20th Anniversary Edition

River Journeys 5

Published by
International RiverFoundation
Brisbane, Australia
www.riverfoundation.org.au

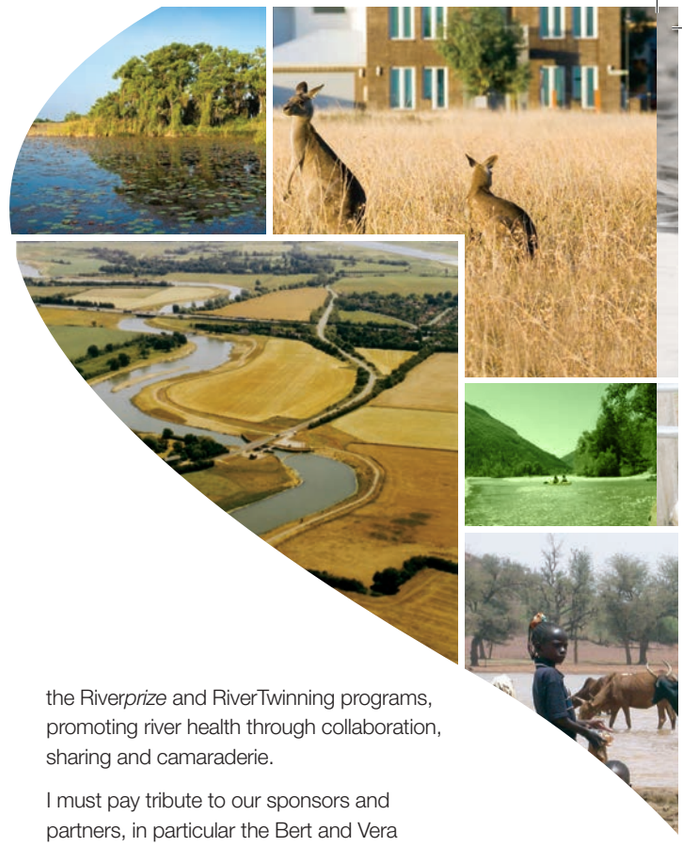
ISBN 978-0-646-92668-1

Contributors
Eva Abal, Natalie Baker, Sylvia Liu,
Verna Monsanto-Hearne,
Patricia Dalby

Fifth edition published 2019

THE THIESS FAMILY

This book is proudly sponsored by
Daphne, Kareena and Danielle.



Preface

This book builds on the stories of its predecessor volumes to recognize the achievements of River*prize* winners around the world. The suite of prizes managed by International RiverFoundation now includes the Thiess International River*prize*, the Australian River*prize*, the Asian River*prize*, the Morgan Foundation New Zealand River*prize*, as well as the European and North American River*prize's*.

This year, we celebrate 20 years of awarding the River*prize*. This special edition of River Journeys celebrates all our River*prize* winners over the past 20 years, sharing unique and often personal stories that have benefited waterways and communities all over the world.

In this edition River*prize* winners from the past three years have been featured, adding to the distinguished group that has been growing since the first Thiess International River*prize* was awarded in 1999. The efforts, dedication and achievements of River*prize* winners are inspirational for river managers at all scales - from tiny streams to major international waterways. Each *prize* has been awarded after the careful assessment of multiple entrants, a short-listing process to a small number of finalists, and the selection of an overall winner each time. The International RiverFoundation welcomes all finalists to our expanding Alumni Network, which is now comprised of over 100 organisations and individuals from around the world.

Some of our winning River*prize* organisations are grass-roots community groups working largely through volunteers, while others are grand cross-border catchment authorities, with a full range of organisation types and collaborative partnerships in between.

River Twinning, another key program of the International RiverFoundation, enables River*prize* winners and others to apply for funding to share their knowledge and experiences with another catchment that may be facing similar challenges. We believe that important lessons need only be learned once, and that where precious water resources are concerned, river managers everywhere should benefit from the commitment and hard work of others who have succeeded. This edition of River Journeys also contains inspirational stories of RiverTwinning collaborations that cross geographical, political and cultural barriers. These are a measure of the true worth of the River*prize* and RiverTwinning programs, promoting river health through collaboration, sharing and camaraderie.

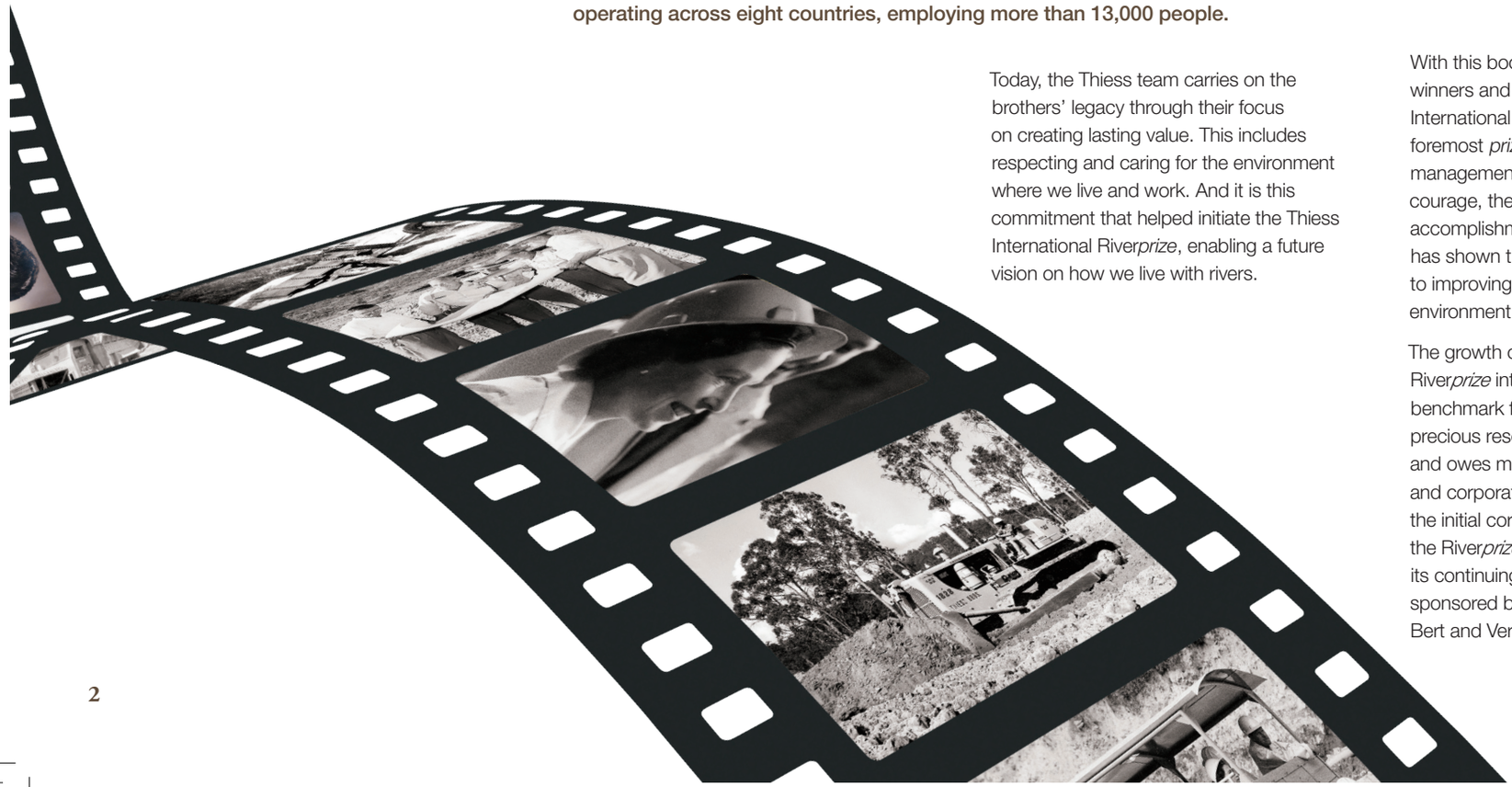
I must pay tribute to our sponsors and partners, in particular the Bert and Vera Thiess Foundation, and the Thiess Family, without whom the River*prize* would cease to exist. I also acknowledge the work of the IRF Board of Directors and hard-working staff, whose passion allows us to advance our vision of a future in which both people and ecosystems benefit from sustainably managed resilient rivers.

Paul Greenfield
Chair
International RiverFoundation

Contents

Our River Journey is built on more than 80 years of Thiess history

In 1934, Australia was coming out of the Great Depression and the government launched significant civil and public works to stimulate economic activity. Against this economic backdrop, the Thiess brothers rallied all of their determination and ingenuity to launch a business that would eventually become the world's leading mining services provider, operating across eight countries, employing more than 13,000 people.



Today, the Thiess team carries on the brothers' legacy through their focus on creating lasting value. This includes respecting and caring for the environment where we live and work. And it is this commitment that helped initiate the Thiess International River*prize*, enabling a future vision on how we live with rivers.

With this book, we recognise the founders, winners and benefactors of the Thiess International River*prize* – the world's foremost *prize* for river restoration and management – for their vision, their courage, their commitment and their accomplishments. Each and every one has shown true passion and dedication to improving the health of their riverine environment, creeks and wetlands.

The growth of the Thiess International River*prize* into a globally respected benchmark for the protection of the Earth's precious resource, water, has been inspiring and owes much to some far sighted people and corporate supporters. Providing the initial cornerstone sponsorship for the River*prize* was Thiess Pty Ltd. Now its continuing publication is also being sponsored by the Beneficiaries of the late Bert and Vera Thiess Estate.

Bert and Vera's father Stumpy Horn was integral to the establishment of the Thiess business many decades ago. It is inspirational that the family should now throw their energies into major forward-looking initiatives of the International RiverFoundation.

The early development of the Thiess Bros business was guided by respected accountant, the late John Peden. For almost 40 years as financial adviser, then company chairman and family friend. John's son Alec has also spent a lifetime of close association with the Thiess family and today provides advice and support to the administration of the Estate.

As well as supporting River Journeys, Bert and Vera created the Ken Thiess Memorial Scholarship in memory of their son who lost his life working for Thiess in the Snowy Mountains. The annual scholarship enables emerging community leaders from developing countries to undertake a year-long Master of Integrated Water Management Degree offered by the International WaterCentre. Successful applicants study at IWC partner Universities, so that they can return to their own countries and improve the way water is managed in local communities.

It is fitting that the descendants of Bert and Vera have now united in creating a Vera Thiess Fellowship for Women in honour and recognition of their mother and grandmother. The inaugural annual Fellowship was awarded in New Delhi at the 2016 International River*symposium* – the first ever to be staged outside of Australia.

The Thiess family and the Peden's are also actively involved in the International RiverFoundation's Twinning Programs, such as supporting the safe water projects being installed progressively by the Tweed River Catchment Group in Kenya where there is a pressing need for clean village water supplies.

This contribution continues Thiess' construction legacy which had its foundation in the development of water infrastructure. The company not only built more than 100 dams, it also constructed water treatment plants and the largest desalination plant in the southern hemisphere in Victoria.

Today, the Thiess International River*prize*, together with related activities is testament to the far sighted social responsibility of the Thiess and Peden families. The Thiess River*prize* is now recognised as a beacon for the work of the International RiverFoundation in championing the restoration and management of the world's rivers and wetlands. Through the River*prize* and the IRF, they share an intergenerational commitment to the future wellbeing of the planet and its people.

Martin Albrecht AC
IRF Board member
Founding Chair
1989 – 2012

Douglas Thompson
Thiess Managing Director
2017 - Present

The International RiverFoundation

The International RiverFoundation (IRF) was founded to provide global recognition for best practice in river restoration and management and provide support for outstanding work in the field. It has since become a globally respected organisation, championing the health and resilience of the world's rivers and running life-changing programs to encourage celebration, enhance leadership and foster collaboration.

Through the River*prize* awards, the Ken Thiess Memorial Scholarship, the Vera Thiess Fellowship for Women and other awards and fellowships, we celebrate river health and best practice in river management. We believe that those who are achieving great things or who aspire to do so should be appropriately acknowledged and celebrated—and supported in their efforts. The International River*symposium* provides the opportunity to salute our 'river champions' in front of their peers, while RiverJourneys ensures their stories, learnings and successes remain accessible for years to come.

By celebrating river health and best practice, we build the foundation for a growing network of river leaders globally. Representatives from River*prize* winners form our Alumni Network, a group of individuals with many qualities in common—unwavering passion, awareness, determination, and a desire for positive change, among others. Our Alumni Network are the 'go-to' group for expertise on all aspects of river basin management.

Also among our RiverLeaders are our River*Patrons*, a respected group of respected community leaders, Chief Executives and Chairs from Australian and global organisations who champion our cause and understand the importance of nurturing healthy and resilient rivers. River*Patrons* lend their personal and professional expertise to the various programs we support.

With our networks as one of our strongest assets, the IRF is well-placed to facilitate collaboration and drive change on the ground. Through our River Recovery program, community well-being and livelihoods are improved through collaborative partnerships with local communities, governments, businesses, and other stakeholders in a specific basin or region. These tailored, integrated, on-ground programs assist communities to revive the health of their rivers through activities such as basin planning, awareness-raising and education. Together with our Resilient Rivers Blueprint partners, we aim to provide a framework to achieve the resilience of our rivers in light of climate change and complexities of the global water challenge. The Blueprint presents a set of principles to guide rivers around the world to resist and recover from disturbances, ensure water security for communities and contribute to the reduction of poverty.

Our RiverTwinning program is one of our most recognised programs and a prime example of the enormous impact of collaboration. As a critical component of our work to share knowledge on best practice river basin management, we enable

partnerships between River*prize* champions and communities who can benefit from their expertise. Twinning focuses on long-term, peer-to-peer relationships between organisations and communities at the local level, and has achieved outcomes in river basin management, community development, education and WASH (Water, Sanitation and Health).

Underpinning all of our programs is our focus on foundation excellence. This means that we operate a sustainable and high performing organisation that is strategic, agile, passionate and aligned with the global environmental agenda. At each bend in our IRF river journey, the great work being done in river restoration seems to redefine the meaning of best practice, highlighting creative, innovative approaches that will provide practical solutions designed to address declining water quality, freshwater crisis and climate change. With continued determination and the valuable support of those sharing our vision for healthy and resilient river systems around the world, IRF can play an even greater role in achieving river resilience, making a difference to the way human beings live with their rivers and creating a legacy worth leaving for generations to come.

Dr Eva Abal
CEO
International RiverFoundation

International River*symposium*

The International River*symposium* offers river managers, policy developers, scientists, consultants, students, NGOs, Indigenous and community organisations and representatives from business and industry the opportunity to tackle these challenges by sharing their knowledge, learning from one another and collaborating to improve the sustainable management of river basins. Held annually since 1999, the International River*symposium* is the biggest global conference focused on rivers and basins, with a reputation for inspiring keynote speakers, engaging sessions and multiple opportunities for networking.

Effective river basin planning and management can achieve poverty alleviation, sustainable development, improved access to energy, healthier ecosystems, gender equality and thriving livelihoods—yet complex hurdles threaten the making of a water-secure world. When rivers cross international, interstate, or administrative boundaries, there are often different institutional, regulatory, policy, and planning procedures and processes in place and no coordinating mechanisms to bring these together. Across sectors, there are different indicators for success, and across communities there are a variety of competing reasons to use water resources.

Integrated river basin management is the key to reviving our rivers—and is crucial to a sustainable water future. The International River*symposium* embraces the principles of Integrated River Basin Management by involving all stakeholders in discussions and encouraging a collaborative approach to developing and implementing policies and strategies for our rivers. The broad range of topics up for discussion helps to reiterate that we can find best practice river management in many activities—from community use to environmental science, economics, urban planning or business management.

River*symposium*'s global focus also seeks to address the specific challenges many countries are facing in their quest to effectively balance competing demands for freshwater resources—including urbanisation, industrialisation, power generation, irrigation and domestic use. Productive, collaborative discussion helps to mitigate any negative impacts—including regional tension, environmental migration and low economic growth—and there is no more effective way of collaborating than by doing so face-to-face.

Every year, with support from our sponsors, we enable hand-selected representatives from low income countries to participate in the event, giving them the opportunity to learn from others, inspire others, and build their own networks. River*symposium* is known for its enriching delegate experience, its focus on inclusion and diversity and the strong theme of celebration. We celebrate our River*prize* winners and finalists, our scholarship and fellowship recipients, our emerging water professionals and all the successes and lessons learned showcased by our delegates—no matter how big or small.

Now in its 22nd year, River*symposium* has cemented its place on the global water events calendar. It is held outside of Brisbane every second year and in an international location every four years, with a strong following of return delegates and continued new interest from both delegates and sponsors. We thank everybody who has participated in a River*symposium* for your input—your unique stories and experiences are helping to inspire others so that together we can build more resilient rivers all across the globe.

River*symposium* reach

600+
Delegates

160
Countries around the World reached through communication channels

15,000+
People in the IRF network

30,000+
Visits to the River*symposium* website annually

Local and international media exposure

the Thiess International River*prize*

All over the world, dedicated, passionate individuals and organisations are working collaboratively to protect and restore our precious rivers. Two decades ago, IRF saw a need to appropriately recognise and celebrate these people in such a way that their efforts would be rewarded and their stories shared, encouraging them and others on similar journeys to continue their important work. The River*prize* was conceived, with sponsorship generously provided by Thiess Pty Ltd. Since 1999, River*prize* has grown to become a recognised brand in the 'water' world, and *prize*s have been established in various regions to enable groups facing similar challenges to compete to be crowned the 'best of the best' in river restoration and protection.

The first Thiess International River*prize* was awarded in 1999 to the Mersey River in England in recognition of the Mersey Basin Campaign's mammoth efforts to restore the river and estuary following two hundred years of abuse and neglect. Now, a total of 19 International River*prize*s, 15 Australian River*prize*s and three European River*prize*s have been awarded, and one River*prize* each awarded in Australasia, North America, New Zealand and Asia. River*prize* now consistently attracts dozens of applicants from all corners of the globe, with a regionalisation strategy enabling winners of continental River*prize*s to automatically qualify for the second stage of the Thiess International River*prize* the following year, awarded every second year at the International Riversymposium in its hometown of Brisbane, Australia.

The beauty of River*prize* is that efforts are not judged on the size of the river being worked on or the scale of investment—whether financial or otherwise. A small stream in Indonesia has just as much of a chance of winning a River*prize* as a transboundary river in Europe. Instead, first and foremost, judges are looking for demonstrated improvements to river health, or evidence of maintained river health as a direct result of efforts by the applicants. Collaborative, integrated approaches are important, ensuring that winners and finalists are working effectively with other organisations and individuals to achieve improved environmental, economic and social outcomes. Recently, the criteria has also been updated to assess a project's 'degree of difficulty', recognising that there are some who have overcome enormous challenges to achieve results, requiring determination, resilience, and unwavering passion.

River*prize* winners receive a cash prize and a unique trophy designed to depict a coolamon or piti – an Aboriginal vessel used by women to carry water and food, or as a cradle for babies. Arguably more importantly, winners and finalists receive widespread recognition for their efforts, with many proceeding to build new partnerships, win other awards and receive additional funding to extend and advance their projects. Some elect to share their knowledge and experiences with other river basins facing similar challenges through IRF's RiverTwinning program, and all become IRF 'alumni' – members of an exclusive network of world-leading river practitioners and experts from all around the world.

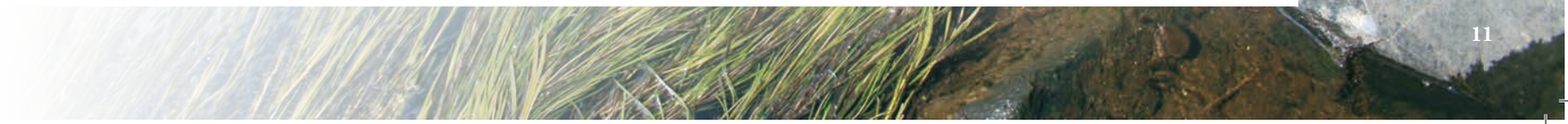
Despite the massive increase in public awareness about environmental issues, so many rivers and their catchments remain in decline. As one of IRF's flagship programs, River*prize* embodies IRF's core values of leadership, celebration and collaboration, fostering positive outcomes for rivers, catchments and their communities. This book harnesses the power of storytelling to demonstrate what can be achieved; to provide inspiration and empower others to begin, continue or accelerate their own river journeys.

Bill Dennison
IRF Board Member


Lake Simcoe, Canada 2009
Grand River, Canada 2000
Suislaw River Basin, USA 2004
Charles River, USA 2011
Willamette River, Oregon 2012
Niagara River, USA 2016
St. Johns River, USA 2008
James River, USA 2019
San Antonio River, USA 2017
River Rhine Western Europe 2014
Mersey River, UK 1999
River Thames, UK 2010
Danube River, Europe 2007
Drôme River, France 2005
Alexander River, Israel 2003
Sha River, China 2006
Mekong River, South-East Asia 2002
Mara River, Kenya 2013
Lake Eyre Basin 2015
Blackwood River, Australia 2001

Thiess International Riverprize Winners

		PAGE
1999	River Mersey, UK	12
2000	Grand River, Canada	14
2001	Blackwood River, Australia	16
2002	Mekong River, South-East Asia	18
2003	Alexander River, Israel	20
2004	Suislaw River Basin, USA	22
2005	Drôme River, France	24
2006	Sha River, China	26
2007	Danube River, Europe	28
2008	St. Johns River, USA	30
2009	Lake Simcoe, Canada	32
2010	River Thames, UK	34
2011	Charles River, Massachusetts, USA	36
2012	Willamette River, Oregon, USA	38
2013	Mara River, Kenya	40
2014	River Rhine, Western Europe	42
2015	Lake Eyre Basin, Australia	44
2016	Niagara River, USA	46
2017	San Antonio River, USA	48
2019	James River, USA	50



A River that Changed the World

Lord Heseltine, Secretary of State for the Environment at the time of the Toxteth riots, took the degradation of the Mersey Basin personally. For him it was an absolute disgrace to civil society – he was genuinely saddened that the river that gave life to that part of England was being ignored for the huge and valuable resource it was. Heseltine was a visionary, and he really initiated and drove the ambitious and long-term aims of the Mersey Basin Campaign (MSC).

Having the support of the government right from the beginning was incredibly valuable. It enabled us to influence and bring about change to achieve our objectives. Strong, active links with the region's research universities also gave us an evidence base that was underpinned by sound science. This was useful at every stage of the Campaign.

I can't over-emphasise the significance of partnerships. Recognising that cleaning up the Mersey Basin was beyond the scope of any one organisation or sector, MBC was always committed to working across the public, private, voluntary, community and academic sectors. MBC was unique in the world, and within the UK there were no other partnerships that were directly comparable. For this reason, there were no ready-made 'tools' that could simply be lifted and applied to our programs.

It was somewhat unique in that MBC was active at different spatial levels: global, European, UK, regional and local. All were related and important to achieving the best possible outcomes in North-West England. We gained a great deal and learnt a lot from trans-national cooperation with partners in several European countries, as

> "…sustainable development was a powerful unifying idea at the heart of everything we did."

well as at home. We had also developed a sophisticated communications strategy, and found that these communication efforts were critical when working at this many levels. It is no good being correct and worthy, if you are also dull and ignored.

We were proactive in maintaining a high profile and good reputation through communications and media work including blogging and social networking. In everything we did, this communication element was taken very seriously. To successfully sustain the campaign, it was essential to maintain the active support of the leading partners – including government, regional bodies, the Environment Agency and United Utilities (the water company). This was all about demonstrating value for money, relevance and professionalism.

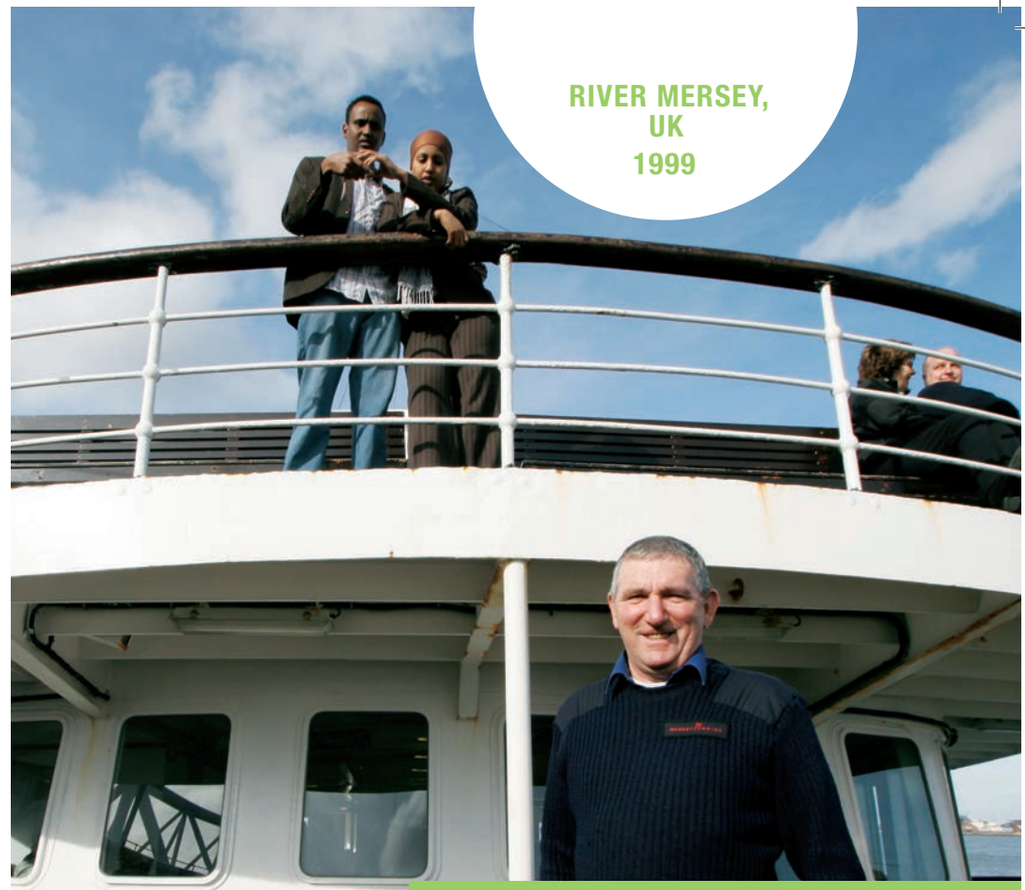
Many rivers in the Mersey Basin are now cleaner than they have ever been since the end of the industrial revolution. Porpoises, grey seals, and fish such as salmon, trout, lamprey and dace have returned to formerly polluted stretches of the river, and juvenile salmon have been found in the upper reaches of the river for the first time in living memory.

Engagement was very important to us – people are much more important than structures. MBC worked with communities in many ways: we had locally based staff implementing practical projects, and we organised events such as local forums, celebrations and award presentations that reached different sectors. We had a flexible approach, but maintained consistency in terms of our objectives. At the conceptual level, sustainable development was a powerful unifying idea at the heart of everything we did.

The experience of the Mersey Basin Campaign has shown that organisations and individuals need to be involved at all levels. Small-scale community projects are equally as valid in terms of reaching the objectives as large-scale capital investment programs. Above all, I feel that the Mersey Basin Campaign has attempted sustainable development, recognising the interrelationships between the environment, the economy and society. I don't know a better idea around which to organise lasting change.

The Mersey Basin Campaign ended in 2010, as planned, after 25 successful years.

Walter Menzies
Chief Executive,
Mersey Basin Campaign (to 2010)



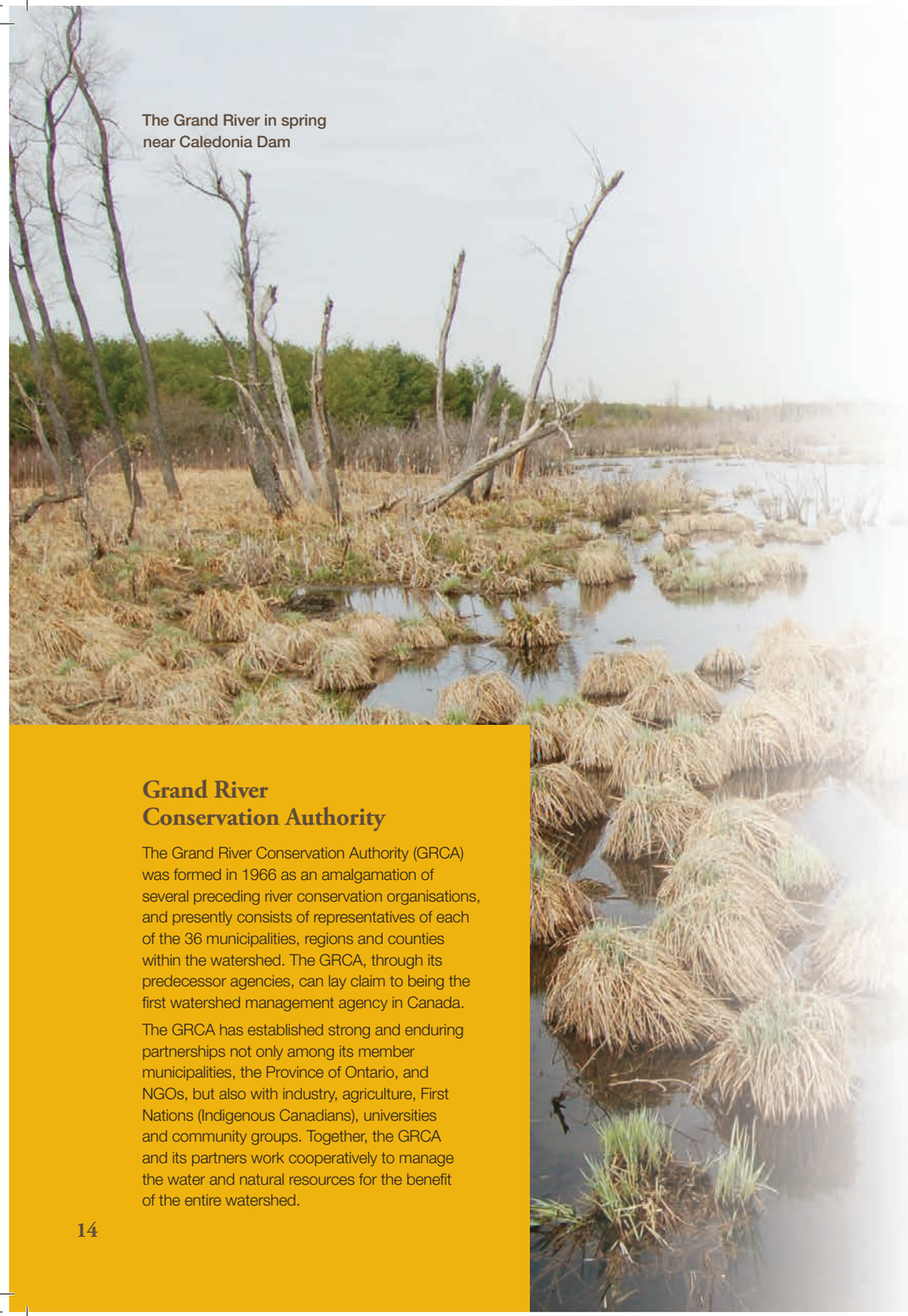
RIVER MERSEY, UK 1999

Deckhand Barney Easdown on one of the Mersey ferries

Dave Sandman swimming in the River Mersey

The Mersey Basin Campaign

In the summer of 1981, two weeks of serious rioting, looting and arson drew attention to the economic, social and environmental decline of the city of Liverpool and its River Mersey. Two hundred years of abuse and neglect had transformed the river into an open sewer, devoid of biodiversity. The unprecedented civil unrest shook the Thatcher Government, whose intervention led to a series of radical and innovative regeneration initiatives. The Mersey Basin Campaign (MBC) was founded soon after, in 1985, with the support of local and regional governments, as well as public, private, voluntary, community and academic sectors. A commitment of all partners to 'make good the degradation of centuries' led to the establishment of an ambitious, long-term plan to restore the Mersey river and estuary, and rejuvenate its surroundings.



The Grand River in spring
near Caledonia Dam

A grand achievement

Peter Krause
Former Chair, Grand River Conservation Authority

The Grand River flows through a highly developed region in Southern Ontario. It's the home of almost one million people. Most live in five cities that occupy less than five per cent of the land in the basin. More than 70 per cent is occupied by farms in one of the most productive agricultural regions in Canada.

They depend on the Grand River and its groundwater system for their drinking water and to take the effluent from about 30 sewage treatment plants. The residents of the basin expect a lot from their river.

Just two hundred years ago, the Grand River basin was the home to small numbers of First Nations people who had a light footprint on land. The early settlers from the United States, Europe and beyond chopped down almost all of the trees and drained the majority of the wetlands.

As towns and cities grew, untreated or lightly treated sewage made its way into the river. Runoff of manure and fertilizers from farm fields added to the river's woes.

By the early 20th century, the Grand River was rightly described as an "open sewer." It was also more prone to flood, and floods were becoming larger.

The Grand River Conservation Commission (later the Grand River Conservation Authority) was created in the 1930s to address water quality, water supply and flooding issues.

It was Canada's first water management agency and one of the first in the world.

The new agency started with a water management plan calling for the construction of a series of reservoirs to capture runoff from the spring melt, to reduce downstream flood peaks. The stored water was then released gradually through the dry summer and fall months to augment flows in order to maintain both supplies and quality. The network of seven reservoirs is now a key part of the infrastructure supporting the water supply and public safety needs of the basin's cities and towns.

Grand River Conservation Authority

The Grand River Conservation Authority (GRCA) was formed in 1966 as an amalgamation of several preceding river conservation organisations, and presently consists of representatives of each of the 36 municipalities, regions and counties within the watershed. The GRCA, through its predecessor agencies, can lay claim to being the first watershed management agency in Canada.

The GRCA has established strong and enduring partnerships not only among its member municipalities, the Province of Ontario, and NGOs, but also with industry, agriculture, First Nations (Indigenous Canadians), universities and community groups. Together, the GRCA and its partners work cooperatively to manage the water and natural resources for the benefit of the entire watershed.

GRAND RIVER, CANADA 2000

Elora Gorge on the Grand River with David Street bridge

But the river – and river management – are dynamic. Neither can stand still without stagnating. Over the decades, new and updated water management plans have been developed, each one building on the accomplishments of the last one and charting new goals for the future.

Generally, these plans have been developed collaboratively by involving the broad range of governments and agencies with responsibility for water issues. It's a reflection of the nature of the GRCA which itself is a partnership of the 39 municipalities of the basin.

Today, cities and towns are confident their water supplies will be secure for the foreseeable future. Improvements in sewage treatment and agricultural practices will result in better water quality. More than 20,000 hectares of sensitive environmental land have been protected. Old wetlands have been restored and new ones developed. Damage from flooding – once common in the urban areas on the river's banks – has been reduced significantly.

During its lifetime, the GRCA has planted about 30 million trees. The basin's forest cover, which was reduced to just five per cent a century ago, has rebounded to 20 per cent and continues to climb.

Grand River cities have adopted some of the most advanced water demand management policies in Canada, meaning they can continue to grow and prosper within the resources available.

Key to all of this has been the continuous search for new and better ways to manage resources to meet both existing and emerging issues.

Over the life of the GRCA, water management plans and reviews have taken place every 10 to 20 years. The last one of the 20th century was completed in 1982.

The GRCA and its governmental partners, along with First Nation communities, unveiled a new Water Management Plan in 2014. The plan, which took five years to develop, addresses the issues of high population growth, climate change and extensive agriculture with a series of actions that are reasonable, affordable and practical. Most importantly, the partners have already committed to carrying out their action items.

And just by going through the process of developing the plan, some of the basin's cities and rural municipalities have had their eyes opened to new ideas they can implement in their own communities to improve the environment.

Managing a watershed as large and as complex as the Grand River's is too big a challenge for any one agency or level of government. But the history of collaborative watershed management in the Grand River basin shows that a process of continuous improvement will produce results.

Changing behaviour, changing rivers

I became involved in the restoration of the Blackwood Basin because my farm is at the top of four catchments and my water flows down to everywhere else. I have strong feelings for stewardship, which is why I make the best use of the water that falls on my farm and try to reduce run off for the greater benefit of the basin by helping to lower the rising water table.

Lake Dumbleyung – a salt lake in the Blackwood River Basin, Western Australia

Restoring the Blackwood River makes me feel I'm a part of a bigger community and that I'm helping to improve the river's quality. You realise that there are catchment-wide goals and you're working and doing your part towards attaining those for the larger picture. You learn that you're not isolated, and the problems aren't so big that they're not worth doing anything about, in fact, you're able to make a difference!

To me a healthy Blackwood River means a sign of a healthier landscape, which should in turn lead to healthier human beings in body and mind. I'm motivated to continue to restore the Blackwood River because of the improvement I've seen by taking bite sized chunks and fixing one paddock

BLACKWOOD RIVER, AUSTRALIA
2001

> “My farm is just a microcosm of what can happen in the macrocosm of the catchment.”

Blackwood Basin Group

The Blackwood River Catchment is a unique wild river, whose headwaters are a sluggish series of connected wetlands before forming a river channel on its journey through the Hardy Inlet to the Southern Ocean. An estimated 78% of the Blackwood Basin is devoted to broadacre agriculture and as a result, large amounts of clearing have occurred, leading to dryland salinity and poor water quality to a degree that it was no longer suitable for irrigation or for swimming in its middle reaches. The Blackwood becomes increasing fresher as it meanders through Jarrah forests before becoming estuarine in it lower reaches. The Blackwood Basin Group (BBG) was established in 1993 as a non-profit, community-based organisation to provide concerned community members, conservationists, farmers and industry representatives from all reaches of the river with an opportunity to work together to address the degradation of the Blackwood basin.

or one block of my own farm at a time. My farm is just a microcosm of what can happen in the macrocosm of the catchment.

The biggest change I've seen is the gradual reduction in the degradation of the river that resulted from the behavioural change. A change in farming systems will eventually bring the river back to what it was. That really validates the work of the Blackwood Basin Group (BBG) team. What makes it work is the way it's done: we are community-based and inclusive, involving people at every level with a bottom-up rather than a top-down approach. BBG is really good at creating networks, engaging people and keeping them 'in the family'. The social benefits of the camaraderie that has developed between people on our team are important elements. These are like-minded and passionate people, and that passion is fuelled by the outcomes on the ground. However, the political aspects are quite challenging: securing funding, capacity building, and trying to keep people employed in a fluctuating funding program.

What I've found very rewarding is the BestFarms systems, which helps landholders to develop and implement environmental management systems on their properties and won the 2007 Australian Business Award for environmental work. The biggest learning in the BestFarms program is that farmers think on a farm-scale when they join, and then adjust their thinking to a catchment-scale.

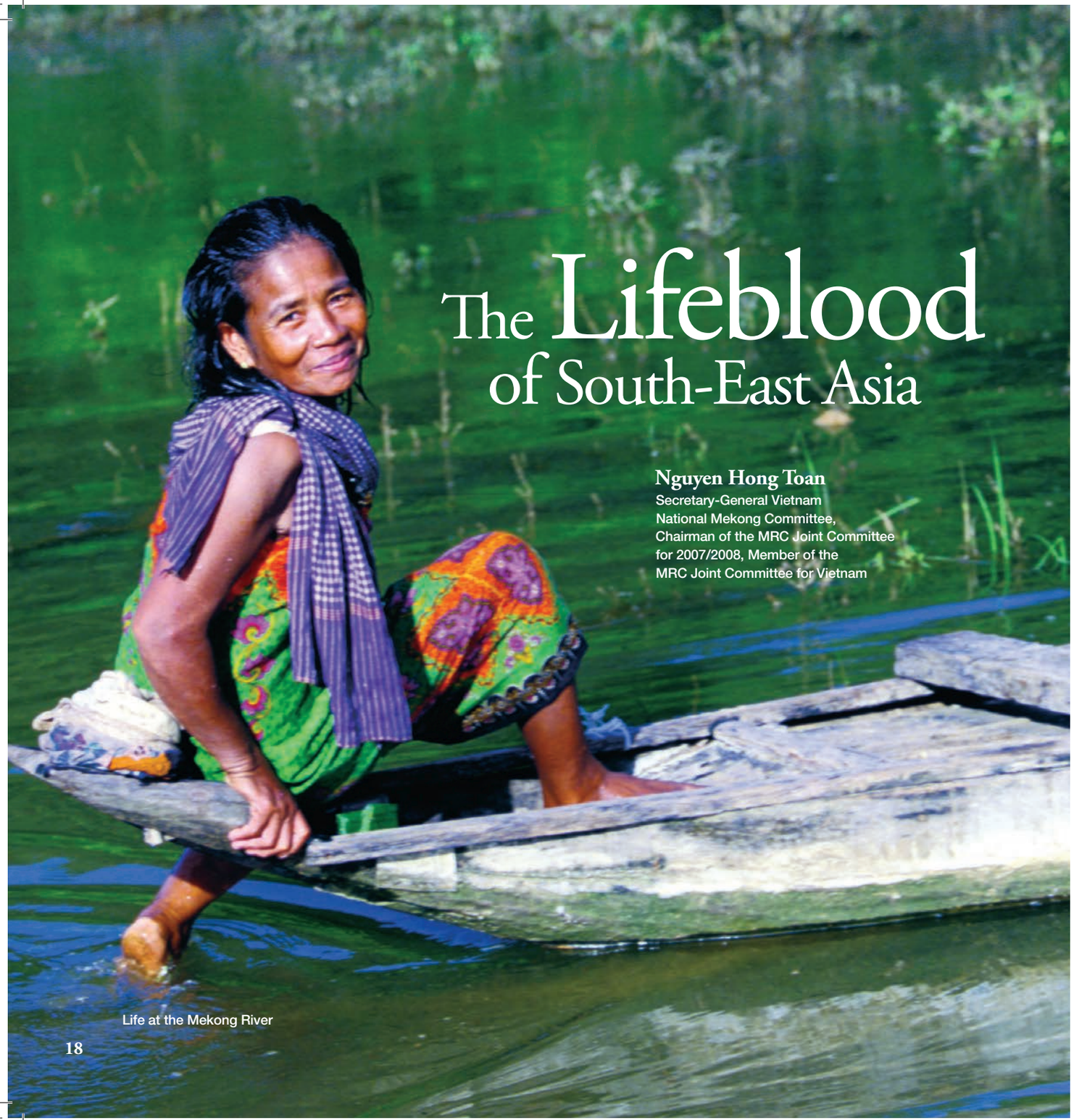
As far as climate change goes, models show the Blackwood River Basin is going to be one of the most affected basins in Australia. I've learnt that we have to be flexible in our farming systems because some years are going to be wetter than normal and some years will be drier. It is about climate variability and an ability to adapt to that.

To be successful in managing and restoring rivers you certainly need to demonstrate to people measurable and direct results from specific actions. Landholders and farmers need to see that there are bottom line improvements. The BestFarms program looks at a triple bottom line outcome for landholders. We guide them but we don't force them into following our system because it's their land.

The *prize* money of the Thiess International River*prize* allowed us to set up the Blackwood River Foundation to advance the sustainability of natural resource management within the catchment with a focus on river health. I wish that farmers can make their living in a more environmentally friendly way, be less dependent on our variable climatic cycle and also get some 'life style' back into farming.

Mick Quartermaine

Farmer and Upper Catchment Representative on the Blackwood Basin Group Committee, and inaugural Board member of Blackwood River Foundation



The Lifeblood of South-East Asia

Nguyen Hong Toan
Secretary-General Vietnam
National Mekong Committee,
Chairman of the MRC Joint Committee
for 2007/2008, Member of the
MRC Joint Committee for Vietnam

Life at the Mekong River

The Mekong River Commission (MRC) is the institutional framework for the cooperation of the four nations in the Lower Mekong Basin. The MRC maintains a strong cultural awareness and shares ideals of regional cooperation. We have developed a knowledge base which helps the countries to cope with trans-boundary issues and make informed planning decisions.

The MRC provides a service to our member countries through information gathering and sharing, strategic development planning, promotion and fundraising, investment facilitation, environmental monitoring and impact assessment, policy advice, and institutional development and capacity building. Maintaining this service means adapting to the ever-changing socio-economic and political realities in the Lower Mekong Basin, while remaining true to the principles of the 1995 agreement and therefore demonstrating to our partners that we are effective and dynamic.

The ultimate goal, and the true test of our success, is poverty reduction. MRC programs are driven by the need to improve the implementation of Integrated Water Resources Management (IWRM) at the basin scale to alleviate poverty and enhance economic growth within the framework of the UN Millennium Development Goals.

The MRC is basically a scientific research organisation, and our reputation and

MEKONG RIVER, SOUTH-EAST ASIA 2002

> “It is essential that the members believe in the idea of co-operation, otherwise, there is no collective will.”

effectiveness depends on the quality of our science. Good science depends to a large degree on good communication. Perhaps our greatest strength lies in the MRC’s ability to facilitate and support concrete investments and development actions in the field, based on effective regional cooperation. The MRC as a whole is a development program owned by the Mekong countries themselves, therefore its continued existence and growth is testament to the growth of cooperation and socio-economic progress in the region.

However, if we are to be honest, MRC’s record in public participation has not matched the goals we have set ourselves, and this is an area that we are working to address . Despite establishing good relations with governmental and non-governmental development agencies across the Lower Mekong Basin, there are still large areas of the client base that the MRC has not yet fully engaged.

MRC believes in promoting concrete actions that will help people, and this includes working with governments and the private sector in sometimes controversial sectors such as hydropower. At the same time we are committed to balancing efficient use of water and water-related resources with protection of the environment and promotion of social justice and equity. To ensure this balance we have formed partnerships with groups such as IUCN and WWF, and are actively seeking dialogue with communities and grass-roots organisations throughout South-East Asia. We recognise that such activities only work if they are inclusive, open and cross-cutting in their nature.

All MRC activities currently depend to a large degree on the continued support of our outside development partners, however, member states are increasing their ownership of the organisation, not just by supplying more staff and expertise to our programmes and secretariat, but also by gradually taking responsibility for more of the MRC budget. These factors improve financial security, but the MRC’s long-term sustainability still depends on its ability to fulfil an effective role in matters that are important to its stakeholders. The 1995 agreement defines our mandate, and we must continually appraise the way we work to meet our obligations for cooperation on sustainable development of the Mekong River Basin.

A river basin organisation like ours must engage its member states, and show them the benefits of water resource development if it is to retain the faith of its clients. It is essential that the members believe in the idea of co-operation, otherwise, there is no collective will and little reason for a river basin organisation such ours.

The Mekong River provides livelihood for many fishermen

Mekong River upstream

Mekong River Commission

The origin of the Mekong River Commission (MRC) may be traced back to the old Economic Commission for Asia and the Far East (ECAFE), now Economic and Social Commission for Asia and the Pacific (ESCAP).

War affected all the riparian countries during the 1970s, and it wasn’t until 1977 with assistance from ESCAP that Laos, Thailand and Vietnam established an Interim Mekong Committee to continue the original committee’s work. Cambodia’s expression of a desire to rejoin the Committee in 1991 led to fresh discussion and transformation of the Committee. The 1995 Mekong Agreement set a new mandate for the organisation ‘to cooperate in all fields of sustainable development, utilisation, management and conservation of the water and related resources of the Mekong River Basin’. The agreement was a huge step in the development of the organisation marking a transition from an UN-related body to an organisation wholly owned by the member states.

A river building a bridge for peace

Amos Brandeis
Manager and Chief Planner,
Alexander River Restoration Project

Local people join forces to restore a river bank

Nachum Itzkovitz recalls fondly, that as a boy, he was able to swim in a clean and healthy Alexander River. Fifty years later, as Mayor of the Emek Hefer Regional Council, he recognised the need to restore the increasingly degraded river, and established a river administration for returning the Alexander River to health.

In 1996, a great deal of construction was happening up-river and in the Nablus Stream, and the impacts were so bad that it was as if the river had died. It was the disaster that helped to bring Israeli and Palestinian people together. This was a real turning point. The Mayor went to meet the Governor of the District of Tul Karem, our neighbouring Palestinian city, and that's how the partnership started. It was the combined willingness of both leaders to solve the ecological problems that led to the implementation of two unique agreements that have facilitated cooperation between both sides.

A difficult time occurred in 2000, when violent conflict broke out around the border between Israel and the Palestinian Authority. A wall had to be built along the border to protect residents and employees from gunfire and bomb shell blasts while they worked on constructing the wastewater treatment plant for the water from Nablus Stream on the Israeli side. Our biggest challenge was to put aside political issues and focus only on the environmental issues for the Alexander River. We succeeded, and continue to succeed in maintaining cooperation with our Palestinian neighbours with the help of the German government, which serves as a mediator and funds the activities on the Palestinian side. Ecology, which knows no political borders, has become a unique bridge between people from both sides of the security fence, which now divides the catchment and physically separates the people who live along the river.

One of the key ingredients for maintaining the success of our project is to have a strong leader for the process. In addition, you need to have a continuous process. You can never stop or become complacent. The moment you stop, the momentum is lost. You must also have a comprehensive, interdisciplinary approach to integrate all aspects of river restoration, and to meet the interests of different stakeholders in the project. This is very important, because many river restoration projects around the world fail when they deal with only a few of the aspects of river restoration.

This project is considered to be the leading river restoration project in our country, and has received five important awards including the 2003 Thiess International River*prize*. We put a lot of effort into finding many different ways to communicate with the public and get them involved in all aspects of the restoration. It's very important that people are part of the decision-making process. You can't make a decision and then tell the people what that decision is.

That doesn't work. They deserve to be part of the process of arriving at those decisions.

I could write a whole book just on the lessons. Learn from others before you start and then try to see what's relevant for your project. Don't try to impose techniques or ideas that aren't relevant or appropriate to your river. It's better to have small successes than large failures. Don't try to do too much in the beginning, but choose tasks and projects that you are sure you can succeed with. These will lead to more and larger projects. What you also need is budget, belief and patience. If you don't have those things, you shouldn't even try to restore a river."

Alexander River Park in Israel before restoration

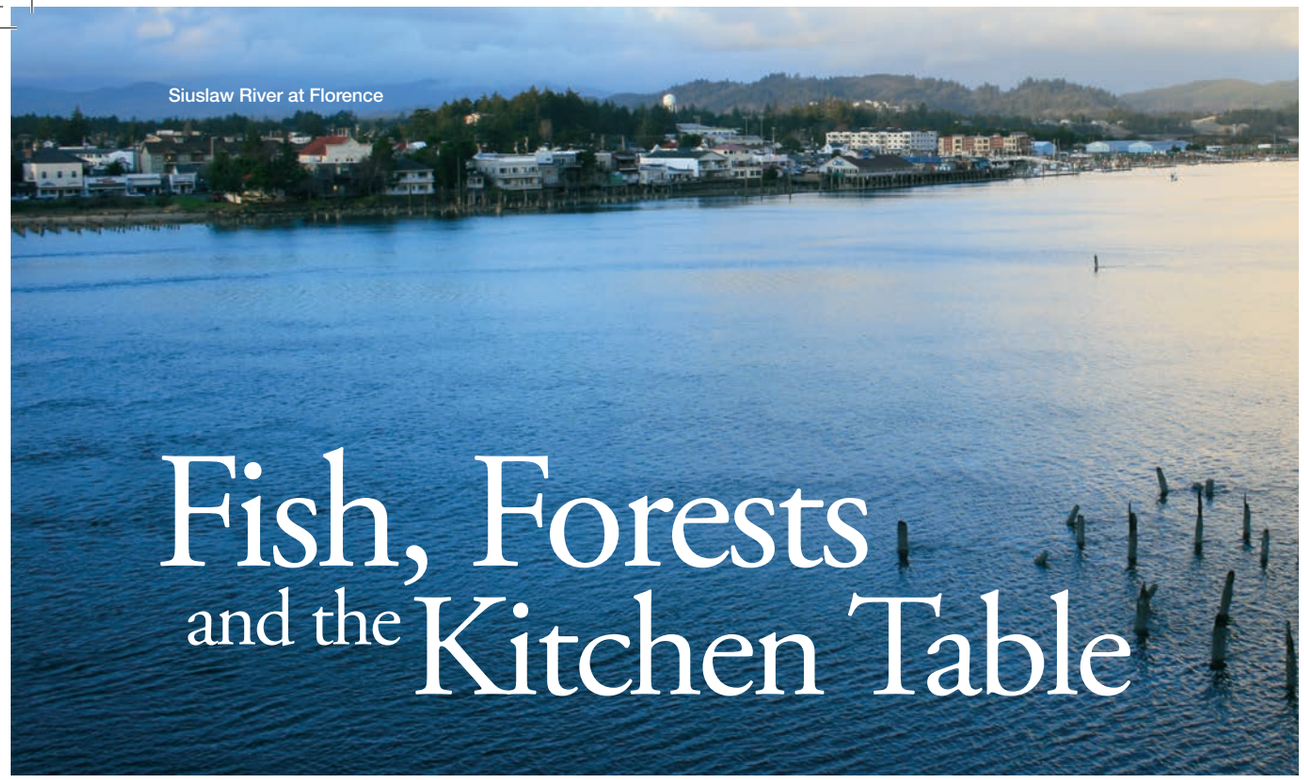
Alexander River Park in Israel after restoration

ALEXANDER RIVER, ISRAEL
2003

Alexander River Restoration Administration

The Alexander River Restoration Administration (ARRA) was founded in 1995 in Israel to address the issues of high concentrations of organic materials in the river. ARRA now consists of 20 public and state entities at local, regional, and national levels. This effort includes a unique and effective partnership with Palestinian neighbours from the district and town of Tul Karem. Formal agreements signed by the Palestinian Governor of the District of Tul Karem and the Israeli Mayor of the Emek Hefer Regional Council have provided a foundation for joint planning and collaborative projects to address the pollution and sewage issues across the entire basin's drainage area.

"Ecology, which knows no political borders, has become a unique bridge between people from both sides of the security fence."



Siuslaw River at Florence

Fish, Forests and the Kitchen Table

Bird surveying during the Watershed Exploration Camp

During the 1980s, our area's economy was primarily timber-dependent, with some commercial ocean and recreational river fishing. By 1990, some anadromous (ocean migrating) fish and terrestrial forest-dependent species were becoming endangered. Part of the difficulty we encountered was that we had a myriad of natural resource management agencies and organisations working in our basin, but they hardly communicated with each other!

To increase cooperation, we recognised the need to develop a Coordinated Resource Management Plan (CRMP) in one of our sub-basins. With most of the resource agencies at the table for the first time, we started talking about the issues and identifying common goals.

The timing of the establishment of the partnership's coordination was key. The management of federal lands was changing rapidly and we were under court order to protect endangered species. The State of Oregon realised that it needed to motivate citizen groups to join together in efforts to take care of their own watersheds, so in 1997 it authorised the development of local watershed councils. The Oregon Plan for Salmon and Watersheds was established. The voters dedicated a portion of Oregon's State Lottery funds to river and salmon habitat restoration.

One key ingredient in maintaining the success of these endeavours is to have dedicated individuals. We cannot emphasise enough the value of relationships and partnerships to our success on the ground and in the water. You do have to have a technical background and foundation for your work, but relationship building skills are absolutely vital, because without trusting relationships, it's really hard to make any progress. Being inclusive, bringing together all of the stakeholders, even those that might be opposed to the activities, is essential to understanding all of the issues.

We are constantly working to make sure that the people involved feel valued. Leadership is certainly important, and community leaders are an important mechanism for reaching out to landowners and encouraging them to adopt new practices. It's often easier for landowners to relate to community-based leaders than to a government official trying to explain the same thing.

Our long-term commitment to what we're doing is essential to sustaining the program. The publicity from winning the Thiess International River*prize* in 2004 has helped engage people who were ambivalent about or unaware of our programs. Sometimes there has been a perception that what we do is unnecessary or a waste of money, but gaining this recognition at an international level brings respect and the feeling of ownership in something important and valuable. Certainly many of our local contractors took a lot more interest in what was going on after we won the River*prize*.

A big challenge has been acquiring and keeping political support. There is buy-in by some politicians and aversion to this kind of education and restoration by others. One way to overcome this is to educate the politicians, get them out on the ground to see the work first-hand. We've also done that with the permit-issuing agencies, which are often a stumbling block because they usually don't want to try new things. You can also influence politicians by getting your message out to the citizens who can have some influence over the politicians or agency people, and by communicating about successes such as the River*prize*.

We honour the past, at the same time as we try to prepare for a different future. Our education programs are intended to teach young people 'how' to think about these issues, and not "what" to think. In this way they will grow to be able to make up their own minds and be better prepared to respond to the coming conditions and needs.

We believe we can make positive changes in the world and that we can have a good time doing it. We also believe that we can have both protected and productive landscapes based on common sense and engaged collaboration.

Johnny Sundstrom
President, The Siuslaw Institute

Karen Bennett
Former Watershed Program Manager for the Siuslaw National Forest

Eric Nusbaum
Former District Administrator for the Siuslaw Soil and Water Conservation District

> "We cannot emphasise enough the value of relationships and partnerships to our success on the ground and in the water."

Siuslaw River Basin Restoration Partnership

Siuslaw River Basin partners, consisting of the Siuslaw Soil & Water Conservation District, Siuslaw National Forest, Siuslaw Institute, and the Siuslaw Watershed Council, among others, have been working cooperatively for more than 26 years to restore the basin's natural functions, wildlife populations and economic activities. Restoration work includes recovering and replicating natural habitat, active healthy forest management, water quality protection and decommissioning old roads to control erosion and run-off. We are also planting native vegetation to stabilise river banks and floodplains and to create shade to reduce water temperature throughout the aquatic system. Water quality studies performed by volunteers, and public school education programs are also ongoing and essential to the Partnership's mission.

SUISLAW RIVER BASIN, USA 2004

Rocky Creek in the Siuslaw Basin in Oregon, USA

a river saga with sage

The work of the CCVD began informally. We worked for over a year with the local administration, environmental NGOs, fishermen and about three important government officials in the valley.

Communauté de Communes de Val de Drôme

The Communauté de Communes de Val de Drôme (CCVD) is a conglomerate of 35 rural municipalities and 27,000 people in the Drôme River Valley. The CCVD was established to respond to the problems of over-extraction of water for irrigation, and pollution caused by effluent and contamination. The first river management contract was agreed in 1990. In 1997, a Catchment Management Plan (SAGE) for the Drôme River was developed – a first-off in France following the establishment of the French Water Law in 1992.

The SAGE is a key tool of French water law, defining local and State actions and processes for local consultation and negotiation. Its objectives include coordinating water management between different parties and river users. In 1999 a second river contract was established as a tool for implementing the SAGE. The CCVD now works to address waste and river management, economic development, social policy, tourism and agricultural issues.

In France, when you're dealing with a water project, there needs to be a group of elected officials involved because water is a government issue. It's also important to discuss the issues with key stakeholders before going out to the public, because water is always a delicate topic. Working cooperatively in this way allowed us to fully scope the situation, define the problem, develop trust among the stakeholders and circulate information. This was very important to our success.

In 1992, a change in French law permitted the development of commissions and watershed councils which consist of elected officials, government representatives and watershed users. The councils need to represent all the players in a basin. There are six natural sub-basins in our watershed, each of which has different issues. That's why we work on a sub-basin level.

DRÔME RIVER, FRANCE 2005

There are two things that we don't have enough of in the Drôme. One is water and second is tributary flow. In trying to determine the causes of these low flows, it was quite a challenge for us to find out how much water farmers' irrigation systems were removing from the river. There were four big farm associations taking water out for irrigation, but the figures they gave us didn't correspond with reality. We commissioned a photographer to take aerial photos of the whole valley to determine how many hectares of corn they were growing and calculated the amount of water needed to grow the corn. We sat down with the farmers and asked, 'what's going on?' It wasn't about trying to turn their taps off, but about helping them to realise that they didn't own the water in the river. This was really important in helping us to establish trust and relationships, and after that we were able to work together.

We've learnt that it's really important to start with what everyone agrees upon, and make decisions democratically. Other elements of the community, officials and entrepreneurs, recognised the opportunities for tourism that a healthy and clean river would bring, and we received support from these groups, as well as from environmental organisations and NGOs, to restore the river. There is no personal ambition in our organisation which would come before the group's needs – everyone is working for the same outcomes.

We've received two big 7-year contracts from the French Water Agency, which involved: improvement of water quality, finding supplemental water for irrigation,

Nature reserve Ramières in the Drôme River valley

educational programs for the community, a management system for droughts, and the development of a syndicate which unifies and streamlines all management and restoration efforts in our watershed. With such big dollar amount contracts, you are committed to finishing the project and that was a big stimulus.

Research is underway at present to investigate the transfer of alluvial deposits into the river. When researchers are involved in research and monitoring the river, they hold meetings for the basin community to improve scientific understanding of river issues among the population. Keeping the community and citizens informed, results in more willingness to support research and programs to restore the river. However, in cases where communities disagree over funding research for example, we have created a fund to pay for the work independently.

I remember before the restoration work started the river was so heavily polluted that I wouldn't let my children swim in it. Now it's beautiful to see that people are able to swim in the river again – in fact, our river is now a tourist attraction!

Kayaking on the Drôme River

Saillans, a town in the heart of the Drôme River valley

Jean Serret, President
Communauté de Communes de Val de Drôme (CCVD)
Translated by Nicole Portley, Wild Salmon Center, Oregon USA.

> "Keeping the community and citizens informed, results in more willingness to support research and programs to restore the river."

Back to a ‘River of Life’

Park along the Sha River

In 1999, scientists rated the Sha River as virtually ‘dead’. Most species of fish, shrimp and wildlife had nearly vanished from the river, and it had become a severe public health hazard, seriously affecting everyday life for people in Chengdu and for communities downstream.

The local people became really upset with the pollution, and brought the issue to the attention of the People’s Congress of Chengdu. The government was very receptive and started to take action right away.

It was clear to everyone that the benefits of restoring the ecological functions of the river would also be accompanied by economic and social benefits. We understood that environmental protection and sustainable development needed to be achieved within the context of the contemporary enterprise system, and this understanding helped us to bring stakeholders together to collaborate on the project.

Because of the large scale of the project, multilateral cooperation was considered essential, and we worked to ensure that government committees, banks, international design institutes, engineering firms, environmental organisations and local community representatives were all involved. Developing partnerships with the media helped us to reach the different stakeholders, and facilitated cooperation and collaboration.

Cooperation from the local people was especially important, because the project required relocating 100,000 people out of the poor conditions they were living in to new apartments further from the river. It was quite easy to encourage people to relocate when they saw the benefits, however, this relocation was also the biggest challenge. Some people didn’t want to move from the area where they were born and had lived their lives, and didn’t want to give the relocation a chance. In China it is very important that people in senior positions can get things done, and that they enjoy serving others.

The Chengdu Sha Restoration Project also involved the development of water recycling infrastructure and wastewater treatment systems used to create a sustainable source

> “With population growth and development, we need to communicate to more and more people about the need for river restoration.”

of potable water for human and industrial use. Additionally, large-scale reforestation and bank control measures, including the relocation of housing development projects and major industrial facilities away from the river, were also carried out. Municipal and rural waste, as well as silt accumulations within the river system, were addressed through a major clean-up project and public education campaign designed to prevent future misuse of the river. On 22 kilometres of the river, over 42 different mechanisms have been implemented to filter the sewage before it enters the river. A lot of the people in Chengdu do not know much about scientific processes, but they understand that to decrease pollution we need to limit the use of cars and stop dumping rubbish in the river. In one program, for example, the city enlisted volunteers who wrote on the side of boats ‘stop dumping rubbish’.

We’ve seen dramatic improvements in aquatic and terrestrial biodiversity as a result of these restoration activities. We also plan in the longer term to work on other tributaries of the Sha River in the surrounding areas.

River pollution before restoration

We have tried to renew a sense of appreciation for the river within the community by improving various historical and cultural sites surrounding the river for public recreational use. This has contributed to an improvement in community attitudes towards the river.

Due to the factors of population growth and development, the need for river restoration is an issue that we want to communicate to more and more people. It’s everyone’s problem, and we need to start working right away to restore our rivers. If we don’t manage our river well, then the pollution will flow downstream to other rivers. We don’t want to pass our problems on to somebody else.

Liu Qunfang
President of the Board of Supervisors, Chengdu Sha River Restoration Project Incorporation

Chengdu Sha River Restoration Project Incorporation

Throughout its long history, the Sha River has evolved through many adaptations and uses in accordance with the changing needs and environmental philosophies of various eras. Years of rapid population growth and industrial development saw the river suffer from the combined impacts of city waste, raw sewage, deforestation, coal silt and rural garbage. The river in its impairment became a significant obstruction to industrial and economic growth.

The Chengdu Sha River Restoration Project Incorporation was co-founded in 2001 by a large number of government organisations and investment agencies in the Sha River watershed. Their goals were to improve water quality, control flooding, improve riparian management and waste disposal, and increase public use of the Sha River and its surroundings. The scope of the project necessitated the involvement of the community and a large number of different stakeholder groups, all of whom worked together to restore the Sha River.

The 'Blue Danube' – a blueprint for collaboration

The Danube River catchment extends into the territories of 19 countries, making it the most international river basin in the world. Cooperation among diverse stakeholders calls not only for a sound legal framework, but also for personal commitment and a political will to cooperate.

International Commission for the Protection of the Danube River (ICPDR)

In the early 1990s, countries within the Danube River Basin recognised the need for a legally binding tool to protect their water and riverine environment. Hungary established a meeting for the Danubian countries in 1991, at which ecological and water protection issues were discussed. Austria and Hungary together prepared a River Protection Convention, and solicited the interest of other countries in participating. The convention was signed in December 1994, and entered into force in 1998, at which point the EU expressed a willingness to participate. The Danube River Protection Convention was prepared in parallel with the EU Water Policy, both advocating integrated river basin management. This provided consistency for the eight Danubian countries that are members of the EU. International funding from the EU, World Bank and Global Environment Facility (GEF) has made it possible for all 14 major countries to work together to develop and implement activities coordinated by the ICPDR.

The legal framework was created by the Danube River Protection Convention, signed in 1994. We found that it is the genuine commitment of the people involved that brings success; people who can stand up and say "this is something I believe in". From the beginning, we have had a small core group of very committed people in the ICPDR who were instrumental in getting others on board. Establishing common goals has been critical to our success to date.

Without cooperation it would be impossible to manage the rivers in the basin sustainably. The same water is used by many countries as it flows downstream. For example Hungary, which lies in the heart of the Danube River Basin, receives 96 per cent of its country's surface water from 'abroad'. In the past, Danubian countries relied upon bilateral water agreements. The Danube River Protection Convention and the ICPDR help us to cooperate bilaterally, but also to work together multilaterally at the basin level.

Currently, one of our main tasks is to achieve 'good status' of all waters by 2015. The EU Water Framework Directive (WFD) guides acitivites in line with this objective. To help coordinate the implementation of this directive, the ICPDR employs, among others, the River Basin Management Expert Group, comprising more than 70 scientists, biologists, engineers, ecologists and economists from all the ICPDR countries.

As the Danube River flows through so much of Europe, it is a key symbol for Central and Eastern Europeans and people feel very attached to it. Through our work, we keep people involved and enhance their understanding that they are part of a bigger picture. Communication has been given a big role in recent years and we understand that it is important to have 'science communicators' – people who have scientific knowledge and can communicate it effectively to people. Every year on 29th June, the day when the Danube River Protection Convention was signed, every Danubian country celebrates 'Danube Day'. The celebrations are also an important occasion to recognise the people who work to protect and restore the river.

Winning the Thiess International River*prize* in 2007 was very important for us. Receiving recognition from the rest of the world that we are doing well was a major boost for everyone working to protect the Danube rivers. The *prize* money also helps us to support those countries with a very low GDP and minimal funding to join in the activities of the ICPDR, who would otherwise have found it impossible to participate.

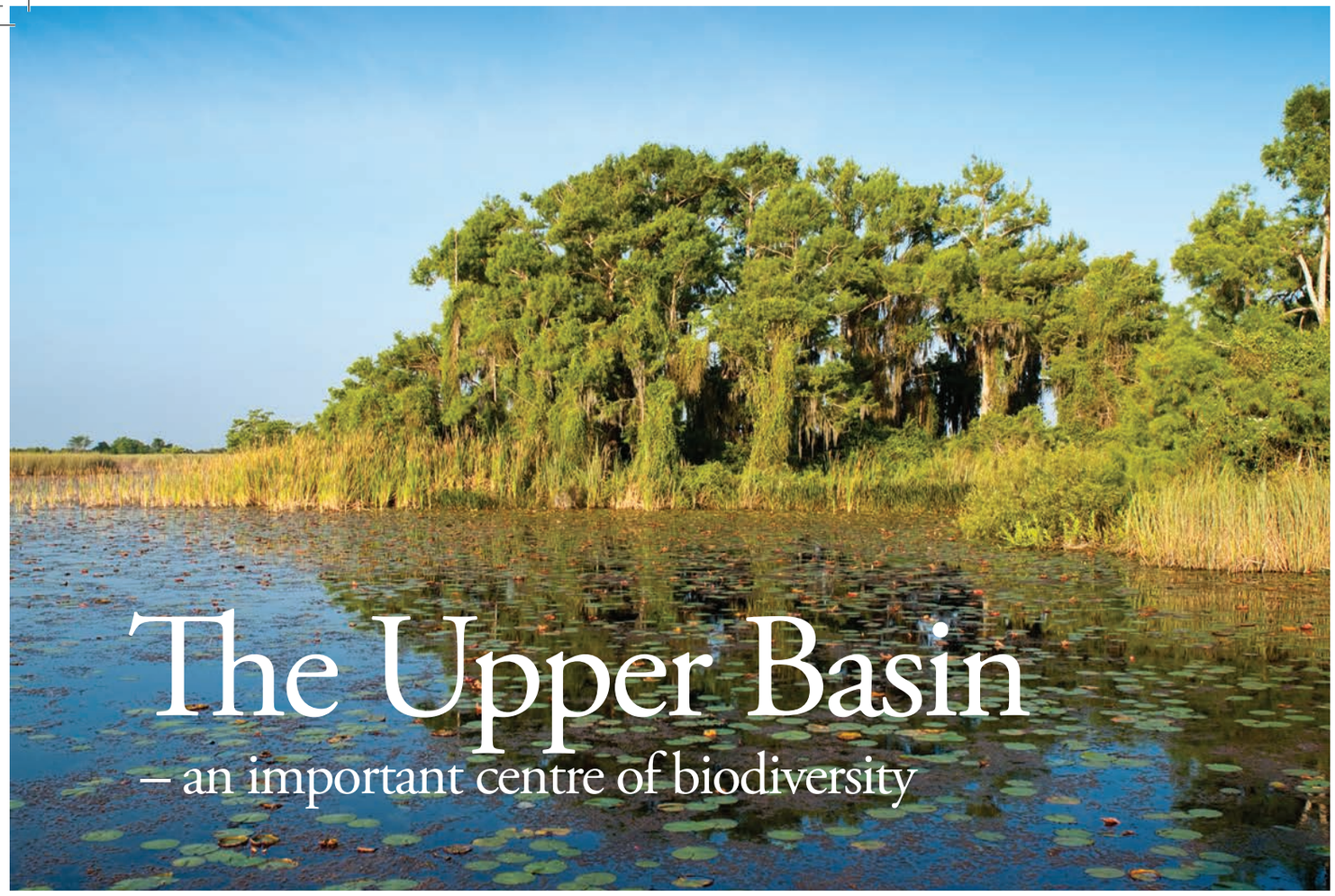
One of the remaining wetlands in the Danube Basin

DANUBE RIVER, EUROPE
2007

"We keep people involved and enhance their understanding that they're part of a bigger picture."

Gyula Holló
Head of the Hungarian Delegation to the International Commission for the Protection of the Danube River (ICPDR)

Jasmine Bachmann
Public Participation and Public Relations Expert of the ICPDR



The Upper Basin
– an important centre of biodiversity

The development in the floodplain marsh including dike and canal constructions led to widespread ecological degradation of the upper St. Johns River basin.

Maurice Sterling
Division Director, Division of Project Management, Department of Water Resources for St. Johns River Water Management District

Lengthening dry periods led to an increase in the number and intensity of wildfires in the marsh. High levels of nutrients and suspended sediment, the result of agricultural pumping, degraded the wetland and lake habitats. Wood storks and snail kites, both endangered bird species, no longer used the area for nesting. The high levels of freshwater and sediments being discharged into the Indian River Lagoon led to a decline in hard clams, a significant local industry, and in seagrass, a critical habitat for fish and marine invertebrates.

Beginning in the late 1970s, scientists at the St. Johns River Water Management District, together with engineers at the US Army Corps of Engineers (USACE), began to design the multi-purpose Upper St. Johns River Basin Project. The District has developed and promoted strong partnerships with the Florida Fish and Wildlife Conservation Commission (FWCC) to improve the management of these recreational resources.

Early in the Project's history, a citizen's Technical Advisory Committee was formed comprising of stakeholder representatives of governmental and non-governmental organisations. This group reviewed the proposals made by District scientists and worked with the District and USACE to ensure that the water control structures could be operated to achieve hydrologic restoration, water conveyance and flood control benefits.

Strong leadership and consummate professionalism – and all those two attributes imply – at every level of all partnering organisations are key factors in ensuring the success of the project. Also the maintenance of professional integrity leading to good, trustworthy relationships among and between agency partners,

> People rarely oppose what they themselves create so the more diverse interests who participate in planning the project, the more likely you'll have widespread approval downstream.

stakeholders, interested people, and even the common citizen who calls with a question and who is seeking help, are vital traits which can assure success in any public water resources endeavour. The state of Florida's lead environmental agency – the Florida Department of Environmental Protection – has hailed the Upper St. Johns River Basin project as a national model of modern floodplain management which is indicative of support for the Project at the top levels of state government.

When working in a dynamic and ever-changing natural environment and multiple partners are involved, it takes time to work through even anticipated issues. We had to adapt – frequently and timely – and remain flexible enough to alter our approach, to implement either design or management changes when new information gleaned from system responses yielded new levels of technical understanding. In the world of water resources management, we have learned adaptive management is the preferable and most advantageous path forward.

For those eager to initiate a river restoration project, my advice is to accept at the onset that you can't foresee everything; so be as thorough in your planning as you can. Things will always take longer than you anticipate; so be patient. Dedicate sufficient resources to openly and effectively communicate, communicate, communicate! Keep policy-makers, stakeholders and affected interest groups fully informed at every stage. As much as possible, involve opposing interests early in the planning stages to enhance your chances of securing positive buy-in and/or endorsement (or at a minimum 'acceptance') early on. Remember that people rarely oppose what they themselves create so the more diverse interests who participate in planning the project, the more likely you'll have widespread approval downstream. Lastly, consider carefully your fiscal requirements. Good cost-estimating and fund management is crucial to keeping your project on-track. Consider adding multiple paying partners to stabilise your project's funding capabilities.

ST. JOHNS RIVER, USA 2008

St. Johns River Water Management District

The St. Johns River Water Management District was established in 1976. The mission is to ensure the sustainable use and protection of water resources for the benefit of the people of the state. It encompasses the entire drainage basin of the St. Johns River and its major tributaries for a total of 32,000 square kilometres. The St. Johns River flows north 500 kilometres from its headwater marshes in east central Florida to Jacksonville where it enters the Atlantic Ocean. The river's gradient is less than 1.6 cm per kilometre, making the St. Johns River one of the slowest flowing rivers in the world.

One of the major projects of the District is the Upper St. Johns River Basin Project which is one of the largest river restoration projects in the United States. The Project is a co-operative project between the District (state of Florida) and the US Army Corps of Engineers (US Federal government).

Conservation
by and for the people

Virginia Hackson
Chair of Lake Simcoe Region
Conservation Authority (2010)

Ontario, Canada has a proud history of watershed-based river and lake restoration. In 1946, the Conservation Authorities Act enabled the creation of local, watershed-based organisations called Conservation Authorities. In 1951, responding to environmental degradation in the Lake Simcoe basin, the Lake Simcoe Region Conservation Authority was formed to manage natural resources on a watershed basis and to initiate local improvement programs.

Our inspiration comes from the lake itself and the 35 rivers that flow into it. Every day some 400,000 residents benefit from the lake and its watershed. Lake Simcoe is a source of drinking water and waste assimilation. Sweeping more than 3,400 square kilometres, across 20 municipal borders, the basin supports local business and agriculture and plays host to thousands of tourists with an annual economic impact of more than $200 million. The “Lake Simcoe Basin’s Natural Capital Report”, completed with the David Suzuki Foundation and the Friends of the Greenbelt Foundation, noted that, ‘The ecological benefits provided by the Lake Simcoe ecosystem, a vital part of the world’s most diverse Greenbelt, are estimated at close to one billion dollars a year.’ This value examines the goods and services provided by the basin including carbon storage, water quality, supply and filtration, flood control, waste treatment and clean air. This is our inspiration for clean, healthy water within the Lake Simcoe watershed.

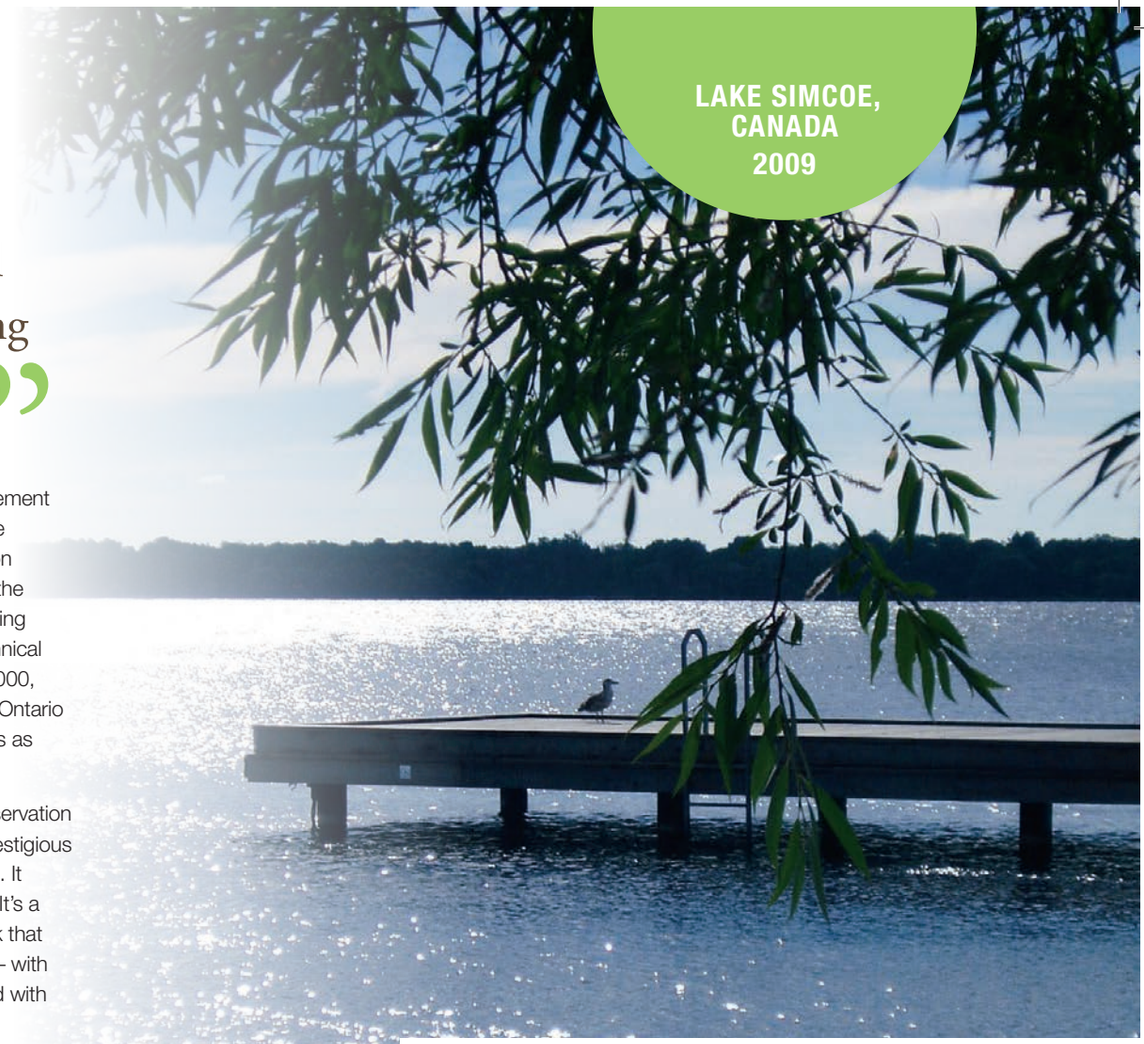
Since the 1940s we have embraced the motto ‘Conservation by the People’. Dr. A.H. Richardson’s book ‘Conservation by the People’ quotes, “It’s often been said that the conservation authority movement in Ontario is unique on this continent, perhaps the world. One of the principles underlying the strength and success of the movement has been the emphasis on community initiative. The conservation movement has been a movement of, by and for the people.” This has been our guidepost over the past 70 years.

‘Conservation by and for the people’ is embedded in our work. By working with our partners, we have developed an integrated watershed management plan focussing on four pillars.

Leading edge science and research is our first pillar, allowing for good decisions, predicting the current and future impact of growth, and reviewing the impact of past practices and future best practices. Our second pillar involves restoration and protection. Our third is education and engagement and our fourth rests with a solid financial plan.

These tools are used together with a watershed report card grading system to communicate with stakeholders on a variety of watershed health and lake indicators.

We’re proud of our long history of watershed restoration and stewardship.



LAKE SIMCOE, CANADA 2009

> “The Lake Simcoe watershed brings us all together, naturally connecting and sustaining our communities, inspiring commitment.”

From 1990 to 2010, over three million trees have been planted and more than 1,500 projects such as erosion control, stormwater retrofits, agricultural projects and septic system improvements have contributed to a decrease of phosphorus to our ‘great lake’ resulting in early signs of a recovering cold water fishery. Our long legacy of land acquisition has resulted in the securement of 1,420 hectares of wetlands, shorelines and significant recharge areas - and progress continues.

Each decade has provided a key turning point. In the 1950s we focused on conservation land plans, in the 1960s we embraced water reports, and in the 1970s floodplain mapping, stewardship, education and land securement were initiated. By the 1980s integrated watershed management was introduced and LSRCA became the leader in stakeholder coordination and protection of the watershed. In the 1990s governance, sustainable funding and building of inter-disciplinary technical expertise was a key priority. Since 2000, leading edge science emerged and Ontario became a world leader in such areas as drinking water source protection.

The pinnacle to our 60 years of conservation came in 2009, when we won the prestigious Thiess International River*prize* award. It is now located in a place of honour. It’s a symbol in our watershed of the work that we will continue to pursue together – with cooperation, with determination, and with great hope for the future.

Lake Simcoe Region Conservation Authority

Established in 1951, Lake Simcoe Region Conservation Authority (LSRCA) has been working with municipal, community and other government partners for over 60 years, providing leadership in the protection and restoration of the environmental health and quality of Lake Simcoe and its watershed. LSRCA’s work is founded on four pillars of integrated watershed management – science and research, restoration and protection, education and engagement and leadership and support. This approach is critical to managing and balancing the human and natural systems of the Lake Simcoe watershed, allowing us to realise “A Watershed for Life”.

To hell and back

Robert Oates
Trustee of the Thames Rivers Trust
Alastair Driver
National Biodiversity Manager, Environment Agency for England

The history of the ecological degradation of the Thames goes back a long way. Six hundred years ago the river through London was already a manufacturing centre for materials such as cloth, gunpowder and leather goods. All of the waste from these industries went straight into the river, along with the raw sewage from an ever growing population.

The Industrial Revolution which started in the UK 300 years ago increased these impacts, and by 160 years ago, the Thames through London was biologically dead. The Greater London Authority and Thames Water Board were formed in the early twentieth century and were involved in river clean up works. However, the economic crash of the 1930s and World War Two in the 1940s set the river back to being biologically dead again by 1950.

Over the past 60 years a major river restoration and clean-up effort by central and local government organisations, water authorities and water companies, industry and NGOs working together has succeeded in restoring the ecological health of the river to the point where we now have 125 species of fish in the tidal river, otters in all parts of the river basin and a flourishing seal population in the estuary. This success enabled the Thames to win the Thiess International River*prize* in 2010. The Thames winning entry was submitted by the Environment Agency for England (EA), which along with its predecessor government body, the National Rivers Authority, has been the driving force for environmental protection and enhancement along the river. The Thames entry was supported by the Thames Rivers Trust, representing the many non-profit organisations helping to improve the river. The Thames winning entry focused on the wide range of activities taken to improve the ecological status of the river, such as catchment restoration work with farmers in the upper river and the development of a London Rivers Action Plan for our capital. It also included future themes such as the Thames 2100 project by the EA to plan and prepare the river for impacts from climate change and sea level rise.

There are other long- term trends affecting the Thames such as the continuing economic growth in the region and the consequent rise in population, increase in demand for water and sewage treatment and construction of buildings on floodplains. These trends are the driver for ongoing

Thames Rivers Trust

Thames Rivers Trust (TRT) is a non-profit organisation which helps to enhance the river Thames and its tributaries by raising funds, delivering projects in partnership with others and involving community groups and volunteers. TRT was formed in 1986 as the Thames Salmon Trust (TST) which raised over £1m and worked with the Environment Agency and others to construct 37 fish passes along the river. The need was then recognised for wider enhancement work throughout the river basin and TST changed its name to the Thames Rivers Restoration Trust in 2005. Since then, TRT has worked with a wide range of public and private organisations and other NGOs to complete 25 environmental improvement projects at a cost of nearly £4m. They also work with the Environment Agency and others to design and deliver the Thames River Basin Management Plan to achieve the 'Good ecological status' goal set by the EU Water Framework Directive.

RIVER THAMES, UK 2010

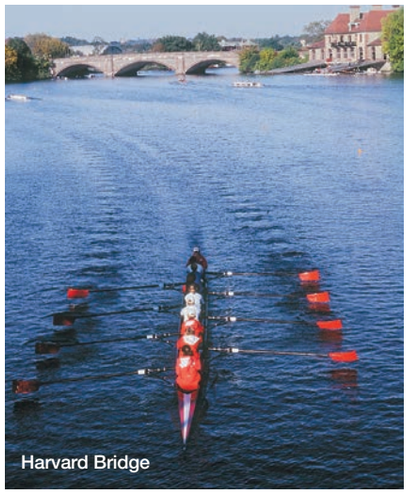
activity by the EA to protect and enhance the river environment, much of it in partnership with a whole range of public, private and non-profit organisations. That activity includes many river restoration projects funded and delivered through partnership working, which can be viewed on the website of the UK River Restoration Centre at www.therrc.co.uk.

Another long-term driver for improvement to the river is the European Union's 'Water Framework Directive' (WFD). The WFD requires all EU member states to take measures where practicable and affordable to improve the ecological status of their rivers. The main tool for doing this is the preparation and implementation of 'River Basin Management Plans' (RBMPs). The first Thames RBMP was put together in 2009 by the EA in partnership with representatives from a whole range of stakeholder organisations, including local government, industry, farmers, anglers and NGOs. All of those organisations are continuing to work together in a 'Thames Liaison Panel' to assist the EA in the preparation of the next RBMP to run from 2015 to 2021. Our goal is for even more organisations and community groups to work together to improve the river far as possible towards the new EU standard of 'Good Ecological Status'. A river that has been to hell and back deserves no less.

> "160 years ago the Thames through London was biologically dead."

Restoring
the Charles River

There was a time, in the 1960s, when the Charles River in Boston ran in colours depending on the colour of the paint being manufactured. Fish kills were common, and the Charles Lower Basin that creates the boundary between urban Boston and urban Cambridge had been closed to swimming since 1954. Truth be told, the river should have been closed to swimming decades earlier.


Harvard Bridge

Unfortunately, virtually the same thing could be said of almost any urban river in the world. Our use of rivers to slake our thirst, drive our engines of commerce, and convey our wastes away is millennia old. Until more than halfway through the 20th Century, few thought of rivers in any other context.

In Boston, in 1965, seven years before the passage of the Clean Water Act in the U.S. and five years before the first Earth Day, a writer for the Boston Globe newspaper, a few outraged citizens, and members of the Newton and Wellesley, Massachusetts, League of Women Voters founded the Charles River Watershed Association (CRWA). Though not the first such organisation, CRWA was among the earliest. CRWA's nascent years were characterised by advocacy around a general theme: a polluted Charles River was not an acceptable consequence of urban living, but rather the result of misunderstanding and mismanagement. Further, the argument went, we as a people faced a dire and uncertain future if we were to accept the consequences of mismanagement and pollution as a given.

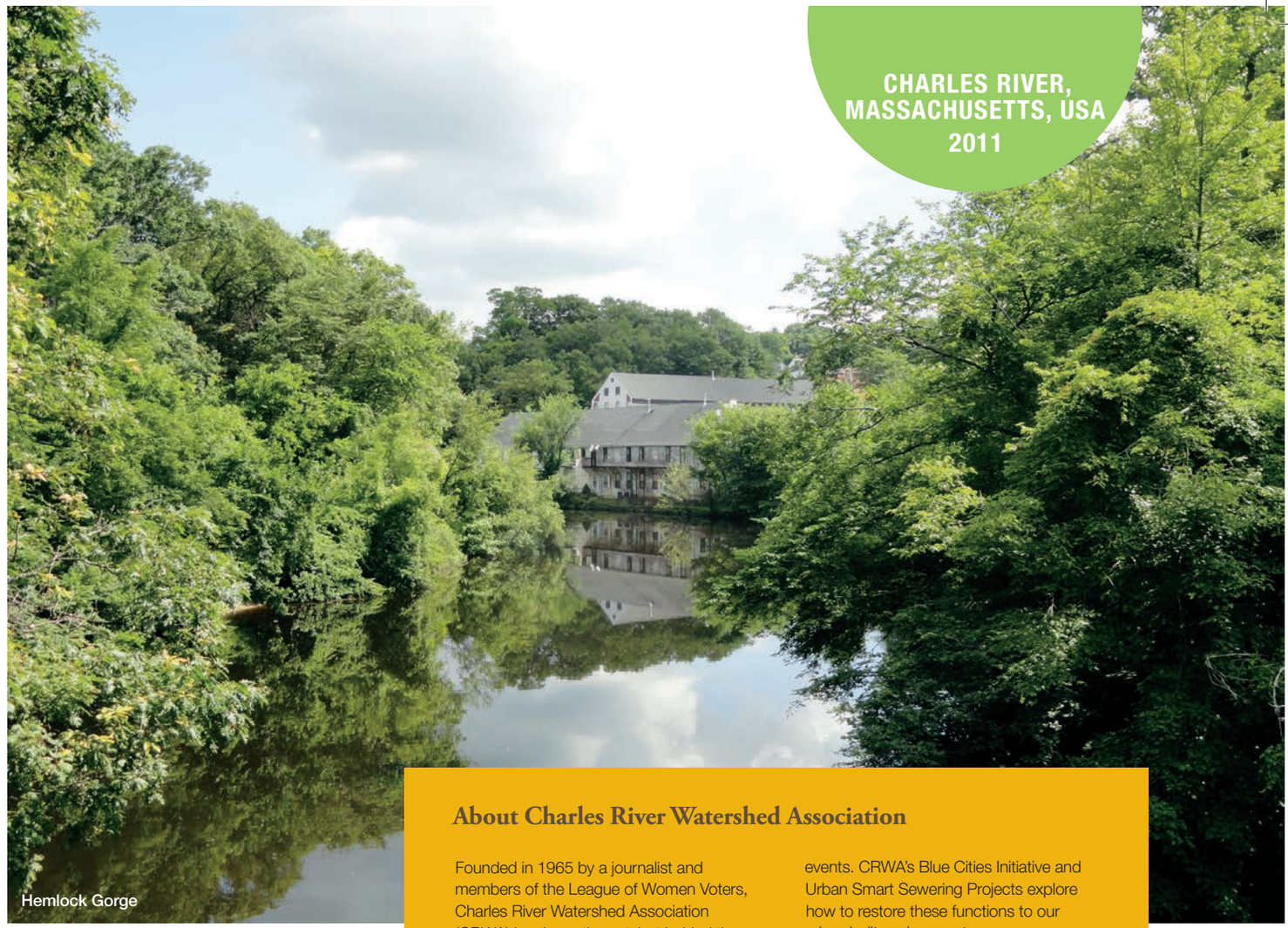
Things began to change for the Charles when Rita Barron, CRWA's second executive director, took over in 1973. She negotiated the acquisition of 3360 hectares of wetlands as flood storage by the U.S. Army Corps of Engineers in 1974 in lieu of the Corps building flood levees. Wetland acquisition over the 127 kilometre long Charles has helped protect Boston from flooding since, and remains today the largest acquisition of wetlands by the Army Corps in its history. The "ancillary benefits" of improved water quality, habitat and recreational values are a wonderful inheritance of this decades-old green infrastructure approach to problem solving.

Building on Rita's legacy, we have focused since 1991 on better understanding the Charles River and how urbanisation over the past 300 years has changed it. Using our own science and engineering, and a 20 year-old monitoring program, we have worked to discover the root causes of the Charles' ills, from nutrient pollution and low flows to mistaken law and regulation based on a legacy of water infrastructure developed to protect human health.

The conclusions we have drawn from our research are revealing. Large centralised water systems, and particularly their wastewater and stormwater components, are antithetical to the way water works in nature. By taking clean water from a source, using it to meet human demand often tens of kilometres away, and then recollecting that water as waste for treatment and discharge even farther from its source, we create low flow and pollution problems. Runoff from pavement and compacted soils reduces groundwater and subsequent recharge of surface water bodies, while creating insidious stormwater pollution and contributing to flash floods.

Our commitment to undertaking the necessary work in order to broadly understand the Charles River, and the roots of its problems, has led to the river's rapid improvement over the past 20 years. Working with regulatory agencies and cities and towns, and armed with the knowledge that comes with understanding how the river works now and in the past, we are beginning to transform water management. The U.S. Environmental Protection Agency (U.S. EPA), and the Massachusetts Department of Environmental Protection have presided over repairs to existing metropolitan Boston water infrastructure that ensure it works as well as it can. We continue to assess the success of the regulatory programs and test new approaches to water infrastructure that return rainwater to the ground, transform wastewater treatment from centralised to distributed, and from energy sinks to renewable energy producers. As a

CHARLES RIVER, MASSACHUSETTS, USA 2011



Hemlock Gorge

> “…sustaining ourselves depends on our willingness to restore nature”

Temperature monitoring

consequence, the U.S. EPA calls the Charles the cleanest urban river in the nation, and the Charles was awarded the Thiess International River*prize* in 2011.

Resting on the river’s laurels, however, is not an option. There is much to do. Since winning the River*prize*, we have moved in to pilot and demonstration projects showing that the transformation of urban water infrastructure is not only possible, it is financially desirable. Associated with that work are our investigations into restoring urban natural hydrology, and in the process anticipating many of the consequences of climate change on the urban water environment.

In all of this work dating back to Rita Barron and the Corps of Engineers there is an essential truth – sustaining ourselves depends on our willingness to restore nature. Anything less, and our survival, let alone the survival of our urban rivers, is very much in doubt.

Robert Zimmerman, Jr.
Executive Director
Charles River Watershed Association

About Charles River Watershed Association

Founded in 1965 by a journalist and members of the League of Women Voters, Charles River Watershed Association (CRWA) has been the catalyst behind the restoration of the Charles River and its watershed ever since.

CRWA science provides the basis for all our work, setting our priorities, and identifying our successes and failures. To achieve a fully healthy Charles River, our science tells us, we must bring the functions of a natural forested watershed to the city. In the forest, there is no waste, and great flexibility, adaptability, and accommodation in the face of catastrophic events. CRWA’s Blue Cities Initiative and Urban Smart Sewering Projects explore how to restore these functions to our urban built environment.

CRWA provides regional, national, and international leadership in watershed management. Our work has been recognised by the U.S. Environmental Protection Agency, the Natural Resources Defense Council, and River Network. In 2011, CRWA received the IRF Thiess International River*prize*, and through IRF’s Twinning Program, we are now partnering with teachers, students, and citizens in Jarabacoa, Dominican Republic.

The Willamette: Oregon's Big River

The Willamette has been called Oregon's 'big river' for a reason. It is the 13th largest river in the conterminous United States and provides 15 per cent of the flow of the mighty Columbia. Over two-thirds of Oregonians live within 20 miles of the river, and 75 per cent of the state's economic output is generated in the Willamette Basin.

The Willamette River basin

Before attracting European settlers with its mild climate, fertile bottomlands and plentiful water and timber, the Willamette Valley sustained Indigenous peoples for over 10,000 years with Pacific salmon and lamprey eels, edible plants and abundant wildlife.

But by the early 1900s, the dumping of waste from booming towns and industries had taken a dramatic toll on the river's health. In 1930, the Willamette was considered biologically dead; experiments documented young salmon dying within seconds when placed in samples of Willamette River water. It wasn't until the 1960s that cleanup efforts really took hold. The state adopted stricter pollution controls and, in 1972, National Geographic heralded the Willamette as 'a river restored.'

With laws reducing municipal and industrial discharges, our river is visibly cleaner than it was 50 years ago. But the restoration challenges we face today will likely be harder to solve. The river has been straightened and simplified, and farms and cities have replaced bottomland forests. Dams built for flood control have dramatically altered river hydrology and restricted access to spawning and rearing habitat for migratory salmon and steelhead. The Portland Harbor was declared a federal Superfund cleanup site in 2000 due to the accumulation of decades of industrial waste. And recent studies show that chemicals from personal care products and pharmaceuticals are making their way into the Willamette, with impacts that are only beginning to be understood.

The challenge is great, but we have much reason to be encouraged. In 2011, the City of Portland completed a billion dollar project to separate its municipal stormwater and sewer systems, all but ending the days when raw sewage spilled from outfalls into the river. With funding and technical assistance provided through our partnership, communities, agencies and NGOs are planting extensive riparian buffers, improving flows and fish passage, and expanding the footprint of remaining bottomland forests. In the last five years, our partners have succeeded in protecting thousands of acres of floodplain and securing agreements with hundreds of landowners to improve land and water conditions on private property.

A landmark project is underway at the confluence of the Coast and Middle Forks of the Willamette, the river's headwaters. In 2010, The Nature Conservancy acquired 514 hectares of ecologically critical land that was once used for gravel mining and is now developing strategies to reconnect the river to its historic floodplain, control invasive species, restore endangered habitats and accommodate public access compatible with restoration. The Willamette Confluence

WILLAMETTE RIVER, OREGON, USA 2012

Chinook salmon, *Oncorhynchus tshawytscha*

Meyer Memorial Trust

Meyer Memorial Trust is a private philanthropic organisation based in Portland, Oregon, USA. In 2008, the Trust launched the Willamette River Initiative to increase the scale, pace and effectiveness of river restoration in key locations across the basin.

Working with a variety of partners, the Trust supports a loosely-coupled network of public agencies and non-governmental organisations working to restore critical habitat and passage for migratory fish, reconnect the river to its historic floodplain, acquire key conservation properties, re-think dam operations and engage the agricultural and gravel industries. Functioning as a virtual "backbone" organisation, the Willamette River Initiative and four core partners – the University of Oregon, Oregon State University, the Oregon Watershed Enhancement Board and the Bonneville Environmental Foundation – provide funding, technical assistance and convenings to align these efforts around a common vision for a healthier Willamette. Over the past six years, the Trust and its funding partners have invested almost $15 million in these activities.

was the missing link in a chain of adjacent public lands; its protection enables habitat protection and restoration across more than 1,900 hectares.

Further downstream at Harkens Lake on the mainstem Willamette, farmers Gary and Steve Horning are working with a local land trust to convert a seasonally inundated field back to floodplain forest. The Willamette will reclaim a small but important piece of its historic floodplain, and, in doing so, repurpose a gravelly field that is costly and difficult to farm. The land trust guided the Hornings through the complex process of securing a conservation easement, and in March of 2014 restoration crews replanted the property with 22,000 native trees and shrubs.

Threats to watershed health don't stop at property boundaries. Up along the Luckiamute River, a Willamette tributary, a local watershed group is working to eradicate the highly invasive Japanese knotweed. Their successful outreach efforts have resulted in over 88 per cent participation from landowners in the target area – a great example of scaling up the impact of partnerships toward a healthier Willamette.

Pam Wiley
Willamette River Initiative Director, Meyer Memorial Trust / Tides Center

Kendra Smith
Willamette Model Watershed Program Director, Bonneville Environmental Foundation

Meta Loftsgaarden
Deputy Director, Oregon Watershed Enhancement Board

"The Willamette is a part of my life. A part of my rituals and stories. It is up to me, up to each one of us, to make sure that it remains so for future generations."

Achieving unity and collaboration for Africa

Flowing through Tanzania and Kenya, the Mara River is the lifeblood of support for rural communities. Water is precious, and as the flows and quality of the Mara River deteriorated over several decades from the demands placed on it by various parties, the people living along the river realised that their future was inextricably bound with the health of this essential waterway. Not only was the degradation of the river affecting our families, livelihoods, children and health, but it was also impacting on the rare and beautiful animal species which call Kenya home. Something needed to be done.

MARA RIVER, KENYA
2013

Looking to the future, we realised that we all needed to pull together to avoid a future where the river could no longer meet the requirements needed for agriculture, drinking water and maintaining biodiversity. As is the case in many impoverished places around the world, on the horizon also laid the potential for conflict over increasingly scarce water resources. With these things in mind, the Mara River Water Users Association was born. We implemented a plan to restore the river, to ensure that communities would have access to enough clean water to support their families, and that there would be enough supply to ensure agriculture and farming could continue. Additionally, a basin-wide plan was put in place that contributed to the protection of the the world famous Maasai Mara Game Reserve.

Over the last decade, more than two dozen villages have become involved in river basin activities that address issues such as river protection and restoration, conflict resolution in relation to water sharing, awareness creation on conservation, reforestation, water harvesting technologies, energy saving technologies, assisting relevant government bodies in water allocation and the promotion of income generating activities that also support sustainable water resources management.

Management of a transboundary river has many challenges, but we have moved forward and created a transboundary water forum as well as taken steps towards the creation of transboundary policies for the river. The Association and the dozens of communities have worked hard to ensure that this essential river will continue to be a source of life, hope and health rather than a source of conflict and we will continue to work towards a brighter future for all people of Kenya and Tanzania who live along the river. We hope for both a healthy, thriving river and healthy, thriving people.

Mara River Water Users Association

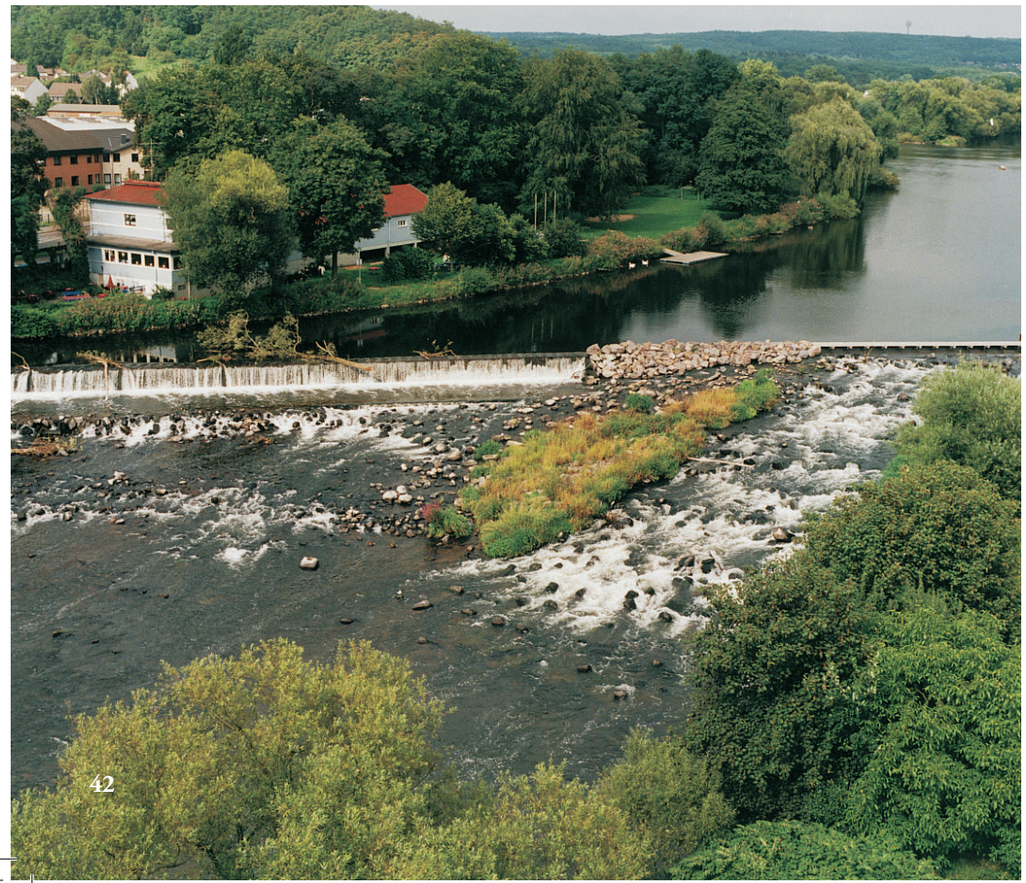
The Mara River Water Users Association (MRWUA) was established in 2003, and is made up of over 40 Catchment Management Groups (CMGs). These CMGs are spread throughout different zones within the basin, and are responsible for implementing conservation activities in local villages. THE MRWUA has a board of 17 members representing different areas and interests within the basin from the three main tributaries: Amala, Nyangores and the main Mara. Key partners of the MRWUA include the Mara River Basin Community, World Wide Fund for Nature (WWF), National Environmental Management Authority (NEMA), Ministry of Agriculture (MOA), Water Resources Management Authority (WRMA) and research organisations GLOWS and FIU.

Within its seven years of existence, the groups have grown from 15 in 2004, 27 in 2008 and to 40 in 2014 as the populations within the basin vary numbers differ from village to village or community to community.

Kennedy Onyango
Mara River Water Users Association

the phoenix rises

On the 1st November 1986, a horrendous blaze at the Sandoz agrochemical storehouse in Basel caused tonnes of pollutants to be spilled into the River Rhine. The Rhine would die as a result of this incident and subsequently rise again.



This great river system of Europe was turned blood red and all biological life was wiped out. This infamous moment in our history would also be one of the most important, providing impetus to accelerate actions already being undertaken by our organisation, the International Commission for the Protection of the Rhine. The task ahead was daunting and decades of partnership would be put to the test, but we knew that we were ready.

1986 might be the most famous year in the history of our great river, but our Commission had already been working on the task of transboundary river protection and restoration for many decades. Through a history of industrialisation and with burgeoning populations common throughout the whole of Western Europe, the Rhine had already suffered greatly prior to the Sandoz disaster. As early as the 1960s, the Rhine was notoriously known as the “sewer of Europe”. Today, the transformation is something that our Commission is deeply proud of. The third largest river in Europe has been resurrected, life has been returned with many river species once again living and thriving in its waters; nine governments and 60 million people can now be proud of their river again.

Underpinning this success are the great efforts of our partners and our commission in working collaboratively, building up a network of trust and seeking common solutions to problems that transcend the artificial boundaries drawn on a map. Bringing the Rhine back to life required strong leadership and keeping one eye on our vision of a healthy river. This beautiful river supports many socio-economic activities and is a key natural resource for the communities, species and ecosystems that it supports. Our commission has worked on an integrated approach to the river, ensuring that all of these aspects are incorporated into planning, governance, problem solving and achieving meaningful outcomes on the ground.

> “9 governments and 60 million people can now be proud of their river”

Bringing the Rhine back to life was not achieved overnight. Following World Water II, our Commission already had a clear vision for the future of the Rhine, a vision that was concurrently tested and strengthened by the incident in 1986. Now, this vision has been achieved. One notable achievement from decades of focussed effort has been the return of salmon to the river. Under the “Salmon 2000” program, it was hoped that this iconic fish would return to the river by the year 2000, and subsequently indicate that the river’s health had also returned. First successes have been recorded, but more has to be done before a sustainable salmon population can be achieved. Nevertheless, this program is just one of the great success stories of our lifetime of efforts for the Rhine.

Winning the River*prize* was a great acknowledgement of our work and our achievements in the last decades. Moreover it gives us the opportunity to increase our communication with other river commissions and the public to spread the word about what was already accomplished and what still needs to be done.

Through the many dark times in the history of this beautiful river, the hard won successes and restoration of the Rhine seem that much more worthwhile. Like a Phoenix that has risen from the ashes, the Rhine reminds us to never be complacent but to continue working towards our vision even in the face of pressures such as climate change, economic stress and continued physical threats to the river. With a shared history and the strength of trust and partnership, our Commission will continue to take on this challenge.

Flood water, Cologne

RIVER RHINE, WESTERN EUROPE 2014

Also awarded the 2013 European River*prize*

Fish passage, Iffezheim

Gustaaf Borchardt

President, International Commission for the Protection of the Rhine, Koblenz, Germany

‘The International Commission for the Protection of the Rhine’

On 11 July 1950, following a diplomatic exchange of notes, all Rhine-bordering countries gathered in Basel to discuss the problem posed by the pollution of the Rhine. This event marked the birth of the International Commission for the Protection of the Rhine. In 1963, the Bern Convention was signed, establishing a legal framework for cooperation within the ICPR. Following spectacular chemical accidents in 1969 and 1971, the Convention on Chemical Pollution was elaborated and signed in 1976. Fixing emission standards for a number of pollutants and building wastewater treatment plants slowly but steadily improved water quality. However, as a result of the fire near Basel in 1986, a principal rethinking process was developed near Basel. Within 11 months, the “Rhine Action Programme” was adopted. In the aftermath of enormous floods in 1993 and 1995, it was demonstrated that the Bern Convention of 1963 did not cover such aspects. An extended and modernised Convention on the Protection of the Rhine was signed on 12 April 1999, comprising all aspects of integrated water management. Following this, the Rhine-ministers adopted in 2001 the Programme on the Sustainable Development of the Rhine – Rhine 2020.

Keeping them free-flowing

The Lake Eyre Basin rivers are ever-changing with their 'boom-bust' cycles as they course across one sixth of the Australian continent to the impressive Kati Thanda-Lake Eyre in South Australia.

Rivers around the world are degrading faster than terrestrial and marine systems, with catastrophic consequences not only for wildlife but also for people who depend on them. Nowhere is this more obvious than in water-scarce regions of the world. In Australia, we are all too familiar with such degradation, writ large across the Murray-Darling Basin, which is costing Australian taxpayers more than $12 billion to rectify. It is all the more remarkable that communities, governments, traditional owners and scientists have charted a radically different path for the spectacular and largely undeveloped rivers of the Lake Eyre Basin.

In the late 1990s, an irrigated cotton proposal on the Cooper Creek floodplain near Windorah caused widespread community concern, fuelled by people's passion for their rivers and their knowledge of impacts in the Murray-Darling Basin.

Ironically, the community had reacted strongly to the potential imposition of World Heritage listing of the Lake Eyre Basin in South Australia. Faced with such conflicting visions, the community demanded a greater voice in decision making; they wanted their rivers protected, but this also needed to be inclusive. Tired of decisions about water and land being made by distant bureaucrats, they questioned the wisdom of a fragmented approach to management. What followed was a 20-year journey to protect the great rivers of the Lake Eyre Basin.

Beginning as conflict and tension from power imbalance and threatened livelihoods, this grew into a public drive for change, led by collaborative personalities, strategic thinkers, articulate community leaders, industry groups, scientists and government staff. Management models from highly developed river systems in southeast Australia were unable to serve the needs of a large, free-flowing system like the Lake Eyre Basin. Instead, jurisdictional borders dissolved as people embraced more meaningful ecological and social boundaries, channelling passion into effective communication and knowledge.

The landmark Lake Eyre Basin Agreement was struck by governments in 2000 to protect the Basin's free-flowing rivers and embrace the ecological and social dimensions advocated by grassroots leadership. This was reinforced by formal groups, including catchment committees, community groups and scientific advisory groups. This network developed deep trust through principled communication, providing constant guidance to governments—including harsh criticism where proposed developments threatened sustainability. Community members and scientists were given direct access to the cross-jurisdiction Lake Eyre Basin Ministerial Forum, with policy and management decisions informed by investment in knowledge and data collection throughout the Lake Eyre Basin rivers.

Fish, vegetation, waterbirds and hydrology indicators all continued to point in the direction of healthy ecosystems. Most recently, governments adopted a framework of adaptive management, with emphasis on scientific monitoring and a clearer link between management, values and objectives. There is now considerable optimism that this amazing basin will continue to sustain its exceptional environmental values, incredibly rich Aboriginal history and connection to country while supporting the industries and communities it has for generations. The rivers will continue to run free and provide economic returns for landholders, tourism and sustainable industries.

In 2015, the Lake Eyre Basin Partnership went on to win the prestigious International River *Prize*, the first time the judges had awarded the *prize* to a team primarily focused on protection of a river system. As a result, the Lake Eyre Basin Partnership has moved to form a twinning partnership with the Cubango-Okavango River system,

> “Tired of decisions about water and land being made by distant bureaucrats, they questioned the wisdom of a fragmented approach to management.”

through the Okavango River Basin Water Commission. This has resulted in a visit to Australia by members of the Commission to present the governance and management of their free-flowing river which flows from Angola, through Namibia to the World Heritage site of the Okavango Delta in Botswana. They presented at a symposium at the Society for Conservation Biology in Brisbane and then were taken on a tour of the Lake Eyre Basin, visiting the people and environments that make this such a special part of the world. In addition, the Lake Eyre Basin Partnership is progressing with Strategic Adaptive Management across the basin, focusing on how individual projects would integrate into a basin-wide vision and involve stakeholders.

Professor Richard Kingsford
Director of the Centre for Ecosystem Science, School of Biological, Earth and Environmental Science, University of New South Wales

Vol Norris
Shared Journeys, Longreach

LAKE EYRE BASIN
NT, QLD, NSW, SA
AUSTRALIA
2015

Also awarded the 2014 Australasian River*prize*

The Lake Eyre Basin Partnership

The Lake Eyre Basin Partnership consists of the communities of the Lake Eyre Basin who have been responsible for ensuring that the rivers remain free-flowing. These communities of landholders, traditional owners, industries and scientists have developed a deep trust, coupled with growing understanding of this exceptional river basin. The partnership has focussed on ensuring the long-term sustainability of free-flowing rivers of the Lake Eyre Basin through communication, adaptive management, scientific effort and an intergovernmental agreement. This has continued to ensure one of the world’s great free-flowing river systems remains as such.

Civic Engagement Leads the Way to

Watershed Restoration

"Twenty-five years of advocacy and restoration work has helped re-connect our region to its Great Lakes heritage, and our cities and towns are now re-branding themselves around the importance of fresh water."

Our water defined our region's history, and it will define our future. Western New York State is an eastern gateway to the Great Lakes Basin, the world's largest fresh water system, and shares a 40-mile international boundary with Canada along the Niagara River. With 80 per cent of North America's fresh surface water flowing through our region, our impaired waterways have become priorities for restoration, protection and stewardship.

Western New York forms a land bridge between Lake Erie and Lake Ontario, and is home to one of the world's most recognisable water features: Niagara Falls. Our Great Lakes geography, cheap hydropower, extensive railroad network and numerous ports for lake transshipment encouraged a century of growth of the chemical industry and manufacturing—a legacy we are still dealing with today.

The challenges facing our region have weighed heavily on our community for generations. After the economic boom and bust of the industrial revolution, the Buffalo River was declared 'biologically dead'; Lake Erie was dying; and the Niagara River was inaccessible and considered merely an industrial component that was harnessed to produce hydroelectric power. Buffalo, once the world's 9th largest economy, was now the 4th poorest community in the country. The city of Niagara Falls had become more famous for the environmental disaster at Love Canal, than for the river cataracts that created one of the world's natural wonders.

Our region's future was bleak, and we had every reason to fail. However, the strength and energy of the community has been the catalyst to the remarkable economic and environmental recovery of our region.

Buffalo Niagara Riverkeeper is guiding the transformation from a historical rust belt region to one that values and maintains the integrity of its fresh water systems, considering that these systems are a major component of regional economic revitalisation. We have been a catalyst for change, a trusted professional resource and a respected partner in all sectors. Through our ability to partner, collaborate, facilitate, and advocate, we have successfully leveraged public and private investments totalling nearly US$200 million to restore and revitalise area waterways.

Buffalo Niagara Riverkeeper's work has evolved into a systems-level approach to securing Great Lakes watershed resiliency. Our innovative nonprofit business model has allowed Riverkeeper to implement ground-breaking cross sector partnerships; produce innovative ecosystem and watershed planning; design, construct and monitor habitat restoration; remediate 100 years of contaminated sediment; address 150 years of sewage pollution; implement green infrastructure methodologies; enable a water-based economy; and mobilise more than 10,000 volunteers through our education and engagement programs.

When you get people demanding access to the waterways, coming out to public meetings, filing public comments, using social media, and generating news stories, you start to shift thinking. Elected officials, developers, and decision-makers will respond to what the people demand. As environmentalists and waterkeepers, we have both a responsibility and an opportunity to drive civic engagement, and that's the amazing role of grassroots organisations. Clean water isn't just an environmentalist issue anymore; it is the lifeblood of our entire community.

Jill Jedlicka

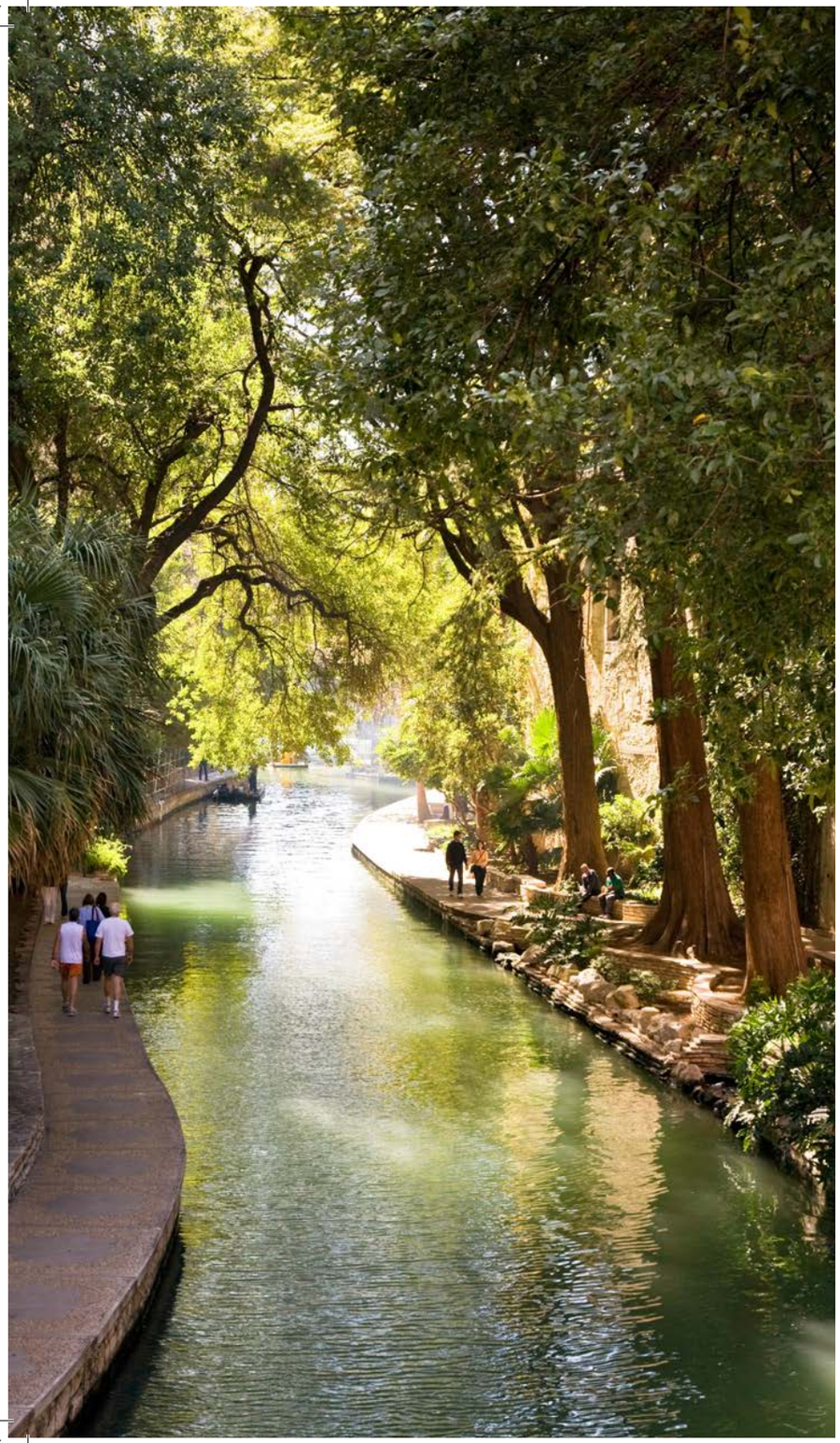
NIAGARA RIVER, NEW YORK, USA 2016

Also awarded the 2015 North American River*prize*

Buffalo Niagara Riverkeeper

Founded in 1989 by a volunteer group of environmental professionals and concerned citizens, Buffalo Niagara Riverkeeper was created out of the desire to restore and protect the Buffalo River. In 2005 it joined the international Waterkeeper Alliance, and through its innovative non-profit business model, Riverkeeper has grown to become one of the largest Waterkeeper organisations in the world. Riverkeeper now supports 25 full-time staff whose work touches 3,250 miles of waterways throughout the 1,400 square mile Niagara River Watershed, including the Buffalo River and two US Great Lakes: Lake Erie and Lake Ontario.

For more than 25 years, Riverkeeper has tackled some of the region's biggest fresh water challenges such as cleaning up toxic sediment, eliminating sewage overflows, restoring critical habitat, and advocating for the long-term health of the Great Lakes. Its actions protect drinking water, connect people to waterways and contribute to a thriving water-based economy.



Committed to Innovation

The San Antonio River is unique in that it originates from, flows through, and ends in distinct ecological and historic landscapes. The 386 km watercourse begins in the populous San Antonio, Texas, meanders along Spanish missions, now declared as World Heritage Sites, and through farm and ranch land before it empties onto San Antonio Bay, a winter habitat for the endangered Whooping Cranes.

The San Antonio River Authority (SARA) was specifically created to preserve, protect, and manage the unique San Antonio River and its ~4,500 km2 river basin. To this end, SARA is committed to innovative, adaptive, strategic, and collaborative actions that address watershed issues and priorities holistically.

SARA uses science, computer modelling, and decision matrices as core tools in its approach as its team of engineers, scientists, and other professionals strives to balance the physical, chemical, biological, economic, and social aspects of the watershed. To reduce pollution, SARA worked with partners to complete the Upper San Antonio River Watershed Protection Plan (WPP) that identified and assessed potential sources of bacteria and evaluated Best Management Practices that could be used to control those sources. . Since completion of the plan, many measures have been implemented by stakeholders, including a unique recommendation to install an ultraviolet (UV) disinfection system on the outfall coming from the San Antonio Zoo.

SARA also utilises data to support bay and estuary activities such as the Ecological Dynamic Simulation (EDYS) application and the Estuary Response Project (ERP). The EDYS model determines the effects of salinity and sediment gradients on specific marsh species, while the ERP, which was originally jointly funded with the Guadalupe-Blanco River Authority, helps determine the freshwater inflow requirements of San Antonio Bay.

In collaboration with the Federal Emergency Management Agency (FEMA) and the Bexar Regional Watershed Management Partnership, SARA created models for almost 7000 stream kilometres to complete the Digital Flood Insurance Rate Maps (DFIRM). The two-foot contours of DFIRM make them some of the most accurate floodplain maps in the nation and they were used to develop a flood alert system, providing near real-time flood information to emergency responders in San Antonio and flood warning notices throughout the southern basin.

Perhaps the most innovative, strategic, and collaborative achievement is the San Antonio River Walk, including the US$384.1 million additions to the River Walk named the Museum Reach and

Mission Reach projects. The River Walk is one of the most visited places in Texas and is now recognized as a world leading example of inspiring urban park design, prosperous riverfront development, and urban ecosystem restoration. A 2014 study indicated the River Walk supports 31,000 jobs and has an overall annual economic impact of US$3.1 billion. The Museum Reach project alone has already returned nearly US$2 billion in private development.

The Mission Reach is one of largest urban ecosystem restoration projects in the nation. It is named after the historic Spanish Missions along the river which are recognized as a World Heritage Site. In addition to recreational amenities, the Mission Reach is increasing the quality, quantity, and diversity of plants and animals to over 14km of the San Antonio River. Over 300 species of native herbaceous and woody vegetation have been restored, and nearly 63,000 birds have been counted using the restored urban ecosystem, including a total of 201 different species. Healthy stocks of fish species are returning and biologists from SARA are evaluating the potential reintroduction of four native freshwater mussel species in the Mission Reach.

Relying on science-based techniques, watershed-focused approaches, and partnership-supported efforts, SARA is successfully managing the entire San Antonio River Basin as it advances its expertise in the function of the riverine, bay, and estuary systems. SARA is a basin-wide leader in promoting sustainable land development that preserves natural watershed functions while achieving a balance of economic, environmental, and quality of life considerations.

SAN ANTONIO RIVER, TEXAS, USA 2017

Steven Schauer
Director of Government and Public Affairs
San Antonio River Authority

> “The San Antonio River Walk is recognised as a world leading example of inspiring urban park design and prosperous riverfront development”

San Antonio River Authority

The State of Texas has empowered the San Antonio River Authority (SARA) to preserve, protect and manage the resources and environment of the San Antonio River Watershed. SARA’s vision is to inspire actions for healthy creeks and rivers.

SARA continues to develop the technical and professional expertise needed to fulfill our service mission to sustain and enrich life in the San Antonio River Watershed.

SARA promotes a holistic approach to develop and implement projects on a watershed basis as opposed to managing water based on the boundaries of legal jurisdictions. SARA has formalised partnerships at the federal, state and local levels and regularly works with community and stakeholder groups to successfully accomplish projects throughout the San Antonio River Watershed.

Collaboration
has been fundamental

The James River, designated as America's Founding River by the U.S. Congress in 2007 for its unparalleled history, is the largest river in the state of Virginia and is the southernmost tributary to the Chesapeake Bay. As the home of the first permanent English settlement in North America, the James River has played an integral role in the development of the region and as a result faces significant threats from centuries of intensive human use and neglect.

When the James River Association (JRA) was founded in 1976, the James River was considered one of the most polluted rivers in the country with large sections declared dead or unfit for human use.

Through four decades of consistent and continued effort, the James River has transformed from one of the most polluted in the country to one of the most improved. The health of the James River has improved from a grade of D-minus to a B-minus (as measured in JRA's biannual State of the James report) and has been rated the healthiest major tributary of the Chesapeake in nine of the past ten years. This remarkable improvement in river health is the result of an inclusive, comprehensive approach to strengthen public awareness and appreciation, as well as many years of public and private investments in conservation projects.

Access to the James River has expanded to over 200 public access points. Wastewater, agriculture and stormwater projects have achieved collectively 52% of nitrogen and 77% of phosphorus reductions needed for a fully healthy James River and are on track to meet regulatory goals by 2025. Virginia is establishing comprehensive plans to increase resilience along the James River, addressing climate change and other future threats.

The James River has been the defining feature of Virginia for centuries, and it is growing steadily more important as water resources become more critical in the 21st century. The James River is a vital component of the communities along its course, and a major driver for commerce, tourism and economic development throughout the region. Its diverse landscapes offer sought-after outdoor recreation, scenic beauty and quality of life that attract new residents and businesses. The James River contributes an estimated US$19 billion of economic value and ecological services yearly to the surrounding communities. However, a fully healthy, restored river meeting Virginia's commitments under the Chesapeake Bay clean-up effort would increase that value to US$22 billion annually.

The James River and its tributaries are Virginia's largest source of drinking water serving over 2.7 million people. In 2016, the James River produced 6.5 million pounds (2.9 million kilograms) of commercial fish and shellfish with a total dockside value of

> “The James River has been the defining feature of Virginia for centuries...”

US$18 million. More than 4 million people visit its riverside parks each year, where they can witness one of the East Coast’s largest nesting bald eagle populations and one of the only Atlantic sturgeon populations that supports “sturgeon watching trips” during their spawning run.

Collaboration has been fundamental to JRA’s work and essential to achieving progress. JRA engage diverse partners for building appreciation, action and advocacy for the James River and has resulted in a remarkable improvement in river health, public and private investment and a thriving community.

JAMES RIVER, VIRGINIA, USA 2019

James River Association

James River Association (JRA) is a member-supported nonprofit organisation founded in 1976 to serve as the guardian and voice of the James River. JRA’s vision is to achieve a fully healthy, Grade A James River that supports thriving communities. With offices in Lynchburg, Richmond and Williamsburg, JRA works across Virginia to address issues affecting the James, its tributaries, and its people.

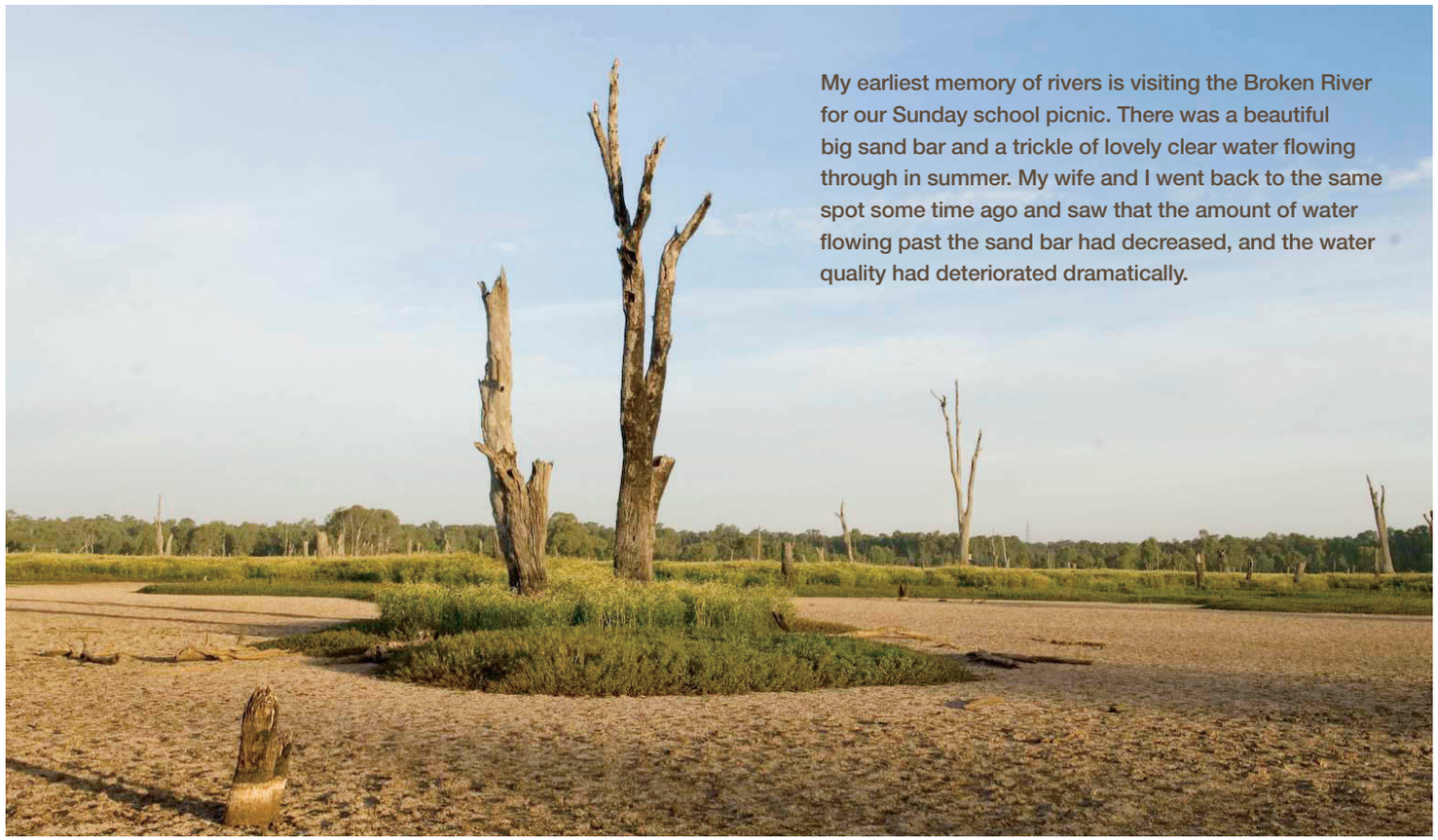
JRA has expanded its work on local, state, and federal levels and has helped secure over US$1.3 billion for Virginia water quality programs, and stronger protections from toxics and nutrient pollution. JRA engages 2,500 volunteers annually in hands-on restoration projects and is currently spearheading restoration of over 80 kilometres of stream banks. Since 2013, JRA has helped add 28 public access points along the river. Each year JRA’s environmental education programs engage 10,000 students with immersive outdoor experiences, particularly at JRA’s James River Ecology School.


Condamine River, Qld, 2012
Sunshine Coast, Qld, 2011
Bulimba Creek, Qld, 2005
Oxley Creek, Qld, 2009
Lake Eyre Basin,
NT, Qld, NSW, SA
2014
Wallis Lake, NSW, 2004
Hunter River, NSW, 2003
Murray River,
South Australia
2015
Lake Macquarie, NSW, 2008
Whangawehi
Stream,
New Zealand
2018
Torbay Catchment, WA
2006
Goulburn Broken Catchment, Vic, 2001
Murray Wetlands, Vic, 2007
Glenelg River, Vic
2013
Merri Creek, Vic
2002
Aorere River,
New Zealand
2015
Derwent Estuary,
Hobart
2010

Australasian Riverprize Winners

* Lake Eyre Basin was awarded the 2015 International River*prize* and 2014 Australasian River***prize.*** Story appears in the International River***prize*** section of this book.

The Golden Valley of the Goulburn Broken



My earliest memory of rivers is visiting the Broken River for our Sunday school picnic. There was a beautiful big sand bar and a trickle of lovely clear water flowing through in summer. My wife and I went back to the same spot some time ago and saw that the amount of water flowing past the sand bar had decreased, and the water quality had deteriorated dramatically.

The damage that's still being done to the rivers drives my passion for continued investment in the protection of river health and water quality. While localised works, such as tree planting can improve waterways, the need for long term strategic planning and policy is essential. This enables regional improvements to be made. The challenges are to affect future policy in the way we value, use and protect our waterways. I think it's important to get people involved in activities on the river for them to appreciate their value.

Our community is addressing these challenges through the Catchment Management Authority (CMA), through the guidance of the Regional Catchment Strategy and sub-strategies covering land use, water quality and biodiversity. Regional programs are guided by geographically based implementation committees that implement the strategies and programs of the CMA. The committees are our link with the community.

Relationships with the community and different stakeholders are really important to us. For example, programs like our Salinity Program were based heavily on science.

GOULBURN BROKEN CATCHMENT, VIC AUSTRALIA 2001

This meant we needed to have strong partnerships between the community and with Federal and Victorian government agencies. The salinity program itself is one of our biggest achievements, contributing to the protection of native vegetation and the sustainability of irrigation programs and industries in the region.

We were very fortunate to have some highly qualified people who played an enormous role early on in representing different industries and convincing others to get on board. Community support and participation has been the key to the success of the programs. Without the community support the improvements could not have been made.

To be successful in the restoration of a river, the support of adjoining landholders is essential. You need to reduce stock impact on the river and reduce the impact of weeds. Once this happens you'll see regeneration, biodiversity and wildlife return. We've seen these changes firsthand on our own property. By irrigating only those areas that are well suited to it, and planting up to 300 trees annually, our place is really starting to change. We even had a kangaroo in the orchard the other day!

Success breeds success. We've learnt that if you can highlight a successful project being implemented soundly and well reported back to government, you are highly regarded for future grants. Winning a *prize* like the Australian River*prize* helps to establish credibility and it's good for the morale of the whole community. In addition, landholders are realising that biodiversity and wildlife increases property values and does not impact on land production.

The health of our environment and our rivers is in many ways linked to the health of the communities around them, because it's only when communities are healthy that people can really pay attention to the environment. I think we're all linked to rivers, but most people take them for granted. It's not until they see huge expanses of trees being lost in the lower reach of the Murray River, that people really sit up and take an interest. I wish we would protect our rivers from grazing and declare national park status for the most sensitive areas of the Goulburn and the Murray River, particularly the wetlands.

> "The health of our environment and rivers is linked to the health of the communities around them."

John Pettigrew

Chair of the Goulbourn Valley Environment Group (GVEG) and fruit grower in the Goulburn Broken River catchment

Goulburn Broken CMA

In 1997 the rivers in the Goulburn Broken catchment experienced declines in water quality, native vegetation and biodiversity. Dry-land and irrigated salinity issues became more severe. The catchment contributes 11 per cent of the water to Australia's largest river basin – the Murray Darling and generates 26 per cent of the rural export earnings for the State of Victoria.

The Goulburn Broken Catchment Management Authority (GB CMA) was established by the Victorian State Government as a community-based not-for-profit statutory authority. GB CMA oversees the implementation of strategies on various levels to deliver a range of programs that integrate river health, biodiversity and floodplain management in order to achieve significant environmental outcomes. Working in partnership with landholders, Landcare groups, the wider community, research organisations, the Victorian and Australian Governments and their agencies, the GB CMA has achieved significant improvements in water quality and river health.

The return of the kingfisher

We both have a shared love of the Australian environment. In 1976, we had just moved to Brunswick. We were excited by the potential to restore the natural parkland, if it could be restored, and so we helped to set up a local group called the Brunswick Merri Creek Action Group. Later that year, with the co-operation of local Councils and a number of local groups in suburbs along the creek, the Merri Creek Coordinating Committee was formed, a precursor of MCMC.

Sacred Kingfisher

The Merri Creek Management Committee (MCMC) is well known locally for planting and managing indigenous grasses, shrubs and trees at more than 80 sites along the Merri Creek in the northern suburbs of Melbourne, Australia. Further up the creek we've found amazing areas of native grasslands and other natural vegetation communities, some of which are highly significant on a national scale. Restoration is all very well, but we can't properly recreate the pristine character of the original vegetation and animal communities. That's why it's so important to protect what's left.

Over the years, the Friends of Merri Creek have done a lot of work towards the protection and restoration vision including conducting site inspections, engaging in political lobbying, and writing planting guides for the Merri Creek. The most challenging part is fighting all the threats to the creek because an open space corridor is as attractive to utilities with their impacts, as it is to local people. We're threatened by sewer overflows, power lines,

freeways, weeds, and increasingly, urban development affecting the vision that we have for a natural corridor.

It's been very rewarding to see the changes over the past 30 years because it really was a very neglected drain and dumping ground when we first arrived. We've seen a lot of wildlife coming back and the kingfishers have returned! So to me that's a really terrific reward and that is also what's attracting people to the creek. Their attitudes have changed so much towards it too – now it's a big real estate asset! A lot of people value the creek and are willing to get behind us when we campaign against new developments or freeways.

It is a challenge to maintain that collaborative relationship with everyone involved, but we have been quite successful. The Merri Creek people are very community minded – Merri Creek is a community asset, so it's about trying to make sure we all work together to protect that for everyone's benefit. Being inclusive and allowing everyone to contribute in whatever way they can is important, because active and supportive participation is vital for harnessing community goodwill, skills, a lot of energy and creative thinking, and all this community input is needed to sustain the group. We've learnt that getting people on board is also about being credible, and that means having a long-term plan, and being constructive and positive rather than just complaining and opposing things. If we have a threat like a freeway, we try to present a more constructive alternative. You

MERRI CREEK, VIC AUSTRALIA 2002

> “We’ve learnt that getting people on board is also about being credible, and that means having a long-term plan, and being constructive and positive.”

also have to be persistent and professional to successfully manage a creek like this. You have to do your homework, be well informed and politically active as well. That part is about engaging with the political part of the community to tell the story and sell the vision.

Long-term, we would hope for Merri Creek to be protected, that parklands could surround the creek all the way from the Yarra to the Great Dividing Range, and that the whole catchment would be managed sympathetically.

Merri Creek Management Committee

For many years, Merri Creek was the backyard for industries, over-run by weeds, and the storm water that drained into it dumped rubbish and deposited contaminants. In the 1970s, local residents recognised its values and began to work for its rehabilitation.

Merri Creek Management Committee Incorporated (MCMC) is an environmental coordination and management agency formed in 1989. It aims to ensure the preservation of natural and cultural heritage, and to encourage the ecologically sensitive restoration, development and maintenance of Merri Creek and its tributaries, their corridors and associated ecological communities. Representatives of member groups form a Management Committee which guides the activities of the MCMC. Member groups include all the municipalities in the catchment, namely: the Darebin, Hume, Mitchell, Moreland, Whittlesea and Yarra Councils, and two community groups, the Friends of Merri Creek and the Wallan Environment Group. All of these groups share a vision for a healthy Merri Creek.

Ann and Bruce McGregor
Friends of Merri Creek and Merri Creek Management Committee

Born on the banks of the Hunter River

Vera Frances Deacon
Community member, Kooragang Wetland Rehabilitation Project

Vera Frances Deacon at a tree planting site at Kooragang Wetlands on Ash Island

My mother always said, 'You were almost born on the banks of the river'. I learnt to crawl and walk along the river and by the time I was two, we were living on Dempsey Island, out in the river. My siblings and I had a special feeling for the islands. The river was our mother. It linked us with the mainland. It helped feed us, just as it fed the Indigenous people and the early settlers and pioneers. Our parents taught us to respect the river.

During the Second World War, the river was polluted with oil and ore dust and tar. We found out that the industries were just tipping everything into the river. Now mankind is beginning to wake up and see that we can't go on being so careless, so spendthrift with nature's resources.

My mother and I were reminiscing about the island days, recalling that the people were really ignorant of the local history of Newcastle. That's what started me off. In March 1999 I became a planter on the island. It's wonderful to plant a tree that's about nine inches high and grows as the months go by and you always remember that it was you who planted that tree. You have to be willing to dirty your hands and be prepared to put a shoulder to the wheel. What really makes this work successful is companionship. You feel united in a project that's worthwhile, and that helps to make a difference.

There is a fragile, almost sacred balance in nature and we have upset it, not always willingly or knowingly, but often blindly. Now we're learning that we're part of it all and we seem to have made a mistake of setting ourselves above nature, feeling that we can dominate it. My dad used to have a saying, 'You've got to go with nature and learn from her. And what you take out of nature, you must put back'.

I regard the river as a life source. It's the life-blood of the community, of the earth

Above: Scott's Point frog ponds on Ash Island
Right: Saltmarsh on Ash Island in the Hunter estuary near Newcastle

and it behooves us all to take care of it and to restore it. I'll never forget seeing this dry river bed when suddenly the rain came and a gush of water began to trickle in all over the dry, sandy earth. Without water, we're sunk, aren't we!

I think it's important to give people access to learn something about the importance of wetlands, mangroves, and the shore of an island or a riverbank. Schools come across, and the children can see and learn about restoration - it is so important to reconnect children with nature.

The most challenging parts of our work are physically restoring the river and its banks, and finding alternative energy sources to protect the environment for the future. Living in Stockton, I know that reducing the amount of coal dust we get in the air is absolutely imperative - if we leave it for ten or twenty years, it will be nearly too late. The surge of environmental stewardship and responsibility is coming, there's no doubt about it, and it must be encouraged by the authorities, the governments and councils. The Healthy Rivers Commission stated that it would take 100 years and two billion Australian dollars to restore the Hunter River. So, it's a long-term project!

If I had three wishes for the future I'd wish for the planting to continue; that Governments, the Council and industry would continue to help finance the project, and that its educative role be developed to attract more and more people to come to learn and appreciate what's taking place here in this estuary.

Hunter-Central Rivers CMA

More than 100 years of sustained urban and industrial development, led by the coal mining and power generation industries, left the Hunter River in a polluted state, prompting the community to take action. Through the Hunter Catchment Management Trust, and subsequently the Hunter/Central Rivers Catchment Management Authority, the river community has worked with government, industry and landholders to improve the health of the Hunter River and its catchment.

The Kooragang Wetland Rehabilitation Project (KWRP) is one of the largest coastal rehabilitation projects in Australia, and one of the CMA's flagship projects. The Kooragang Wetlands act as a buffer between the Ramsar-listed Hunter Estuary Wetlands and the major industrial and urban areas of Newcastle. These wetlands are home to over 600 plant and animal species. Rehabilitation efforts have included restoring flows in tidal creeks, creating fisheries and migratory shorebird habitat, preserving remnant rainforest, protecting riverbanks, and revegetating areas throughout the catchment.

‘Farming with a green vision’

At one time, we were told by the local agriculture department that we should use artificial fertiliser on our property, but we became really frustrated because the cattle weren’t doing well and the pastures weren’t growing like they should. We decided to go back to our original way of doing things and within two years we noticed a difference. Our production improved, cattle were a lot healthier, and we felt healthier too. We don’t have to irrigate as much now either, because the soil holds the moisture.

Back then, we were regarded as ‘weird people’. Nowadays, people ask all the time, ‘How do you get grass so green?’ People are seeing what we’ve accomplished by doing the alternative to using chemicals and fertilisers.

We became involved in river restoration through involvement with the Landcare network. On our farm, we’d put in what they call off-stream watering, which is running pipelines under the ground to water troughs so that the cattle can drink out of them instead of going to the creeks. We’ve also fenced off our gullies and planted native vegetation there to encourage wildlife to come back into the area. The water’s cleaner so they’re healthier, and the river benefits because the cattle aren’t in there.

The Great Lakes Council is trying to address current issues by visiting the farms in the upper catchments and trying to work with the landholders, encouraging them to change their ideas and practices. People really should be recycling 90 per cent of the water. It’s not a very expensive proposition, but it seems people just don’t want to use grey water. A change in mindset needs to happen fairly quickly, otherwise we’re not going to have the water resources available to sustain the population.

I’ve been working with the Council, and the local Catchment Management Agency. The idea was that being a farmer I would have more rapport with the farmers they were visiting. We introduced a sustainable grazing system and over the last three years we’ve gone from 35 to 280 farms following the system.

> “Our major lesson learnt is that you have to listen to what other people have to say.”

Our major lesson learned while restoring the catchment is that you have to listen to what other people have to say and try to make a contribution to what they’re saying. You have to come up with a system that everybody is happy with and reach a compromise. You have to talk and work things through so that everybody has an understanding of what’s going on. It takes a lot of diplomacy to get people to speak up

and say what they think, to be able to listen to different opinions and to find out what is going to be relevant to the project and what is irrelevant.

I see that the diversity of roles of the different people coming together is very important, because there's no single person who knows everything. The biggest challenge is to listen and work through different opinions about the same thing, come up with a program that's really going to be sustainable in the short term and long term, and then get the general public to alter their ways of thinking and to implement changes.

Without the Wallis Lake Catchment Management Planning committee, I don't think we would have progressed as far as we have today.

In the future, climate change is going to be another challenge. They're saying that you've got to learn to adapt to climate change, but I think you have to try to fix the problem first before you start thinking about adapting to something that is so severe as climate change.

There is still a lot of degradation being caused by both farmers and urban communities. I think the first stage has to be re-educating people to think in different ways – people need to seriously consider how they want their lives to be in 20-30 years time. That vision will require a lot of attitudes being changed today.

Great Lakes Council

Wallis Lake suffered a serious Hepatitis A contamination event during late 1996/1997. This seriously threatened the AU$125 million per year tourism industry, the AU$10 million per year oyster farming industries, as well as the second most productive estuarine fishery in New South Wales. This event illustrated the real value of a healthy lake and watershed to the regional community and economy, and provided the motivation to establish an outcome-driven, integrated watershed management and restoration program for the Wallis Lake system.

The Wallis Lake Catchment Management Plan developed a set of major restoration programs within a comprehensive planning and management framework. These were designed to achieve integration across environmental, health, economic and social planning agencies. Working to instil this synergy between agencies and initiatives in Wallis Lake has paid dividends, empowered communities and provided a foundation for effective restoration and rehabilitation outcomes in the catchment.

Alice Roberts
Chair, Dyers Crossing Landcare Group

Les Roberts
Chair, Karuah-Great Lakes Landcare Management Committee;
and Member, Wallis Lake Catchment Management Planning Committee

a web of green

Urban catchment groups evolving to suit a changing landscape

After moving to Brisbane, I became very involved in bush care and was one of the founders of a catchment group for Bulimba Creek in 1996/97. We recognise that we're in a critical time here in Brisbane, Queensland, and Australia. If we don't restore our rivers and creeks, and protect our bushland now, nobody will. They are too valuable for us to let them die – we have to save what we have for future generations.

Bulimba Creek Catchment Coordinating Committee (B4C)

Urban growth pressures brought inappropriate land use, tree clearing and invasive species (particularly water hyacinth), which all contributed to problems of diminished water, loss of floodplain and wetland function, water quality impairment, and deterioration in natural aesthetic, recreational and educational assets across the catchment.

The establishment of the Bulimba Creek Catchment Coordination Committee (B4C) in 1997 was almost entirely community driven, and continues to be supported by volunteers. The B4C includes many partners with a wide range of government agencies, corporations and industry leaders, educational institutions and bush care groups. They are working together to increase awareness of problems occurring within the river system, and to mobilise more resources toward restoration and management initiatives. The combined efforts of B4C and their volunteers and partners helping to bring wetland functions back to life.

The Bulimba Creek Catchment Coordinating Committee Inc. (B4C) was formed in 1997 and now operates as a community-driven social enterprise in the greater Brisbane area. The success of this organisation has been achieved to a major degree by the efforts of its working arm, the Ecosystem Services Unit (ESU).

The ESU is a professional team of accredited and experienced people who provide specialised environmental services, seeking biodiversity positive rehabilitation, adding to public and landscape amenity, ecological corridor and habitat enhancement. This is the road we have travelled in the past decade after being a completely voluntary organisation in our initial years.

We have undertaken contract work for Queensland Urban Utilities (QUU), Department of Transport Main Roads, Department of Community Safety, Powerlink, Port of Brisbane, Queensland

Wayne Cameron
Manager, Bulimba Creek Catchment Coordinating Committee

BULIMBA CREEK, QLD AUSTRALIA 2005

Motorways, Energex and Redland City Council. Profits are used to support community-based environmental initiatives.

Through our experience as an on-ground, community organisation we are aware of the challenges involved in both environmental protection and restoration. This, along with our knowledge of the catchment and surrounds, ensures that environmental works contribute to building the positive habitat and biodiversity values of the Brisbane region.

In addition to our environmental works, we have developed social structures to engage with the community and provide opportunities for young graduates to gain first-hand experience at the community "coal-face" as a launch to their careers in the environmental and sustainability sectors.

We have developed the "Southside Sustainability Centre" at Carindale in Brisbane and cater for volunteers in horticulture, nursery, sustainable living and handymen. We are linked to other community organisations like the Transition Hub and Landcare and are always looking for new presenters at our monthly workshops.

Bulimba Creek Catchment Coordinating Committee Inc. (B4C) is now a member group of the Brisbane Catchment Network Inc. (BCN), of which Wayne Cameron has been the President since 2011.

BCN has brought the 12 creek catchment committees together independently for the first time. BCN has its own Community Biodiversity Strategy and Brisbane River Corridor Project.

A friend of ours, Mr Roberto Eple of the European Rivers Network, asked me back in 2006, why Brisbane had community groups caring for Brisbane's creeks, but not for its major river – the Brisbane River. It became apparent to me that this was all the catchments' responsibility eventually. To that end, we have developed the Brisbane River Corridor Project – which aims to protect, enhance and build our green corridor web along the river, starting in the Lower Brisbane River Catchment – which is a challenge, to say the least.

We have had good outcomes over the past three years with two large parkland areas along the river near Gateway Bridge rehabilitated and we now have an initiative at St Lucia near the University of Queensland. We are bringing the community back to the River and hopefully the wildlife as well.

A recent achievement is the Science Unit (2014), a group of young environmental graduates and undergraduates pooling their skills to achieve catchment-based research and scientific monitoring, which is useful to all levels of society and government.

B4C is also using these skills and its own expertise to engage with the needs to understand, restore and promote the need for Blue Carbon areas along our coastline – Seagrass, Mangroves and Saltmarsh. We are one of few organisations propagating saltmarsh species of plants to provide stocks for ecosystem recovery.

Campaigning has always been part of our make-up and last year we led the campaign to save "Swan Lake" at the Port of Brisbane; a lake that could easily have been converted to a car park unless we changed some minds in high places. We had a resounding win and formed the "Swan Lake Alliance" of networks of community organisations that do not generally work together. Maybe this is an outcome in itself?

We have come a long way and now pride ourselves on our professionalism and achievements, realising that to be able to contribute to achieving a bright environmental future for our city, we have to keep working hard, keep learning, and most importantly – keep improving.
To sit still is not an option in a vastly changing landscape – both in development and politically.

There are choices we all have to make about what can and should be protected, what can be recovered and how to address threatening processes to all of this. This game is volatile and always challenging and we have to be up for it and on our game to be able to make a difference.

Caring for the land

In 1990, when the water supply department in Albany wanted to transfer the effluent water from Five Mile Creek back into the sea, a group of concerned residents including Terri Harwood and I formed a committee and researched the disposal of effluent. The paper we produced proved that the use of effluent to water Blue Gum trees was a much more economical way of disposing of the water. Now, there's quite a substantial forest of blue gums at the sewage site.

The Torbay Catchment Group started almost as a progression from that committee, and has gradually progressed. Funding from the Government to carry out our river restoration work has lifted our profile and, as a result, the group is held in much higher esteem within the community.

I've learnt a lot about river restoration from work on my own farm. When you bought land back in those days it was what they called 'conditional purchase' and an inspector was sent round every year to make sure that you were clearing one third of your land within three years and two thirds within five years. The clearing and planting I did on my property was in the best interest of my livestock, and the fact that I've been able to maintain the bush system and the health of the cattle proves me right. Ultimately, if you're a farmer, the health of your animals is what pays the bills at the end of the day.

> "It's the community support that's enormously important."

I see the farmer as the beginning and the end, because the health of the river depends on how they use or misuse their land. That's why education is so important. When I was very young in the farming industry I was taught that slowing the water down on your property stops the nutrients from flushing into the river systems, and that's something I've always practiced. I maintained thick vegetation in the creek system that helped to keep out weed intrusion, and I never allowed a fire to get into the creek which helped a great deal in keeping it in good condition.

I truly believe that if you don't look after your environment then it doesn't look after you. Often people don't take action until the situation is going to cost them horrendously, and then it takes a very long time to undo the damage that has been done to the environment, like the case of Lake Powell. Nobody cared, and it's only when people care that you can start working to repair some of the damage.

What you need is to be in love with your environment. There's no other way. In the Torbay Catchment Group there is a lot of good camaraderie. We all have similar interests and the same goals, otherwise we wouldn't be there. We keep people interested by staying innovative and giving the members of the group something to aim for. Keeping the community together is really important, because it's united communities that ultimately benefit their districts.

The biggest problem that we have are those land holders who only look at the money and don't look at the overall benefit to the ecology and the community in general.

Suspicion, to me, has been the greatest battle that we've had to fight. The only way you can overcome it is to lead by example. We had one classic case of a particular farmer who had 500 acres of very flat, exposed land, with no tree on it. A tree line put in on the opposite side of the highway afforded him a certain amount of protection and then he could see the advantage of producing a tree line of his own.

You only need one wish for the future really, that the community continues to support the work that's being done, and then all the other wishes will follow. It's the community support that's enormously important.

Maurice McCormick

Farmer and member of Torbay Catchment Group Committee

Torbay Catchment Group

Large-scale alterations to the natural drainage system of the catchment resulted in a relying on manual operations to control water levels in the wetlands. The increasing incidence of toxic blue-green algal blooms, and acid sulphate soil problems led to significant losses of habitat for fauna and a diminishing quality of life for local residents.

The Torbay Catchment Group was initiated in 1999 in response to community concerns, and quickly received the support of the Water Corporation, City of Albany, and the Western Australian Government. This wide union of players contributed to the development of a 'whole of watershed' approach and an integration of scientific research, local knowledge and community values – and eventually the 'Watershed Torbay' project. It prioritises action targets, details required actions, identifies the stakeholder groups responsible, and outlines how to monitor progress and results. The Project has successfully engaged stakeholders, facilitated collaboration between partners, achieved changed behaviour and enhanced the capacity for change among stakeholder groups.

Rejuvenating the dying River Red Gum country

My husband and I have lived near Albury-Wodonga in NSW for nearly 40 years and we've done a lot of land care on our property trying to restore the natural biodiversity of the farm.

In the 50s and 60s, the river management industry was influenced by engineering practices in which you used rock or whatever material was available to stabilise river banks, but the idea of looking after riparian vegetation and maintaining the ecological integrity of river banks for their value to the river just didn't enter the equation. Some enlightenment came in from the 1980s as to treating our rivers better by trying to maintain their natural functions and understanding the morphological processes that were causing the problems.

In addition to the impacts of extraction, clearing and grazing on unregulated tributaries of the Murray River, regulation has also had negative effects. Many of the wetlands or billabongs would normally just fill up in a flood and then drain again. Due to the regulation, the Murray River runs full capacity during the irrigation season in summer and at a low level in winter, the opposite of its natural cycles. This has caused accelerated degradation as they are losing their biodiversity. The intrusion of Carp (invasive fish) into the system compounded these problems. We managed to get funds to build regulators on the entrances to these wetlands and after they filled in the spring we would close the regulators and let them dry out which is much more like the natural regime. The response from the wetlands has been very good. We've also had good results in the Moira and Barmah forest wetlands, home of the largest remaining stand of River Red Gum worldwide, where we helped save a breeding event for some 20,000 Ibis.

With our 'Water for Farms' program we've been able to supply water to farmers in the irrigation districts to flood some of the wetlands on their properties which hadn't been flooded for a long time. We have had 170 land holders involved in six years. MWWG monitored all wetlands and did vegetation surveys before and after the water went in. It was really successful.

I think the more we look after the rivers, the more we can sustain the whole landscape. Our rivers must be a real focus as areas of fertility and refuge, since they are such key parts of the whole landscape. It's so important to have good resilience and diversity in the riparian areas around a river, and good interaction between the river and the floodplain.

Murray Wetlands Working Group Ltd

In 2007, the NSW Murray Wetlands Working Group received the National Theiss River*prize*. Two years later, the Group formed a company, Murray Darling Wetlands Working Group Ltd. followed by an environmental trust and a balanced water fund. This enabled the Group to expand into new projects and catchments, and focus on broader wetland and floodplain rehabilitation. However the Group retains most of its original focus and charter as it now builds on its rehabilitation achievements pioneered between 1992 and 2007. One of its significant successes is that much of the Group's knowledge is now integrated into the way that state and commonwealth government agencies manage their environmental water.

MURRAY WETLANDS, NSW AUSTRALIA 2007

We try hard to work well with local communities and have them take ownership of the projects that we're involved in, because the level of involvement increases the understanding and the acceptance of change. In trying to change people's attitudes, let them make up their own minds because that's what really creates lasting change.

We've been grappling with the drought issue. I'm sure climate change is happening but it's very hard to nail down. All we can do as far as climate change response goes is to increase the resilience of the wetlands so that they have the ability to adapt to it. We will really have to use science as much as possible to work out the best approach, to cover all bases and to think through every possible scenario.

I'm an optimist and I feel that if we work hard at it we can work it out. It's impossible to restore everything to its original state, but by making the effort and understanding enough about the process, we can accomplish a lot more to reduce these severe impacts, and to improve and maintain what we have, because if we lose it, it's gone.

Judy Frankenberg
Farmer, ecologist, environmental consultant, and member of the Murray-Darling Wetlands Working Group Board

> "Our rivers provide areas of fertility and refuge, and are such key parts of the whole landscape."

Connecting the Community with their Coastal Estuary

As a child, I remember growing up in an urban area on the outskirts of Newcastle and playing in a beautiful little creek that would run behind our house. It was really well hidden from the people that lived there, running behind backyards and fences, so people didn't really connect with it. Over time, the creek was all fenced off and was piped underground and a house was built on top. I knew it wouldn't be the same again.

School students involved in water quality monitoring at a storm-water treatment device

Today, through my role at Lake Macquarie City Council, I help look after Lake Macquarie into which the same creek flows. Most people still don't know the creek is there, and overall, that's a big challenge we face. People don't have any connection with their environment, especially in the newly developed areas. Trying to get those connections between people and the environment around them, especially the creeks and watercourses, is something that's really important. The hope is that once people have a greater understanding of these things, they will consider changing their behaviours. Maybe they will stop washing their cars on the street, or top-dressing their lawns with heaps of soil that might wash into the creek.

What I love most about my role is working with people who are committed to the environment. Our fantastic volunteers and community groups are passionate about looking after the health of our lakes, creeks and catchment. We are very lucky to have a strong network of over 260 landcare groups all doing great work in their local environment. It is wonderful seeing people become empowered to a level where they are running things themselves.

Today there continues to be large development pressures in our catchment. One of the jobs I do is try to prevent inappropriate development around our creeks. We look at planning controls, comment on different developments and work with developers, planners and other levels of government to minimise impacts. We also try to engage with and educate local communities to inspire them to be more involved in their creek and catchment and to help them understand the consequences of their actions.

Seeing the results of the work we do is one of the most rewarding aspects of my job. Water quality improvement devices such as building constructed wetlands have a positive impact on downstream health. Getting community understanding of lake health issues has been a big step forward.

Vegetation planted in a concrete drainage channel to improve water quality

Rock fillets installed along the creek-bank to reduce erosion and promote mangrove establishment

Symon Walpole – Ecosystem Enhancement Coordinator (courtesty, Lake Macquarie City Council)

LAKE MACQUARIE, NSW AUSTRALIA 2008

There was little acknowledgement that local residents play a part in the health of their local watercourses. We did a lot to try to connect people so they know where their water goes and how their daily activities impacts downstream. It is the cumulative effect of all people doing the same thing that's really important.

A lot of what's happened for us within Council has been about changing the culture of our organisation from that of a structured traditional council approach – using engineering and pipes and pits – to changing that perspective and looking after the health of our watercourses with a more natural approach. This change has been flowing from the very top levels of our organisation, especially from the Mayor, who has been exceptionally supportive of our whole program. It's been important having that top-level support and seeing it reflected in all of Council's activities so that the health of the lake and the broader environment comes forward as something everyone does as part of their normal role.

Symon Walpole
Ecosystem Enhancement Coordinator, Lake Macquarie City Council

Lake Macquarie City Council

Lake Macquarie City Council, with a population of about 200,000, is one of the largest Councils in New South Wales (NSW). The Council's vision is to achieve a balance between the environment and development of the city.

The Lake Macquarie Improvement Project, developed in 1997, was based on a unique cooperative approach and as a joint initiative of Lake Macquarie City Council, Wyong Shire Council, the New South Wales State Government and the community of Lake Macquarie.

The project aimed to improve the health of Lake Macquarie, and was developed as a fully integrated catchment and waterway improvement project with a strong emphasis on community involvement and long term sustainability.

Leading change

through industry, community and landholder partnerships

When I started water quality monitoring the tributaries of Oxley Creek in 1975, I remember placing the monitoring equipment in Moolabin Creek, which is an eastern tributary, and having to pull it out again and again because beans and carrots would be passing through! I kept thinking the person who owns this factory wouldn't do this at home – they wouldn't just throw their rubbish over to the next door neighbour!

Improvements in our waterways have only occurred because a strategic approach was adopted from the beginning. The establishment of the Oxley Creek Catchment Coordinating Committee provided a vehicle for a whole-of-catchment approach to land and water management. The first thing OCCA did was to commission two reports – 'The State of the Oxley Creek Catchment' and a 'Water and Land-use Impact Analysis Report'. These indicated that the water quality in Oxley Creek had very high sediment, nutrient and E.Coli levels. Following this we developed a Catchment Management Plan in consultation with stakeholders. This plan forms the basis of OCCA's activities with a focus on community engagement through partnering, advocating, educating and participating in catchment management activities.

Ongoing engagement with Bushcare and other groups in the catchment has helped OCCA to focus on the key issues facing the catchment. A focus on pollution prevention and riparian restoration resulted in the establishment of the CreekWatch program – working with industry to improve environmental management of their sites and reduce their impact on the creek.

The CreekWatch program took quite some time to develop, after door-knocking and consultation with many local businesses. Now, those businesses who are members of the program are taking a strong responsible approach to the environment.

Protecting our waterways is like a large riddle which probably has many solutions, and you end up asking yourself, 'Can we make a difference?' 'How do we attract a group of landholders and persuade them that it's in their interest to care for their waterways?' To be successful in protecting and restoring rivers, you must examine the situation, find alternatives which might overcome the problem, find evidence to back your claim and find support for your ideas. Following the January 2011 floods in Brisbane – our CreekWatch Pollution Prevention Program was expanded to include Flood Preparation Workshops providing information on the do's and don'ts of flood management planning and actions from businesses that had been impacted by the floods. This 'learning from your neighbour' approach which provides more opportunities for people to learn about creek bank rehabilitation; response to spills; minimisation of downstream impacts; and flood preparation from the people actively involved.

The key to successful outcomes is a partnership approach to problems, whether it be with the community, business or governments. The Granard Wetland Restoration Project is an example of our success in partnering with Council and local industries to restore an important wetland area along Stable Swamp Creek. Despite serious setbacks such as suspected land contamination, our efforts are now focused on a program which will encourage more community use of the land and corresponding recognition and ownership of a valuable wetland.

OCCA is supported by many organisations and many volunteers without whom we could not do as much as we do. Our Management Committee is made up of volunteers and oversees the direction and operation of our not-for-profit organisation. Too often welcome funding is provided for creek restoration but there is no funding for ongoing management. Our dedicated CreekCare Team ensure that these restored areas are maintained and improved and do not fall back into disrepair.

Our commercial arm, OCCA's Biodiversity Services, has been able to assist larger landholders with weed control and revegetation projects. Charging for the services of the Biodiversity Services has reduced OCCA's reliance on grants and has led to greater continuity of staff. Our officers, who are trained in weed and native plant recognition, are able to advise local landholders about the weeds on their property, help to remove them and suggest species to replace them. OCCA has been extraordinarily fortunate that our officers have demonstrated great loyalty and have worked above and beyond their duty.

Recently, we celebrated our fourth biennial 'Peaks to Points' Festival across the southern side of the Brisbane River. The Festival highlights the diverse natural environments of this large area. The establishment of the Flinders-Greenbank-Karawatha Habitat Corridor is a planning tool based on existing relatively undisturbed areas and intact corridors, and celebrates the groups and communities working hard to protect undisturbed areas and restore degraded areas.

We would love a future in which more recognition was given to the protection of our waterways and wetlands. There should be more focus placed on how everything we do is reflected in the water and explaining how every one of our actions has an impact on our waterways and ultimately Moreton Bay.

Anne Clarke
Executive Officer,
Oxley Creek Catchment Association

OXLEY CREEK, QLD AUSTRALIA 2009

Oxley Creek Catchment Association (OCCA)

In 1995, some members of the Oxley Creek Environment Group Inc. and the Australian Marine Conservation Society Inc. approached the Brisbane River Management Group (then part of the Queensland Department of Environment) to establish an Integrated Catchment Management (ICM) program for the Oxley Creek catchment. Permission was granted to trial a pilot urban ICM structure and the Oxley Creek Catchment Association (OCCA) was born. OCCA is an Incorporated Body and is endorsed as a deductible gift recipient (DGR) under the Income Tax Assessment Act 1997.

The Brisbane River Management Group (now Healthy Waterways) contributed funding to employ a Catchment Coordinator up until June 2000. Since then the Committee has relied on successful grant applications to employ its officers.

The Association is guided by a dedicated group of volunteers who shoulder the responsibilities for management of staff and resources. Until recently OCCA also had a Nursery which produced approximately 36,000 plants per year from seed collection within the catchment.

Gateway to the Antarctic

The Derwent estuary lies at the heart of Hobart and is a waterway of great natural beauty and diversity. Over 210,000 people – 40 per cent of Tasmania's population – live around the estuary, which is widely used for swimming, boating and recreational fishing.

The Derwent supports several large industries including paper, zinc and fertiliser production, boatbuilding and the Cadburys chocolate factory and is Australia's maritime gateway to the Antarctic. The estuary also supports large areas of wetlands, seagrasses, tidal flats and rocky reefs that shelter a rich and varied fauna including platypus, seadragons, little penguins, whales and the critically endangered spotted handfish.

As with many waterfront cities of a certain age, the Derwent was historically used as a convenient dumping area for sewage, industrial wastes and urban stormwater, until pollution control regulations were passed in the 1970s. To address the resulting heavy metal contamination of water, sediments and seafood, loss of estuarine habitat and species and elevated levels of nutrients and organic matter, the Derwent Estuary Program (DEP) was established in 1999.

The DEP is a regional partnership between the Tasmanian Government, six councils, five businesses, scientists and the community to restore and promote our waterway. It is unusual in the breadth of its support and inclusiveness by these organisations, including Commonwealth governments. Our success in engaging such a wide range of partners can be attributed to effective institutional arrangements, excellent communications and a robust and transparent monitoring and reporting framework.

Through the DEP Committees, these groups have been directly involved in the development and review of our long-term Environmental Management Plan, and in the implementation of key projects. Within our partner's organisations, there is genuine interest and support at all levels - political, senior management, technical and scientific.

We are fortunate to have several major scientific institutions based in the Hobart area (CSIRO Marine Research and the Institute of Marine and Antarctic Studies at the University of Tasmania), and in recent years there has been a major surge in research activities targeting the Derwent. We attribute this to the availability of high quality, long-term data sets, opportunities to piggyback projects onto the DEP's field and laboratory programs, and clear links to management outcomes.

Similarly, there is a growing interest in the Derwent estuary by community groups and schools. In particular, the Derwent Little Penguin project and the Clean Up the Derwent litter campaigns have been strongly supported. More recently, the DEP has developed resources for teachers, such as the Derwent Habitat Atlas.

Since 1999, over $150 million has been invested in environmental projects, and the Derwent is showing promising signs of recovery. During the past ten years, there have been substantial reductions in discharges of organic matter (>90%), heavy metals (>60%), and sewage-derived nutrients (10 - 20%), as well as major improvements in stormwater treatment.

So, where to from here for the DEP? We intend to continue to remediate heavy-metal contaminated groundwater and stormwater at the historic zinc works, avoid disturbing contaminated sediments, manage nutrient inputs and river flows to prevent low oxygen levels, and carry out more detailed studies of heavy metals in fish & biota, providing better information and awareness about seafood safety.

The Museum of Old and New Art's (MONA) River Derwent Heavy Metals Project is a new partnership opportunity for the DEP that provides an exciting catalyst to examine, interpret and seek creative solutions to a problem of international significance that has been traditionally consigned to the 'too hard' basket. The project is fostering an exciting dynamic between artists, scientists and architects to think outside the square.

Christine Coughanowr
Director Derwent Estuary Program

Ursula Taylor
Communications Officer
Derwent Estuary Program

DERWENT ESTUARY, TAS AUSTRALIA 2010

The History of the Derwent Estuary Program

The Derwent Estuary Program (DEP) is a regional partnership between the Tasmanian Government, local governments, industry, scientists and the community to restore and promote our estuary.

The DEP was established in 1999 and has been nationally recognised for excellence in reducing water pollution, conserving habitats and species, monitoring river health and promoting greater use and enjoyment of the foreshore.

The DEP currently manages monitoring activities, projects and communications valued at over $1 million per year. Our partners and supporters include:

- Tasmanian Government
- Brighton Council
- Clarence City Council
- Derwent Valley Council
- Glenorchy City Council
- Hobart City Council
- Kingborough Council
- TasWater
- Norske Skog Boyer
- Nyrstar Hobart
- Tasmanian Ports Corporation
- Australian Government
- IMAS/UTas
- CSIRO Marine Research
- NRM South
- Hydro Tasmania

Valued waterways valued people

Peter Armstrong
Catchment Management Officer,
Environmental Operations, Sunshine Coast Council

The Sunshine Coast's great natural beauty, beaches, waterways and hinterland environments attracted me here to settle with my young family more than 10 years ago. I was moving into an area where the local catchment and Landcare groups were vibrant and the collaborative approach had been building since 1990.

Community Planting day with Michael Gilles Environmental Visitor Centre officer and local and interstate visitors

At a time when the Natural Heritage Trust funding was waning in South East Queensland, the local council kicked in, investing in a strong staff support network. This was when we entered into a more strategic phase of planning and investment in river recovery which saw exponentially increasing outcomes as the capacity across the catchments built.

During the establishment of the Sunshine Coast Rivers Initiative for the Australian River*prize* in 2011, it was a rewarding experience to look back and celebrate the past achievements made by all of our groups as we set the future direction for a collective approach to local catchment management.

One of our big strengths from early on was our efforts to continually grow the ownership of our natural assets of the Mooloolah, Mary, Pumicestone and Stanley River catchments; to promote the important role they play in the livelihoods and lifestyles that we all enjoy. In simple terms, our actions during the week, whether we're farmers, developers

“…Our actions during the week, …affect how we play on the weekend.”

Enjoying Currimundi Lake

Noosa Landcare Mr Phil Moran hands on weed removal

or environmental managers, affect how we play on the weekend.

As part of the Initiative, we continue to build on river-health planning and on-ground achievements in six catchment areas that will encompass about 5,000km of waterways across the Sunshine Coast. We were extremely proud to be collectively recognised by being awarded the 2011 Australian River*prize*.

Amongst some significant political changes, it has been encouraging to see the collaboration continue through the recent development of the Pumicestone Passage and Catchment Action Plan. This planning effort unites the concerns and management activities of more than 30 community, government, NRM and industry groups operating across the catchment and on the Passage itself, and identifies 42 actions for delivery in the next three years.

Through the combined efforts of many other stakeholders, implementation of this Action Plan will contribute to the cooperative custodianship of one of the Sunshine Coast’s and Australia’s iconic waterways through coordinated action to preserve the values and services we all enjoy.

The future is an exciting place here on the Sunshine Coast and the Sunshine Coast Rivers Initiative now has a place in the history of our region and also stamps a positive future. We want to continue to build on the partnerships, planning and policy, education and advocacy, on-ground projects and science that make our task both rewarding and achievable.

Sunshine Coast Rivers Initiative

Based on the Sunshine Coast, South East Queensland, Australia, the Sunshine Coast Rivers Initiative is delivered by the Sunshine Coast Rivers Community: a powerful partnership between government, community, industry and research organisations.

Formalised in 2011, the Initiative acknowledges and unites those working to protect and improve the health of local catchment and the numerous achievements that continue to be made.

The activities of the Initiative have been consistently underpinned by sound science, constructive partnerships and an enterprising spirit encompassing the energy of its members. This has resulted in continual improvements in waterway management and uptake of local learnings in other regions.

Restoring life in the Condamine

The Condamine River is at the heart of our catchment. It weaves its way through a highly productive landscape that supports agricultural land, industrial developments, urban and rural communities and a growing mining industry. Over generations this productivity and development has had a significant impact on our river and its tributaries.

Like the 'canary in the mine', our native fish populations were giving us a warning about the health of our waterways. Reduced by 90 per cent since European settlement, their status showed us their home and surroundings were in need of help.

This need inspired a new generation of river guardians who rallied together to establish the first and only Demonstration Reach in Queensland – with a simple goal to restore native fish populations to 60 per cent of pre-European settlement levels.

Determined to 'bring back the fish', we developed a strategic plan for river rehabilitation in the catchment, with strong foundations that combined planning, monitoring and evaluation with communications and engagement, and a mix of on-ground works. The urgency of the project, together with the community's high regard for the river, has mobilised and empowered the community, business, industry and Government.

The Dewfish Demonstration Reach began at a modest 28 kilometres back in 2006, but overwhelming community interest and support has seen it stretch to its current length of 110 kilometres (and still stretching). It begins in central Dalby and incorporates parts of Myall Creek, Oakey Creek and the Condamine River.

The depth and breadth of social and economic upshots of the Reach has both surprised and delighted all those involved in this pioneering project. Strong community and industry partnerships have attracted over $3 million of additional co-investment from major players and helped spread the story far and wide throughout the catchment.

We've undertaken rehabilitation work on every scale – from planting trees on

> “While the rally cry might be to ‘bring the fish back’ – and indeed we have – our work has revived more than fish populations.”

riverbanks through to the installation of a major fishway on Loudoun weir to improved connectivity. We’ve discovered that the secret to a healthy habitat has a direct link to healthy native fish numbers and lower pest fish.

There were times when we had to step up and take a bit of a gamble. Can you imagine what locals thought? After generations of clearing out the river, here we were resnagging and putting structures back in! Our gamble has paid off and the proof is in the results! Our restored areas are outstanding and we continue to see great outcomes everywhere we’ve done restoration work.

Our native fish numbers are booming and pest fish are lower than almost anywhere else in the Murray-Darling Basin. The numbers speak for themselves: golden perch is up by 1000 per cent, bony bream up by 200 per cent, Dewfish or eel-tailed catfish up by 300 per cent, the return of Hyrtl’s tandan seen in the Reach for the first time in 15 years and the discovery of the dwarf flatheaded gudgeon recorded for the first time ever.

We are constantly in awe of our community’s commitment to get things done and the outstanding willingness of all partners to go the extra mile with us. Over 90 groups and organisations, not to mention individuals, have now partnered with our project – dramatically above what we expected.

With growing support our future looks bright. The biggest challenge ahead is to find the funding to support the science and work that’s still needed. Arrow Energy have been the first to step up to this challenge, investing $754,000 over three years to secure the future of the Dewfish Demonstration Reach.

Our vision continues to grow and the the job is far from finished. We plan to expand our learning across our catchment, starting with the World Heritage Listed Gondwana Rainforest in the headwaters, with over 50 rare and threatened species that need protection. But we wont stop there – ultimately we have a dream of restoring the full length of the main channel of the Condamine River, all 500 odd kilometres of it. We are also committed to protecting our catchment and the whole basin from the threat of tilapia.

It’s hard to escape the fact that at the heart of our movement an unlikely hero has emerged – our native fish. While the rally cry might be to ‘bring the fish back’ – and indeed we have – our work has revived more than fish populations. We’ve been able to demonstrate that good planning and science, partnerships and community support along with meaningful engagement and communication can lead to outstanding results for our aquatic ecosystems.

Phil Mccullough
Chief Executive Officer, Condamine Alliance

Kevin Graham
Manager River,
Condamine Alliance

Carl Mitchel
Manager Water,
Condamine Alliance

Condamine Alliance – partnering for the future

Condamine Alliance is a local and experienced not-for-profit organisation specialising in environmental philanthropy who partners with community, industry and government to optimise public and private investment for the benefit of our region’s natural and cultural resources.

Our vision is to help create a conscious community that is aware and motivated to care for and use its natural and cultural resources thoughtfully for a flourishing region today, and in the future. Together with our partners we aspire to inform, consult, involve, collaborate and empower the community to use resources thoughtfully.

We plan: Oversee Condamine Catchment Natural Resource Management Plan - helping land managers, industry and government make important resource decisions.

We explore: Gain and acces research and knowledge to better understand our region and the issues that matter to our community.

We work together: We work in partnership with all corners of the community.

We share knowledge: Workshops, events, publications and reports are just some of the ways we share information and raise awareness.

We reach out: Every day good people and organisations do great things for our region – we help share these stories.

Benefits flow from fencing

For thousands of years the Glenelg River was known by the Indigenous Gunditjmara people, as 'Bocara'. The river remains important to the region's Indigenous people, particularly because of its diverse and unique native fish assemblage which includes short finned eel as well as the Glenelg River Spiny Crayfish.

Adam Bester and Lucy Cameron
Glenelg Hopkins Catchment Management Authority

Environmental flow release

However, when pastoral stations were established in the 1830s the landscape changed quickly and dramatically. The highly erodible upper catchments, with steep hillsides, susceptible soils, good rainfall and often limited ground cover due to over-grazing and rabbit infestation, have contributed massive deposits of sand along the Glenelg River and its tributaries. The sand has smothered habitat and damaged ecosystems, reducing much of the River to a flat 'highway of sand'. This sand is progressively making its way down the river towards the near pristine Glenelg estuary, where its accumulation would have significant impact on estuarine ecological processes and recreational values. The construction of Rocklands Reservoir in the 1950s substantially altered natural flow regimes in the River. This reduced water quality and exacerbated sedimentation issues, reducing structural diversity and connectivity for aquatic species. Further pressure was added to the Glenelg River with the introduction of a number of pest plants and animals to the area, most notably blackberry, pine and bridal creeper as well as carp.

In the early 2000s the Glenelg Hopkins CMA in conjunction with community groups and other agencies commenced the Glenelg River Restoration Project, an ambitious undertaking to look at an integrated and long-term approach to restore health to the Glenelg River. This project has been made possible by the involvement of a large and diverse group of organisations and individuals including all levels of government, water authorities,

GLENELG RIVER, VIC & SA AUSTRALIA 2013

industry groups, Indigenous groups, individual landholders, research institutions and community organisations such as Landcare. The project has relied heavily on the voluntary efforts of local landholders and community groups and we are lucky to have a community that is passionate about their rivers and the environment.

The diverse nature of environmental problems required a multi-pronged response, and has included varied activities including estuary management, urban waterway restoration, wood re-instatement, construction of erosion control structures, the establishment of environmental flow releases, sand extraction, carp monitoring and eradication, weed control and the removal of fish barriers. However, the central activity to the Project has been fencing and revegetation, which is a low-cost solution to many of the River's threats. To date, 659 property owners and community groups have helped construct 1725 kilometres of fencing, planted more than half a million trees and direct seeded 796 kilometres of waterway frontage.

There are multiple long-term benefits of fencing and revegetating rivers. Of particular importance to the Glenelg River has been the fencing of tributaries to allow plants to immobilise eroded soil and sand, preventing it from entering the River where it has caused destruction to instream habitat. These plants also filter surface runoff, provide shade, habitat and food to instream biota and initiate the reformation of waterholes and low flow channels. There are examples in some river reaches of water holes up to three metres being re-scoured through deposited sediment since they have been stabilised through stock exclusion and native vegetation restoration. In addition, fences prevent stock from damaging the physical form of the river channel and riparian vegetation and fouling the water.

Other key achievements of the restoration program include 2784 hectares of integrated cross-tenure weed control, re-instatment of 870 pieces of large wood back into the river, the opening of 977 kilometres of the Glenelg River and its tributaries to fish movement and the establishment and delivery of an environmental flows entitlement. These restoration works have led to significant outcomes and improvements in the ecological health of the river system. The project has resulted in several native fish species extending their range by hundreds of kilometres. Other outcomes include a 150 per cent increase in Variegated Pygmy Perch, a 280 per cent increase in Blackfish numbers at sites with large wood reinstated and significant water quality improvements in response to environmental flows.

Although the river is beginning to bounce back, there remains much work to do. Restoration of a river system can take generations and requires ongoing maintenance to protect previous investment. Our long term vision involves a river system that is able to sustain both its natural ecological function and original fauna. We would like the Glenelg River to be known nationally as a recreational destination for canoeing, fishing, bird-watching and camping. Additionaly, we would like to see the River sustain its economic value to the local community via tourism, stock water and a sustainable sand extraction industry. Finally, we would like a community that remains actively engaged and feels passionately about the River including local Indigenous groups that retain their ancient cultural links to this important feature in the landscape.


Glenelg before fencing


Glenelg after fencing

> "Restoration of a river system can take generations and requires ongoing maintenance to protect previous investment."

Glenelg Hopkins CMA

Early restoration in the Glenelg Basin commenced back in early 1960s under the Soil Conservation Authority, who constructed hundreds of soil erosion control structures in the upper catchments to slow the rate of erosion. Despite these early restoration works, in the mid-2000s the Glenelg River was on the brink of ecological collapse due to low flows, poor water quality, loss of habitat, weed and carp invasion.

In the early 2000s, the Glenelg Hopkins Catchment Management Authority, in conjunction with community groups and other agencies, commenced the Glenelg River Restoration Project, an ambitious undertaking to look at an integrated and long-term approach to restore health to the Glenelg River.

Glenelg Hopkins Catchment Management Authority is a Victorian Government established organisation, created to coordinate natural resource management in south west Victoria. It works with a range of organisations including government departments, community groups, individuals and NGOs to ensure efforts are co-ordinated and add value to each other.

Our long term vision involves a river system that is able to sustain both its natural ecological function and original fauna as well as sustain its economic, social and cultural value to the local community.

Indigenous Nations Agreement assists participation in river management

Ruppia watch monitoring
– Anthony Long and Kat Ryan

The Ngarrindjeri people are the descendants of the original Indigenous inhabitants of the lands and waters of the Murray River, Lower Lakes and Coorong and adjacent areas. Ngarrindjeri have occupied, enjoyed, utilised and managed our traditional homelands since time immemorial.

Our traditional management plan was don't be greedy, don't take any more than you need and respect everything around you. That's the management plan—it's such a simple management plan, but so hard for people to carry out.

Since colonisation, Ngarrindjeri have struggled for recognition as the true custodians of our lands and waters. Over a century of non-Indigenous river management and policy in Australia had effectively excluded Indigenous interests, creating a significant obstacle for the Ngarrindjeri Nation to meet our customary obligations to Care for Country. The challenge for Ngarrindjeri is brokering new relationships and a future for the Nation, and creating space to exercise our responsibility to care for Yarluwar-Ruwe (Sea Country).

Emerging from this context and driven by the devastating impacts and challenges presented by the Millennium drought, Ngarrindjeri have developed an integrated river management framework grounded in the fundamental relationship between people, lands, waters and all living things (Ruwe/Ruwar) with a focus on first nation capacity building. From this framework, we have emerged as critical partners with the South Australian (SA) Government in managing the Lower River Murray, shifting towards joint river management.

The Kungun Ngarrindjeri Yunnan ('listen to Ngarrindjeri people speaking') Agreement (KNYA) has been critical to establishing a new relationship with government. In 2009, we entered into a consultation and negotiation agreement that included quarterly leader-to-leader meetings between signatories, Ngarrindjeri leadership and government agencies. With our partnerships, the Agreement led to

progressive inclusion of Ngarrindjeri cultural values and interests in river management policy, as well as high-level Ngarrindjeri engagement in a range of river recovery programs and plans.

The Agreement's innovative framework has changed river management policy and planning in the region to include Ngarrindjeri social, cultural and economic values and aspirations, with a range of legal and non-legal mechanisms in place to support Ngarrindjeri engagement in integrated river management. Some of our key initiatives through the Agreement include a water resources planning agreement with the State that recognises Ngarrindjeri interests in water; a Speaking as Country deed that seeks to align government and Ngarrindjeri objectives for maintaining cultural river health; and a new relationship with the Commonwealth Environmental Water Holder that culminated in a Ngarrindjeri water delivery agreement. This is the first agreement of its kind with an Aboriginal Nation in the Murray-Darling Basin, and through these arrangements, we now take a joint leadership role in managing the Murray River.

The Ngarrindjeri Yarluwar-Ruwe (NYR) Program has also been crucial to these achievements. Established in 2007, the Program integrates Ngarrindjeri cultural, social and economic perspectives into our vision for our Sea Country. Initially supported under Murray Futures, the Program is responsible for coordinating and supporting holistic Ngarrindjeri Caring for Country activities and has supported training in conservation and land management, development of skills in water resource and river planning, and participation in regional decision-making processes in integrated river management. It has also created meaningful employment opportunities for Ngarrindjeri people.

It has also facilitated a range of partnerships across local, state and Commonwealth government, placing Ngarrindjeri businesses as growing players in regional environmental projects—including protected area management, pest control and nursery production. Ngarrindjeri are building an economic future based around Caring for Yarluwar-Ruwe (Sea Country) and the understanding that a healthy Ngarrindjeri Nation requires, and will support healthy lands and waters. We have also created partnerships that are now drawing international investment and research into the region. This work has been critical in informing our engagement in integrated river management, and is essential to ensuring that future river policy better recognises Indigenous interests.

RIVER MURRAY, SA AUSTRALIA 2015

Swan (kungari) nest monitoring – Des Karpany and Jeremy Rigney

Ngarrindjeri Elder Tom Trevorrow (deceased)

Ngarrindjeri Regional Authority

The Ngarrindjeri Regional Authority (NRA) is the peak regional body for the Ngarrindjeri Nation, an Aboriginal nation in South Australia. It represents communities and organisations that make up the nation, and its individual Native Title (indigenous land rights) claimants.

In 2008, the Authority established the Ngarrindjeri Yarluwar-Ruwe (Sea Country) Program to coordinate and support holistic Ngarrindjeri heritage and Caring for Country activities. The ground-breaking work of the Authority and the program is based on cultural values and principles, supported by national and international research partnerships. Through this work, the Ngarrindjeri people have a demonstrated long-term engagement in integrated river basin management in the Murray-Darling Basin region. The engagement is characterised and underpinned by the Ngarrindjeri's Kungun Ngarrindjeri Yunnan Agreement making process, which established a new and equitable relationship between the Ngarrindjeri and the South Australian Government.

Investing in a collective future

NZ Landcare Trust

NZ Landcare Trust is an independent, non-government organisation that was established in 1996 to encourage and nurture a sustainable approach to land and water management in New Zealand. The Trust has flourished thanks to its practical, community-based approach, working directly with farmers, landowners and community groups on a variety of sustainability and restoration projects.

More recently, the Trust has scaled up its support for larger community-led integrated catchment management projects. This approach has been further extended to include working in collaboration with other agencies and funders on a large, landscape-scale initiative in Northland.

A key feature of NZ Landcare Trust is the way it unifies diverse interest groups in production, environment and recreation. This is achieved by having representatives from all three groups in leadership positions on the Board of Trustees.

We are proud to work with some extraordinary communities; in this case, a group of dairy farmers who took on the challenge of improving water quality in the Aorere River near Collingwood at the northern end of New Zealand's South Island.

It's not easy dairy farming around the Aorere River. With up to four metres of rainfall each year flooding can be a regular event. Being a fairly remote community, people here are used to a certain level of self-sufficiency, enjoying a quiet existence away from the limelight. However, things changed when the local marine farmers faced closure due to deteriorating water quality, and dairy farms became the focus of negative media attention.

Dairy farmers had always been proud of their farms and believed the Aorere River to be in good condition; yet suddenly, they were presented with information that challenged those beliefs. To their credit, they responded positively and formed the Aorere Catchment Group, with the aim of finding solutions.

This is where we at NZ Landcare Trust got involved. We helped the catchment group secure financial support from the Sustainable Farming Fund and used our independent perspective to introduce other key stakeholders, including representatives from the marine farmers, the Tasman District Council and local voluntary environmental groups. The confrontational attitudes that had grown from early desperation and uncertainty were transformed into community cohesion underpinned by a common ideal – *'we are all farmers whether we work from a tractor or a boat; our families and community rely on protecting our collective futures.'*

As a group, we remained unsure exactly what was causing the water quality issues in the bay, so the first step was to commission a scientific study. It was pleasing to discover that the Aorere River was actually in good health, with no significant nutrient contamination. However, the marine farms located near the mouth of the river are very sensitive to contamination from faecal bacteria,

AORERE RIVER, NEW ZEALAND (NZ WINNER) 2015

and scientists confirmed that *e-coli* from dairy operations was the source of the problem.

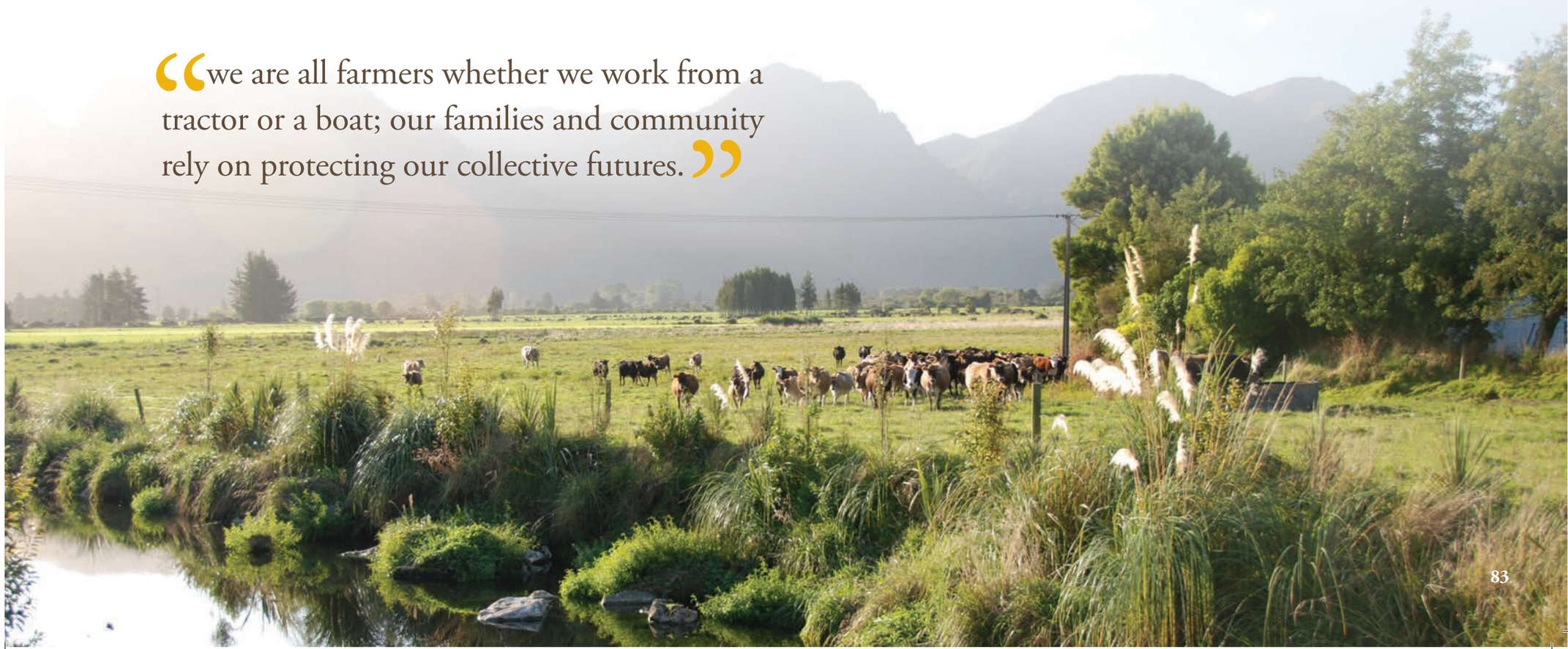
Dairy farmers accepted the results and with help from us at NZ Landcare Trust, they set about identifying ways of reducing the amount of bacteria entering waterways. They implemented a series of good management practices linked to individual farm plans, all of which were tailored to reflect the specific nature of farming within this catchment. Key changes included eliminating all stock from waterways through fencing, bridging, and building culverts at waterway crossings. Increasing effluent storage capacities gave farmers the flexibility to avoid irrigating onto saturated soils, while reducing effluent application rates also proved important. Weeping wall filtration was found to be best for our high rainfall catchment, as it not only reduced the potential for bacterial runoff but also increased uptake of valuable nutrients in the soil.

As a result, water quality improved, increasing marine farm harvesting opportunities from 28 per cent to 75 per cent. The small rural community had overcome conflict to secure environmental, economic and social benefits. They had moved beyond anger, finger pointing and blame, to unite together and invest in a collective future.

Dr Nick Edgar
CEO NZ Landcare Trust

Barbara Stuart
Nelson/Tasman Regional Coordinator NZ Landcare Trust

> "we are all farmers whether we work from a tractor or a boat; our families and community rely on protecting our collective futures."



Catalyst for awareness

Nicolas Caviale Delzescaux
Project Manager, Whangawehi Catchment Management Group

The story of protecting the Whangawehi stream starts with a Maori woman who inspired her people to come together. To Kathleen Mato and the Rongomaiwahine tribe, the Whangawehi stream, its estuary, and mahinga kai (beds beyond the river mouth) are sacred traditional fishing grounds, known as Mataitai.

It did not sit well with Kathleen when Wairoa District Council began discussions about building a water treatment plant in the headwaters of Whangawehi River. With the philosophy that "you have to step forward and you have to do something, don't just sit there and talk about it," she spoke with her people and convinced them to raise the issue of the potential effects of the wastewater treatment plant on the water quality of their Mataitai.

After countless meetings, the Whangawehi Catchment Management Group (WCMG) was formed in 2012 a unified body of stakeholders including marae, agencies, and school representatives. With the vision to "maintain or improve the different cultural, ecological, recreational, and economical values of the Whangawehi Catchment by the community and maintain and improve a healthy awa (river)," WCMG quickly became a catalyst for raising awareness among all Whangawehi land users about the potential effects of the wastewater plant on the cultural, historical, recreational, and ecological values of the Whangawehi catchment.

At its core, WCMG is a marae-led initiative that is committed to safeguarding the sacred Whangawehi stream and its catchment—including both its past and its future. To safeguard its past, one of the primary projects of the group was surveying for indigenous sites of significance. A hand-picked archaeologist identified physical remains of past life which ultimately changed the course of the restoration program. Several other sites, including an old whaling station, have been reported to the Historic Places Trust. To safeguard the future of the Whangawehi, the WCMG ensures that future stewards of the stream and the land understand its importance through a unique environmental education program especially developed for Te Mahia school pupils. Eleven workshops per year are run by kuia and kaumatua (elders) to transfer local knowledge around Matauranga Maori themes such as water monitoring, Rongoa (traditional Maori medicine), carving, weaving and planting trees. This allows local knowledge to be transferred to the younger generation.

The Whangawehi catchment suffered loss of riparian habitat for bird and fish life. Under a community-led catchment management plan, the WCMG has helped farmers to establish native trees along the river. The habitat restoration programme has seen 200,000 native trees planted over five winters, established 100 ha of riparian margins, and retired 30 ha of native bush block. The WCMG has also helped farmers to undertake pest control measures, with over 350 traps now being actively managed by landowners.

The various activities of WCMG are now showing positive measurable impacts. The water quality in the Whangawehi stream has improved by 15%- with the Whangawehi the only river in the Hawkes Bay region bucking the negative trend. Improved water quality has allowed the endangered long fin eel to grow to a healthy population with no sign of decline, and the once nearly extinct whitebait population is now abundant.

Restoring a healthy and sustainable native bird population is one of the community's long term goals. Since the WCMG programs commenced, there has been an increase in bird life-including including the arrival of a pair of Kaka—an endangered native species. The Whangawehi was known as 'the valley of the Takahe' in the pre-Rongomawahine period due to the noticeable presence of Takahe and the group hopes to reintroduce the Takahe in the future.

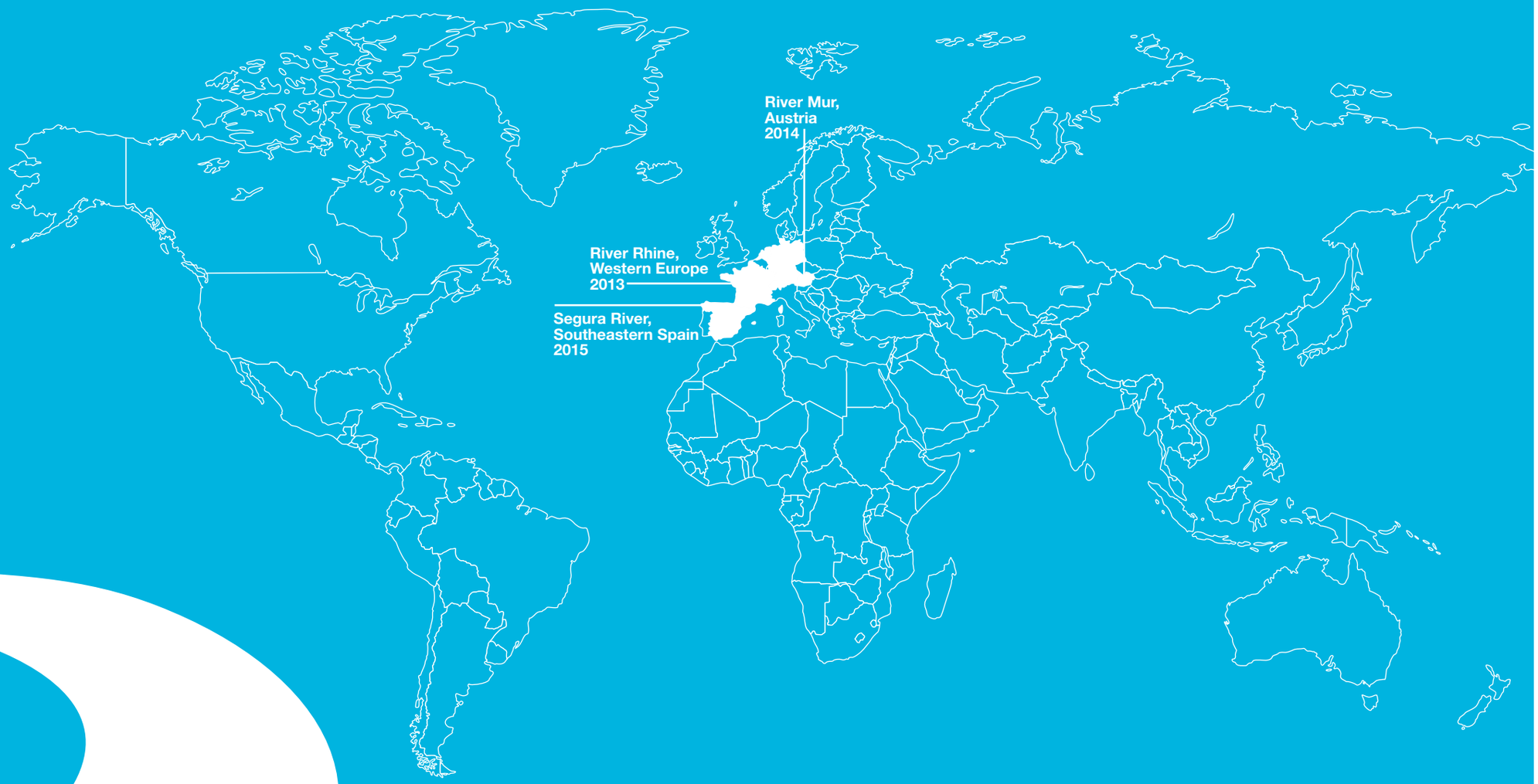
The group has also been working with the school children on a blue penguin project as blue penguins used to thrive in the harbour up to the 1970s. School children have planted an old breeding area to recreate a favourable habitat, set up traps and built and installed blue penguin boxes This way, Kathleen's childhood memories of seeing the little blue penguin in the Whangawehi stream may become a reality for her people's children.

WHANGEWEHI STREAM, NEW ZEALAND 2018

> "You have to step forward and you have to do something"

Whangawehi Catchment Management Group

The Whangawehi Catchment Management Group (WCMG) based in Mahia (East Coast of the North Island of New Zealand) sprung out of one person's vision. Its original founder, Kathleen Mato became so concerned when the Wairoa District Council started talking about building a water treatment plant in the headwaters of their local Whangawehi River that she decided to take action and form a committee. At the time, lots of people were complaining but Kathleen states "that you have to step forward and you have to do something, don't just sit there and talk about it". After relentless meetings among local marae, the WCMG committee was finally formed (2010). This way she knew the committee could be an effective decision maker at the table of local authorities when it came to future water management.


River Mur,
Austria
2014
River Rhine,
Western Europe
2013
Segura River,
Southeastern Spain
2015

European Riverprize Winners

		PAGE
2013	River Rhine, Western Europe*	44
2014	River Mur, Austria	88
2015	Segura River, Southeastern Spain	90

* River Rhine was awarded the 2014 International River*prize* and 2013 European River*prize.* Story appears in the International River*prize* section of this book.

Bringing a river back to life

freiland Environmental Consulting Civil Engineers Ltd. and the Styrian Government Department of Water Management

freiland was founded in 1991 and has since become one of Austria's leading environmental and landscape planning consultancies, with offices in Vienna and Graz. The practice is committed to combining high-quality design, expert consultancy services and creative thinking with the complex context of our clients' requirements, environmental concerns and the protection of natural habitats.

The Styrian Government Department of Water Management is responsible for all technical and organisational activities concerning Styria's rivers. Its principle responsibilities include river basin management, maintenance work and the conservation and revitalisation of water-related habitats.

From the early beginning of the Mur river restoration, we worked together in a very constructive way. Jointly, we developed a strategy for the diversified river course that focused on combining our interests in water protection, water management and the protection of endangered habitats, animal and plant species.

RIVER MUR, AUSTRIA 2014

In Styria, southern Austria, the river Mur once was the life-vein for human development. But as the industrial revolution took place, Styria became a province of heavy industries and the river became significantly polluted. In the thirty years since the revolution, ongoing efforts have taken place to restore the river system.

Severe industrial pollution, coupled with systematic river alterations in the 19th century, led the Mur to degrade significantly. These changes led not only to bad water quality, but also to other ecological deficits—such as radically limited dynamic flow variations, a lack of residual flow, and loss of valuable habitats for fish, amphibians, birds and even people. Straightened, dammed and massively contaminated, it was classified as one of Europe's dirtiest rivers.

The first big challenge was to gain a positive chemical status, which was achieved in the early 1990s. Subsequently, we started a five-year pilot project for basic ecological research in 1995. As we lacked experience in applied river restoration projects, the initial motto was 'learning by doing'—and this was relatively successful.

Since then, we have implemented a series of comprehensive renaturation programmes, restoring our Mur as an ecologically valuable water body. Cities and villages have also identified the river´s importance for urban development and nature experience, creating potential for leisure and recreation projects along the Mur.

Throughout the last 20 years, renaturation programmes have constantly improved in quality and public acceptance. We have learned that effective enhancements can only be achieved by long-term, future-oriented river basin management and by discussing problems from various angles to find creative and innovative solutions. Therefore, we involved various key stakeholders in the planning and implementation process—affected communities, energy companies, environmental groups, fisheries and local groups. Such stakeholder involvement also served our long-term aim of enhancing community engagement, environmental education and awareness.

During the process of restoring the Mur, we approached planning agencies and universities for technical and scientific support. This allowed us not only to find solutions based on the current state of technology, but also to contribute to the development of new investigation and monitoring methods.

As the Mur forms the border to Slovenia along 33.5km in the south of Austria, cross-border cooperation turned out to be especially valuable for us, as the mutual information exchange and productive discussions provided the basis for beneficial cross-cultural development. According to the objectives of the European Union, this bilateral cooperation has been a visible sign of overcoming national barriers, and has broadened the horizon of residents and visitors alike.

As with former days, the Mur has again become the centre of attention in the environmental world. After more than 30 years of broad-scale efforts, animals and plants have benefited from new habitats and people have rediscovered the huge value of ecologically sound river landscapes. It is fair to state that today, the Mur has been brought back to life as one of the most important rivers in Austria.

Rudolf Hornich
Project coordinator, Office of the Styrian Government – Water management, resources and sustainability

Christine Konradi
Project coordinator, freiland Environmental Consulting Civil Engineers Ltd.

> "After more than 30 years of broad-scale efforts, animals and plants have benefited from new habitats and people have rediscovered the huge value of ecologically sound river landscapes."

Reclaimed water, recovered river

The story of the Segura River is one of scarcity, drought and pollution. But it is also a narrative about agriculture and natural life, and about how reclamation made possible the restoration of our most valuable treasure: water. This is the story of the Segura River.

The Segura Basin is located in Southeastern Spain on the Mediterranean coast, an area with the least average yearly rainfall of the European continent. Nevertheless, irrigation is a strategic economic sector in the area. At the end of the twentieth century, the large water demand and absence of treatment plants transformed the Segura into one of the most polluted rivers in Europe—damaging the ecosystem, reducing agricultural supply and causing the public to turn its back on the river.

We had to take action. Water scarcity and pollution were serious challenges we faced. However, to solve this problem we did not just need a set of limited measures, but a comprehensive plan. Therefore, we started a research process which gathered national, regional and local governments, along with economic, environmental and social stakeholders. The goal was to clean the water, to produce extra resources for irrigation and to restore the riparian ecosystem. Its name was the Segura River Project.

The Segura River Project was an engineering, legal and sustainable plan to restore the river and supply reclaimed water to agriculture, developed by the Regional Water Department, with the participation of the Segura River Basin Authority and town councils. It entailed building infrastructures, controlling wastewater, and, very importantly, developing a new legal framework for an economic management system to apply the 'polluters pay' principle.

To recover the river through water reclamation, between 2001 and 2010 a total of 46 large advanced water treatment plants, and about 350 kilometers of sewage collecting systems, were built. We chose the most advanced wastewater reclamation system available at that time and were pioneers in driving a basin-scale plan for water regeneration.

> "46 large advanced water treatment plants, and about 350 kilometers of sewage collecting systems, were built"

SEGURA RIVER, SPAIN 2015

A major breakthrough was achieved in 2003 when the quality of the water in the Segura River started improving, thanks to the reclamation scheme. Since 2010, pollution is unnoticeable.

Nowadays, we produce around 100 Hm^3 of reclaimed water annually, ready to use for irrigation, and we reclaim 99% of the generated wastewater. The main benefit is that part of the reclaimed water pours into the Segura before it is reused, so the flora and fauna can profit from it. Endangered species like otters and eels have recovered their population, a trend that was first noticed in 2013 and is still ongoing.
This water also flows into two wetlands which have been included in the Ramsar Convention List, due to their role as resting and nesting place for birds migrating between Europe and Africa. Finally, this extra water supply has diminished the agricultural stress of our drought-prone region.

Miguel-Angel Rodenas
President of the Segura River Basin Authority

The Segura River Basin Authority

The Segura River Basin Authority ('Confederación Hidrográfica del Segura' (CHS) in Spanish, is a public organisation that answers to the Spanish Government through the Ministry of Agriculture, Food and Environment. It was founded in 1926 to oversee the water management of the Segura Basin.

CHS was born as an organisation of irrigation farmers, and one of its first initiatives was to fight against the lack of water and also the floods. However, at the end of the twentieth century, a principal function of the organisation became protecting the ecosystem linked to the river. The Segura River Project began at this point.

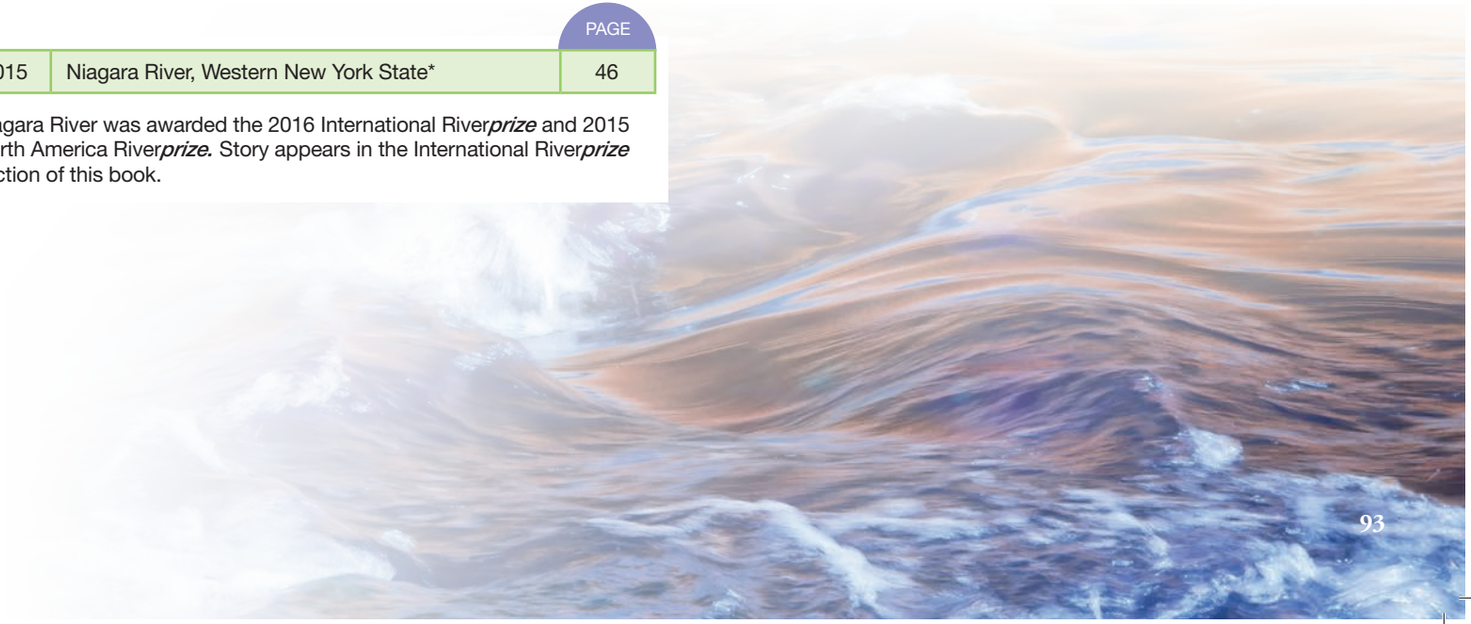
Having achieved the restoration of the Segura's water, nowadays CHS focuses on improving the environmental values of flora and fauna of the river through two main programs: native forest restoration and enhancement of fish migration.

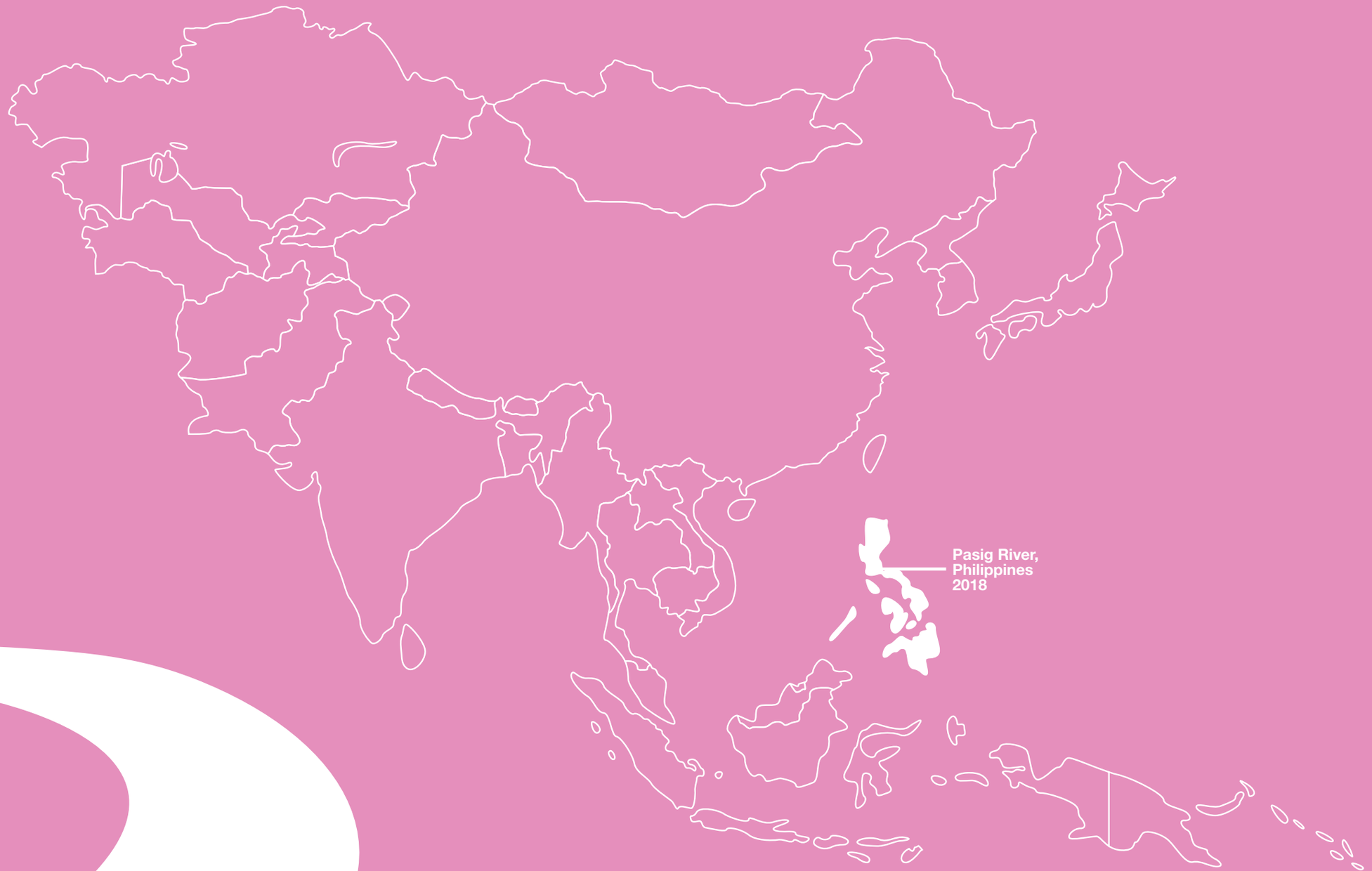

Niagara River,
Western New York State
2015

North American Riverprize Winner

		PAGE
2015	Niagara River, Western New York State*	46

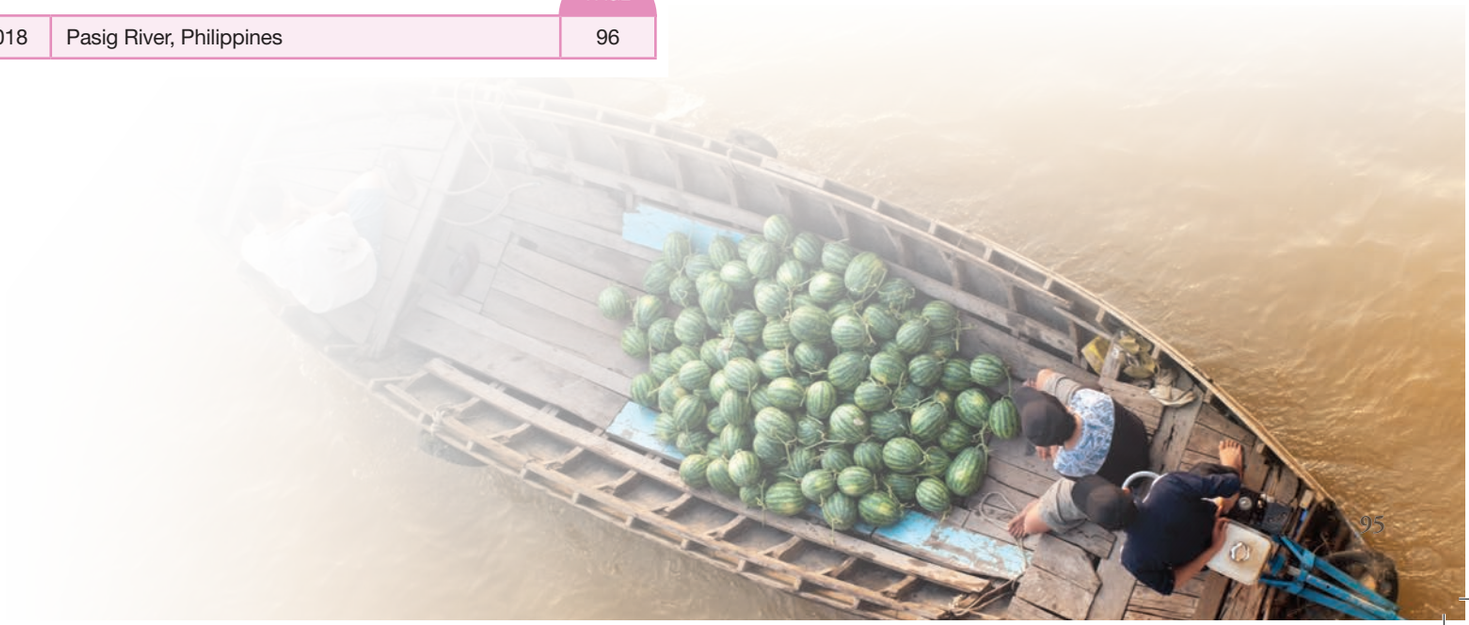
* Niagara River was awarded the 2016 International River*prize* and 2015 North America River*prize.* Story appears in the International River*prize* section of this book.




Pasig River,
Philippines
2018

Asia
River*prize* Winner

		PAGE
2018	Pasig River, Philippines	96



Giving hope to the people

The Philippines' Pasig River and its vanishing network of creeks and rivers tell a captivating story of a river system which refuses to die. It is a story of how the convergence of various stakeholders improved the river's water quality, increased its biodiversity, enhanced its economic value, and brought it back to life.

Nestled in the heart of the country's capital, the 27-kilometre river system with a total watershed area of 663 square kilometres, covers 47 identified connecting major and minor tributaries across 23 cities and municipalities in Metro Manila and nearby provinces. It is also bounded by two important bodies of water and serves as the only connecting channel to the Manila Bay in the west and the Laguna Lake in the east.

As early as the pre-colonial years, the Pasig River served as the main artery for transport, trade, and cultural exchange between the Philippines and its neighboring countries, and has figured prominently in the events that transpired in Philippine history.

Now home to a population of more than 12 million, which accounts to almost 40% of the gross domestic product of the country, the Pasig River has become the subject of many efforts for rehabilitation and preservation after it lost its importance as a vital waterway when it was declared biologically dead in the 1990s due to rapid urbanisation and industrialisation.

PASIG RIVER, PHILIPPINES 2018

> “By using a multi-sectorial river restoration and management approach towards the achievement of its mandate, PRRC has brought the Pasig River back to life”

Thankfully, the Pasig River Rehabilitation Commission (PRRC) was created in 1999 to revive the river, in collaboration with its stakeholders. PRRC's river restoration and management programs include easement recovery, relocation, riverbanks development, solid waste management, water quality improvement, and public awareness.

After 20 years, PRRC and its partners have already accomplished so much for the Pasig River. Almost 20,000 informal settler families (ISFs) have been resettled to safe and decent housing facilities. More than 42 kilometres of environmental preservation areas were established. To date, almost 20 out of the 47 identified tributaries have already been rehabilitated. More than 30 million kilograms of solid waste have already been diverted since 2012 through intensive and daily clean-up efforts. Biodiversity in the Pasig River has already returned with 118 species of trees and vegetation, 39 species of birds, eight species of fish, and several aquatic plants. Numerous multimedia information, education, and communication (IEC) campaigns have been conducted with different sectors of society which helped transform communities into environmentally responsible and law-abiding citizens.

With the completion of the Pasig River Integrated and Strategic Master plan (PRISM), PRRC's restoration efforts will expand to cover areas beyond the Pasig River System to the larger ecosystems of Manila Bay and Laguna Lake. In the next 15 years, urban river management for the Pasig River System will be more spatially coherent to accommodate multi-scale solutions to ensure land-based development performance is at par with environmental requisites, stream flow conditions can safeguard urban communities and aquatic life, stream corridors will become reinforced defense lines and a source of unique and multiple environmental and social benefits, and water quality would be sustainably fit for purpose.

Estero de Paco, Manila Before

Estero de Paco, Manila After

George Oliver De La Rama
Head, Public Information, Advocacy and Tourism Division
Pasig River Rehabilitation Commission

Pasig River Rehabilitation Committee (PRRC)

The Pasig River Rehabilitation Commission (PRRC), a national government agency under the Office of the President of the Philippines, was created on January 6, 1999 by virtue of Executive Order No. 54, as amended by Executive Orders No. 65 and 90, as the President's flagship project for the environment to ensure that the Pasig River System is rehabilitated to a condition that can support and sustain aquatic life and resources, and be conducive for transport, recreation, and tourism.

On October 16, 2018, the Philippines' Pasig River won the inaugural Asia River*prize* in Sydney, Australia, conferred by the International RiverFoundation (IRF) and sponsored by the Australian Water Partnership (AWP) in recognition of the inspiring initiatives in integrated river basin management to restore and protect the river.

Twinning
Case studies

Tweed Kenya Mentoring Program

Safe water project in Kenya

Tweed River, Australia

River System	Tweed River, NSW, Australia	South Central Alego district, Siaya County, Kenya
Length	70 km	390 km
Area	1,110 km^2	70,000 km^2
Population	80,000	Population in area of operations: estimated to be 10,000 – 20,000
Origin, Tributaries, etc	The Tweed River flows east to the Pacific Ocean from the Border Ranges and Lamington Plateau. Three freshwater reaches, the Tweed, Oxley and Rous Rivers, merge to form at estuary which meets the ocean at Tweed Heads in northern NSW.	The south central district of Alego has no access to river flows and groundwater is deep and brackish. The community relies on a number of shallow surface runoff collection dams for its water supply. This is supplemented by small scale rain water collection and opportunistic use of ephemeral ponds in the wet season.
Role of river system	• Supports nationally significant levels of biodiversity • Supports tourism • Provides the Tweed Shire drinking water supply	• Local dams provide drinking water for people and livestock.
River*prize*	Australian River*prize* Finalist, 2013	

The Tweed Kenya Mentoring Program (TKMP) was initiated and formally adopted by the Tweed Shire Council (TSC) in 2004. This twinning project is unique in that the TSC have never been a River*prize* winner, though they have been selected as a finalist in multiple years, most recently in 2013. Originating from a chance meeting between Olita Ogonjo from Kenya and Mike Rayner, Council's then Director of Engineering, the project has evolved over the last eight years but remains committed to water, the environment and a strong friendship between the two participating communities.

TKMP initially focused on working with youth groups in Nairobi on environment issues, using sport as a tool to engage and inform young people about river rehabilitation. Additionally, the program worked in the rural district of Siaya in Kenya's west to install small water purification facilities. Work in the past has also focussed on sanitation and community health. Today, TKMP's work concentrates on the provision of clean water.

TKMP now operates four water filtration systems, known as Safewater Projects, in Siaya County, western Kenya, and supports local water user committees to achieve better water governance. The water supply dams for many thousands of people in TKMP's area of operations are highly contaminated by silt, algae and faecal pollution from both livestock and human waste. There are no centralised water services, and so water is collected by people walking to the dams, sometimes from kilometres away. Poor water quality and limited availability creates serious health impacts for people who live in the TKMP area of operations.

In 2012, Nigel Dobson from TSC led the "Safe Water 4" project and the successful rehabilitation of Gona Dam which is now a permanent source of water for 6000 people. Prior to works, Gona Dam contained so much silt that it would dry up regularly, forcing local women and children to walk up to six kilometres per day in search of water.

The project partner Olita Ogonjo, is responsible for both the strategic and logistical delivery of the project, as well as technical operation and maintenance of Safewater facilities. The project partner

works closely with community water committees to ensure that projects are valued, used and maintained. Each of the four projects was installed and commissioned by volunteers from Tweed, who lived with local families and worked with community water associations to design, build and celebrate access to clean water.

A major focus of TKMP operations is building the technical and administrative capacity of communities relying on these facilities, and promoting increased local government responsibility for provision of safe water and sanitation.

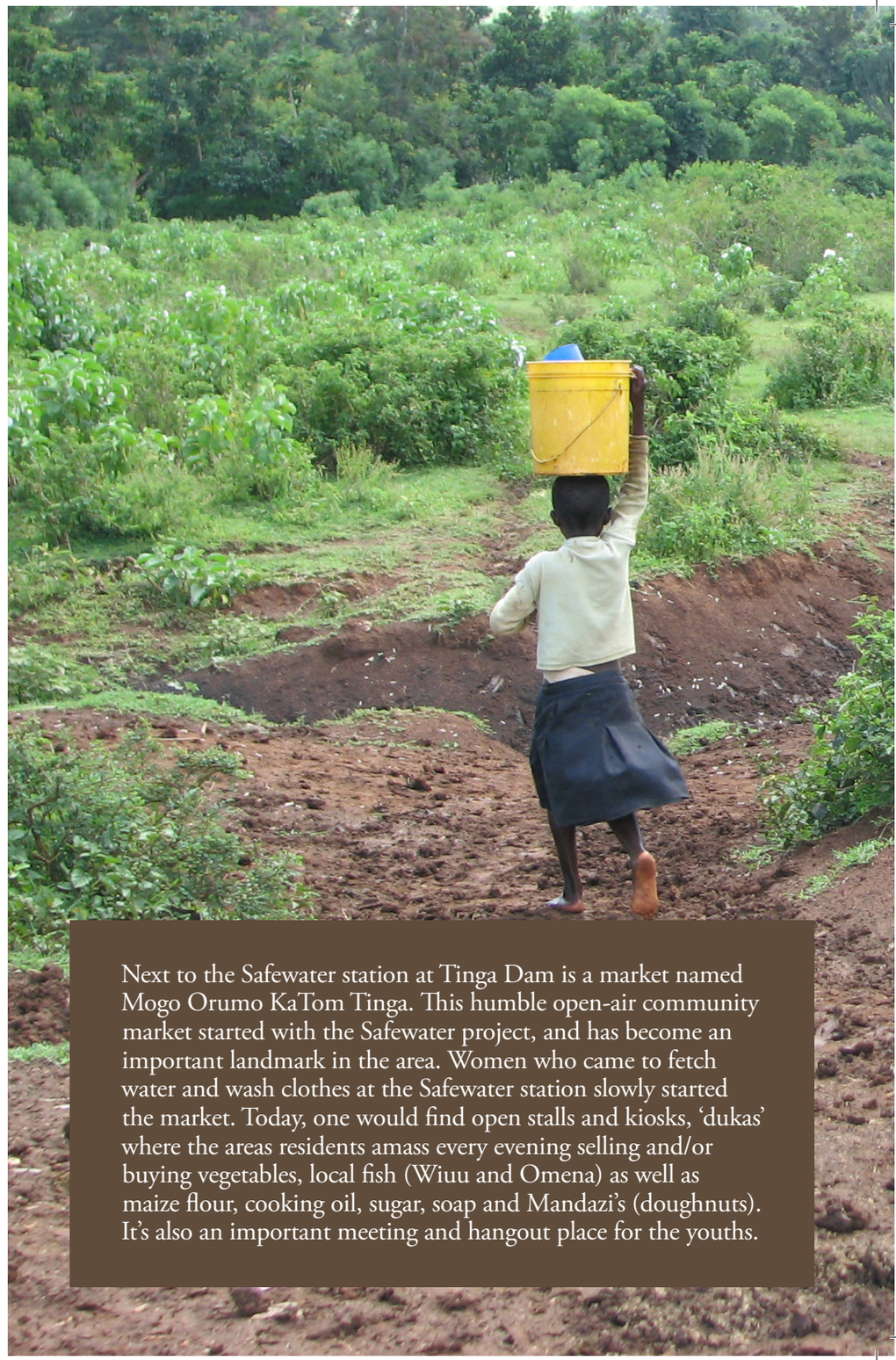
A recent highlight for TKMP was completing the de-silting of Tinga Dam in 2017. This dam is the location of a water treatment facility established by TKMP in 2007, and serves a population of several thousand people. Soil loss in the dam's catchment resulting from deforestation, over grazing and road construction had contributed to the dam losing most of its storage capacity, which lead to serious water shortage and water quality problems.

TKMP's Operational Plan for the period 2018 - 2020 contains the following objectives:

1. Continue operating and maintaining the four existing Safewater Projects (SWP).
2. Ongoing community capacity building for dam water user associations, with a continuing emphasis on operator training, water fee collection and community banking of revenue raised.
3. Sanitation education and promotion, including investigating/trailing undertaking construction of best practice home and school toilets.
4. Continually include the Kenyan government within TKMP activities, showing how the community uses the safe water projects.
5. Undertake good quality governance and reporting, including the publishing of four quarterly reports per year, as well as an annual report provided to Tweed Shire Council.

TKMP is funded from a variety of sources including private philanthropy, business sponsorship, donations from the Skyjuice Foundation and a partnership with another Tweed based health charity, Health Organisation of Kenya. Donations from Tweed Shire Council staff members are matched by Council and thousands of volunteer hours have gone into the project. The International Riverfoundation has been fundamental to the initiation and sustainability of TKMP, providing funding and governance support, and invaluable encouragement, visibility and guidance throughout the 15 years of endeavour.

Admiring the new technology



Next to the Safewater station at Tinga Dam is a market named Mogo Orumo KaTom Tinga. This humble open-air community market started with the Safewater project, and has become an important landmark in the area. Women who came to fetch water and wash clothes at the Safewater station slowly started the market. Today, one would find open stalls and kiosks, 'dukas' where the areas residents amass every evening selling and/or buying vegetables, local fish (Wiuu and Omena) as well as maize flour, cooking oil, sugar, soap and Mandazi's (doughnuts). It's also an important meeting and hangout place for the youths.

River Thames, UK & Ganges River, India

The River Thames won the Thiess International River*prize* in 2010 for significant achievements in river restoration. 60 years ago, the River Thames was declared biologically dead. Due to the work of the Environment Agency and its predecessors and partners, the cleaner waters and improved habitats have encouraged the return of a whole range of wildlife, including otters and 125 species of fish, in the tidal river.

Similar to the River Thames, the Yamuna River is a main tributary of the Ganges River and flows through New Delhi, the capital of India. The Yamuna has similar problems to those the Thames experienced in the 1950s. The Yamuna's problems are mainly the result of the rapid population growth and industrialisation which India is experiencing. Whilst helping to bring the benefits of development to hundreds of millions of people, there are side effects on rivers and the essential services that they provide for people and nature.

The Thames – Ganges twinning partnership was formed between the Thames River Restoration Trust (TRRT), the Peace Institute Charitable Trust of Delhi and WWF India in 2011. The Environment Agency made the charitable decision to donate the whole of the Thiess International River*prize* monies, not just the twinning portion, to TRRT for investment in the twinning partnership.

As a result of this twinning, more than fifty 'Friends of the River' groups have been built up along the whole 1,400 kilometres of the Yamuna River and extensive catchment restoration has been undertaken. River health and village health monitoring have been established, and natural farming, waste management, sanitation and renewable energy initiatives have been introduced. Additionally, intensive field surveys have been conducted to monitor biodiversity and evaluate threats to species (including the critically endangered Gharial crocodile) and habitats. On the Upper Ganges, a project to reintroduce the Gharial has been successfully supported, along with community development projects. The project partners will continue to work together through activities such as the 'Indian Rivers Week' starting in November 2014.

In the future, Thames Rivers Trust will continue to work with all partners to disseminate the lessons learned from the project to help the restoration of other rivers in India and around the world.

River System	River Thames, England	Ganges River, India
Length	346 km	2510 km
Area	12,935 km^2	750,000 km^2
Population	14 million	400 million
Origin, Tributaries, etc	From Gloucestershire to the Thames Estuary at Essex	From the western Himalayas (Uttarakhand, India), flowing south into the Bay of Bengal, Bangladesh
Role of river system	• Industry • Recreation • Water supply • Biodiversity • Agriculture • Tourism • Navigation	• Water supply • Agriculture • Tourism • Industry • Biodiversity • Central point of religious ceremonies
River*prize*	Thiess International River*prize* Winner, 2010	

River Thames, UK

Gharial, Ganges River, India

Charles River, USA & Jarabacoa Rivers, Dominican Republic

In September 2011, following 20 years of successful river restoration on the Charles River, Charles River Watershed Association (CRWA) won the Thiess International River*prize*.

In January 2013, Charles River Watershed Association (CRWA) officially launched their twinning partnership in Jarabacoa, a small city in the highlands of the Dominican Republic.

The City of Jarabacoa is home to a population of 52,000 and sits in a mountainous region of the Dominican Republic. It is a popular tourist destination and the wellbeing of its population is closely intertwined with the quality of its rivers including the Yaque del Norte, a critical source of drinking water, irrigation and hydropower for the region. Two small streams, Arroyo Yerba Buena and Canada Los Gatos, flow through Jarabacoa into the Yaque del Norte. Like many urban streams, they have been channelised and polluted as the city has grown.

The objectives of this twinning partnership focus on the key areas of community engagement, water quality and river restoration. CRWA and its partners in Jarabacoa are planning a comprehensive program plan for the next three years. In the first year, the partners successfully established a volunteer water quality monitoring program, and have begun the process to develop a long-term river restoration plan with the community. A community engagement and education program will be launched by the end of year two, and the partners plan to develop a demonstration restoration project by the end of the third year.

In July 2014, a delegation of ten project partners from the Dominican Republic visited Boston for a learning exchange. The visit included training activities for water quality monitoring, macroinvertebrate monitoring and improving fish passage at dams, as well as visits with Boston area environmental groups, tours of local projects, and pleasure trips on the Charles River.

This twinning project is expected to benefit both partners in many ways. CRWA will benefit from the experience of training another community, and learning about the types of problems impacting rivers other than their own. Jarabacoa will benefit from positive changes in water quality and will learn how to sustain and manage new restoration efforts as a community. The overarching goal is to unite the cities of Boston and Jarabacoa around the shared goal of cleaning up community rivers and training a new generation of environmental scientists.

River System	Charles River, USA	Jarabacoa Rivers, Dominican Republic
Length	129 km	13 km
Area	798 km^2	Unknown
Population	1 million	52,000
Origin, Tributaries, etc	From Echo Lake in Hopkinton out to the Boston Harbor.	Small tributaries to the Yaque del Norte River
Role of river system	• Recreation • Wetlands support • Species habitat • Drinking water supply	• Agriculture • Recreation • Tourism • Drinking water supply • Ecosystems
River*prize*	Thiess International River*prize* Winner, 2011	

Jarabacoa Rivers, Dominican Republic

Charles River, USA

Grand River, Canada & San Roque Lake, Argentina

Grand River, Canada

San Roque Lake, Argentina

The Grand River, Ontario, Canada won the Thiess International River*prize* in 2000, and a twinning relationship was formalised in 2004 with Los Algarrobos (Cordoba, Argentina) a non-governmental organisation specialising in environmental education, community enhancement, and watershed issues to improve the health of the San Roque Lake watershed. More recently, the twinning has included the National University of Cordoba. This twinning relationship is a mechanism for sharing and learning between the two watershed communities.

12 exchange visits have been undertaken between the two countries which have in turn facilitated workshops and the transfer of effective watershed approaches, practices and techniques from Canada to Argentina. Twinning participants have also attended the International River*symposium* and had the opportunity to learn about integrated river basin management from a range of global experts.

As a consequence of these activities, several sewage treatment upgrades have been made in the San Roque valley and open-air dumps have been shut down and cleaned up. Los Algarrobos environmental education materials, which were distributed to tens of thousands of teachers, have a watershed module that is a direct result of this twinning project. There is a growing network of watersheds in Argentina sharing information with each other and leveraging the benefits of the twinning. This watershed network includes the provinces of Catamarca, Jujuy, Cordoba, Mendoza, Salta, and Nequen.

The second phase of the twinning program focussed on implementing demonstration sites in the San Roque Lake Watershed and extending the benefits to the growing watershed network. Following the success of the Los Algarrobos twinning and in collaboration with the national University of Cordoba and the Water Resources Ministry of the Province of Cordoba, demonstration sites were established where farmers and other stakeholders implemented sustainable management practices.

To share the successes and lessons learned and to engage partners, a 'Healthy Watersheds for Healthy Communities' conference was held in 2012. Four workshops, including tours of the demonstration sites and academic seminars have been held. These events attracted a wide variety of stakeholders such as government agencies at the national, provincial and municipal level, educational institutions of tertiary and university level, farmers, producers, technicians, academics, civil organisations, general public and business and international partners. Opportunities for future partnerships and best practices were highlighted on key issue areas in the basin: riparian zones recovery, windbreaks: structure, composition and operation, and agroforestry systems: structure, composition and operation.

River System	Grand River, Canada	San Roque Lake, Argentina
Length	300 km	–
Area	14,430 km^2	16 km^2 (surface area)
Population	956,000	750,000
Origin, Tributaries, etc	Major tributaries include: Speed, Eramosa, Nith and Conestogo Rivers	Created by the damming of several rivers, including the Susuia Cosquin.
Role of river system	• Grand River and tributaries are a managed system with seven dams and reservoirs operated by the GRCA • Reservoirs, operated as a system, provide flow augmentation, water supply and flood control • 70% of land base is agriculture • Surface water and groundwater protection and management is critical for growth, recreation, agriculture, biological health and community prosperity	• Supports a large community • Tourism • Biodiversity
River*prize*	Thiess International River*prize* Winner, 2000	

Lake Simcoe, Canada & Ayuquila Armeria River Basin, Mexico

Watershed	Lake Simcoe, Canada	Ayuquila-Armeria River Basin, Mexico
Watershed Description	Surface area of Lake Simcoe – 722 km^2 Total area of Lake Simcoe watershed – 3,400 km^2 Combined length of rivers flowing into Lake Simcoe – 4,225 km	Total area of Ayuquila-Armeria River Basin – close to 10,000 km^2 Combined length of major river systems – 294 km
Population	400,000	660,000
Origin, Tributaries, etc	A number of southern Ontario rivers flow generally north from the Oak Ridges Moraine and south from the Oro Moraine, into Lake Simcoe	Located in Western Mexico, the Ayuquila River is part of the Ayuquila – Armería Basin. The Ayuquila River rises in the upper basin and merges with the Tuxcacuesco River to its east forming the Armería River.
Role of watershed and its main river systems	• Ice Fishing capital of Canada • Provides recreational opportunities in all four seasons • Supports large urban, rural and agricultural communities • Provides regional quality of life and healthy living	• 3 large dams provide water to irrigate 54,000 hectares of farmland in Jalisco and Colima • 26 municipalities within two states (Jalisco and Colima) • Supports a large community
River*prize*	Thiess International River*prize* Winner, 2009	

In 2009, the Lake Simcoe Region Conservation Authority (LSRCA) won the Thiess International River*prize*. With the *prize* came the opportunity to twin with a developing country, sharing expertise in the areas of watershed management, flood control, public participation, forestry, and general environmental management.

In July 2010, after an extensive process, LSRCA announced JIRA (a regional collective of ten municipalities working together along the Ayuquila River in Mexico) as its twinning partner. The partnership was formally expanded in February 2013 to include the University of Guadalajara and the Ayuquila-Armeria Watershed Commission.

Within the Ayuquila-Armeria River Basin, fertile valleys support the main economic activity of intensive sugar cane production. Economic benefits from development are not evenly spread within the watershed - some upstream communities profit from the intensive agriculture export of sugar cane, watermelon and tomatoes, while downstream communities rely on subsistence farming, livestock, and fisheries. Water pollution from the sugar mill and untreated sewage from the upstream communities have negative impacts on the quality of life downstream.

Between 2010 and 2013 the twinning partners completed three successful missions:

Mission I Project Definition (Mexico) defined four key areas of importance to JIRA – Governance, Water Quality Improvement/ Wastewater Treatment, Stewardship and Education.

Mission II Knowledge Building (Canada) solidified and deepened understanding of integrated watershed management and governance through three days of touring protection, restoration and monitoring projects within the Lake Simcoe watershed, and through workshops and discussions with LSRCA staff, Board members and partners.

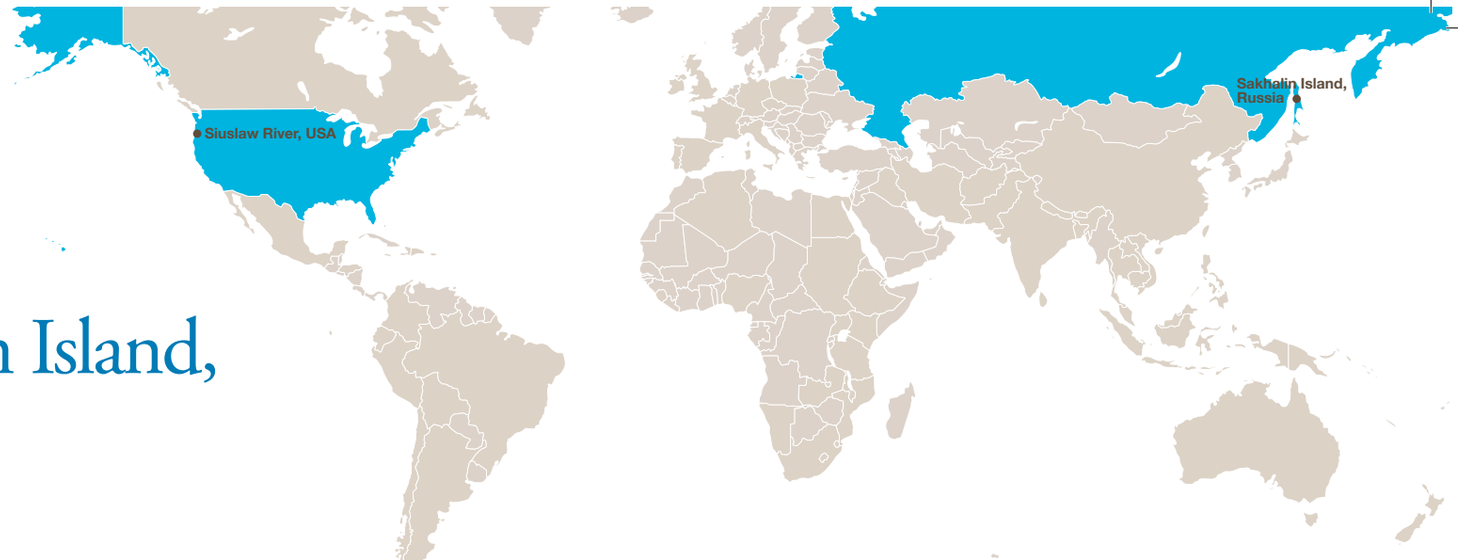
Mission III Capacity Building (Mexico) realised numerous "in the ground" accomplishments within the Ayuquila-America River Basin, including the restoration of 65 linear metres of river bank, installation of six water quality/quantity monitoring stations, delivery of community stewardship workshops, and celebration through a community tree planting event.

Mission IV is now underway and is focused on the development of an integrated watershed management plan for the Ayuquila-Armeria River Basin.

This twinning Partnership is well on track to achieving its objectives and inspiring positive social and environmental change in both countries. It is hoped that the work completed within the Ayuquila-Armeria River Basin will one day be recognised as a Thiess International River*prize* winner.

Ayuquila Armeria River Basin Mexico

Lake Simcoe, Canada



Siuslaw River, USA & Sakhalin Island, Russia

River System	Siuslaw River, USA	Rivers of Sakhalin Island, East Russia
Length	177 km	66,175 rivers in the region totalling 105,260 km, 98% of these are minor rivers no longer than 10 km
Area	2040 km^2	72,492 km^2
Population	19,500	580,000
Origin, Tributaries, etc	Drains from the Central Oregon Coast Range directly to the Pacific Ocean at Florence, Oregon	Largest rivers drain from the mountain ranges, discharging into the Sea of Okhotsk
Role of river system	• Freshwater habitat for salmon and other aquatic species • Recreation • Outflow of the region's 100+ inches of annual rainfall	• Food source • Employment (through salmon fishing) • Tourism • Recreation • Freshwater habitat of salmonoid fish
River*prize*	Thiess International River*prize* Winner, 2004	Smyrnik River was a Finalist for River*prize*, 2008

After the Siuslaw Basin Partnership from Oregon USA won the 2004 Thiess International River*prize* for their remarkable accomplishments and innovation in the restoration of salmon habitat, they embarked on a journey to share their experience and lessons with Pacific coastal areas in the Russian Far East in order to assist in preserving those wild salmon populations.

One major difference between the two regions is that in contrast to Oregon, all of Sakhalin's salmon runs are still wild and at 50 percent or more than historic numbers, and continue to make a significant contribution to the local economies.

Wild Salmon Center (WSC), a non-governmental organisation based in Portland, Oregon, provided an important bridge between Sakhalin Island and Oregon. WSC was founded in 1993 to share knowledge of the historical impacts and innovative remedies occurring in the Pacific Northwest USA with the rest of the world.

Sakhalin Salmon Initiative (SSI) was formed in 2004 through the joint efforts of Sakhalin Energy Investment Company, Wild Salmon Centre, the Siuslaw Partnership, and multiple local stakeholders. This unique, public-private partnership focused on advancing conservation and sustainable use of wild salmon and the ecosystems upon which they depend, building institutional capacity for conservation, and promoting sustainable economic development on Sakhalin Island.

The twinning partnership between the Siuslaw, WSC, and communities in the Russian Far East has played a major role in the establishment of Russia's first-ever Public Salmon Councils involving citizens, agencies, academia, and commercial and recreational interests in restoring and protecting salmon habitat on Sakhalin Island and other areas of the region. The Khabarovsk Region on the mainland and large river catchments on Kamchatka Peninsula have added a great deal to this initiative and its scope in the development of Public Salmon Councils.

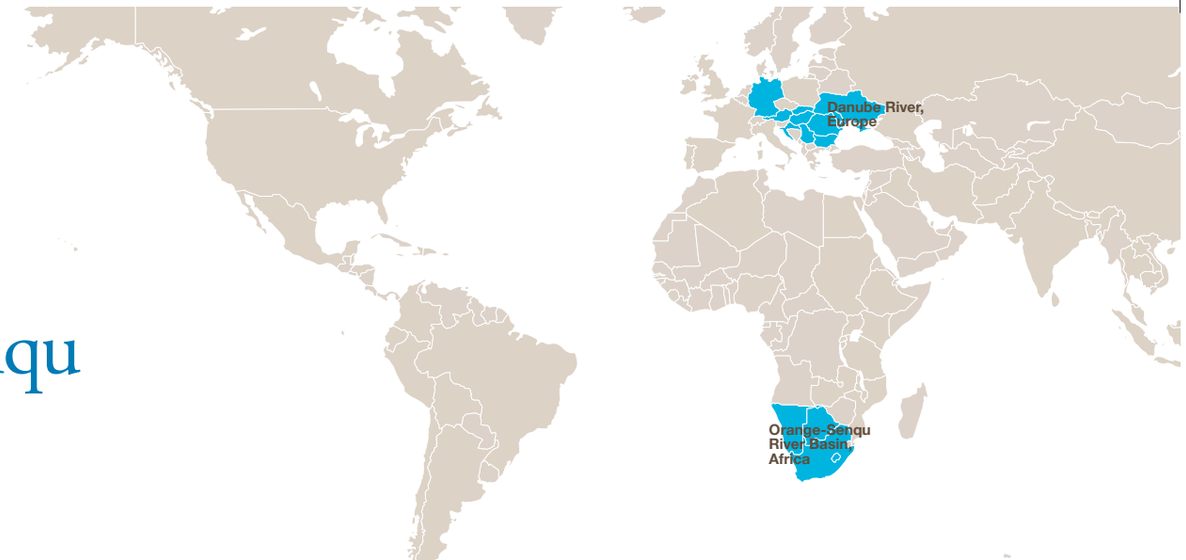
There have been 12 exchange visits between Russian Far East representatives and the Siuslaw Basin since 2005, with Johnny Sundstrom of the Siuslaw Institute, Oregon leading the twinning initiatives.

In August 2012, he participated in the first-ever Kamchatka Peninsula's Ust-Bolshaya Council's regional Salmon and Community Festival, and in 2013 these efforts were the basis of that Council's placement as a finalist for the Thiess International River*prize*.

Siuslaw River, USA

Sakhalin Island, Russia

Danube River, Europe & Orange-Senqu River Basin, Africa



The International Commission for the Protection of the Danube River (ICPDR) won the Thiess International River*prize* in 2007 for significant achievements and excellence in river management recognising the work undertaken for the past 15 years to overcome political and economical obstacles.

The ICPDR and Orange-Senqu River Commission (ORASECOM) have established a long-term collaborative relationship. The two Commissions entered into a Memorandum of Understanding regarding cooperation on Technical assistance, capacity building, and information sharing on transboundary river basin management and other related issues at a meeting in Vienna, Austria on the 13th of July 2008.

The twinning exchange of knowledge and experience will be focussed on the following:

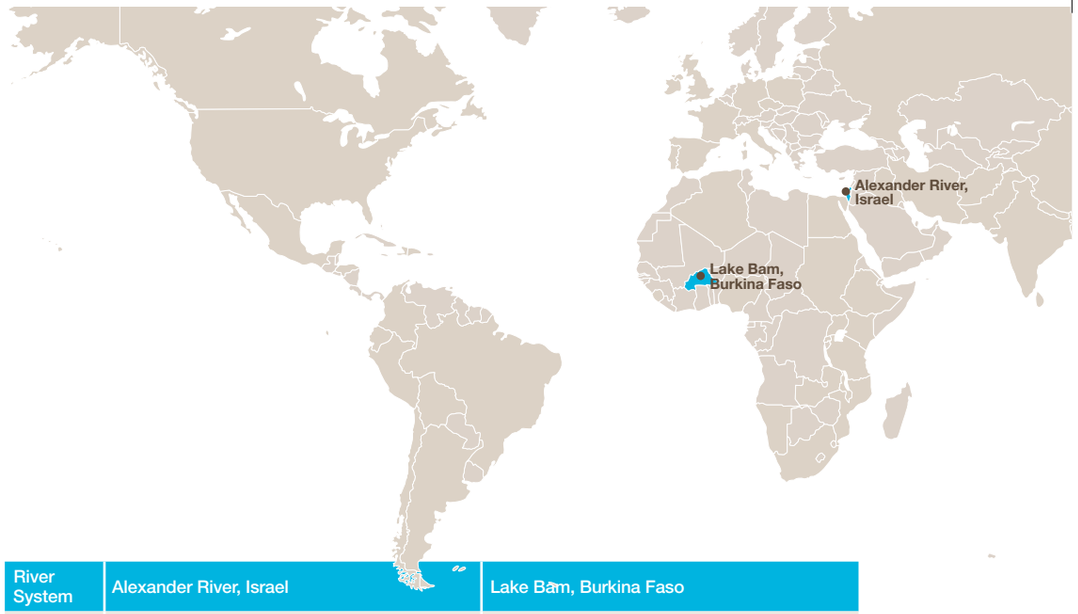
- Institutional and organisational development of River Basin Organisations including procedures and operations, and participation of key stakeholders such as NGOs and the business community in both operational activities and official meetings;
- Implementation of legal instruments that regulate the operations of a River Basin Organisation;
- Development of common policy framework in trans-boundary basin system;
- Balancing priorities among different stakeholders and interest groups as well as improving stakeholder participation in basin management; and
- Technical assistance in the development of basin wide management plans for
  – improving stakeholder participation in basin management; infrastructural development (e.g. GIS data bases); pollution control, monitoring and water analysis.

River System	Danube River, Europe	Orange-Senqu River Basin, Africa
Length	2857 km	2300 km
Area	Ca. 800,000 km^2	1 million km^2
Population	Ca. 83 million	14.5 million
Origin, Tributaries, etc	Classified as an international waterway. Originates in the town of Donaueschingen, Germany—at the confluence of the rivers Brigach and Breg. Flows eastwards passing through four capital cities before entering the Black Sea via the Danube Delta in Romania and Ukraine.	Highly variable geography. From the mountainous terrain of the Kingdom of Lesotho, through the semi-arid and arid landscapes of South Africa's Karoo and Richtersveld, to the deserts of southern Namibia. Basin also covers the arid area of southern Kalahari desert in Botswana.
Role of river system	• Industry & Transport • Agriculture • Large urban populations • Drinking water • Recreation & Tourism • Wildlife corridor	• Agriculture • Power generation • Urban and domestic uses • Industry • Mining • Wildlife
River*prize*	Thiess International River*prize* Winner, 2007	

Orange-Senqu River Basin, Africa

Danube River, Europe

Alexander River, Israel & Lake Bam, Burkina Faso



Following winning the 2003 Thiess International River*prize*, the Alexander River Restoration Administration (ARRA) from Israel established in 2004 a twinning project with the Ministry of Agriculture, Water Resources and Fisheries in Burkina Faso, West Africa. The aim was to share knowledge and together plan how to restore the deteriorated Lake Bam, which is situated approximately 120 km north of Ouagadougou, the capital city of one of the poorest countries in the world.

Lake Bam is a natural lake, part of the Nakanbe (Volta) river system, which flows through the Central Plateau of Burkina Faso. The length of the lake usually varies between 15-25 kilometres, and the width is 1-2 kilometres. The volume of the water in the lake varies between 37.5 million cubic metres in the wet season to almost nothing at the end of the dry season. The lake is only two to four metres deep in the dry season, and in extreme droughts it may dry out. This happened three times in the last century. On the other hand, the lake floods its surroundings frequently during the wet season, including parts of the very poor town of Kongoussi.

The lake suffers from the impact of desertification, local human activity and pressure around it, and from enhanced use of its water by the fast growing population. The lake is the source of life for the environment in this region and for a population of about 100,000 people who totally depend on the water from the lake, sometimes even for drinking. With no intervention, it might dry out and cause an environmental and human crisis. The problem of Lake Bam is a local environmental problem with global impact. The project of saving Lake Bam is a project where a real difference can be made.

Both partners of the twinning project, together with the IRF which financed the project, established a planning team of experts from four continents, speaking five languages. The team has prepared a scoping study (2005) and a Feasibility Study (2007) which includes a wide range of recommendations on how to turn the lake into a long term sustainable resource again.

River System	Alexander River, Israel	Lake Bam, Burkina Faso
Length	45 km	–
Area	550 km^2	Variable surface area due to extreme weather conditions
Population	ci. 600,000	100,000
Origin, Tributaries, etc	Flows from Nablus in the mountains of Samaria to the Mediterranean Sea.	Natural lake, part of the Nakanbe River system (Upper Volta)
Role of river system	• Biodiversity • Agriculture • Recreation	• Clean water for a large community • Source of food • Agriculture
River*prize*	Thiess International River*prize* Winner, 2003	

Alexander River, Israel

Lake Bam, Burkina Faso

Derwent Estuary, Tasmania & D'Entrecasteaux Channel, Tasmania

The Derwent estuary lies at the heart of the Hobart metropolitan area. This beautiful and diverse waterway is an integral part of Tasmania's cultural, economic and natural heritage.

The estuary is an important and productive ecosystem and supports a wide range of habitats and species. The Derwent River is also a major supply of drinking water and source of hydroelectric power. The Derwent Estuary Program (DEP) was established in 1999 and brings together a wide range of stakeholders – first to build a common understanding, vision and management framework – and second to progressively implement this vision through partnership agreements, good science and practical actions.

The DEP won the Australian River*prize* in 2010. This allowed a twinning program to be seeded between the DEP and stakeholders of the adjacent waterway of the D'Entrecasteaux Channel and lower Huon estuary. Issues affecting the D'Entrecasteaux Channel and lower Huon estuary include population growth, rapid development of aquaculture, and increasing recreational boating and fishing.

River System	Derwent Estuary, Australia	D'Entrecasteaux Channel, Australia
Length	239 km	
Area	9,832 km^2	717 km^2
Population	200,000	30,500
Origin, Tributaries, etc	Originating at Lake St Clair and flowing south to New Norfolk, the estuary portion extends a further 52 km out to sea	The Channel lies between Bruny Island and south-east mainland Tasmania. It extends between the estuaries of the Derwent, and the Huon Rivers
Role of river system	• Recreation • Transport • Industry • Drinking Water • Hydroelectricity	• Cultural significance • Marine reserves • Biodiversity • Recreation • Commercial fishing • Tourism
River*prize*	Australian River*prize* Winner, 2010	


D'Entrecasteaux Channel, Tasmania


Derwent Estuary, Tasmania

The River*prize* was instrumental in integrating community, government and industry interests to formalise a D'Enrecasteaux Channel partnership. This partnership released a comprehensive 'State of the Waterway' in 2012. It has since adopted the name 'The D'Entrecasteaux & Huon Collaboration ('the Collaboration'), and approved its first five year joint action plan, the focus of which is 'a healthy waterway through public stewardship'. Focus activities include joint reporting of waterway monitoring, scientific exchange and learning, and facilitating public stewardship of the waterway.

Regional geographic proximity has worked exceptionally well for the DEP and the Collaboration well for this twinning program. Advantages are evident in:

- the mentoring relationship via mutual understanding of what is desirable and feasible in applying the DEP model at the local scale of the Collaboration, and
- public confidence in investing in the Collaboration, because the DEP model is familiar and well respected.

Bulimba Creek, Queensland & Gregory River, Queensland

Bulimba Creek Catchment Coordinating Committee (B4C), Queensland, won the Australian River*prize* in 2005. The area is dominated throughout by residential development. Whilst large scale industrial activities continue in the lower catchment, the upper catchment has some peri-urban areas.

Fed by limestone springs, the immense Gregory River is one of few rivers in this region that flow all year round thanks to a strong groundwater influence from Australia's largest karst terrain.

The Maga-Kutana, Wakabunga, Nguburinjo, Ganggalida amd Mingin people are the traditional owners of the Gregory River catchment area and maintain strong cultural and spiritual connections with the land and rivers. The traditional ecological knowledge and health of these communities is in turn critical to the ongoing health of this wild river system.

B4C started building relationships in the Gregory in 2006 in collaboration with Southern Gulf Catchments. In 2007, B4C became a founding member of Gregory River Landcare Group and started to work with schools to establish healthy food gardens and facilitate cultural exchanges with students in Brisbane. The first healthy food gardens were established in 2008 at Gregory Downs, Burketown and Doomadgee, and since then members of Bulimba Creek Catchment have visited the region yearly to refurbish the gardens and run workshops with the students. There have been successes, failures and lessons learned. While twinning has been ongoing, 2013 will be a year of new challenges.

Organisations involved:

- Bulimba Creek Catchment Coordinating Committee
- Gregory River Landcare
- International RiverFoundation
- Burketown State School
- Doomadgee State School
- Gregory Educational Facility
- Southern Gulf Catchments

Focus activities:

- healthy food gardens for local schools
- weed eradication
- establishing landcare
- prevention of waste from travelling tourists entering the river

Bulimba Creek, Queensland

Gregory River, Queensland

River System	Bulimba Creek, Australia	Gregory River, Australia
Length	–	73 km
Area	122 km^2	717 km^2
Population	120,000	The neighbouring town of Gregory Downs has less than 100 people
Origin, Tributaries, etc	The Bulimba catchment is the second largest creek catchment in Brisbane, Queensland.	The Gregory River is fed by limestone springs and flows all year round
Role of river system	• supports urban community living • recreation • Industry	• significant cultural and spiritual values to indigenous Australians • traditional ecological knowledge
River*prize*	Australian River*prize* Winner, 2005	

Oxley Creek, Queensland & Bremer River, Queensland

River System	Oxley Creek, Australia	Bremer River, Australia
Length	70km	100 km
Area	260 km^2	2032 km^2
Origin, Tributaries, etc	From the northern slopes of Mt Perry, south of Ipswich, to the Brisbane River in Tennyson. Oxley Creek has five major tributaries.	From the World Heritage-listed National Parks bordering the Great Dividig Range, flowing north-east to Ipswich and joining the Brisbane River at Barellan Point. The Bremer River has five major tributaries.
Role of river system	• diverse range of land uses including rural, residential, industry, old sand extraction pits, waste facilities • contains a regionally significant core habitat area	• grazing land, horticulture, and mining • drinking water for residents • irrigation water for crop producers and dairy farmers
River*prize*	Australian River*prize* Winner, 2009	

Oxley Creek, Queensland

Bremer River, Queensland

Awarded the Australian River*prize* in 2009, Oxley Creek Catchment Association Inc. (OCCA) had an opportunity to twin with the nearby Bremer River. Both Oxley Creek and the Bremer River flow into the Brisbane River and then into the Ramsar listed Moreton Bay, home to herds of dugongs and other marine life. These two waterways face similar issues such as agricultural pressures in the upper reaches of the catchment, and the developed industrialised flood plains in the lower reaches. This Twinning Program was focused on sharing knowledge, skills and ideas for engaging industry, along with encouraging greater community involvement in waterway health projects.

The Oxley Bremer Twinning Project commenced in 2014 with OCCA learning about the Bremer's water quality issues, the types of land uses and impacts, the variety of stakeholders, its passionate community groups, and the need for cross boundary collaboration and whole of catchment management. The partnership enabled workshops, sharing of experiences and a legacy of collaboration. The twinning project led to the development of a network for the Bremer, drawing from the learnings of Oxley Creek's successful 'CreekWatch' program. This initiative paved the way for sustainable funding of community projects and has led to stronger community and industry collaboration within the Bremer Catchment.

In alignment of OCCA's ethos that partnerships with community, industry and government are vital for the health of the catchment and the creek, in 2017, the twinning project formally ended, and the collaborative Bremer River Network was formed. The network has forged the foundations for the Bremer River Network to obtain funding from the Council of Mayors South-East Queensland's Resilient Rivers Initiative. The Bremer River Network has facilitated the delivery of numerous projects including the "Garden of Eden" revegetation program in the heart of Ipswich City Council's central business district, which had seen 6000 plants planted and cared for in a partnership between the Catchment Groups, Council and local volunteers.

Sunshine Coast Rivers, Queensland & Capricornia Catchments, Queensland

The Sunshine Coast Rivers Initiative (SCRI) won the Australian River*prize* in 2011 for their long-term collaborative and strategic approach to community-based natural resource management in the catchments of the Noosa, Maroochy, Mooloolah, Pumicestone, Stanley and Mary Rivers.

Part of the traditional lands of the Darumbal, Fig Tree Creek Catchment lies in the heart of Yeppoon on the Capricorn Coast and flows into Keppel Bay and ultimately to the Southern Great Barrier Reef Lagoon.

The catchment faces multiple environmental pressures arising from increasing urbanisation including poor water quality due to stormwater, weed infestation, significant erosion and lack of community stewardship. Other issues include aging/ inadequate infrastructure, historical lack of environmental assessment and lack of strategic management.

The SCRI and Capricornia Catchments/ Livingstone Shire Council Sister Catchment project was formulated for the purpose of sharing expertise across aspects of catchment management, with a focus on the relatively small Fig Tree Creek.

The project aimed to embrace the waterway management through collective community planning and action, and has achieved symbiotic benefits for both groups with many useful expertise exchanges, ultimately contributing to better overall management of the Fig Tree Creek catchment. These included erosion and sediment management, the establishment of a nursery and biocontrol breeding facility for Cats Claw Creeper control following a visit to the Noosa Landcare facility, marine debris clean-up in Keppel Bay which has become an annual event, new technologies being trialled for gross pollutant traps, capacity building with Livingstone Shire Council and Traditional Owner youth leadership exchange.

Although there were several setbacks including a Category 5 cyclone and time constraints, the project has yielded positive results which are on-going. The SCRI and Capricornia Catchments/Livingstone Shire Council continue to maintain their connections from the Twinning Initiative into the future.

River System	Sunshine Coast Rivers, Australia	Capricornia Catchments, Australia
Length	5,000 km	5.7 km
Area	159 km^2	800 ha
Population	380,000	18,500
Origin, Tributaries, etc	Blackall Range, Cooloola National Park and Woondum Range.	The Fig Tree Creek Catchment runs through the heart of Yeppoon
Role of river system	• Habitat • Recreation • Enhance liveability • Support commercial activities	• Enhances urban liveability • Recreation • Habitat
River*prize*	Australasia River*prize* Winner, 2011	

Sunshine Coast Rivers, Australia

Capricornia Catchments, Australia

Willamette River, USA & Rio Laja, Mexico

River System	Willamette River, USA	Rio Laja, Mexico
Length	301 km	320 km
Area	29,730 km²	5,000 km²
Population	2,940,000	400,000
Origin, Tributaries, etc	Several tributaries, flowing northward from the Cascade Mountains to the Columbia River and Pacific Ocean.	Several tributaries, flowing southwest across Central Mexico to the Rio Lerma and the Pacific Ocean.
Role of river system	• Agriculture • Salmon and native fish habitat • Drinking water for several municipalities • Sand and gravel extraction • Community recreation	• Agriculture • Employment (through salmon fishing) • Tourism • Recreation • Freshwater habitat of salmonoid fish
River*prize*	Thiess International River*prize* Winner, 2012	

The Willamette-Laja Twinning Partnership united youth, teachers, river restoration practitioners, and the birding community for deep cultural connections and sustained conservation of shared migratory birds species and habitats.

In September 2012, the Willamette River Initiative (WRI) in Oregon, USA won the Thiess International River*prize*, and in 2015 the WRI partners formally selected the Rio Laja, located in the state of Guanajuato in Central Mexico to be a twinning partner. The Laja faces similar watershed issues such as sand and gravel extraction, wetland destruction, invasive species, diminished upland oak habitats, and water quality degradation. A significant factor in choosing the Laja were cross-cultural connections between communities in the Laja and the Willamette's own Mexican immigrant population. The cultural ties were invaluable considering the large Mexican migrant work force in the Willamette's native plant nurseries and contracted forestry and riparian planting companies.

The Willamette-Laja Twinning Partnership has sparked new partnerships and continues to plan cross-cultural exchanges for professionals and primary school teachers interested in watershed restoration and education. The overarching goals include promotion of a diverse conservation movement in the Willamette, development of strong cross-border relationships of all ages, and continued peer-to-peer learning among professionals to improve the effectiveness of watershed restoration and conservation in the Laja and Willamette basins.

The platform of shared neotropcial migratory bird species creates a direct cultural link based on ecological connectivity in the North American flyway. The Willamette-Laja partnership project is focused on full lifecycle conservation along the flyway using education, engagement and economic development with rural and urban Latino communities.

The projects long-term youth education, local community engagement and habitat restoration projects will indirectly benefit all shared migratory species in Laja and Willamette by decreasing pressure on local forest resources, creation of local ecotourism and recreation economies, and fostering community understanding and value for birds and the local watersheds.

Willamette River, USA

Rio Laja, Mexico

Mara River, Kenya & Sondu-Miriu River Basin, Kenya

The community-based Mara River Water Users Association (Mara River WUA) in western Kenya won the 2013 Thiess International River*prize* for overcoming significant challenges and successfully collaborating with farmers, community groups, NGOs, consultants and many other stakeholders to implement the Mara River Environmental Management Initiative. Following their win, Mara River WUA established a Twinning relationship with the neighbouring Sondu-Miriu River Basin. The objective of the Twinning partnership was to assess the progress of implementing the recently established Sondu Basin Catchment Management plan and organise field visits to engage with local community members and stakeholders.

The Sondu-Miriu River Basin originates from the western slopes of the Mau Escarpment, flowing through a narrow gorge before entering the floodplains of Nyakwere and eventually Lake Victoria, 22km south of Kisumu City. It's the fourth largest Kenyan river basin flowing into Lake Victoria and spans 3,470 km^2. One of the main problems identified during the preparation of the Sondu Basin Catchment Management Plan was the siltation coming from unsustainable farming and land use practices. Other challenges included poor institutional frameworks, lack of finances to implement river restoration and catchment degradation from deforestation resulting in flash flooding in the lower basin.

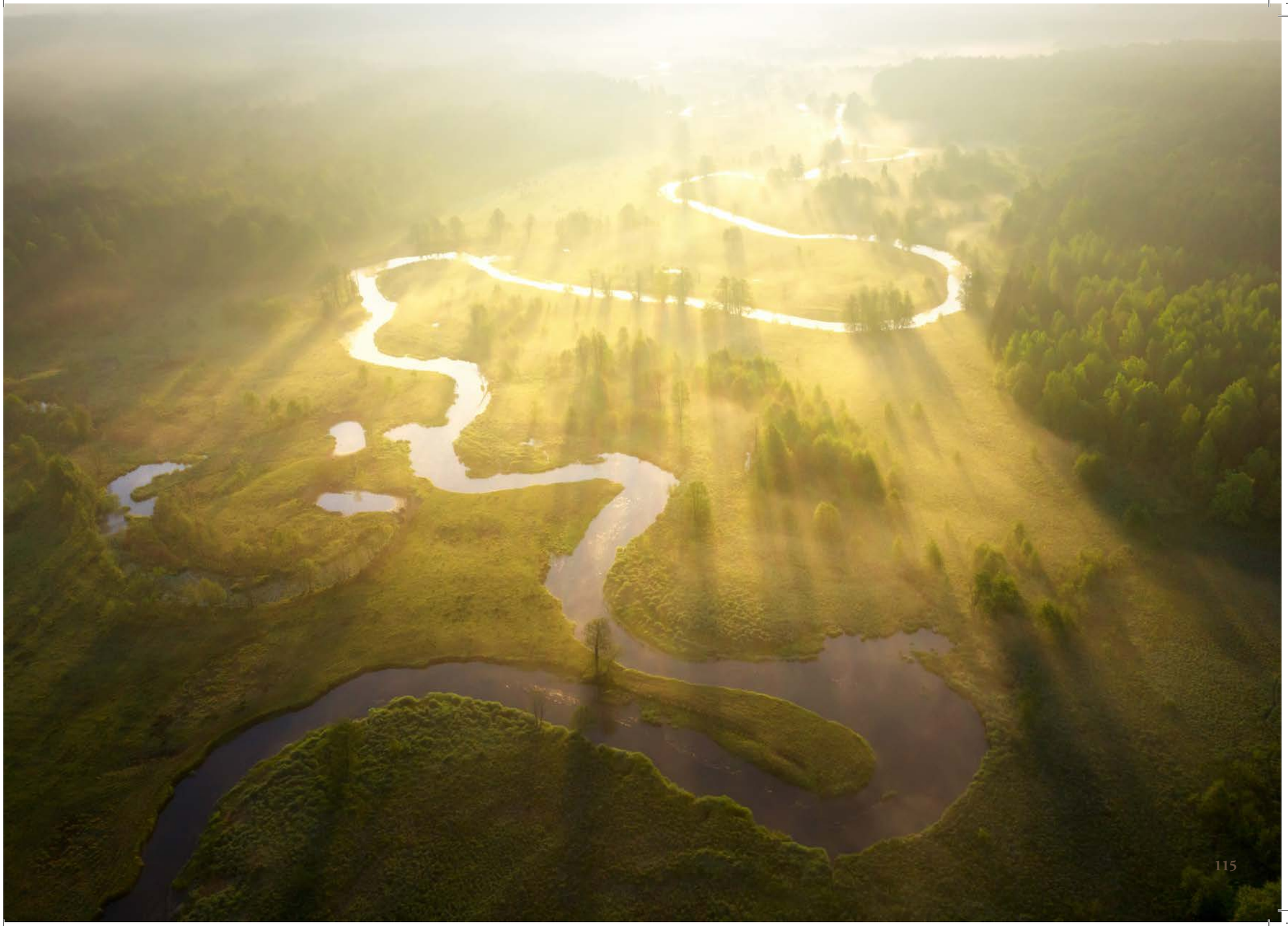
The Mara Sondu Twinning Initiative enabled a mutually beneficial platform to achieve the following:

- Identification of riverine conservation hot spots including the rehabilitation of a 25km river reach
- Formation of a Community Forest Association and the implementation of a collaborative 20-hectare forest rehabilitation project in the upper catchment;
- Exchange visits, workshops and training sessions on water resource governance;
- Conducting water quality and quantity monitoring with aims of improving farming practices to maximise soil and water retention and reducing siltation;
- Mara River WUA donated a water quality monitoring kit and trained Sondu River Basin representatives to carry out monitoring; and
- Identification of farms to be used as a knowledge sharing hubs for other community members in the area.

Mara River, Kenya

Sondu-Miriu River Basin, Kenya

River System	Mara River, Kenya	Sondu-Miriu River Basin, Kenya
Length	395 km	–
Area	14,430 km^2	3470 km^2
Population	956,000	750,000
Origin, Tributaries, etc	Major tributaries: Nyangores and Amala Rivers	Main tributaries of the river are the Kipsonio and Yurith
Role of river system	• Pastoralism • Farming • Supports the community • Biodiversity	• Supports a large community • Farming • Biodiversity
River*prize*	Thiess International River*prize* Winner, 2013	



Beyond the River*prize*

By Adrian Wells and Deborah Nias
Murray Darling Wetlands Working Group Ltd

"The value of people working together at the local level to improve land, water and cultural resources."

Murray Darling Wetlands Working Group Ltd

In 2007, the NSW Murray Wetlands Working Group received the National Theiss River*prize*. Two years later, the Group formed a company, Murray Darling Wetlands Working Group Ltd. followed by an environmental trust and a balanced water fund. This enabled the Group to expand into new projects and catchments, and focus on broader wetland and floodplain rehabilitation. However the Group retains most of its original focus and charter as it now builds on its rehabilitation achievements pioneered between 1992 and 2007. One of its significant successes is that much of the Group's knowledge is now integrated into the way that state and commonwealth government agencies manage their environmental water.

The Murray Darling Wetlands Working Group Ltd continues to develop and implement well-researched, technically-sound and community-endorsed management plans for wetlands within the Murray, Darling and Murrumbidgee catchments of NSW as well as in northern Victoria. The Group's focus continues to be wetlands on private properties where most wetlands are situated, and which are of vital importance to overall wetland diversity and improved landscape management across the Murray-Darling Basin.

Two years after receiving the Australian River*prize* in 2007, the Group began looking to new horizons and innovative ideas to continue its work. To broaden its geographic reach, it became a company limited by guarantee with a slight name change to Murray Darling Wetlands Working Group and a charter to work throughout the Murray-Darling Basin. The new company soon entered into a 5 year partnership with the Murray Catchment Management Authority to rehabilitate over 3000 ha of wetlands for carbon storage. The Group was also exploring the role of Water Trusts in the management of water and looked to the USA for examples of how a Water Trust might operate in the Murray-Darling Basin. Two members of the Group visited America to investigate the concept and, on their return, the Group's chair, Howard Jones, challenged the Group to build on the River*prize*, be more innovative and take more risks, rather than continue 'just wetting things on floodplains'.

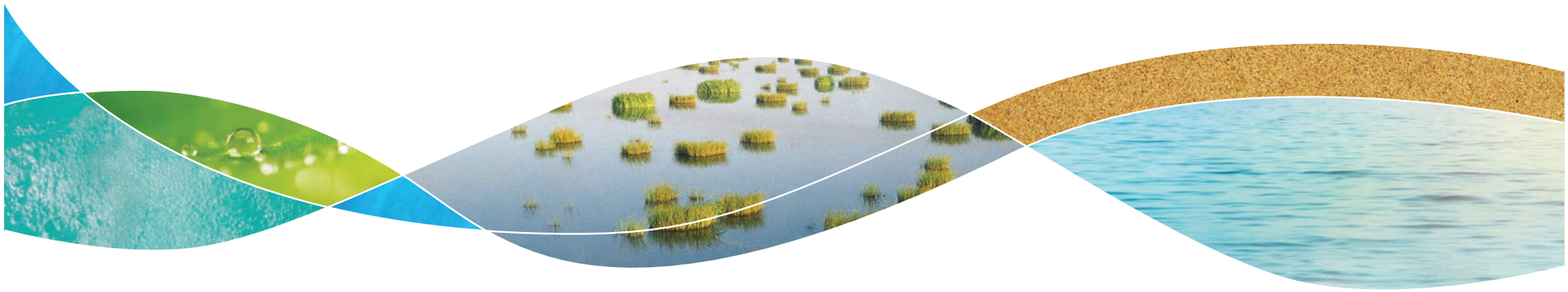
It was a serendipitous moment in 2013 when the CEO, Deborah Nias, met Brian Richter from The Nature Conservancy (TNC) USA whilst he was travelling through the Murray-Darling Basin. A conversation began between TNC and the Group on how the water market and impact investors could work together in a new model of funding and water management. Together with TNC in Australia, a new partnership was forged to establish an environmental water trust supported by a water investment fund, named the Murray-Darling Basin Balanced Water Fund.

The Balanced Water Fund, the first of its kind in Australia, is an impact investment fund managed by Kilter Rural, which receives funds from investors to purchase water entitlements. Each year, a portion of that water is returned to agriculture through trade and lease and importantly, some water and supporting funds are also donated to the Environmental Water Trust, owned by the Group and TNC Australia. This allows the Group to secure donations of money and water to improve social, cultural and ecological outcomes for wetlands, particularly on private property. These developments allowed the Group to also expand its vision from rehabilitating single wetlands to large-scale watering of floodplains across multiple catchments. In November 2017, Murray Darling Wetlands Working Group, The Nature Conservancy and Kilter Rural received a Banksia Award, in the natural capital category for establishing the Murray-Darling Basin Balanced Water Fund.

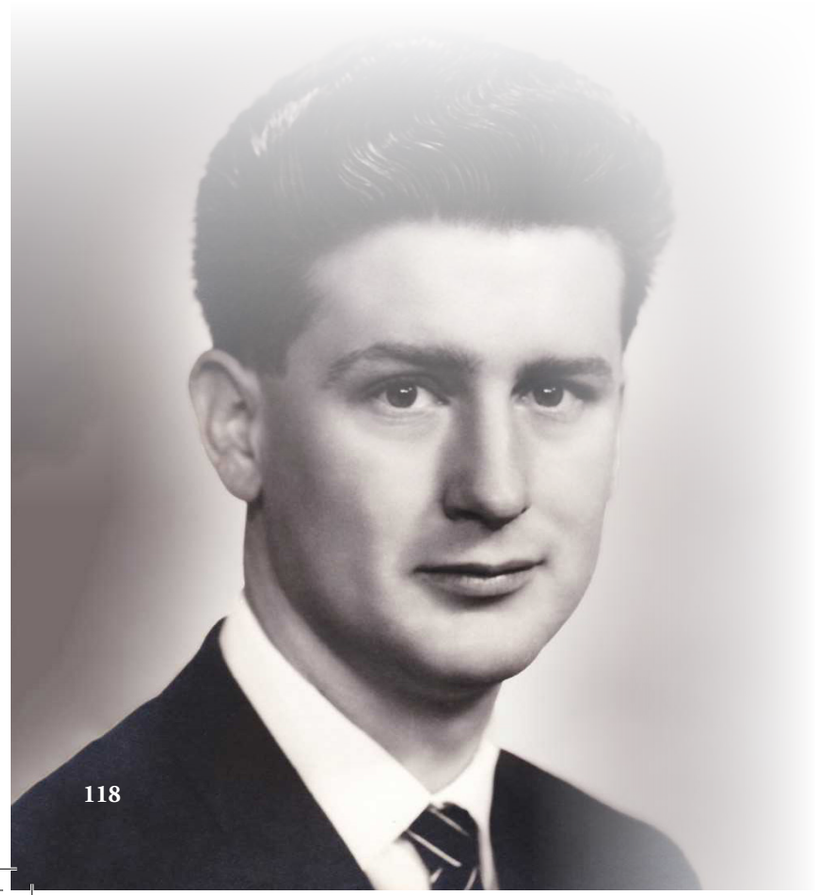
Since 2017, the Group has also matured its engagement with Aboriginal communities. In 2018, the Group became part of a consortium to rehabilitate Gayini Nimmie-Caira, an 85,000 ha of highly significant floodplain wetlands on the lower Murrumbidgee River. The Nari Nari people are one of four equal partners in this 10-year program to rehabilitate a floodplain of cultural, environmental and social significance.

Over 27 years that have included droughts, floods and major water reform across the Murray-Darling Basin, the Group has actively pursued improved wetland rehabilitation with little conflict. The Group has demonstrated the value of people working together at the local level to improve land, water and cultural resources. In addition, much of the Group's knowledge has been integrated into the way that state and commonwealth governments manage their environmental water.

The Murray Darling Wetland Working Group's chair, Ian Davidson, sees no finishing point for the Group. 'Science, technology, communication and communities as well as the challenges of climate change, invasive plants and animals, protecting cultural heritage and changing water use will demand new management techniques. These are opportunities the Working Group is well-equipped to handle.'



Ken Thiess Memorial Scholarship



Our Ken Thiess Memorial Scholarship builds capacity in integrated water resource management which in turn benefits the home nation of the scholar.

This scholarship enables a recipient to study the International WaterCentre's Master of Integrated Water Management in Brisbane, Australia by funding tuition, living expenses, travel allowances, visas and health cover. This Master's degree builds future water leaders to collaborate, create and deliver innovative approaches to complex water management and sustainable development challenges.

This scholarship is funded by the Bert and Vera Thiess Foundation as legacy for their son, Ken Thiess, who died performing engineering duties on the construction of the Snowy Mountains Scheme. The scholarship is awarded to emerging water leaders who exhibit his commitment and dedication to water.

IWC Master of Integrated Water Management

The course is taught by international leaders in a broad spectrum of disciplines and delivered by the International WaterCentre. Graduates gain the research, strategic and managerial skills they need to advance their careers in the water sector and become future leaders in integrated water management.

IWC International WaterCentre

2019
José Fernández
PERU

2019
Rosie Sanderson
AUSTRALIA

2018
Joel Dalberger
AUSTRALIA

2018
Jamyang Namgyel
BHUTAN

2018
David Rodgers
AUSTRALIA

2017
Rej Bungabong
PHILIPPINES

2017
Camaria Holder
ANTIGUA & BARBUDA

2016
Jackline Muturi
KENYA

2016
Denise Cheah
MALAYSIA

2014
Vanh Mixap
LAOS

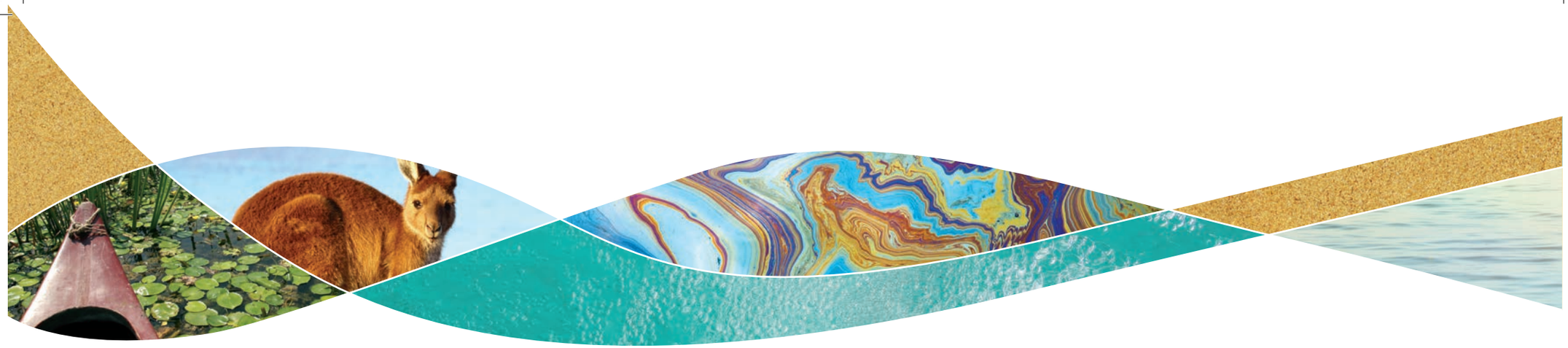
2013
Faisal Elias
GHANA

2012
Nonceba Noquayi
SOUTH AFRICA

2012
Indrawan Prabharyaka
INDONESIA

2011
Kundai Chihambakwe
ZIMBABWE

2010
Olita Ogonjo
KENYA



Vera Thiess Fellowship for Women

Our Vera Thiess Fellowship for Women gives women from developing countries the opportunity to gain invaluable professional experience through the IRF and its diverse and extensive global network.

First awarded in 2016, four Fellows have undertaken research projects to enhance their professional experience and bridge the gap in women's participation in river basin management.

Awarded in the name of the late Vera Thiess, a long-time supporter of the IRF, the Fellowship recognises Vera's and the Thiess family's long-time philanthropic support and commitment to forward-looking initiatives of the International RiverFoundation.

2018
Carmina Rivera
PHILIPPINES

2018
Charity Mundava
ZIMBABWE

2017
Marie Cabriole
PHILIPPINES

2016
Suparana Kaityana
INDIA

Riverprize winners & Twinning case studies

STAFF MEMBERS

Dr Eva Abal
CHIEF EXECUTIVE OFFICER

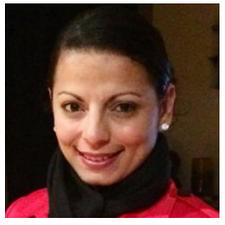
Carla Littlejohn
GERNERAL MANAGER - PARTNERSHIPS & PORTFOLIO

Kelly McMillan
EVENTS MANAGER

Natalie Baker
RIVER*SYMPOSIUM*
COORDINATOR

Sylvia Liu
COMMUNICATIONS OFFICER

Jacqui Atique
PROJECT OFFICER



Marion Schembri
FINANCE OFFICER

Tara Davis
ALUMNI COORDINATOR

Abdula Bansuan
PROJECT COORDINATOR – RIVER RECOVERY (PHILIPPINES)

Chris Skelton
FINANCIAL ADVISOR

Vanh Mixap
EMERGING WATER PROFESSIONALS PROGRAM MANAGER

BOARD MEMBERS

Chair: Prof Paul F. Greenfield
BRISBANE, AUSTRALIA

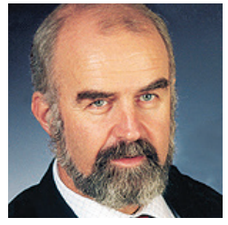
Martin Albrecht AC
BRISBANE, AUSTRALIA

Prof. Bill Dennison
BALTIMORE, USA

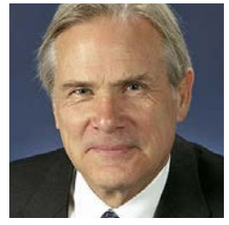
Wouter Lincklaen Arriëns
SINGAPORE

Philip Weller
VIENNA, AUSTRIA

Dr. Selina Ward
BRISBANE, AUSTRALIA



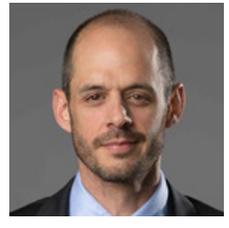
Dr. Peter Rowley
LONDON, UNITED KINGDOM



John McCarthy AO
BRISBANE, AUSTRALIA

Craig Morton
BRISBANE, AUSTRALIA
Until August 2019

Brian Kemp
ONTARIO, CANADA



Anthony De Domenico
BRISBANE, AUSTRALIA
From September 2019

IRF partners

THIESS

We thank the executives and staff at Thiess who have shown marvellous support for the IRF since its inception.

BRISBANE CITY

Dedicated to a better Brisbane

Queensland Government

The Albrecht Foundation

The IRF sincerley thanks the Albrecht Foundation for the continued support of our core programs and for the long-standing commitment to the IRF.

Australian Government
Department of Foreign Affairs and Trade

river NETWORK
connecting people saving rivers

BERT AND VERA THIESS FOUNDATION

European Centre for River Restoration
ECRR

PKF

IAWD

World Rivers Day

IWC International WaterCentre

OCEANAGOLD

Resilient Rivers Blueprint Partners

IW LEARN

Healthy land & water

University of Maryland
Center for Environmental Science

Deloitte.

International River*symposium* Partners

Australian Aid

The Australian Water Partnership

Griffith University
Queensland, Australia

ADB