

# **Capacity building and knowledge exchange methods for river management - Canada and Australia compared**

**Dr Siwan Lovett**

Land & Water Australia, 86 Northbourne Avenue, BRADDON ACT 2601, [www.rivers.gov.au](http://www.rivers.gov.au), [siwan.lovett@lwa.gov.au](mailto:siwan.lovett@lwa.gov.au)

## **Abstract:**

This paper compares and contrasts Canadian and Australian approaches to capacity building and knowledge exchange within the context of river restoration. It highlights the strengths and weaknesses of the two countries' different approaches, revealing that the strengths of one country are the weaknesses of the other. Canada's strengths are in engaging communities, initiating action, celebrating, and using art, culture, history and drama as ways of 'knowing' a river. Australia's strengths are technical rigour, a greater level of institutional coordination and the involvement of communities who are building capacity to make strategic long-term decisions about the future sustainability of their river and environs. By combining these strengths and investing in relationships between key organisations in each country, the paper suggests that the foundations can be set for future cooperation and improved river restoration and management outcomes in both countries.

## **Introduction:**

The terms 'capacity building' and 'knowledge exchange' have become part of the vernacular of river restoration and management. They are umbrella terms that are used to describe a range of ideas and activities that generally aim to assist communities engage with, and become informed about, their river and surrounds. The quest to find out how best to engage communities is one that Australian research and government agencies are examining, as resource constraints mean that only the most effective and proven strategies are worth funding. Studying another country's approach to the same issue enables new perspectives to be gained, as well as providing opportunities to import new ideas and adapt them to local environments. In this case, Canadian approaches to capacity building and knowledge exchange are examined, and ideas put forward about how the experience of another country can inform and improve the work being undertaken in Australia.

## **Canada and Australia compared:**

Watershed management in Canada involves Federal, Provincial and Municipal levels of government. Each province has developed different institutional arrangements for managing natural resources, with coordination between levels of government patchy and reliant on informal rather than formal engagement processes. Considerable interest was shown in the Australian model where Commonwealth, State and regional organisations are now working more closely together to deliver coordinated natural resources management outcomes. The Australian model is attractive because in theory, it means organisations working in a catchment are doing so on the basis of shared goals and objectives. In contrast, watersheds in Canada have several different government and non-government organisations working within them on river related issues. There is no single watershed plan to which all these organisations refer, rather, they each follow their own. Joint

activities tend to be on a project by project basis, and largely dependent on informal relationships between the people involved, rather than through any formal inter-organisational agreements.

Although institutional coordination may be lacking in Canada, the strengths of Canadian organisations in engaging local communities is evident. Canadians believe in the value of taking time to build and cement relationships. River restoration operates at the grass roots level to engage people locally, without demanding that they take a broader watershed view. The act of being involved is seen as enough of a contribution. This means that there are high levels of local engagement and 'feel good' factor amongst those groups undertaking river restoration activities, particularly when this is consolidated with the designation of their river to a nationally recognised initiative such as the *Canadian Heritage River System*.<sup>1</sup> Communities are encouraged to celebrate and connect with their river, and as most people in Canada holiday along a lake or river shoreline, this is something that is more easily achieved than in Australia where people tend to take their breaks at the coast.

'Capacity building' is a recognised term in Canada and covers a range of different activities. However, there has been a recent shift in government from funding specific short-term programs labelled 'capacity building', to approaches that focus on establishing relationships and networks that are trusted, and within which community capacity building can occur. Most people working in the area of 'capacity building' are either permanent government employees operating within a locally based natural resources management agency and responsible for extension and outreach programs in their region, or consultants paid to run a specific extension activity. As such, capacity building is not singled out, but rather, incorporated into the more general work of engaging communities in natural resources management. This is an approach that Australian could learn from, as sometimes in our efforts to focus attention on a topic we tend to isolate it and make it 'stand-alone' as an area of concern. As we move to a new regional model for land and water management, now may be a good time to re-integrate the research and work we have done on capacity building into the more general day-to-day activities of river management.

Canada has several good examples of outreach and extension programs that engage people in protecting and restoring rivers. These programs use the term 'stewardship' to remind people of their connection to and responsibility for taking care of land and water resources. The strength of these programs is in their longevity (often been running for over ten years), consistency in message and the staff delivering that message; their ability to interest and engage people with their local river or stream, and extension materials that are easy to understand and connect with by people from a non-scientific background. The work of non-government organisations such as Cows and Fish, Pacific Streamkeepers Federation and Living by Water provide valuable information and approaches about how to connect with communities, with these organisations further supported by National initiatives such as the on-line Stewardship Centres, Canadian Heritage Rivers System, Canada Rivers Day and Yellow Fish Road.<sup>2</sup> The following 'snapshots' in Table 1 provide overviews of these organisations and their ideas, with more information available from their websites.

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<sup>1</sup> The Canadian Heritage Rivers System was established in 1984 by the Federal, Provincial and Territorial governments to conserve and protect the best examples of Canada's river heritage, to give them national recognition, and to encourage the public to enjoy and appreciate them. More information can be found at <http://www.chrs.ca/>

<sup>2</sup>For more details see the snapshots section of the paper that provides links to organisational websites.

**Table 1: Snapshots of Canadian organisations involved in capacity building and knowledge exchange**

Organisation	Approach
<p><i>Cows and Fish</i>  <a href="http://www.cowsandfish.org">www.cowsandfish.org</a></p>	<p>The Alberta Riparian Habitat Management Society - 'Cows and Fish' was established to foster a better understanding on how improvements in grazing management on riparian areas can enhance landscape health and productivity, for the benefit of cattle producers and others who use and value riparian areas. The program has been very successful in engaging ranchers, and is now entering its thirteenth year of operation. It aims to build relationships with ranchers so that they can understand the importance of riparian areas and, based on this understanding, work to improve their management of these areas on-ranch. The program has a sound scientific base and can undertake detailed riparian health assessments if required. The products Cows and Fish have developed are excellent, and provide easy access for ranchers to learn about riparian functions that need to be protected and maintained for improved water quality and river health. The organisation recently won the Canada Environmental Award for Educational Learning in recognition of the work it has done on ranches across Alberta.</p>
<p><i>Pacific Streamkeepers Federation</i>  <a href="http://www.pskf.ca">www.pskf.ca</a></p>	<p>The Pacific Streamkeepers Federation (PSkF) was initiated in May 1995, and is a non-profit society committed to supporting community groups involved in Streamkeepers activities throughout British Columbia and the Yukon. It is a community engagement program with an active and vibrant network of people committed to its cause. It has received funding from government for ten years (annually renewable contract), and is likely to continue to do so in the future. The program covers different aspects of stream management from awareness raising about what a healthy stream looks like, through to training on restocking and identifying different fish species. A manual supports the program and is used to deliver training courses to local communities. The focus is largely on stream management and fish (salmonids), with restoration primarily concerned with habitat protection and creation for fish, restocking, stock assessment and raising awareness about fish related environmental issues. PSkF believe that people are better able to engage in environmental activities when they have one thing to focus on, and fish provide this focus. Volunteers seeing fish return to their streams to spawn is a powerful motivator for action and their continued involvement in protection and maintenance programs.</p>
<p><i>Living by Water</i>  <a href="http://www.livingbywater.bc.ca">www.livingbywater.bc.ca</a></p>	<p>Living by Water is a conservation and stewardship program targeted to individual urban, rural and seasonal waterfront residents, and other citizens interested in natural healthy shorelines. The goal of Living by Water is to improve the quality and quantity of wildlife habitat, including cleaner air and water. The project was developed to fill the gap in information and services for people living on shorelines. It was developed as a national program, and has a strategic alliance with the 'Canadian Naturalists' group to ensure cross Canada coverage is maintained. The motto of the Canadian Naturalists is 'to know nature and to keep it worth knowing'. Living by Water provides handy tools and tips for people living along shorelines, with a range of different communication techniques used to connect with individuals and groups and engage them in the project.</p>
<p><i>Trout Unlimited Canada (Yellow Fish Road)</i>  <a href="http://www.tucanada.org">www.tucanada.org</a></p>	<p>Trout Unlimited Canada (TUC) is a non-government organisation that was established in 1972 with a charter to 'conserve Canada's coldwater resources'. Today, TUC has over 4000 members in 17 Chapters across the country. The organisation invests in a range of science and extension activities, and has an established reputation for its scientific credibility, as well as for its ability to work with federal, provincial and municipal governments. The organisation's charter enables it to invest in a range of activities relating to habitat restoration and conservation. All the research undertaken is reported back to members, with fish habitat, fish health and life cycle investigations a prime area of investigation. In addition to playing a major advocacy role, the organisation also works on a range</p>

	of education and awareness programs. One of the most successful of these is the Yellow Fish Road project that works with schools to paint yellow fish on all drains, stormwater outlets etc. to raise awareness about the importance of protecting river health. The project is integrated into school curricula with materials developed for teachers to use in the classroom.
<i>On-line Stewardship Centres</i> <a href="http://www.stewardshipcentre.on.ca/">http://www.stewardshipcentre.on.ca/</a>	An exciting Canadian initiative is the development of a stewardship website that links all provinces through the common goal of 'stewardship'. The website enables all non government and government organisations to load their material onto the site, providing it is informing people about natural resources management activities that are protecting, maintaining or restoring the environment. The site is maintained by the Federal Ministry of Natural Resources and is keeping provinces connected on the topic of 'stewardship'. Each province is responsible for updating their part of the site, which makes the website active, current and constantly changing.

The strengths of these initiatives are that they focus on achieving a specific river related outcome (be it designation as a Canadian heritage river, celebration of rivers as special places, raising awareness about what goes down stormwater drains etc) and provide clear, well resourced guidelines on how to get there. They are also developed with people in mind, so emphasis is placed on fun, working together and generally having a good time.

History, art, drama, poetry and song are also highly valued as ways people can understand and relate to rivers. The canoe has become an iconic symbol for people's connection to rivers, and many songs, poems and plays use the canoe to link people with the water. The canoe is used as a powerful marketing tool by private and public organisations alike, to promote the positive associations people have with their river. This recreational, and often spiritual connection, enables people who do not necessarily have an 'environmental' interest to get involved in river restoration. Recognition is also given to the many different ways people can 'know' a river, and in many cases recreation, heritage and cultural values appear to outweigh the value placed on the environmental assets a river may possess. The term 'heritage' is used to cover these other ways of 'knowing', with the natural assets of a river often not explicitly recognised, but rather viewed as the foundation upon which culture and history have developed in relationship to that waterway.

Despite the high levels of engagement, however, Canadian communities are not asked to take on responsibility for their river and watershed, but instead are encouraged to take an interest in their part of the river. The sense of urgency that pervades river restoration in Australia is not present in Canada. Restoration activities are 'place-based', where people can get involved in local activities that directly affect them. They tend to be short-term projects, that are well resourced, and with the staff managing the project being permanent employees of a locally based agency. A range of different government and non-government agencies provide opportunities for people to get involved in river restoration, with most projects focusing on specific interests such as the provision of fish habitat or wildlife protection. This often narrow focus is defended by people working on programs such as the Pacific Streamkeepers Federation that is primarily concerned with returning fish populations to formerly degraded areas, as they argue that people are better able to engage in environmental activities when they have one thing to focus on – in this case, fish provide the focus. In Australia, although a group may come together to address a particular issue such as fish passage, they are often encouraged to consider that issue within the broader context of what is happening upstream, downstream, and adjacent to the river. This approach generally leads to a more informed project being developed that considers the multiplicity of factors that might be impacting on the river restoration outcome, however, in some cases, it can stifle enthusiasm and overwhelm with the depth of understanding and technical assessments that are required. Agencies and communities need to work together to find a better balance so that projects can have a sound technical base,

without losing the inclusiveness, fun and enjoyment that attracts people to get involved in the first place.

In Canada, on-farm river restoration activities do not tend to focus on fish and wildlife, but rather, protecting or improving water quality for downstream users. Fencing out stock from waterways, providing alternate stock watering options, building stock crossing points and managing effluent on-farm, are key areas of activity. A range of incentives are available, with the work able to be undertaken at little or no cost to the farmer. Compensation (around \$250 per annum<sup>3</sup>) is also paid to the farmer for up to three years in recognition of loss of land from production. The focus on water quality rather than ecological health is because most of the incentives are paid for through a variety of municipal funded rural water quality programs. Improving water quality in rural areas means less money being spent by the municipality on water treatment for the ever growing urban sprawl that characterises many parts of Canada. The municipal funding provided for on-farm projects also supports extension staff in rural regions whose job it is to work with local farmers and assist them to change management practices. The staff employed to do this work are chosen on the basis of excellent interpersonal skills and an ability to work with the local community. There is a general rule that no 'cold-calling' on farmers is allowed, with the theory being that a better outcome will be achieved if the farmer contacts the agency running the program and invites them onto their farm. This approach has been successful because time is allowed for staff to settle and become trusted in the local community. When this solid relationship with the local community is supported by excellent incentives available over the long-term (ie: more than three years), the results are impressive.

In Canada, knowledge exchange is not viewed as a topic that necessarily requires 'innovative' strategies, as the experience of those working with communities has confirmed that the best way to exchange information and build capacity is to establish long-term, well resourced relationships between all involved. The time it takes for someone to change their behaviour is recognised by those working at the local level as being between three to five years. In some instances, government will fund a non-government agency that has an established relationship (eg: Cows and Fish) to deliver a program, as it is more effective than trying to introduce new people and organisations into local communities. Non-government organisations play a substantial role in capacity building and knowledge exchange, as well as leading debate on issues such as the development of a natural resources management strategy for Canada. These organisations engage communities in river restoration activities, as well as independently funding science on issues that relate to their area of concern (for example, Trout Unlimited Canada).

A new discipline being used to assist knowledge exchange is 'conservation marketing'. Conservation marketing has been developed by the founders of the Living by Water project (see earlier snapshot) and builds on modern ethical business marketing, as well as the tools and techniques of community-based social marketing and environmental education. The purpose of conservation marketing is to move people along a continuum of awareness through education, to attitude and behaviour change, and eventually sustained behaviour change. The principles underpinning conservation marketing are that you need to be:

1. *Customer driven:* Marketing strategies speak of the central role of the customer in determining how companies do business. What does this mean for a river restoration initiative, and how does it translate into action? It is often the case that we present information in ways that assume the target audience has caused the problem, and are knowingly destroying habitat and reducing water quality. Conservation marketing is optimistic, presents choices and avoids preaching and apportioning blame.

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<sup>3</sup> This example is from Ontario where \$250.00 per annum for three years would be provided to a farmer who had fenced off a couple of kilometres of stream, installed off-stream watering points and provided stock crossing points.

2. *Use promotion extensively and creatively:* River restoration activities can be promoted through a variety of channels, be it radio through sponsored public announcements, awards for community groups, catchy themes and using local champions to promote action.
3. *Provide a full service resource:* To successfully engage with communities it is important that there is consistency in the message being delivered and the people delivering that message. In Australia there have been programs funding facilitators for short-term positions in regions (generally three years) to deliver specific projects. Three years is not long enough for someone to become settled, known and trusted in a region. For the facilitator, it is often half way into the second year when they start to feel they are achieving something, with their third year characterised by uncertainty about their future and needing to find a new position. Providing a 'full service' resource means that support is lasting and people can establish relationships that are not jeopardised by funding patterns that mirror political cycles.
4. *Use a variety of distribution channels:* Art, poetry and drama are all ways that we tell stories, and stories shape the way we manage our rivers and adjoining lands. There is a need in Australia to rediscover traditional knowledge and relevant myths to adapt and create new 'stories'. We must also integrate scientific knowledge into these stories, and recognise that science is a way of telling a story that people need to be able to relate to in order for it to make sense to them in their situation.
5. *Encourage on-ground improvements:* Workshops, web-based resources, field days, publications, ambassador programs are all ways to encourage people to get involved in river restoration activities. Canada, like Australia, has a number of different programs to promote and assist people make changes on-ground. It is important that a variety of mechanisms exist for people to get engaged.
6. *Use a whole ecosystem approach:* An ecosystem approach recognises the interrelatedness of the earth's air, water and soil cycles. This approach allows the full impact of non-point source pollution or toxic products to be considered, incorporating their impact on groundwater, and on organisms that live in the soil. The Living-by-Water project views shoreline corridors as ribbons of life and show the intersection of air, land and water as an intricate web. Waterfront residents are seen as the living zone of cooperation between the fragile waterfront and the uplands. The whole ecosystem approach places the resident in the middle of the issue, so that they become part of the solution rather than being the source of the problem. (Callaway & Kipp 2001)

These conservation marketing principles are being used to develop programs and workshops with public and private agencies wanting to better communicate with the general community about natural resources management issues. The key learning about the conservation marketing approach is that it is one in which customer needs are given a place of importance. Engaging the 'customer' is viewed as the most important part of accomplishing changes on-ground to improve river management.

Although Canada is strong in community engagement, the monitoring and evaluation of river restoration projects undertaken by community groups is not well developed. Most community based river restoration projects use observation and photographic records as the basis for monitoring and evaluation. In many projects once the structural works have been completed, for example a fence constructed, the next project is moved on to, with little work done on baseline, during and after monitoring of treatment effects. This means that performance measurement information is generally qualitative rather than quantitative. Canadians acknowledge their

deficiencies in the area of monitoring and evaluation, but do not seem to be overly concerned as it does not prevent them from continuing to achieve the on-ground changes they seek and, to date, funding has not been withdrawn from their activities. In Australia, monitoring and evaluation is becoming a necessary and vital part of any restoration project, and although not well developed in the past, it is now becoming more sophisticated as groups recognise the need to assess whether their actions are having any impact on the problem being addressed.

The role of science in river restoration is also highly variable in Canada. Government scientists are employed in mainline departments such as the Fisheries and Oceans Department (in decreasing numbers), but do not seem to play a key role in determining the design and implementation of community-based projects. Non-government organisations also fund science, for example, Trout Unlimited Canada, with these projects specialising in fish habitat, health and population. In general, however, most scientists work in government departments or universities and have little day-to-day contact with those working in community-based river restoration.

Technical knowledge is valued in Australia, and community groups are working hard to build their levels of understanding and skills to be able to interpret quite complicated scientific information. An interesting development in Australia is that the value that has been placed on technical knowledge has led to community groups demanding more from science and research organisations, with some groups refusing to make decisions unless definitive, technically rigorous information is provided. For scientists, meeting these expectations is daunting and often not able to be achieved. As a result, we may need to reconsider the emphasis placed on science, so that it becomes an important, but not the only input, into decision making processes.

### **Conclusion**

These observations about Canada and Australia serve to highlight the strengths and weaknesses of their different approaches to river restoration. Interestingly, the strengths of one country are the weaknesses of the other, creating ample opportunity for learning from each other. Ideally, river restoration needs to be inclusive, celebratory and stable, yet also institutionally cooperative and scientifically rigorous. Canada's strengths are in engaging communities, initiating action, celebrating, and using art, culture, history and drama as ways of 'knowing' a river. Australia's strengths are technical rigour, a greater level of institutional coordination and the involvement of communities who are building capacity to make strategic long-term decisions about the future sustainability of their river and environs. In Australia, we may need to rethink some of the technically based demands we are placing on community groups, and replace that with ways to celebrate and encourage involvement at a range of different levels, not just in formal committee structures. It would also be valuable to start exploring ideas around different ways of 'knowing' a river and try to place an equal value on 'scientific' and 'experiential' knowledge in our decision making processes. Australia can learn from the Canadian experience and start to tailor some of their strategies to local audiences. By combining the strengths of both countries we can continue to work with communities to improve capacity building and knowledge exchange strategies so that improved river and riparian restoration outcomes can be achieved.

### **References:**

Callaway, C. & Kipp, S. 2001. Conservation Marketing Tools and Techniques of the Living by Water project. Canada.