Eco-social Capital: A proposal for exploring the development of cohesiveness in environmental volunteer groups

Rafiq Huq and Shelley Burgin, School of Science and Health, Western Sydney University

Abstract

Australians have a legacy of volunteering. Since the late 1960s, individuals have increasingly coalesced into environmental volunteering groups, typically focused on creating awareness of the natural environment's fragility. Environmental volunteering programs provide effective tools for community engagement, although their outcomes are not clearly understood. Most appear to oscillate between economic and ecological capital, with societal impacts largely ignored. We propose that eco-social capital that develops within groups result in social networks with a sense of place and ecological identity. Networks develop trust and reciprocal relationships within/among similar networks, and they connect through social-ties, such as bonding, bridging and linking, to generate eco-social capital that contributes to sustainable communities. However, to progress the concept will require further conceptualisation of the societal impact of environmental volunteerism, and the resultant direction of this impact on communities. There is also a need to seek to articulate the place of eco-social capital within ecological sustainable management.

Keywords

Volunteer environment; social impacts; sense of place; ecological identity; ecological social capital

Introduction

In discussing environmental planning, Selman (2001: 15) suggested that the popular view was that 'widespread and spontaneous participation will only occur where deep reservoirs of social capital exist'. In contrast, we suggest that social capital can be created or strengthened in environmental volunteer groups, and this may culminate in the development of 'eco-social capital'.

In this paper we use an Australian historical perspective to develop the concept of 'eco-social capital'. We begin with the extremes in the perception of 'land' between Indigenous and non-Indigenous Australians at first interaction, and follow the gradual change in European perception of the environment. Over time the perceptions of non-Indigenous Australians has morphed into environmental volunteerism, which ultimately fostered a 'sense of place' and 'ecological identity'. We then discuss the concept of 'social capital', before these concepts are combined to propose that 'eco-social capital' has evolved from 'environmental volunteerism'. Finally, we suggest the next steps in the development of the concept of eco-social capital.

'Care for Country'

Among Indigenous Australians, 'land' represents the foundation of culture and spirituality. Traditionally, these peoples have lived embedded in nature and as an intrinsic part of it. The concept of 'country' is the framework of this belief, their ancestral connectedness and the underpinning of their existence. To these Indigenous peoples, 'country' means origin, but it is more than simply geographical space. It encompasses the values, places, resources, stories and cultural obligations that they associate with such space (Yencken & Wilkinson 2000).

By contrast with Indigenous Australians, this ancestral connectedness with country has not been the paradigm for other Australians. The initial focus of European explorers was to identify 'new land' and to obtain it on behalf of others, even if the land was not considered to have value. However, early European settlers soon realised the potential of

these lands as a passport to social worth and wealth (Vandenbeld 1988), although the concept of its conservation apparently did not commence until the mid-nineteenth century (Mosley 1989; Sellars 1997; Margules & Pressey 2000). This is evidenced by the standing instructions to the Crown Land Department survey officers, who, as part of their duties, were required to identify scenic landscapes and to recommend reserves so that the public interest would be protected under the *Public Park Act* of 1854 (Mosley 1989).

Environmental Volunteerism

Environmental volunteerism apparently commenced with the conservation of such lands for public interest. For example, in the 1860s, Australian Colonial Press popularised the ideas of the American writer and naturalist George Marsh. He challenged the dominant role of humanity over the natural world, and expressed concern about the environmental damage caused by forest clearing. This concept was strongly supported by contemporary intellectuals, and subsequently a new generation of naturalists emerged in Australian colonial communities (Sorrenson 1996; Raj 2000; Worboys et al. 2001; Lumley & Armstrong 2004).

Natural history societies were established in most states of Australia by the 1880s (Meacham 2007). These included the Philosophical Society of Australasia (1821), which remains contemporary as the Royal Society of New South Wales. The Entomological Society (1873) also changed direction, ultimately being absorbed into the Linnean Society (Augee 2010). In 1879 the Zoological Society was introduced to obtain and release non-native species. Its emphasis later shifted to the establishment of a zoo (at Moore Park, Sydney), which subsequently was morphed into Taronga Zoo. More recently, the primary focus of the Royal Zoological Society of New South Wales has been on native animals and their environments (Strahan 1992; RZS 2015). Each of these societies, run by volunteers, ultimately had the self-imposed mandate to investigate the natural environment from a scientific view (Meacham 2007). This led to the development, and parallel successes, of the conservation movement

in the late nineteenth and early twentieth centuries. Milestones included the first legislation to protect native fauna in Tasmania (1860), the protection of Jenolan Caves (New South Wales) as a water reservoir (1866), the establishment of Royal National Park (near Sydney, 1879), the construction of walking tracks and accommodation around significant natural features in Tasmania (1912), and the establishment of the Mountain Trail Club of Myles Dunphy (1914). These successes were followed by the establishment of other bushwalking clubs by the 1920s. Walking activities became increasingly popular and were the nucleus of the voluntary conservation movement in Australia. For example, the creation of the National Parks Association of New South Wales in 1957 provided Australian conservationists with a model to advance from isolated lobby groups to more effective and diverse activities, in part focused on educating the broader community (Worboys et al. 2001). These activities have, in turn, supported the formation of institutional environmental volunteering.

Since the late 1960s, individuals within the community have increasingly coalesced into environmental volunteering groups, typically with a focus of creating awareness of the fragility of the natural environment (Oppenheimer 2009). The associated activities have included the systematic restoration of urban bushland, which was popularly conceptualised as Bushland Regeneration on Sydney's North Shore during the early 1970s using techniques developed by the Bradley sisters (Buchanan 1994). Similar methods had been previously introduced by the assayer and botanist Albert Morris in the 1930s. Morris used indigenous plants to develop a 'green belt' to protect Broken Hill (New South Wales) from soil-erosion and sand drifting (Kennedy 1986; Meacham 2007).

By the 1980s, with the increasing engagement of volunteers in ecological restoration on public lands across Sydney's North Shore, local governments began to develop environmental volunteering programs. For example, in 1989 Ku-ring-gai Council invited local communities to form volunteer groups (AABR 2010), and subsequently the term 'Bushcare' was introduced in the early 1990s (Park 2007). Since that time, 'Bushcare' has become the common descriptor of environmental

volunteering programs in Australia's urban/peri-urban areas. These groups have typically continued to be supported by local government. The bush-regeneration concept of the Bradley sisters (see Bradley 1988) has also matured, and over time Bushcare has come to encompass a range of activities, from holistic ecosystem restoration to environmental education focusing on urban sustainability. Over the last two decades Bushcare has become more sophisticated, with many volunteers now working on ecological issues. For example, in addition to flora and fauna management, stormwater management, erosion control, education and environmental monitoring may be undertaken by environmental volunteers (AABR 2010).

Momentum was subsequently provided to the expanding environmental volunteer movement in 1989, with the federal government's introduction of the Landcare Program (DAFF/DWPC 2008), with substantial funding through the National Landcare Program (Lockie & Vanclay 1997). Subsequently, Landcare has provided a nationwide formal platform for environmental volunteering for natural resource management both in rural and urban areas. The federal government funding also underpinned the strengthening of state initiatives, such as the *Catchment Management Act 1989*, which was implemented in New South Wales in 1989 (Burgin 2002; Lunney et al. 2002). The ecological identity engendered by the engagement in ecological volunteering encouraged by such initiatives as Landcare have also supported the development (or a deeper development) of a 'sense of place' in many Australians (Carr 1995; Broderick 2005; Woodhill 2010).

A 'Sense of Place' and 'Ecological Identity'

One of the principal motivations behind environmental volunteering is the desire to care for a particular place (Measham & Barnett 2007). Humans develop a strong attachment to their settings through emotions and personal experiences. Over their life they explore their surroundings, enjoy them, blend their intrinsic features with their personal memories and tend to resist their change. Mackay (2005: 1) suggested that this was because of 'the powerful sense of that place – the look of it, the feel of it,

the smell of it' that stir emotions in the individual (positive and negative) that are accessible from memory alone. This 'sense of place' is one of the characteristics that have been similarly displayed by individuals as 'local identity'. Such 'sense of place' encompasses the sense of belonging and connectedness to a specific ecological context, and may be the driving force for environmental volunteering. This human dynamic of sense of place has three variables: 1) legibility – a sense of the familiar; 2) perception preference for the visual environment – the 'mystery'; and 3) compatibility between person and setting (Kaplan et al. 1972).

Commenting on environmental volunteers, Gooch (2002) reported that both a sense of place and the development of 'an ecological identity' can be strong motivators that underpin sustained volunteer commitment. James (2001) considered that the development of motivation occurred gradually and spontaneously by living in a particular landscape and accruing history within its confines. In the words of Suzuki (2008):

> *. . . we learn to see the world through perceptual lenses formed by heredity, upbringing, personal experiences, religion, socio-economic differences, and so on. Even though we detect our surroundings in the same way through eyes, ears, nose, skin, and tongue; our brains actively filter that incoming information so that it 'makes sense' according to our individual values and beliefs.*

As a consequence of developing such environmental awareness, obtaining an understanding of natural settings and instilling such ideas of valuing the components of ecosystems are necessary to achieve a generic sense of rationality in societal perspectives, which may ultimately evolve into a sense of place. This is the common ground for the differences among societies. Such sense of place is largely developed around natural features, patterns of human settlement and social relationships. It is determined only by local knowledge and is embodied in folklore, personal narratives and oral history (James 2001). Christie (2004) provided an example of the difference in perceptions between environmental volunteers and the supervising project staff which illustrates this concept of sense of place. While staff of a natural resources restoration project focused

on the benefits derived from revegetation in an area (e.g. reduction in salinity, soil erosion, habitat restoration), volunteers perceived the beneficial outcomes of their efforts to be additional vegetation in the landscape (i.e. restoration of the landscape to its 'natural' state; Christie 2004). In this study it was observed that exchange of views, ideas and knowledge, shared works and networking with like-minded fellow volunteers enhanced the motivational process and their sense of place. It also led to a sense of the worth of their work, and progressed through the development of a sense of satisfaction to altruism. This ultimately led to a stronger commitment that drove individual motivation to sustain and contribute further.

Gooch (2002) suggested that the sense of place that is associated with environmental volunteers leads to the development of an 'ecological identity', which Thomashow (2002: 3) defined as referring to 'all the different ways people construe themselves in relationship to the earth as manifested in personality, values, actions, and sense of self', and suggested that it included the interpretation of life's experience as it transcends social and cultural interactions. In addition, he suggested that it included a person's connection to the earth, perception of the ecosystem and direct experience of nature. This sense of self also acts with settings or nature and results in the development of an ecological sense of self. Similarly, the Norwegian philosopher Arne Naess (1995) considered that an individual's ecological self encompasses that with which they identify. This concept was described by Wilson (1996) as a sense of self in relation to the natural world, and he considered that this determined an individual's ecological identity. In development of the concept of Naess (1995), and why ecological identity is important, Thomashow (2002) suggested that it was the personal introspection that drives one's commitment to environmentalism, which he considered could be referred to as the unfolding, evolving, active development of an ecological world view, a perspective that is at once dynamic, diverse and radical. It was considered to represent the ideas, people and actions that constitute a social and intellectual movement. In this context, an ecological identify is the outcome of perfecting a sense of place. Such ecological identity is often argued to be the gateway to the world of 'deep

ecology' and a new form of identity politics, which also has the potential to generate radical views of 'nativist' and nationalism through the acts of ecological restoration (Light 2000). We propose that this ecological sense of place constitutes a form of social capital: eco-social capital.

Social Capital

The term 'social capital' was introduced to the literature in 1916 by Hanifan. He promoted the values of social relations and social interactions separately from the traditional concept of the capital of individual human societies. He said that his use of the term did not include its accepted use, except in the figurative sense. Personal possessions (e.g. real estate, money) were not included in the Hanifan (1916) definition. He, instead, considered the term to refer to those attributes (e.g. goodwill, fellowship, mutual sympathy, social intercourse) that made the tangible count in life for most individuals and families that make up a social group. Since the views of Hanifan were introduced, the concept of social capital has become widely acknowledged.

A more contemporary definition of the term 'social capital' was provided by Fukuyama (1999). He described social capital as a set of informal values or norms shared among members of a group that permits cooperation among them. He also suggested that if group members believe that others would behave reliably and honestly, they would tend to trust one another. From the applied view, social capital can therefore be denoted as the set of norms, networks and organisations through which people gain access to power and resources, and through which decision-making and policy formulation occurs (Dale 2005). Hence measures of social capital provide additional perspectives to the socio-economic social indicators of a functioning society (Cox 2002).

The importance of measuring social capital has been promoted by various authors, including Putnam (1995), Onyx and Bullen (2000), Narayan and Cassidy (2001) and Cox (2007). For example, Cox (2007) considered that social capital could be a diagnostic tool used to identify how different types of social networks produce desirable (or negative) outcomes. Accordingly, social capital processes underpin working

collaboratively and with respect for each other's values and differences. It also implies that disputes are resolved civilly, with the recognition and acceptance of the existence of different interests within a framework which takes account of the common good and not just sectional interests. A key component of social capital is to recognise that building trust requires fairness and equity to all involved, and that prejudice and exploitation are negatively correlated with the positive attributes of social capital (Cox 2002).

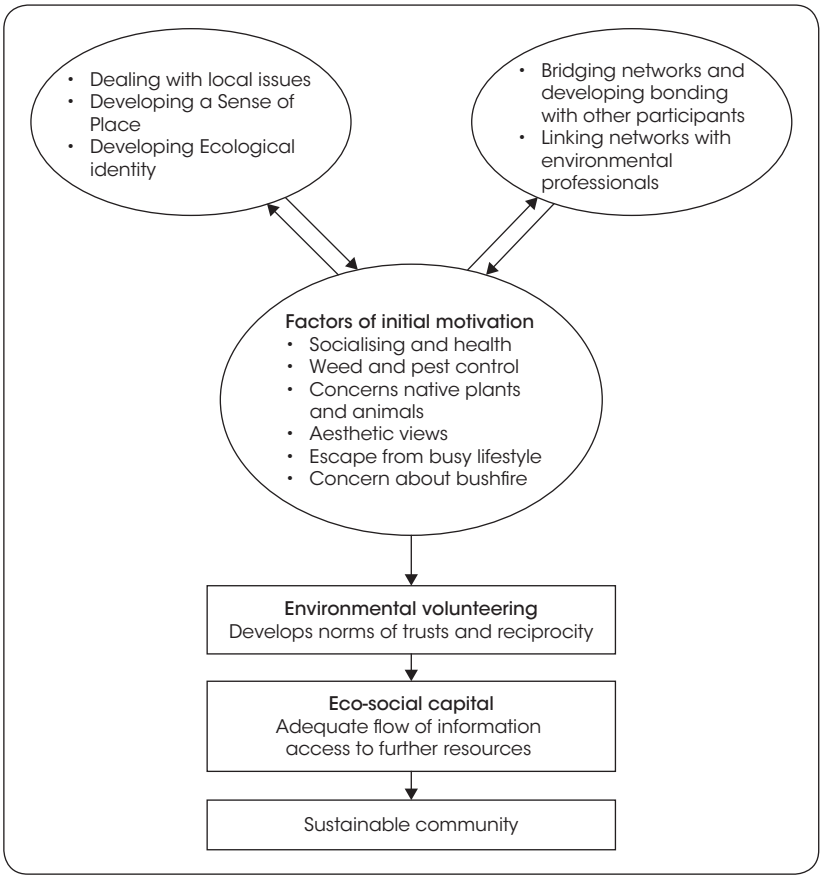
Increasingly, there has been the acceptance of a positive link between social capital and sustainable communities, where a sustainable community can be defined as the:

> *. . . places where people want to live and work, now and in the future, they meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run and offer equality of opportunity and goods services for all* (CLGUK 2009 p. 1).

One of the prominent authors on social capital, Putnam (1995), suggested that social capital referred to the active connections and attendant norms of trust. This ultimately benefits individuals and their community and, in some forms, may influence civic ends. Onyx and Leonard (2002) suggested that the capacity-building blocks of social capital were 'trust', 'social agency', 'tolerance of diversity' and 'value of life'. These underlying attributes of social capital collectively redirect other capitals towards the sustainable use of resources and ultimately to sustainable community development (see Figure 1).

Dale (2005) suggested that the six steps to sustainable community development (empowerment, relationship, connection, reciprocity, communication, deliberative dialogues) can be considered as the building blocks of sustainable community development. While he depicted these as a series of sequential steps on a graph, they may not always be a linear sequence, since, depending on access to power and resources available to communities, some attributes may be achieved simultaneously. However, since individuals require freedom and power to develop a sense of

Figure 1 Diagram to depict ecological motivations that may generate ecological social capital (eco-social capital) which contributes towards sustainable community development.



emotional or intellectual engagement, empowerment is necessarily the first step required to initiate this process. Hence, it is the most crucial step into generating social capital, as a step towards generating eco-social capital. We believe that environmental volunteering precisely initiates actions to achieve sustainable community development.

How These Concepts Can Combine

Measham and Barnett (2007) revealed that Australian environmental volunteers possess six principal motivations: i) helping a cause; ii) social interaction; iii) improving skills; iv) learning about environment; v) general desire to care for the environment; and vi) desire to care for a particular place. These motivations demonstrate that environmental volunteers seek to develop relationships with fellow volunteers, and possess or develop a sense of belonging to a particular setting, a place or a cause. Consequently, they develop (or enhance) social relationships, group cohesion and networks. These attributes may even be recognised as more valuable than the voluntary work undertaken. Previous studies (e.g. Mayer 2003) have also revealed that a society with voluntary participation, operating perhaps through such connections as elevated levels of trust and civic engagement (i.e. social capital), extends well beyond the direct value of the work performed by the volunteers. However, there is difficulty with the conceptualisation of such societal impact of environmental volunteering and how to grapple with the resultant direction of this impact on communities. To achieve such conceptualisation, the following concepts have been suggested:

a) Environmental volunteering participants possess or develop a sense of belonging to a specific place (i.e. they have or develop a sense of place), physically and emotionally (Kaplan et al. 1972; Gooch 2002; Christie 2004; Mackay 2005; Sparkes 2005).
b) This sense of place typically develops an 'ecological identity' in participants and enables them to identify with the natural world. Coupled with a sense of place, this may form the driving force for their commitment to environmental volunteering programs (Wilson 1996; Light 2000, Gooch 2002).
c) Globally, networks of like-minded people, developed through volunteering to undertake environmental activities generate social capital, which has been observed to be positively related with 'sustainable community development' (Fukuyama 1999; Cox 2002; Dale 2005; Onyx 2005, Dale & Newman 2010).

Voluntary environmental management activities, such as ecological restoration, biodiversity conservation and protected area management, enable participants to develop networks. Individuals engaged in such programs may identify the benefits of collective efforts, effectively from the commencement of their endeavours. For this reason they actively seek to develop further networks. This observation supports the concept that people invest time, and engage in networks, when they understand that the benefits of their collective efforts are greater than their individual endeavours (Dasgupta & Serageldin 2000; Pretty & Smith 2003).

Within volunteer networks, individuals enhance their norms of trust and reciprocity and thus initiate social capital. This phenomenon was described by Sparks (2005) in a dual way: i) the flow of resources and energy between a community and an ecosystem; and ii) a community's capacity to organise towards collective actions that result in stewardship of the ecosystems of focus. Relationships of trust, reciprocity, common rules, norms and sanctions, and overall the connectedness within groups, therefore creates social capital which is necessary to achieve positive outcomes in biodiversity conservation in the area of applied ecology (Pretty & Smith 2003). Schwartz (2005) called such social capital 'conservation social capital'.

Onyx and Leonard (2002) described participation in formal volunteering as the strongest factor of social capital. Hence, the networks of environmental volunteers that are based on ecological concerns also generate a diversity of social capital, associated with a) bonding; b) bridging; and c) linking.

Bonding Social Capital

In the current context, bonding social capital refers to close relationships, usually observed within family members or friendship circles, or among neighbours. It depends on dense, multi-functional ties and strong, but localised, trust. Bonding social capital provides the potential to connect a community, and to afford the basic source of the individual's identity and the sense of meaningfulness within the community. It can

also coalesce into closely networked communities with impermeable boundaries and remain closed to outside influence (Onyx & Leonard 2002). However, Dale and Sparkes (2007) considered that this may counteract the formation of social capital. They suggested that such networks were often less diverse and showed stronger resistance to views from beyond the network to those expressed within the network. This was said to constitute 'negative social capital'.

Bridging Social Capital

Bridging social capital may also commonly be developed among networks through strategic reasoning. It is frequently characterised by weak and opportunistic ties that facilitate access to resources. It may form through horizontal relationships with other networks or, alternatively, it may be developed vertically to relate to and gain access to resources from the source of power (Newman & Dale 2005). However, a vertical relationship has the potential to weaken social capital. This is because communities sometimes object to hierarchical relationships. When this occurs we have observed that they may close their network or step out of the existing network.

Linking Social Capital

In contrast to bridging social capital, linking social capital enables communities to link with the political and financial decision-makers, and the professionals they are involved with for strategic and management-related issues. It is also characterised by weak and opportunistic ties that connect with formal institutions beyond their immediate community (Dale & Sparkes 2007). Such ties enable the government leadership of political and civil societies to connect with community networks to deliver messages of common interest. However, Onyx (2005) found that in such situations there was a substantial risk of contradiction and consequent negative social capital. However, Dale and Newman (2010) suggested that these social capital ties were a necessary condition of sustainable development because they did provide a link to required resources outside of the community.

Eco-Social Capital

To enable a precise, realistic and applied approach to understanding social capital created through environmental volunteering, we have expressed the key ideas outlined above through the new metaphor of eco-social capital. This concept is not equivalent to the concept of 'ecosocial capital' proposed by Carr (2004). He used the term to describe inter-human and interspecies bonds. Shaw (2006) used the term 'ecosocial capital' to make the link between human health and wellbeing and environmental health, wellbeing and sustainability. To avoid confusion, we have chosen to use the term 'eco-social capital' to differentiate from the more succinct 'ecosocial capital'. We define 'eco-social capital' as the outcome of social networks and social interaction of community environmental volunteers who joined networks that had any of a diversity of motivations and ultimately engaged with the network. As outlined above, sustainable community development would be the direct outcome of environmental volunteering through eco-social capital (see Figure 1).

Individuals or groups join like-minded networks when they feel responsible for the protection of natural places (Dale & Sparkes 2007). Since many environmental volunteering roles do not require specific special skills or knowledge, any community member may participate in local environmental volunteering programs with a range of motivations that may not be based on pre-existing ecological ethics. Such participation in volunteering activities encourages individuals to network with other participants and associated professionals. This widens their perspectives on ecosystems, its problems and issues, and may ultimately support the development of a common sympathetic view towards the local environment. Subsequently, this condition encourages individuals in their development of a 'sense of place' and 'ecological identity', as their involvement in the activity deepens and they become more proactive within the network due to increased trust and reciprocal relationships with other members of their volunteer group. With increasing involvement in their voluntary activities, and expansion of their associated personal experiences, their understanding of the benefit

of their work intensifies. Their connectedness with nature increases, together with their appreciation for the health of the environment (Caissie & Halpenny 2003). However, the extent of the group's level of motivation and its leadership's ability varies within the members of the same network. Volunteers with greatest motivation and more developed leadership ability tend to focus outside their network. They have been described as the 'critical node' (Dale & Sparkes 2007). Critical nodes are trusted members of the community, and hence they influence bonding social capital within the network and essentially act as the agent to bridge and link among networks. In this way they control the flow of information, within and among networks. This process generates social capital. This is because the condition for the production of social capital depends on dense, lateral networks involving voluntary engagement, trust, and mutual benefit (Onyx & Leonard 2002).

The form of social capital (eco-social capital) we are proposing differs from other forms of social capital in the sense that it is the direct outcome of an individual's engagement in environmental volunteering programs. However, under such conditions communities also move in parallel with sustainability. This is because, as Onyx (2005) suggested, reconciliation of the bottom-line imperatives (economy, ecology, society) towards sustainability only occur through collective action and the presence of sufficient social capital is essential for such action.

Conclusion

Over time, and particularly with rise of environmental volunteering, the paradigm of non-Indigenous Australians has shifted to embracing a 'sense of place', which we consider a subset of the Indigenous concept of 'caring for country'. Mackay (2005) considered that such sense of place occurred among individuals when emotions of look, feel and smell of a specific place were accessible by memory alone. Such development of an 'ecological identify' has been considered a motivation for environmental volunteering (Gooch 2002; Mackay 2005), the actions of which result in eco-social capital. There is increasing evidence that generating such social capital is the key to mobilising human

resources to achieve sustainable communities (Dale & Newman 2010). We suggest that the eco-social capital that arises between individuals within a group and influences others within and ultimately among groups has the potential to increasingly enhance understanding and commitment to the support of ecological sustainability. We therefore believe that by explicitly identifying the concept of eco-social capital, we provide a more holistic picture of the outcomes of environmental volunteering programs and enhance opportunities for conservation of the environment.

Previous researchers (Onyx & Leonard 2002; Dale & Newman 2010) have suggested that the building blocks of social capital are 'trust', 'social agency', tolerance and diversity' and 'value of life'. Eco-social capital adds an emphasis on 'sense of place' and a greater focus on conservation of the environment. However, to progress the concept requires further conceptualisation of the societal impact of environmental volunteerism, and the resultant direction of this impact on communities. There is also a need to seek to articulate the place of eco-social capital within ecological sustainable management.

ACKNOWLEDGEMENTS

In early discussions around this topic, our colleague Dr Tony Webb coined the term 'ecosocial capital'. The term was subsequently modified to 'eco-social capital' because of previous use of the unhyphenated term in a different context.

REFERENCES

AABR (2010) *History of Bushcare*. Australian Association of Bush Regnerators. Available at: www.aabr.org.au/index.php?option=com_content&task=view&id=17&Itemid=48.

Augee, M. (2010) From Gentlemen Naturalists to Professional Scientists: The changing nature of the Linnean Society in Sydney. In D. Lunney, P. Hutchings & D. Hochuli (eds), *The Natural History of Sydney*: 56–57. Mosman: Royal Zoological Society of New South Wales.

Bradley, J. (1988) *Bringing Back the Bush: The Bradley method of bush regeneration*. Crows Nest: Landsdowne Press.

Broderick, K. (2005) Communities in Catchments: Implications for natural resource management. *Geographical Research*, 43: 286–296.

Buchanan, R.A. (1994) *Bush Regeneration: Recovering Australian landscape*. Sydney: TAFE Student Learning Publication.

Burgin, S. (2002) Tragic Consequences for Conservation of Mis-defining the Term 'Community'. In D. Lunney, C. Dickman & S. Burgin (eds), *A Clash of Paradigms: Community and research-based conservation*: 1–7. Mosman: Royal Zoological Society of New South Wales.

Caissie, L. & Halpenny, E. (2003) Volunteering for Nature: Motivations for participating in a biodiversity conservation volunteer program. *World Leisure*, 48: 38–50.

Carr, A. (1995) Innovation of Diffusion: Landcare and information exchange. *Rural Society*, 5: 56–66.

Carr, M. (2004) *Bioregionalism and Civil Society: Democratic challenges to corporate globalism*, Vancouver: UBC Press.

Christie, J. (2004) *Volunteer Attitudes and Motivations: Research findings and their application for sustainable community involvement programs in natural resource management. Effective sustainability education: What works? Where next? Linking research and practice*. Sydney: New South Wales Department of Environment and Climate Change.

CLGUK (2009) *Communities and Neighbourhoods*. Communities and Local Government, United Kindom. Available at: www.communities.gov.uk/archived/general-content/communities/whatis.

Cox, E. (2002) *The Social Audit Cookbook: Recipes for Auditing the Way We Connect*. Melbourne: Reichstein Foundation.

Cox, E. (2007) The Functional Value of Social Capital. *Australian Journal of Social Issues*, 42: 503–512.

DAFF/DWPC (2008) *Caring for Our Country*. Department of Agriculture, Fisheries and Forestry, and Department of Water, Population and Communities. Available at: www.nrm.gov.au/funding/index.html.

Dale, A. (2005) Social Capital and Sustainable Community Development: Is there a relationship? In A. Dale & J. Onyx (eds), *Social Capital and Sustainable Community Development: A dynamic balance*: 13–32. Vancouver: UBC Press.

Dale, A. & Newman, L. (2010) Social Capital: A necessary and sufficient condition for sustainable community development? *Community Development Journal*, 45: 5–21.

Dale, A. & Sparkes, J. (2007) Protecting Ecosystems: Network structure and social capital mobilization. *Community Development Journal*, 43: 1–14.

Dasgupta, P. & Serageldin, I. (2000) Preface. In P. Dasgupta & I. Serageldin (eds), *Social Capital: A multifaceted perspective*: ix–xii. Washington DC: The World Bank.

Fukuyama, F. (1999) *The Great Disruption: Human nature and the reconstitution of social order*. New York: The Free Press.

Gooch, M. (2002) A Sense of Place: Ecological identity as a driver for catchment volunteering. Australia and New Zealand Third Sector Research Conference. Auckland: Institute of Technology.

Hanifan, L.J. (1916) The Rural School Community Centre. *The Annals of the American Academy of Political and Social Science*, 67: 130–138.

James, N. (2001) *Mapping the Sense of Place: Using GIS and the internet to produce a cultural resource inventory for South Kingstown, RI*. B.A. thesis, Brown University, Rhode Island.

Kaplan, S., Kaplan, R. & Wendt, J. (1972) Rated Preference and Complexity for Natural and Urban Visual Material. *Perception and Psychophysics*, 12: 354–356.

Kennedy, B.K. (1986) Morris, Albert (1886–1939). *Australian Dictionary of Biography*. Melbourne: Melbourne University Press.

Light, A. (2000) What Is an Ecological Identity? *Environmental Politics*, 9: 59–81.

Lockie, S. & Vanclay, F. (1997) Critical Landcare. In S. Lockie & F. Vanclay (eds), *Critical Landcare*: 1–8. Wagga Wagga: Charles Sturt University.

Lumley, S. & Armstrong, P. (2004) Some of the Nineteenth Century Origins of the Sustainability Concept. *Environment, Development and Sustainability*, 6: 367–378.

Lunney, D., Dickman, C. & Burgin, S. (2002) A Bizarre and Threatening Process: The by-passing of ecological research when tackling environmental issues. In D. Lunney, C. Dickman & S. Burgin (eds), *A Clash of Paradigms: Community and research-based conservation*: 97–101. Mosman: Royal Zoological Society of New South Wales.

Mackay, H. (2005) A Sense of Place. *The Age*, 15 October 2005.

Margules, C.R., Pressey, R.L. (2000) Systematic Conservation Planning. *Nature*, 405: 243–253.

Mayer, P. (2003) *The Wider Economic Value of Social Capital and Volunteering in South Australia*. Adelaide: Office of Volunteers, South Australian Government.

Meacham, S. (2007) Silver City Finally Honours its Green Pioneer. *Sydney Morning Herald*. 21 August 2007.

Measham, T. & Barnett, G. (2007) *Environmental Volunteering: Motivations, modes and outcomes*. Canberra: CSIRO Sustainable Ecosystems.

Mosley, G. (1989) *Blue Mountains for World Heritage*. Rocks: Colong Foundation for Wilderness.

Naess, A. (1995) The Shallow and the Deep, Long-range Ecology Movements. In G. Sessins (ed.), *Deep Ecology for the 21st Century*: 151–155. Boston: Shambhala.

Narayan, D. & Cassidy, M.F. (2001) A Dimensional Approach to Measuring Social Capital: Development and validation of a social capital inventory. *Current Sociology*, 49: 59–102.

Newman, L. & Dale, A. (2005) Network Structure, Diversity, and Proactive Resilience Building: A response to Tompkins and Adger. *Ecology and Society*, 10 (1): r2. Available at: www.ecologyandsociety.org/vol10/iss1/resp2.

Onyx, J. (2005) Introduction. In A. Dale & J. Onyx (eds), *A Dynamic Balance: Social capital and sustainable community development*: 1–12. Vancouver: UBC Press.

Onyx, J. & Bullen, P. (2000) Measuring Social Capital in Five Communities. *The Journal of Applied Behavioral Science*, 36: 23–42.

Onyx, J. & Leonard, R. (2002) The Relationship between Formal and Informal Volunteering: A social capital framework. Fifth International Conference, Capetown, South Africa, July 7–10, 2002: 1–17.

Oppenheimer, M. (2009) History of Environmental Volunteering. Growing Environmental Volunteering Forum, 11 June, 2009. Sydney, NSW Government: 1–7.

Park, A. (2007) Flash Back: The Banksia Creek Bushcare Group. *Coo-eee*. Castle Hill: Castle Hills Shire Council – Bushcare Volunteers.

Pretty, J. & Smith, D. (2003) Social Capital in Biodiversity Conservation and Management. *Conservation Biology*, 18: 631–638.

Putnam, R.D. (1995) Tuning In, Tuning Out: The strange disappearance of social capital in America. *Political Science and Politics*, 28: 664–683.

Raj, K. (2000) Eighteenth Century Pacific Voyages of Discovery, 'Big Science' and the Shaping of the European Science and Technology Culture. *History and Technology*, 17: 79–98.

RZS (2015) *Home Page*. Royal Zoological Society of New South Wales. Available at: http://rzsnsw.org.au.

Sellars, R.W. (1997) *Preserving Nature in the National Parks: A history*. New Haven: Yale University Press.

Selman, P. (2001) Social Capital, Sustainability and Environmental Planning. *Planning Theory and Practice*, 2: 13–30.

Schwartz, M.W. (2005) How Conservation Scientists Can Help Develop Social Capital for Biodiversity. *Conservation Biology*, 20: 1550–1552.

Shaw, S. (2006) Deep Blue Religion. Thirteenth Anniversary AASR Conference 2006: Celebrating the past-anticipating the future. Adelaide: Australian Association for the Study of Religions, University of South Australia.

Sorrenson, R. (1996) The Ship as a Scientific Instrument in the Eighteenth Century. *Osiris*, 1: 221–236.

Sparkes, J. (2005) Social Capital Mobilization for Ecosystem Conservation. In A. Dale & J. Onyx (eds), *A Dynamic Balance: Social capital and sustainable community development*: 193–208. Vancouver: UBC Press.

Strahan, R. (1992) The Origin and Early History of the Royal Zoological Society of New South Wales. *Australian Zoologist*, 28: 6–10.

Suzuki, D. (2008) Our Perceptual Filters Shape the World. Weekly Science Matters Column, David Suzuki Foundation. Available at: www.davidsuzuki.org/blogs/science-matters/2008/08/our-perceptual-filters-shape-the-world.

Thomashow, M. (2002) *Ecological Identity: Becoming a reflective environmentalist*. Massachusetts: The Massachusetts Institute of Technology Press.
Vandenbeld, J. (1988) *Nature of Australia: A portrait of the island continent*. Sydney: Collins.
Wilson, R.A. (1996) Environmental Education: The development of the ecological self. *Early childhood Education Journal*, 24: 121–123.
Woodhill, J. (2000) Sustainability, Social Learning and the Democratic Imperative: Lessons from the Australian Landcare movement. In C. Blackmore (ed.), *Social Learning Systems and Communities of Practice*: 57–72. London: Springer-Verlag London Ltd.
Worboys, G., Lockwood, M. & De Lacy, T. (2001) *Protected Area Management: Principles and practice*. Melbourne: Oxford University Press.
Yencken, D. & Wilkinson, D. (2000) *Resetting the Compass: Australia's journey towards sustainability*. Collingwood: CSIRO Publishing.

ABOUT THE AUTHORS

RAFIQ HUQ has worked internationally as a natural resources management professional for over 30 years. He has had an interest in volunteering that extends back to his early student life. This included leading numerous volunteering programs spanning scouting, Leo-Club and various disaster-relief programs. In Australia, as a local-government employee, Rafiq initiated and managed one of the largest environmental volunteer programs in New South Wales. Currently, Rafiq is employed as an Environmental Manager (Community Engagement) for Greening Australia, a national not-for-profit organisation. Throughout his career, Rafiq has explored how the pillars of 'triple bottom line' interact, and this has guided his thinking on the relationship between nature and human societies, and how that relationship leads to social-sustainability – eco-social capital. Email: rhuq@greeningaustralia.org.au.

EMERITUS PROFESSOR SHELLEY BURGIN one of the first graduates in environmental studies in Australia, has spent a career of nearly 40 years lecturing, researching and volunteering in environmental sustainability, both in Australia and abroad. Shelley is particularly interested in the 'ecological' and 'social' attributes of sustainability, and has published more than 150 papers, and supervised many graduate students in aspects of eco-social sustainability. Email: s.burgin@westernsydney.edu.au.