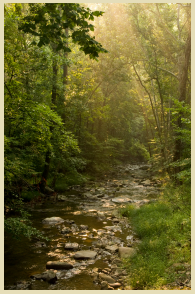
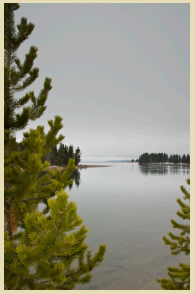
STAKEHOLDERS

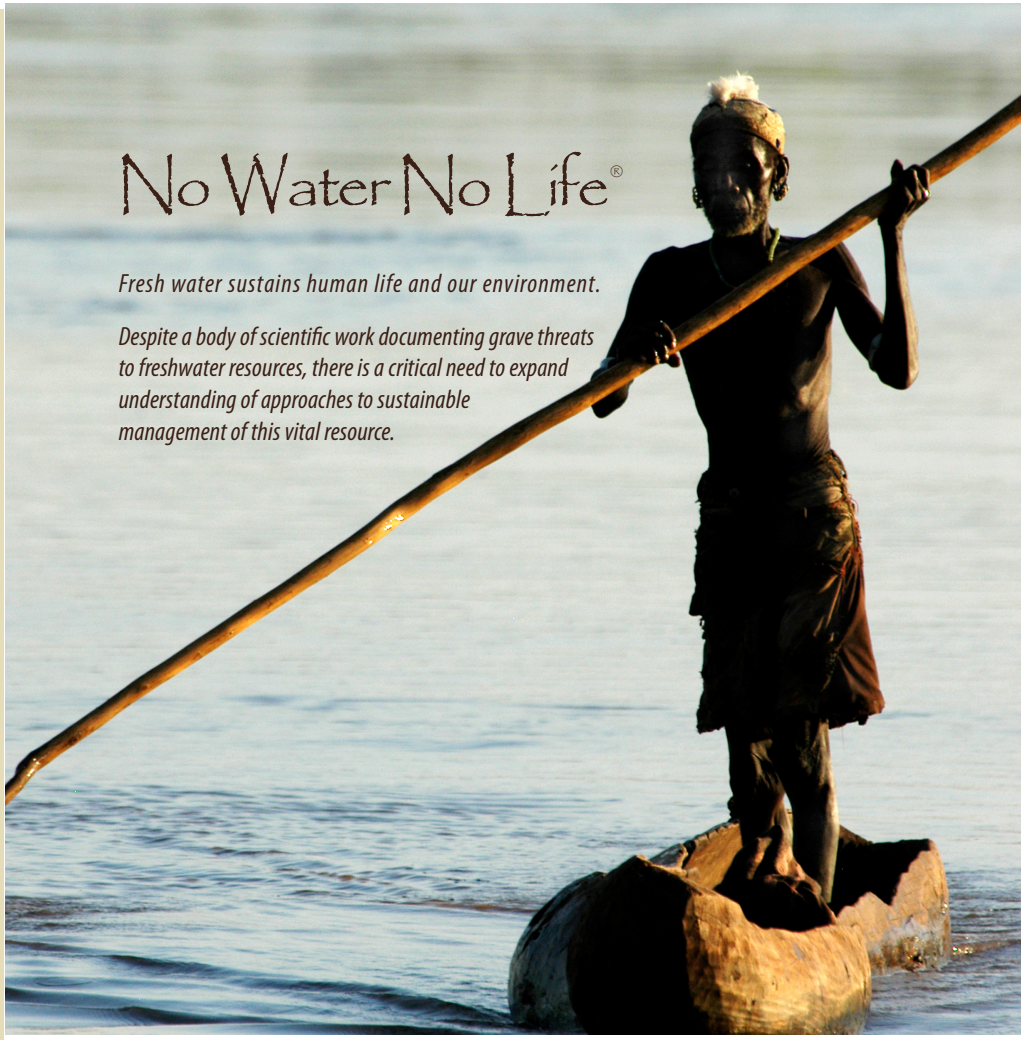




INSPIRATION Just as the Mississippi River's broad reaches spawned Mark Twain's literary classics and the Mighty Columbia inspired Woody Guthrie's rousing songs, the pristine tributaries and misty headwaters of all watersheds can be mesmerizing.

This beauty is often the initial clarion call that stirs watershed protection. A K'tunaxa conservationist in Canada spoke of his vision while sitting quietly by the river: "I swear I could hear a pow wow coming from the waves and I knew I was doing the right thing."

Eventually, all things merge into one, and a river runs through it. The river was cut by the world's great flood and runs over from the basement of time. On some of the rocks are timeless raindrops – under the rocks are the words and some of the words are theirs. -- Norman Maclean



PROJECT MISSION AND GOALS

No Water No Life (NWNL) combines the powers of photography, scientific research and stakeholder knowledge to raise awareness of the vital importance of freshwater resources, perils of watershed degradation and opportunities for sustainable resource management. As a long-term and globally focused project, NWNL's goals are to:

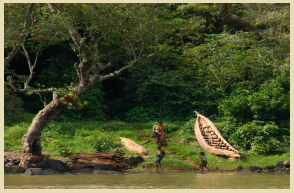
- *Document* the availability, usage and quality of freshwater resources
- *Educate* stakeholders through publications, lectures, exhibits and curricula
- *Foster* partnerships within and across geopolitical boundaries

PROJECT DESCRIPTION

No Water No Life (NWNL) strives to encourage stakeholders worldwide to protect their freshwater resources as it focuses on 6 case-study watersheds: North America's **Columbia, Raritan and Mississippi River Basins** and Africa's **Nile, Mara and Omo River Basins.** Backed by research, NWNL's expeditions visually document conditions and management strategies within these watersheds. NWNL's team includes scientific and technical advisors, photographers and researchers with backgrounds in conservation biology, natural resource management, forest ecology restoration ecology and conservation photography. NWNL has carried expedition flags from The Explorers Club and Wings WorldQuest. It has been supported by The Scott Pearlman Field Award and generous donations and inkind contributions. Wings WorldQuest provides tax-exempt status for the project.

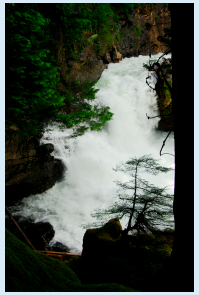
This is a companion catalogue for NWNL's travelling photographic exhibit. Tan pages describe values of our freshwater resources, threats they face and solutions considered. Blue pages present profiles of NWNL's six case-study watersheds. Published by Puddleduck Press, 2009.

www.nowater-nolife.org



WATERSHED VALUES Rivers are sacred. Rivers have spawned ancient human cultures. Rivers provide communication, nutrition, transportation, wealth, beauty and recreation. Africa's ribbons of life are its rivers and lakeshores. From the air, it is clear that there is no water and no life beyond those wildly strewn ribbons. In the developed world, this is not as obvious since visible and invisible infrastructures and technology carry water far beyond the rivers. Will we protect our rivers that serve us so well?

Civilization is a stream with banks. The stream is sometimes filled with blood from people killing, stealing, shouting and doing the things historians usually record, while, on the banks, unnoticed, people build homes, make love, raise children, sing songs, write poetry, whittle statues. The story of civilization is the story of what happens on the banks. -- Will Durant



THE COLUMBIA RIVER BASIN spans 1 Canadian province, 7 US states and 11 tribal nations. Over 11 million people rely on this river, now threatened by climate change, infrastructure, pollution and resource extraction. Receding glaciers and diminishing snow pack will soon reduce water supply. Infrastructure, including over 400 dams, impacts habitats, impedes fish migration and restricts traditional river usage. Industrial, nuclear, mining and agricultural waste threaten water quality and habitat. Extraction of timber, water and fish weakens ecosystems and strains relations between Canada, U.S. and Tribal Nations. Yet public and private transboundary efforts are fostering sustainable solutions, dams are being re-evaluated and the renegotiated 2014 Columbia Basin Treaty may become a model of responsible joint management.

Every part of the Earth is sacred to my people, every shining pine needle, every sandy shore, every mist in the dark woods, every meadow, every humming insect. -- Chief Seattle

NORTH AMERICAN WATERSHED

THE RARITAN RIVER BASIN This relatively short and largely urban river drains water from 6 New Jersey counties into New York's Hudson Bay. Dutch settlers built gristmills on this "Forked River," as it was named by Native Americans. An 1830's canal, joining the Delaware and Raritan Rivers, connected New York to Philadelphia and transported coal resources.

Today the rural Upper Raritan, habitat for ancient brook trout, struggles to preserve farms and open space and to control the large deer population threatening forest renewal. The Lower Raritan, cited as the 13th Most Polluted US River, is heavily impacted by industrial and storm-runoff pollution. Flood damage has risen due to urban development, extensive impervious coverage of land surface and increased storm intensity attributed to climate change. Upstream and downstream stakeholders are now working together to address their widely differing challenges.

All thy wat'ry face, Reflected with a purer grace, Thy many turnings through the trees, Thy bitter journey to the seas, Thou Queen of Rivers, Raritan! -- John Davis, 1806

NORTH AMERICAN WATERSHED



THE MISSISSIPPI RIVER BASIN, the world's 3rd largest, is vital to the security and economy of the U.S. Draining 41% of the Lower 48 States, its rivers provide a major waterway for US commerce and a critical water source for industry, farming and consumption.

Over time, glaciers, earthquakes and the US Army Corps of Engineers have set and reset the course of the Mississippi, its deltaic channels, tributaries and distributaries. The cotton and agricultural industries have flourished due to irrigation levees and canals. Yet the 1927, 1993 and 2008 floods and 1988 record low depths have caused devastation exacerbated by continued channelization by levees, industry and heavy flood plain development. Current management attention is focused on infrastructure impact, importance of forests and biodiversity in headwater regions.

Find some long river and follow it down. -- Greg Brown, musician

STAKEHOLDERS

STEWARDSHIP Pelicans announcing their pre-nesting stage with fibrous knobs on their upper mandibles are among millions of amazing scenes on display upstream and downstream. Awe of this tangled, complex web of riverine life has inspired many to become responsible stewards of our watersheds. So often watership stewards are apt to be those who live on our rivers observing that life's delicate balance is dependant on supplies of available clean fresh water.

Fishermen and fish biologists are often one in the same as they study, enjoy and promote healthy watershed ecologies. Farmers and woodsmen who carefully note the cycles of nature frequently offer models of sustainable and profitable practices.


We forget that the water cycle and the life cycle are one. -- Jacques Cousteau

THE MARA RIVER BASIN, known worldwide for its annual migration of 2 million wildebeest and zebra to the Mara River, has prospered from recent efforts of community-based management within the Maasai Mara Game Reserve. Yet there is severe degradation in the watershed's Mau Forest headwaters and Lake Victoria terminus in Tanzania.

The 1-million-acre Mau Forest Complex, Kenya's largest water catchment, provides water to millions of people in Kenya, Tanzania and the White Nile River basin downstream of Lake Victoria. Illegal deforestation and encroachment in these headwaters have destroyed 25% of the forest. A proposed highway would bisect Serengeti NP, threatening wildlife herds and ecosystems. Lake Victoria's shores are clogged with algae blooms fed by the Mara River's high nitrogen run-off and invasive species. Reforestation, limits on the growth of the tourism industry and family planning are now regional priorities to insure the survival of rivers, lakes and all species in the Rift Valley, Western Kenya and beyond.

Water is the driver of nature. -- Leonardo da Vinci

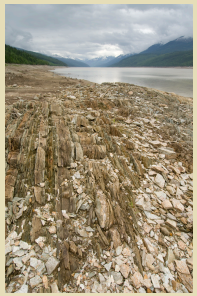
AFRICAN WATERSHED

THE OMO RIVER BASIN cradles a 621-mile river tumbling from Ethiopia's highlands to its arid desert. The ancient, indigenous Omo cultures struggle with droughts, famine, political turmoil and a lack of clean fresh water and sanitation. Large new dams upsteam and climate change are dislocating communities threatening an end to their traditional flood-recession agriculture. Kenya's Lake Turkana suffers from the Omo's livestock overgrazing, replacement of riverine forests by crops and irrigation projects that reduce discharge.

Dams, large-scale agriculture and a Sudan-Kenya highway over the Omo may bring food security, flood control and hydropower. Proposed roads, markets and water/food storage facilities may alleviate the instability of rain-dependent subsistence farming. Yet an influx of foreigners, water extraction and flood control may destroy local cultures and ecosystems.

The stone in the water does not comprehend how parched the hill is.
-- African proverb

DEGRADATION



CLIMATE CHANGE and DEFORESTATION Mountains supply half of the world's drinking water. But as climate change melts glaciers and reduces snowpack, it depletes the reserves in this "bank" of clean fresh water and further increases warming effects as ice and snow reflectivity are lost.

Humans' displacement of water and abuse of resources adds to the destructive effects of greenhouse gas emissions. Our forests, that retain water, regulate its flow and absorb CO2, are being decimated by commercial logging, by destructive pest populations thriving in today's warmer climes and by those needing cooking fuel and heat to survive.

Global climate change is Armageddon in slow motion, dangerously altering the atmosphere, land, oceans and life on Earth, including human life, in incremental steps.
-- Eric Chivian, co-founder of the International Physicians for the Prevention of Nuclear War, winner of the 1985 Nobel Peace Prize

AFRICAN WATERSHED

THE NILE RIVER BASIN The Nile, the world's longest river, spans one tenth of Africa. In its arid basin, 80 million people depend on its water, while river overuse threatens further desertification and transboundary conflicts. All 11 countries in the Nile Basin are demanding more access to water. The 1959 Nile Treaty granted 87% of Nile water usage to Egypt, 13% to Sudan and none to Ethiopia, whose Blue Nile supplies 86% of the Nile's volume. This inequity of water rights, a focus of the Nile Basin Initiative, limits crop outputs and necessitates food aid for 2 million Ethiopians, while Egypt irrigates crops in the desert for export to Europe.

Climate change is shortening wet seasons, increasing precipitation and intensifying dry periods. This limits food production in the Horn of Africa. Continued deforestation will further damage the environment and reduce water retention. Failure to address the need for sanitation and community wells will perpetuate rural health issues.

You think of water when the well is dry. -- African proverb

NO WATER, NO FOOD, NO COTTON While the deltas of Africa's Omo River and America's Mississipi River are hot, humid and mosquito-infested, their fertile flood plains support their inhabitants.

Water usage in these two regions, however, differs greatly. Wasteful irrigation in the US dictates that 30,000 liters of water are used to produce 1 kilogram of cotton. In seeking alternatives to oil and gas, 1700 liters of water are used to produce just 1 liter of corn ethanol.

In contrast, Omo farmers use only the nutrients and waters left behind by floods. Yet this ancient form of sustainable farming will end as dams upstream steady the flow of water, eliminating annual flooding.

Any river is really the summation of a whole valley. It shapes not only the land, but the culture of that valley. To think of any river as nothing but water is to ignore the greater part of it." -- Hal Borland



EXTRACTION and POLLUTION While agribusiness, industry and dams within watersheds provide many stakeholder benefits, they also threaten availability of vital resources by extracting critical supplies of timber and fresh water, polluting clean water and destroying habitats and species.

Sustainable solutions include reduced consumption by the public and adoption of more efficient technologies by commercial and governmental stakeholders. Increased efforts by stewardship groups to coordinate policies upstream and downstream and across geopolitical boundaries, will be critical to effectively correcting the diversion, degradation and depletion of our watershed resources.

Anything else you're interested in is not going to happen if you can't breathe the air and drink the water. Don't sit this one out. Do something. You are, by an accident of fate, alive at an absolutely critical moment in the history of our planet. -- Carl Sagan

A NEED FOR MORE SUSTAINABLE SOLUTIONS
Experts predict that today's fights over energy and food will become tomorrow's water wars. Global stability depends on the availability of clean water. Sustainable energy production can be non-polluting and compensating solutions can be instituted.

Reduced consumption of resources and energy could help to insure water equity in a world where the average person should need no more than 50 liters of water/day -- yet North Americans consume 600 liters/day, while Africans use six liters/day. Recycled wastewater could end the US's use of non-renewable aquifers to supply 50% of its daily water consumption. This "grey water" approach could also greatly reduce Canada's annual drainage of 1 trillion liters of untreated sewage into its waterways. More efficient technology could change the fact that half of the water used today for irrigation is lost to seepage and evaporation.



I wanted to show the things that had to be corrected.
I wanted to show the things that had to be appreciated. -- Lewis W. Hine