CHRISTIANS IN CONSERVATION - ISSUE 54 - APRIL 2013

AROCHA
INTERNATIONAL NEWS

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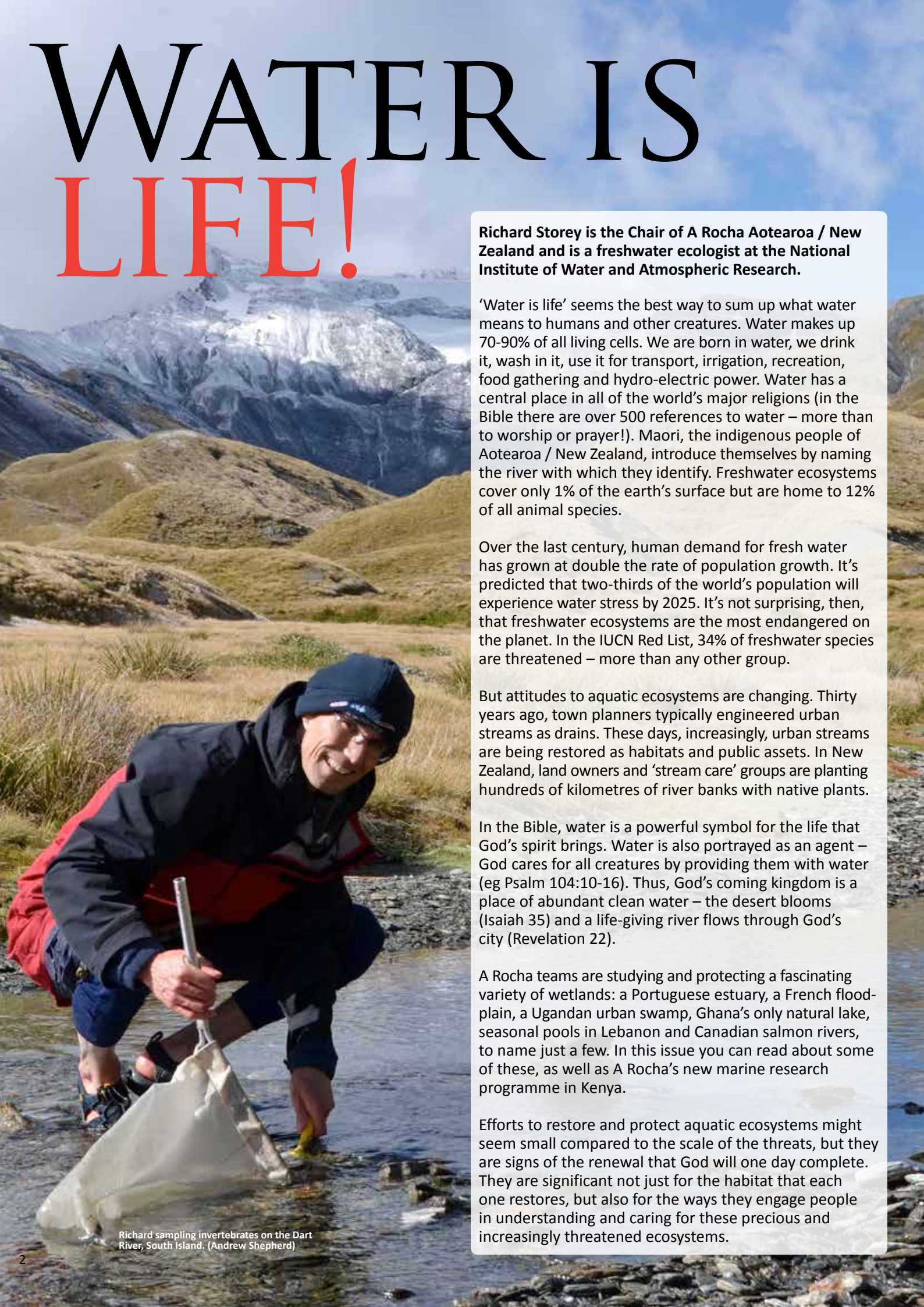
A ROCHA
30 years caring for creation

WATER IS LIFE!



Richard sampling invertebrates on the Dart River, South Island. (Andrew Shepherd)

Richard Storey is the Chair of A Rocha Aotearoa / New Zealand and is a freshwater ecologist at the National Institute of Water and Atmospheric Research.

'Water is life' seems the best way to sum up what water means to humans and other creatures. Water makes up 70-90% of all living cells. We are born in water, we drink it, wash in it, use it for transport, irrigation, recreation, food gathering and hydro-electric power. Water has a central place in all of the world's major religions (in the Bible there are over 500 references to water – more than to worship or prayer!). Maori, the indigenous people of Aotearoa / New Zealand, introduce themselves by naming the river with which they identify. Freshwater ecosystems cover only 1% of the earth's surface but are home to 12% of all animal species.

Over the last century, human demand for fresh water has grown at double the rate of population growth. It's predicted that two-thirds of the world's population will experience water stress by 2025. It's not surprising, then, that freshwater ecosystems are the most endangered on the planet. In the IUCN Red List, 34% of freshwater species are threatened – more than any other group.

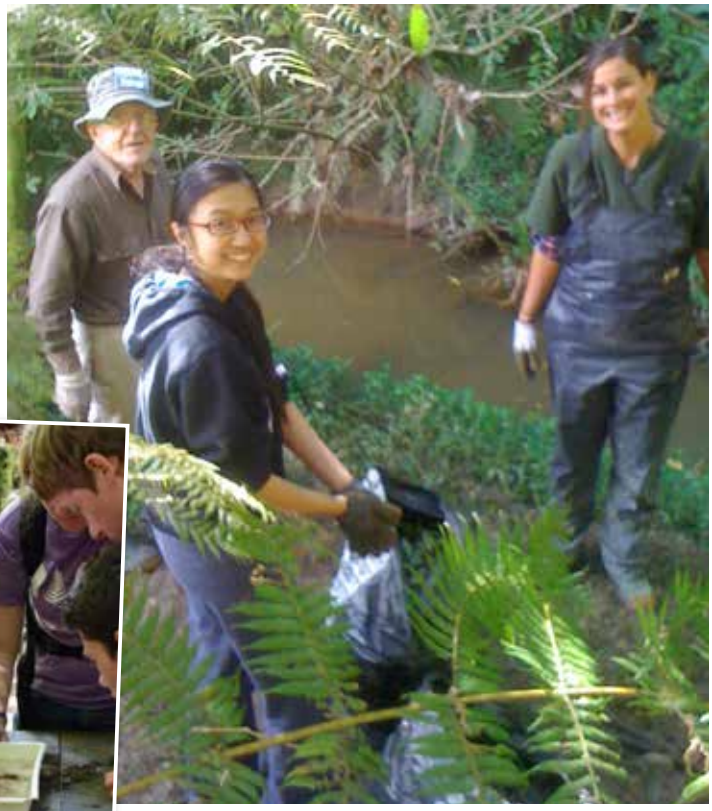
But attitudes to aquatic ecosystems are changing. Thirty years ago, town planners typically engineered urban streams as drains. These days, increasingly, urban streams are being restored as habitats and public assets. In New Zealand, land owners and 'stream care' groups are planting hundreds of kilometres of river banks with native plants.

In the Bible, water is a powerful symbol for the life that God's spirit brings. Water is also portrayed as an agent – God cares for all creatures by providing them with water (eg Psalm 104:10-16). Thus, God's coming kingdom is a place of abundant clean water – the desert blooms (Isaiah 35) and a life-giving river flows through God's city (Revelation 22).

A Rocha teams are studying and protecting a fascinating variety of wetlands: a Portuguese estuary, a French flood-plain, a Ugandan urban swamp, Ghana's only natural lake, seasonal pools in Lebanon and Canadian salmon rivers, to name just a few. In this issue you can read about some of these, as well as A Rocha's new marine research programme in Kenya.

Efforts to restore and protect aquatic ecosystems might seem small compared to the scale of the threats, but they are signs of the renewal that God will one day complete. They are significant not just for the habitat that each one restores, but also for the ways they engage people in understanding and caring for these precious and increasingly threatened ecosystems.

STREAM CARE VOLUNTEERS IN NEW ZEALAND



Teenagers identify the invertebrates living in a stream by a popular picnic spot during A Rocha's Raglan Ecoadventure camp, January 2013. (Tania Ashman)

Water quality is the biggest environmental issue in Aotearoa / New Zealand according to public opinion. Increasingly, New Zealanders are recognising that the clearing of native forests and the introduction of cattle and sheep (which occupy about 40% of the country) are the main causes of declining water quality and aquatic biodiversity. The main way to reverse the decline is to fence stream channels from livestock and plant stream banks with native plants.

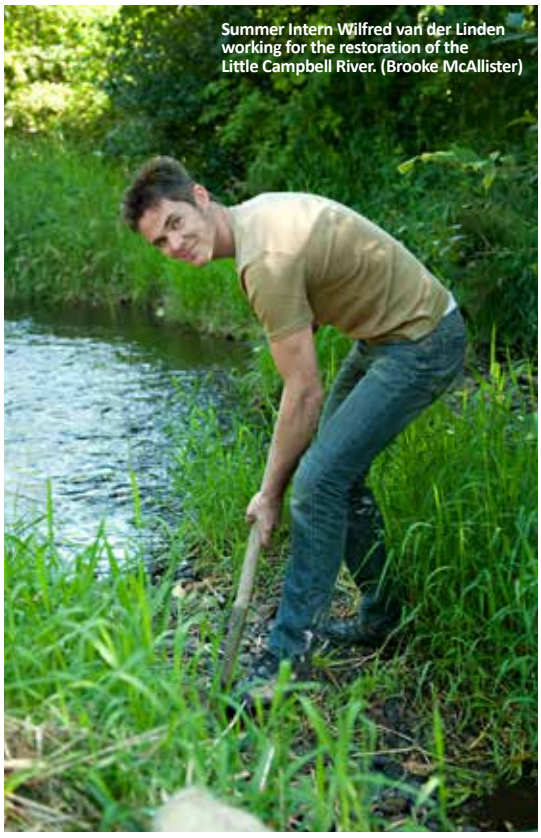
Fencing streams greatly reduces their contamination by sediment, nutrients (which promote nuisance algal growths) and faecal microbes. In addition, native trees along the banks provide shade to reduce high summer temperatures (that stress fish and stream insects) and fallen leaf litter that is food for aquatic life.

Three A Rocha groups are directly restoring streams by planting banks and two others are propagating tough 'pioneer' native tree species such as the iconic 'cabbage tree' for restoration planting. In all these projects, A Rocha partners with local stream care groups.

There is now an urgent need to monitor the recovery of stream ecosystems after fencing and planting. A Rocha could play a vital role here, demonstrating the benefits of the restoration work. Some improvements, such as water quality, are expected to occur within a few years, whereas others, such as the return of large logs from fallen trees, may take hundreds of years. Stream restoration needs to be seen as a long-term project!

Dr Robert J Davies-Colley is a scientist at the National Institute of Water and Atmospheric Research. He is also the local group liaison and projects coordinator with A Rocha.

RESTORING A SALMON RIVER IN CANADA



Summer Intern Wilfred van der Linden working for the restoration of the Little Campbell River. (Brooke McAllister)

The Little Campbell River flows for 30 km through land which is mostly agricultural or urbanised until it empties into Boundary Bay on Canada's border with Washington State, USA. Despite the inevitable threats to water quality, it's still important for runs of five species of salmonids and a diverse range of rare species, including Cutthroat Trout *Oncorhynchus clarkii*, Salish Sucker *Catostomus sp.*, Pacific Water Shrew *Sorex bendirii*, Great Blue Heron *Ardea herodias*, Northern Red-legged Frog *Rana aurora* and Red-legged Frog *R. draytonii*, plus more common wildlife such as Beaver *Castor canadensis*, Bald Eagle *Haliaeetus leucocephalus* and Pacific Chorus Frog *Pseudacris regilla*.

Shortly before reaching the sea, the river flows through A Rocha Canada's Brooksdale Environmental Centre in Surrey, BC – a beautiful 40 acre heritage farm property. Since 2001, the A Rocha team has been studying the river's wildlife and making habitat improvements. In 2012, with funding from the Pacific Salmon Foundation and the Vancity enviroFund, A Rocha created new rearing areas for salmon just off the river, including a pond, marshland and a connecting channel from a tributary. Invasive vegetation along the banks of the A Rocha property and elsewhere has been removed and replaced with native plants. The new habitats will be an important refuge for juvenile salmonids and Salish Sucker at different times of year.

Protecting Ghana's only natural lake

Geologists believe that about 1.3 million years ago, the west central part of Ghana's Ashanti Region was struck by a meteorite. The impact created a huge crater, which is now Lake Bosomtwe, one of only six major meteoritic lakes in the world. It lies 35 km south-east of Kumasi – Ghana's second largest city with a population of about 2 million. The lake is a highly productive biological system, providing water for consumption, fishing, irrigation, recreation and other domestic, agricultural and recreational uses. Farming and fishing are the main livelihoods for the twenty-four indigenous communities around the edge, so the lake and its catchment area are an economically significant part of their existence.

With a rim diameter of 10.5 km and a maximum depth of 78 m, the lake is a closed hydrological basin: four streams flow into it, but it has no outlet. This forest and wetland ecosystem is globally significant for its flora and fauna, the wooded slopes providing habitat for many mammals, including the globally endangered Jentink's Duiker *Cephalophus jentinki*. Important trees in the catchment area include endangered commercial timber species such as the mahoganies *Khaya senegalensis* and *K. grandifoliola*. The lake also has the endemic fish *Tilapia bosonama*.

Although Lake Bosomtwe is a unique and sensitive ecosystem that calls for proper care and management, it is gradually becoming one of the most abused of Ghana's natural resources. Accordingly, A Rocha Ghana is implementing a UNESCO funded project, 'Achieving conservation and improving livelihoods through sustainable management of Lake Bosomtwe basin resources'. The project is participatory: locally designed and developed. It commenced in late 2012 after the people identified four alternative livelihoods: Grasscutter (Cane Rat) rearing, beekeeping, and snail and mushroom farming. Training started in January 2013, so demonstration sites are being established and participants are being given start-up materials and technical oversight to establish their enterprises.

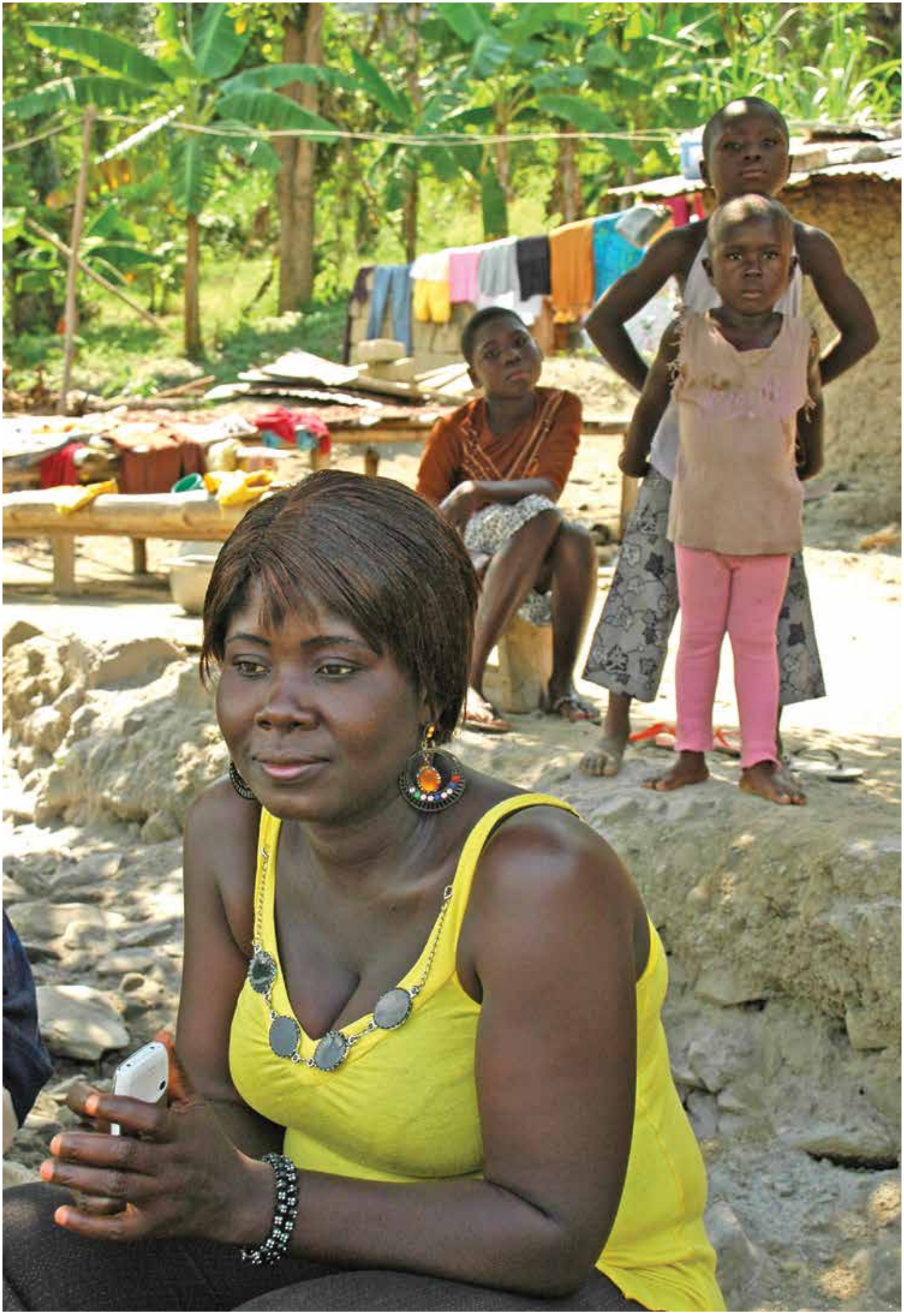
Joyce Kyei is one of the trainees and she explains why the programme is so important:

'I am the mother of five and I am the Unit Committee Chairperson for Abrodwum village. I was born here and schooled here to the basic level, and am a fishmonger by trade, buying and selling fish from the lake. Fish catches have declined over the past years and this has dramatically affected our incomes. This project couldn't have come at any better time for me, as my husband and I recently separated. With five kids to look after, I anticipate to raise another source of income from snails and Grasscutter farming.

This project will dramatically affect many households and also decrease the over-dependence on the lake resources. The project makes us plan and develop ways of protecting the lake, which is great, as I have come to the realization that, until we all act together, nothing could be achieved. This is the heritage passed on to us by our fathers and we must pass it on to our children and great grandchildren. I hope to use my influence as chairperson to get my community members totally committed to and involved with this project.'

Prosper Antwi, Project Manager, and Joyce Kyei, Unit Committee Chairperson for Abrodwum village.

Fishermen at Lake Bosomtwe lifting their plank-like craft out of the water after checking nets. Left: For the farmers around Lake Bosomtwe, cocoa is currently the most important cash crop, but A Rocha Ghana is introducing alternative, sustainable livelihoods. Right: Joyce Kyei with three of her children. (All photos: Barbara Mearns)



Studying Kenya's coral reefs

Would you like to follow the research story? Visit arocha.org/kenyamarine for photos, reports and species lists.

Benjamin measuring juvenile corals in a permanent quadrat in Watamu Marine National Park. (Robert D Sluka)

A Rocha Kenya's field study centre, Mwamba, is on the coast beside Watamu Marine National Park. It's therefore the perfect base for a Marine Conservation and Research Programme – which began in 2010. Our priorities are shaped by our partnership with Kenya Wildlife Service (KWS), the government agency that manages the Watamu park, as they need to better understand the biodiversity of the coral reefs, how human activities are impacting them and the general health of the ecosystem.

One of the first questions which KWS asked us to investigate was whether or not snorkelling by tourists is having an impact. Through a series of studies, including comparisons of areas where there is snorkelling and where there isn't, following swimmers to see what harm they cause, and interviews, we found that indeed there is an impact. Many snorkellers were observed standing on, abrading and causing damage to corals, and very little guidance was given by guides. We have met with local boat operators to discuss ways of reducing damage and are collectively working towards a training programme for them. Our results have been submitted for publication in a scientific journal.

This year we have initiated several new research programmes. The most well developed is through the PhD research of Benjamin Cowburn, a student from Oxford University who is studying the resilience of coral reefs to climate change impacts. Our work characterising biodiversity in intertidal sand and rockpool habitats has also begun and looks to be an area for expansion. Another PhD student, Paul Simonin, is helping us explore how we might incorporate fisheries research. With several experienced volunteers lined up for visits in the coming year, I am being kept on my toes with all the exciting possibilities. During the next few years we plan to expand the range of habitats and species we are studying – there are huge gaps in the published reports on this region!

One of the amazing things about marine protected areas, such as Watamu Marine National Park, is that when protected from fishing, they are of great benefit to fishermen. The fish grow larger inside the park and reproduction in most marine animals is exponentially related to size. So we see echoes of Genesis 1: teeming, swarming, and the abundance described there. The benefit is not only for those who would like to swim with these creatures, but lavishly overflows to the fishing communities as larger fish swim out of the reserve and are caught. Their buoyant eggs also float out and repopulate the surrounding areas. This is holistic creation care.

Working with the diverse community here at Mwamba has been a great adventure these past few years. We are looking forward to developing a fully-fledged marine laboratory, utilizing our new boat, documenting biodiversity, understanding the impacts on this system, characterizing its health and implementing conservation and education activities in partnership with other groups.

Dr Robert Sluka, Director of A Rocha Kenya's Marine Conservation and Research Programme.

The healing power of a Ugandan swamp

A Rocha Uganda is studying and protecting Lubigi Wetland, important for many water birds, birds of prey and large mammals. The wetland is essential not just for wildlife, but also for the people who live in the slums around it, and with whom A Rocha works. It provides them with fish, water to irrigate their vegetables and plants for medicine, crafts and food.

In June and July 2012, with the help of science internship students from Makerere University, Kampala, A Rocha Uganda conducted a survey through household interviews in the communities surrounding Lubigi Wetland. Twenty-five plant species were found to be of medicinal value to the local people, who are financially unable to access western clinics. These are mostly used for the treatment of flu, coughs, pregnancy complications, non-clinical illnesses and the promotion of cultural beliefs. The medicines are prepared in a variety of ways such as making juice, extracting powder, smoke baths, concoctions, steam baths, cold infusions, poultices and rubbing into the skin. Four people were found to directly earn a living through treating people with herbs from the wetland.

Five swamp plants are used to make crafts and dyes, and seven plants as food. Despite the local dependence on the plants, and the recent reduction in the size of the wetland, only the traditional herbalists were found to cultivate medicinal species at their homes.

Dylis Ndibaisa, Research and Conservation Officer, A Rocha Uganda

Top: Mama Arafat, from Ganda Naseri, earns a living by selling herbs which she grows in her small compound and collects from the wetland.

Middle: Mama Ssonko from Masanafu showing *Momordica foetida* in Lubigi Wetland to Hakim Kasule, who is studying for his BSc in Ethno-botany

Left: A woman from Nabweru with *Hoslundia opposita*, used to treat childbirth complications.

(All photos: Dylis Ndibaisa)

Please give a gift and give life!

Water is life! We all rely on healthy rivers and lakes – and so does wetland wildlife. Fish, frogs, dragonflies, water shrews, herons, shorebirds, aquatic plants – all need our help.

Black-winged Stilt *Himantopus himantopus* (Peter Harris)

Please enable us to continue protecting some of the world's most important wetlands. You can make a donation online at www.arocha.org/donatewetlands

If you have a credit card, you can donate here in almost any currency, from anywhere in the world. You can make a one-off gift, or you can set up a regular payment, which is even more helpful, as it helps us to plan with confidence.

If you can't donate online, or you prefer not to, please contact the International Office and we'll advise you on the easiest way for you.

A ROCHA

Christians in Conservation

A Rocha is an international Christian organization which, inspired by God's love, engages in scientific research, environmental education and community-based conservation projects.

The name 'A Rocha' is Portuguese, and means 'The Rock'. In all the countries where we work, A Rocha is identified by five core commitments and to a practical outworking of each:

Christian

Underlying all we do is our biblical faith in the living God, who made the world, loves it and entrusts it to the care of human society.

Conservation

We carry out research for the conservation and restoration of the natural world and run environmental education programmes for people all ages.

Community

Through our commitment to God, each other and the wider creation, we aim to develop good relationships both within the A Rocha family and in our local communities.

Cross-cultural

We draw on the insights and skills of people from diverse cultures, both locally and around the world.

Cooperation

We work in partnership with a wide variety of organizations and individuals who share our concerns for a sustainable world.

A Rocha has National Organizations in 19 countries: *Brazil, Bulgaria, Canada, Czech Republic, Finland, France, Ghana, India, Kenya, Lebanon, Netherlands, New Zealand, Portugal, Peru, South Africa, Switzerland, Uganda, UK and USA.*

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Cover photo: The starfish *Protoreaster lincki* eats most invertebrates found in and around coral reefs. (Bobby Sluka)