Southern Wungong River and tributaries and parts of Derbarl Yaragan (the Swan River). They sponsor and support Landcare and restoration activities, particularly in the urban waterways, streams and wetlands, and assist smaller community groups coordinate and secure funding. They educate and raise awareness in the community of issues such as clean drains, phosphorous levels (Phosphorous Awareness Project PAP), invasive plants such as *limnobium laevigatum* or Amazon Frogbit, different fertilisers and their impacts, and the relative performance of different local governments within their area. This includes facilitating the sharing of Indigenous knowledge of the local environment and bush tucker. They also monitor and conduct research on water quality and issues such as invasive weeds and mosquitos in the catchment.

SERCUL receives little permanent funding and has needed to be dynamic and innovative in securing finances for the projects and activities they support through different sources and partnerships. In many ways they have become a small business, supporting more than two-dozen staff (including part time and casual staff), adept at managing relations with stakeholders, assisting community groups navigate bureaucratic and financial obstacles, and attracting funding and support for activities and projects.

An example of this was SERCUL's receipt in 2010 of \$4 million from the Australian Government, through the National Water Security Plan for Cities and Towns Program under the Water for the Future Initiative, to deliver and support Urban Waterways Renewal projects (UWR). They attracted matching funding from State Government, local governments, the Department of Water, the Department of Parks and Wildlife, community groups, and the Water Corporation. In this, they helped manage and deliver 11 programs aimed at reducing nutrients and pollutants entering the Swan Canning River Park, including constructing wetlands, swales, and basins, removing weeds, installing rock riffles, treatment media and pollutions traps. The project demonstrated SERCUL's adroitness in building partnerships, consulting with the community, and managing and

delivering the necessary steps of complex projects, including concept design, engineer's plans and approvals, site preparation, weed control and upland planting.

Case Study H. Coast SWaP (Southwest & Peel Coastal Management Group Inc.)

The Southwest and Peel Coastal Management Group, or Coast SWaP as it is more commonly known, emerged in the 1990s to assist coastal managers and stakeholders work together and share information on WA's southwest coast. The Group was instrumental in negotiating the emergence of Coastcare in WA's South West, and securing the support of funding and local facilitators and coordinators. They now work closely with government and coastal groups through government grant systems such as Coastwest.

Coast SWaP tries to bring together all the different coastal stakeholders, including NRM regional bodies, Government Departments, local governments, Landcare and community groups, to identify and solve problems together. One of the key ways they achieve this is through their annual forums, usually numbering around five that correspond to distinct localities. These forums are the 'bread and butter' of Coast SWaP where key issues and topics, decided upon beforehand by participants, are discussed and tackled. Most simply, it is about enabling the simple process of putting people together in a room that would not usually have the opportunity to do so. This crucially functions to 'pop the bubbles and fill the gaps' between different stakeholder and coastal management organisations, putting everyone on the same page to allow progress on important issues. On top of promoting partnerships and relations between groups and stakeholders, Coast SWaP also works to raise awareness and share information pertaining to pertinent coastal issues and solutions such as dune revegetation and stabilisation, vehicle management and controlled beach access, publishing case studies and information on various issues raised in their forums. These case studies account the agreements reached and successes made through their forums.

Coast SWaP in many ways exemplifies Landcare's ability to create partnerships; to facilitate cooperation and enable shared goals to be reached. They have played a valuable role in the more effective coastal management system in WA.

QUEENSLAND

Case Study I. Barung Landcare & the Maleny Wood Expo, Maleny, Queensland



Figure 20. Advertisement for the 2019 Maleny Wood Expo hosted by Barung Landcare.

Barung Landcare is one of the oldest and most established Landcare groups in Queensland and certainly one of the most active. The group is based in the town and community of Maleny, a lush timber town in Queensland's Sunshine Coast Hinterland. Barung carry out extensive on-ground works on both public and private lands increasing awareness of local native flora and fauna, improved water quality and better environmental practices. They also established a successful, self-sustainable local native plant nursery that has provided 1.5 million native trees for the local area, educational services, and financial support for the groups other activities. Barung's influence has even extended outside Australia into the region, with the group's former Landcare program coordinator John Muir becoming facilitator for the Philippines-Australia Landcare Project between 1999 and 2004, training local Landcare facilitators (DAFF 2009, 178).

In 1996, Barung Landcare instigated and began organising the Maleny Wood Expo, designed to promote sustainable use of local timbers, bringing together foresters, regional artisans, craft people, and the community. Since 1996, the Expo has become one of the Sunshine Coast's most iconic events, drawing visitors and participants every year from all over the region. Now in its 23rd year, the Expo runs for three days in May and is held at the Maleny Showgrounds. It employs more than a hundred volunteers, showcases local crafts and art, and holds workshops and educational events on subjects ranging from woodwork to native rainforest plants. It has been praised for its success

bringing together ‘woodies and greenies’; two groups more often than not at loggerheads. Barung’s organisation of the event generates significant economic, social, environmental and cultural benefits for the Maleny community and region. It demonstrates how community Landcare groups manifest in their unique context, rising to their own issues and circumstances in innovative and creative ways.

Case Study J. Southern Queensland Murray Darling Feral Animal Initiative, 2015

In regional Queensland, local councils, government and Landcare groups have teamed up together to tackle the formidable pest problem that has been harming local agriculture. The Goondiwindi region and surrounds in south Queensland have been impacted considerably by drought, beginning in 2014. With producers and landholders already in a marginal situation, pest problems from feral pigs and dogs have only compounded problems.

To tackle this issue, funding was made available by the Department of Agriculture, Fisheries and Forestry (DAFF) through the Federal Government Drought Assistance Program. A case study was prepared highlighting the novel way that the project was delivered in the Goondiwindi Regional Council area.

The Goondiwindi Regional Council and local Landcare groups such as the Inglewood & Texas Landcare and Waggamba Landcare collaborated closely to deliver program funding in the most effective and efficient manner. A pig control and feral dog control program were both carried out engaging landholders through use of the Landcare groups’ extensive networks. The pig control program involved a variety of methods including: 1080 baiting, trapping and aerial shooting. Utilising the established and extensive networks and coordination that Landcare provides was instrumental in the quick and effective delivery of the program, across property boundaries, at a landscape scale.

NEW SOUTH WALES

Case Study K. More than Just Erosion Control, Upper Lachlan Landcare, 2017

Upper Lachlan catchment experiences strong water flows during significant rainfall events accompanied by erosion. Over the last 50 years, this erosion has eaten away and degraded significant parts of land within the catchment and can prove, with traditional methods, difficult and expensive to remedy.



Figure 21. Cam Wilson explains natural erosion control methods that also help improve the broader health of the landscape.

Upper Lachlan Landcare, in partnership with Cam Wilson from Earth Integral and South East Local Land Services, provided three workshops to demonstrate low cost and effective erosion stabilising techniques. Using rocks, logs, tree branches, straw and any other readily available materials, Cam demonstrated to landholders how to stabilise erosion, while also rehydrating the landscape, supporting revegetation and soil microbial activity. In this regard, this natural, practical and affordable solution not only attacks the central issue (erosion), but goes on also to restore health to the land around it.

This project is an example of Landcare, in partnership with expert knowledge providers, and its regional body, providing a mechanism, extending and sharing knowledge and practices for arresting and reversing environmental degradation.

Case Study L. Microbats in the Young Shire

A novel project being carried out by the Young District Landcare group has focused on the important ecosystem role played by microbats. There exist up to 15 different species

of microbat in the Young Shire. They play an important role in their ecosystem, eating large quantities of insects, many of which are pests to people, livestock and agriculture, such as mosquitoes, moths, caterpillars and termites. In fact, microbats can eat up to 40% of their own bodyweight in insects in a single night. They therefore provide obvious services to individuals, community and even industry. Unfortunately, like other woodland animals, they face threats from habitat loss and fragmentation.

Thus Young District Landcare received funding from Riverina Local Land Services in 2014 to undertake the project, Microbats in the Young Shire to promote and protect microbats and educate the community about the important role they play. The project provided habitats for microbats through the installation of 140 roosting boxes, revegetation for future habitat. Education was provided through four interpretative signs installed in the area, and the holding of a 'Bat Night' with an expert speaker. Finally the purchase of two Anabat detectors, devices that measure the echolocation calls of bats to identify species, and the training of 10 landcarers, allows the group to continue to monitor roosting sites.

The innovative Microbats in the Young Shire project showcases many of Landcare's diverse values. The group identified a valuable part of their local biodiversity under threat, along with its broad benefits, and mobilised to protect it in collaboration and with their regional body. In doing this they engaged considerable portions of the community, through involvement with 10 schools, interpretative signs, and microbat events, which saw high turnout among local landholders.

THE AUSTRALIAN CAPITAL TERRITORY

Case Study M. The Ginninderra Catchment Group

The Ginninderra Catchment Group (GCG) is both a community-based NRM organisation and a Landcare network operating in the Northwest of Canberra, one of three catchment groups in the Australian Capital Territory. It represents around 17 Landcare groups (including Parkcare, Frogwatch, urban, rural, Junior and Aboriginal Landcare groups) and maintains strong partnerships with local, regional and national bodies and governments.

The GCG has been a strong representative and advocate of Aboriginal Landcare in their catchment. Through working with local Indigenous custodians, they carry out a number of projects and activities that promote Aboriginal land management and protect and preserve Aboriginal knowledge and cultural heritage. Within the Ginninderra catchment, named after the Ngunawal word for ‘sparkling water’, there exist important and various Aboriginal heritage and cultural sites. Since 2013, GCG has worked with local Ngunawal custodians such as Wally and Tyrone Bell to restore and maintain these sites, and educate the community about aboriginal history, heritage and local land management knowledge. In 2014, the Mulanggang Traditional Aboriginal Landcare Group was formed, a member group of the GCG, for local custodians. Together Mulanggang and GCG have worked towards achieving the goals outlined in the draft GCG Aboriginal Landcare Strategy through restoration work on sites such as Umbagong and Gubut Dhaura, and through running interpretative walks, guided by local Aboriginal custodians. Projects have also sought to engage and provide opportunities to local Aboriginal youth to learn about Aboriginal land management and their cultural heritage. GCG’s Aboriginal Landcare activities have enjoyed the supported of the ACT Government’s ACT Heritage Grants, ACT Environment Grants and the Australian Government’s Indigenous Heritage Programme and NLP.

Figure 22. ACT Rural Fire Service assisting in autumn burning trials of grasslands in the Ginninderra catchment.

Another innovative project of the GCG involves experiments and trials with fire as part of the GCG Native Grassland Restoration Program. Aboriginal Australians used fire to shape and cultivate Australia’s landscape for thousands of years, and many plants and ecosystems require smoke and fire in order to rejuvenate. As these management



processes are increasingly revealed, there are increasing opportunities to experiment and discover more (Gammage 2011). For over a decade, GCG’s Native Grassland Restoration Program has sought to address knowledge gaps in the area of ecological

burning and implement native grassland restoration throughout the Catchment. Dr Ken Hodgkinson, local landcarer and Honorary Research Fellow with CSIRO Land & Water, leads this community science project, testifying to Landcare's capacity to both harness and provide a platform for local expertise and human capital. This is particularly evident in places such as Canberra, where Landcare can draw on a rich pool of scientists, bureaucrats and other experts. At different sites, controlled trials were conducted, burning and mowing at different times and frequencies throughout the year to discover the most productive and cost-effective treatments to restore and manage native grasslands. Variables such as floral diversity and the presence of weeds were central in monitoring and project design. The project is addressing knowledge gaps in the area of ecological burning, in particular surrounding the effectiveness of autumn burning. Preliminary research findings, particularly the importance of autumn burns, have been adopted in ACT Government operations. A Grassland Restoration Landcare Group has been established, which continues to support citizen science and grassland restoration across the Ginninderra Catchment.

THE NORTHERN TERRITORY

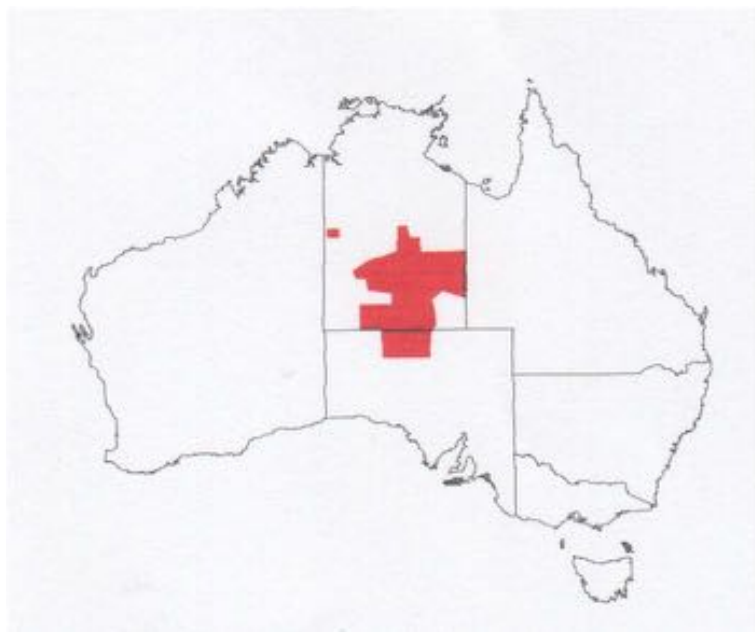
Case Study N. Centralian Land Management Association CLMA

The Centralian Land Management Association (CLMA), a pastoralist Landcare organisation covering the rangelands around the Alice Springs Pastoral District (ASPD) in Central Australia, was founded in 1988. The group emerged in response to the increasing demands for environmentally conscious land management (including substantial criticism of pastoralists), increasing awareness of issues including soil degradation and a need for landholders to better cooperate to address them. Occupying up to 300,000 square kilometres, roughly ten times the size of Belgium, it is by area Australia's largest Landcare group. Beef cattle are the primary industry in the region and the group's membership comprises pastoralists representing around 80 properties, each averaging around 3,000 square kilometres. These vast rangelands are a unique and challenging environment for those that call them home, characterised by isolation, arid soils, scarce permanent water, and extreme weather events. For pastoralists operating in this environment, erosion, poor soil and vegetation, water, pests and weeds, and adverse weather events such as bushfires and floods are among the most pressing problems.

Figure 23. Map displaying area covered by the Centralian Land Management Association.

In this context, the CLMA performs an important role supporting the community to better work both together and with their environment.

Crucially it functions as a communication and knowledge-sharing instrument, where members can keep up to date with news, current best practices, and other relevant information. Workshops are held on topics such as erosion



and improving soil – preparing the land to make the most of rain, controlling pests and weeds, and on long term planning for fires and other adverse events. In these workshops members and local Indigenous Rangers are invited to expand their knowledge and skills to better manage the land. One example of this has been the CLMA’s collaboration with Hugh Pringle and Ken Tinley’s Ecological Management Understanding program, or EMU. This initiative involves experts assisting land managers to better understand and plan their properties over the long term by mapping and studying them in detail. Through these activities, the CLMA has also been acknowledged for its role in acting as a ‘vehicle’ for reformist pastoralists to effect changes and progress in land management (Gill 2004). By preserving local memory and knowledge, built up over generations of operating on the land, the organisation allows new members to plug in and achieve significant gains in information. In an environment with decade long weather cycles this is significant.

CLMA generates the health and social benefits typically derived from involvement in community groups such as Landcare, even more so in a region and industry characterised by distance and isolation. Communication and information networks provide vital support to its members and the broader community. Workshops and initiatives such as the 2013 Influential Women forum initiated by Catherine Marriott, and the consequent Desert Poppies group growing to include more than 70 women from across the

rangelands, showcases Landcare's ability to foster relationships and strengthen community. Furthermore, it demonstrates Landcare's progressive role in supporting and empowering women, often marginalised in male dominated rural industries and society.



Figure 24. Central Australia's rangelands are a challenging environment for those that inhabit them (CLMA).

Case Study O. Friends of Fogg Dam

In 2006, locals Heather Boulden and Jeremy Hemphill formed the Friends of Fogg Dam (FFD) Landcare group to promote and care for the unique environment created by Fogg Dam. The Dam was built in 1956, 70 kilometres from Darwin, as part of a joint venture to develop a lucrative rice industry and a potential 'food bowl' for Asia in the area.

Although within the decade the ambitious 'Humpty Doo Rice Project' had been aborted, the resulting dam and wetland has developed into a rich and unique biodiversity hotspot supporting a huge range of ecosystems and animal species. This includes a great number of species of birds, fish, frogs, snakes (such as water pythons), lizards, insects, mammals and crocodiles. Thus the Dam has become an enormously valuable place and resource, attracting tourists, photographers, bird watchers, herpetologists, and scientists from all over the country and internationally.

Together with the traditional owners the Wulna people and NT Parks & Wildlife, FFD work to protect, promote and manage the Dam. The group, comprising community members from Darwin, Middlepoint, and Humpty Doo, coordinates with these other bodies to maintain the Dam. They hold monthly working bees where they do important jobs such as weeding, maintaining boardwalks, information signs and other tourist infrastructure, and identifying and cataloguing flora and fauna of public interest. Weeding is one of the most important activities as large and dense clumps of vegetation ('weed mats') can grow and spread across the dam, suffocating and crowding out other life. Together with Parks & Wildlife, FFD purchased a large weed harvester and periodically clear large quantities of vegetation from the dam to maintain open water for fish, birds and other life. Currently, the group is organising the purchase of a special 'Mudd Ox' all terrain vehicle to assist weeding even more areas of the dam. Other events, including an annual Earth Hour Night Walk attract considerable community attention and participation. Promoting and raising awareness of the valuable natural resource of Fogg Dam is a central purpose of the organisation.

FFD display many of the qualities that characterise community Landcare. They constitute the community-based component of Fogg Dam NRM management governance, along with the traditional owners and Parks & Wildlife rangers. They work cohesively with and supporting Parks & Wildlife, who have rangers on the FFD committee, where they are able to coordinate work and objectives, harnessing invaluable volunteer labour. For their members, FFD offers opportunities to get outside in nature and learn about their environment, to meet other people from diverse backgrounds (from panel beaters to photographers to scientists) and socialise. Moreover, they have raised awareness that is Fogg Dam.

SOUTH AUSTRALIA

Case Study P. Mid-Murray Landcare & Dark Sky Reserve

The Mid-Murray Landcare Group, supported by the Astronomical Society of South Australia, has been working towards creating an accredited Dark Sky Reserve in the Mid-Murray region. Dark Sky accreditation, essentially a World Heritage Listing for the night sky, would establish the River Murray Dark Sky Reserve, Australia's first Dark Sky Reserve and the second Dark Sky region in the country, following the Warrumbungles

Dark Sky Park, NSW. Outside Australia there exist around 40 formally recognised Dark Sky reserves including the Czech Republic, Hungary, Poland, Slovakia, Spain, South Korea, Japan, the UK, US and Canada (which has 15). The community driven project has already drawn support from across Australia, including SA's Chief Scientist, Premier and Opposition Leader, Nobel Laureate and ANU Chancellor Brian Schmidt, and importantly local shop businesses, tour operators, sports clubs, wildlife researchers, astronomical enthusiasts, local farmers and school children.

Figure 25. The Mid Murray's pristine night sky is being advocated for by their local Landcare group (photo courtesy of Landcare SA).

The proposed Reserve, covering around 3,300 square kilometres of public and private land would yield numerous benefits. Scientific research has revealed the negative effects light pollution has on human and animal health. As population size and density grows,



light pollution and its impacts have become more and more difficult to avoid. Darkness is measured on a scale of 0 to 22, with 22 being total darkness. Darkness in the Mid Murray in January 2019 was measured 21.99. Besides its immediate health benefits for humans and wildlife, preserving this pristine sky would create opportunities to further educate and promote the importance of darkness. Moreover, for local residents and businesses it would be another drawing point to visit the region. This project showcases the innovative ways community Landcare groups identify, protect and utilise their local natural assets to strengthen and support their community and environment.

NATIONAL

Case Study Q. The Olympic Landcare Program, Australia (1998-2000)

Landcare's collaboration with the Sydney Organising Committee for the Olympic Games (SOCOG) on the Olympic Landcare Program demonstrated Landcare's immense value in demonstrating Australia's environmental credentials internationally. SOCOG sought to use Sydney's hosting of the world's greatest sporting platform as a platform for

demonstrating Australia's environmental leadership, launching a number of programs and initiatives to 'make the Games green', raise the profile of environmental issues and the bar of environmental standards, and promote new technologies and models. The Olympic Landcare program was one of these programs, again showcasing Landcare's ability to form mutually beneficial partnerships. The Program cost \$4 million, funded by the NLP and NHT. It involved collaboration between the Landcare Australia, SOCOG, the Australian Government, Greening Australia and Olympic partners, Fuji Xerox, BHP, Westpac, Telstra and Channel Seven. Tree planting events were held in catchment areas near every capital city, where a symbolic 'gold' tree, a dead tree painted gold featured in the landscape. A special event near Lithgow and the Blue Mountains carried 700 volunteers aboard the 'Olympic Landcare Express' train from Sydney, and enjoyed a performance by the band 'Mental As Anything' at the event. The Olympic Landcare Program represented the community contribution to Australia's environment as well as the largest Landcare program to date. It highlighted both Landcare's practical and symbolic value as a platform for Australian progress and achievement on the environment.



Figure 26. Volunteer Karin Ottesen with the author after a big day of Landcare, at Lithgow Olympic Landcare event September 1998.

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