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LETTER FROM THE EXECUTIVE DIRECTOR, MARC YAGGI



AFTER THE REMOVAL OF THE ELWHA DAM IN WASHINGTON STATE — THE LARGEST DAM REMOVAL IN U.S. HISTORY — THE ELWHA RIVER IS THRIVING.

LET OUR RIVERS RUN FREE: A GLOBAL LOOK AT HOW DAMS ARE DESTROYING OUR WATERWAYS

There are many issues affecting the waterways that more than 340 Waterkeeper Organizations patrol and protect in 44 countries. But one issue is so pervasive that it affects rivers and their fisheries in nearly every corner of the world: hydropower dams. These dams are sometimes touted as “clean energy,” but it is abundantly clear that they are not. Along with diversions and reservoirs around the world, dams cause immense harm to waterways, wildlife, economies, and communities. This letter offers a global perspective on the damages they cause, but also presents a case for hope.

IMPACT OF DAMS

Recent studies repeatedly have shown that dams and reservoirs are a major source of greenhouse-gas emissions. One of these studies, published in *BioScience* in late 2016, calculated that, globally, reservoirs are emitting the equivalent of one gigaton—or one billion tons—of carbon dioxide into the atmosphere every year. This level of

emissions is just shy of all emissions from Brazil, which is seventh on the list of greenhouse-gas-emitting countries. Other studies show that 79 percent of greenhouse-gas emissions from reservoirs are methane, which is 86 times more potent than carbon dioxide in accelerating climate change.

Dams have long flooded people out of their homes. Studies estimate that nearly 80 million people have been displaced by dams globally. It is rare to find a case study that shows a displaced community reaping all the benefits promised to them; in reality, they are more likely to face a long trail of broken promises. For example, according to the Geneva-based Internal Displacement Monitoring Centre, the Manwan Dam built by China on the Mekong River displaced more than 7,000 people, who never received enough compensation to build adequate replacement housing, while they suffered from landslides and water shortages.

Dams often cause damage to critical river habitat and destroy fisheries around the world, impacting the temperature, quality, quantity, and frequency of instream flows, as well as degrading or destroying adjacent floodplains and wetlands, which are crucial for healthy ecosystems. Further, these impacts increase risks to already threatened and endangered aquatic species.

And many dam and diversion projects involve repair, replacement or relocation of infrastructure, much of which may be a half-century old, if not older, at a cost of two-to-five

times greater than that of original construction. This expense of updating aging dams often exceeds the profit from the electricity they generate.

FREE FLOWING RIVERS INITIATIVE

These worldwide negative impacts on waterways and communities spurred Waterkeeper Alliance to adopt a “Free Flowing Rivers Initiative,” which opposes construction of new dams and diversions or supports mitigation of their impacts where there is no other option, and advocates for removal of dams wherever possible. The initiative is designed to connect and support battles against dams wherever they are engaged. Below are a few of the most urgent examples:

In Southeast Asia, the Mekong River basin is being threatened by a spate of proposed mega-hydropower dams, including eight in China, nine in Laos and two in Cambodia, where Tonle Sap Lake Waterkeeper Senglong Youk is leading efforts to oppose them. These new dams would threaten the largest inland freshwater fishery in the world, which provides food and economic security to 60 million residents of those countries, as well as Burma and Vietnam.

In the Middle East, Waterkeepers Iraq has joined a coalition of Iraqi and international groups in the “Save the Tigris” Campaign, which promotes the restoration of the Mesopotamian Marshlands of southern Iraq and opposes destructive projects such as the Ilisu Dam on the Tigris in Turkey and the Daryan Dam on the Sirwan River, an upper Tigris tributary, in Iran.

In Canada, Grand Riverkeeper Labrador’s Roberta Frampton-Benefel is one of the grassroots leaders in voicing concerns about Nalcor Energy’s \$12-billion Muskrat Falls dam because of its production of methylmercury, a neurotoxin linked to heart problems, neurological damage to children, and also makes fish consumption dangerous and threatens traditional foods for First Nations’ communities.

In California, Yuba River Waterkeeper Melinda Booth is working to stop the proposed 275-foot-high Centennial Dam in California’s Sierra Nevada foothills, which would flood the last six miles of publicly accessible free-flowing river on the Bear River, destroying fish-and-wildlife habitat, beloved swimming holes and historic Native American sites.

In Peru, Marañón River Waterkeeper Bruno Monteferrri, an environmental lawyer and activist, has been on the front lines of the resistance against a proposal to build 20 dams on the Marañón River, the hydrological source of the Amazon. To date none of these large dams has been constructed, and local opposition, in the face of corporate corruption and political lobbying, has led to a moratorium on all dams until 2021.

But make no mistake, engaging in advocacy against dams is dangerous business. This was tragically proven in 2016, when Goldman-Prize-winning Honduran environmental activist Berta

Cáceres, who championed efforts to protect the Gualcarque River from large-scale development projects such as the proposed Agua Zarca hydroelectric dam, was murdered while participating in a peaceful protest. In March 2018, the president of the company planning the Agua Zarca dam – a former Honduran military intelligence officer – was arrested for her murder.

Globally, according to *The Guardian* and *Global Witness*, approximately 200 environmental advocates were killed in both 2016 and 2017. It has been reported that most of these advocates died while opposing mining, dams, logging, and the activities of agricultural interests. While many of the killers were never brought to justice, reliable sources report that most of them were hired by governments or corporations.

HOPE FOR THE FUTURE

Still, a number of factors help point to a better future. “Climate-friendly” energy sources are becoming more abundant and cheaper than traditional ones. New technologies and management practices are dramatically increasing water conservation and mitigating mismanagement and waste. Governments are responding to citizen demands by shelving dam projects. As noted above, citizen resistance led Peru to enact a moratorium on dams. In 2016, after years of opposition from a network of communities and advocates, including Futaleufú Riverkeeper and Waterkeeper Alliance, the electric company Endesa relinquished its plans to dam the Futaleufú River in Patagonian Chile.

The most powerful and exciting factor pointing to hope for the future is that groups are organizing and working together to oppose new dams and diversions, fight for mitigation of dams’ impacts, and advocate for their removal. In Sweden, where virtually all power is now generated from fossil-fuel-free sources, Älvräddarnas Waterkeeper, Swedish Baltic Rivers Waterkeeper, and others keep fighting to eliminate dams, and last year, after seven years of protest, a county board announced that it would remove the ancient sawmill dam on the Emån, one of Sweden’s 16 Baltic salmon rivers, restoring approximately one-third of the river’s habitat.

These stories of citizens rising up to oppose dams or advocate for their removal will continue to develop as residents become increasingly aware of the truth about “clean” energy. And one day, our rivers will flow free again.

Handwritten signature of Marc Yaggi.



ON THE COVER:

Thousands of fishermen gather in Dublar Char village, in Bangladesh's Sundarbans region, to discuss the threat that the Rampal power plant poses to their livelihoods and their lives.

Photo by Lynne Buchanan

Design by BoyBurnsBarn/John Turner

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You will notice that this copy of WATERKEEPER magazine is different from copies produced in the last few years. Although we are very proud of the paper selection choices we have made in the past, we have found that the industry has moved forward. Today we can print on a 100% Post Consumer Waste paper that provides dramatically better environmental savings at lower cost, without sacrificing the print quality that our readers expect.

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180 Maiden Lane, Ste. 603, New York, N.Y. 10038
info@waterkeeper.org for questions or comments

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Who Is Waterkeeper Alliance?



over 2.5 million
square miles of watersheds



44 countries



more than 300 waterways

Miami Waterkeeper's mission is to defend, protect, and preserve South Florida's watershed through citizen engagement and community action rooted in sound science and research. Through its efforts, it supports a vibrant and resilient coastal community and environment for current and future generations.

Miami Waterkeeper's scope of work is diverse, with core issues including clean water, ecosystem protection, and resiliency. Serving a population of more than 4.5 million people across Miami-Dade and Broward counties, Miami Waterkeeper's approach combines education, community outreach, scientific research, and legal advocacy to achieve protected marine ecosystems and habitats, sea-level-rise resiliency, and clean and safe waterways.

Miami Waterkeeper has had significant victories, including in litigation over illegal coral reef damage during the Port of Miami expansion that has already catalyzed the rescue of several hundred threatened staghorn corals adversely impacted by this project. Miami Waterkeeper is working on preventing similar damage from occurring again, as well as a number of other water quality-monitoring

efforts. "Our beautiful waterways are in the backyard of one of the fastest growing cities in the nation," says Miami Waterkeeper Rachel Silverstein, "and that brings major challenges and opportunities. It's been a privilege to champion clean water and habitat protection initiatives in our unique watershed."

Rachel joined the organization in June of 2014. Her passion for protecting the environment began at an early age while growing up along the Southern California coast. She got SCUBA certified at 14 and has been an avid diver ever since. She received a Ph.D. in Marine Biology from the University of Miami in 2012, focusing on the effects of climate change on reef corals. Rachel was named one of the Top 20 Environmentalists in South Florida and one of Miami's most interesting people by the New Times, was recognized with the Diatom Award by the Mayor of Miami Beach for excellence in environmental advocacy, and was awarded the Miami Herald's Visionary Award.

Follow Miami Waterkeeper on Facebook and learn more about Miami Waterkeeper's work — and how you can help — at www.miamiwaterkeeper.org.

Waterkeeper Alliance unites more than 300 Waterkeeper Organizations and Affiliates that are on the frontlines of the global water crisis, patrolling and protecting more than 2.5 million square miles of rivers, lakes, and coastal waterways on 6 continents.

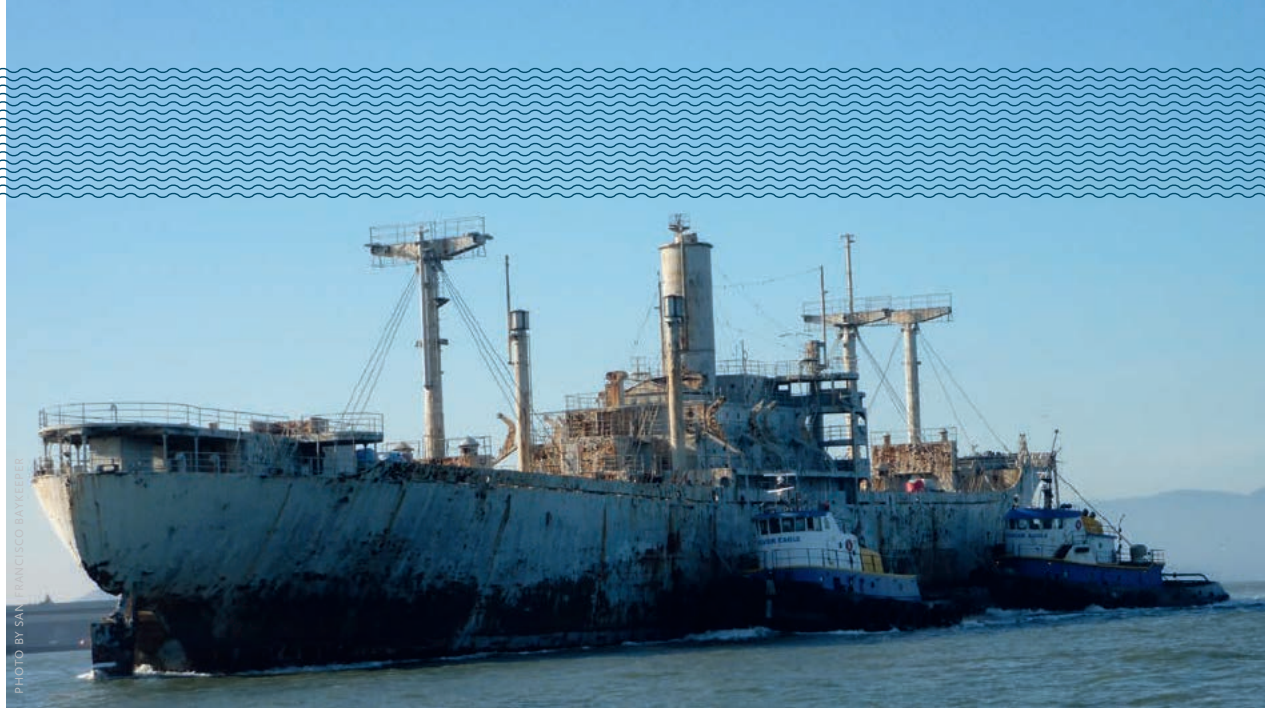
Waterkeeper Organizations and Affiliates defend our fundamental human right to drinkable, fishable, and swimmable waters from the Great Lakes to the Himalayas, and combine firsthand knowledge of their waterways with an unwavering commitment to the rights of their communities.

Whether they're on the water tracking down polluters, in courtrooms enforcing environmental laws, advocating in town meetings or teaching in classrooms, the Waterkeeper movement speaks for the waters it defends with the backing of local communities. Waterkeeper Alliance ensures that the world's Waterkeeper Organizations and Affiliates are as connected to each other as they are to their local waters, organizing the fight for clean water into a coordinated global movement.

Everyone has the right to clean water. It is the action of supporting members that ensures our future and strengthens our fight for clean water. To join Waterkeeper Alliance, go to waterkeeper.org/donate and make a contribution to join as a supporting member. You can also join by mail. Send your check, payable to Waterkeeper Alliance, to Waterkeeper Membership, 180 Maiden Lane, Suite 603 New York, NY 10038. Thanks for your support!



Ripples



“THE POLLUTION LEVELS WERE HIGH ENOUGH TO HARM BOTTOM-DWELLING SPECIES, LIKE GREEN STURGEON AND SACRAMENTO SPLITTAIL, WHICH MEANS THOSE TOXINS WERE ALSO INTRODUCED INTO THE BAY’S FOOD CHAIN.”

SAN FRANCISCO BAYKEEPER SEJAL CHOKSI-CHUGH

GHOSTBUSTING IN SAN FRANCISCO BAY

The “Ghost Fleet of Suisun Bay”— the decaying military ships that poisoned the San Francisco Bay ecosystem for 40 years — is finally gone, as a result of legal action brought against the federal government in 2007 by San Francisco Baykeeper, Arc Ecology, and the Natural Resources Defense Council (NRDC). Removal of the 57 mothballed ships and cleanup of the bay began in 2010 and was completed in late 2017.

The Ghost Fleet was a group of long-defunct vessels from World War II and the Korean War, stored in Suisun Bay, a large northern inlet of San Francisco Bay, for possible emergency reactivation. But, never again deployed, they slowly decayed,

leaking fuel, rusting and shedding metals and toxic paint — an estimated 20 tons of contaminants — into the bay. Pollutants in the mud directly below the Ghost Fleet were found to be in concentrations that exceeded California’s hazardous-waste toxicity criteria.

“The pollution levels were high enough to harm bottom-dwelling species, like green sturgeon and Sacramento splittail, which means those toxins were also introduced into the bay’s food chain,” said San Francisco Baykeeper Sejal Choksi-Chugh.

Suisun Bay and the adjacent Suisun Marsh — the largest brackish marsh in the western United States — provide critical habitat for several species of endangered fish, including Chinook salmon and Delta smelt. The wetlands in the area are home to hundreds of native bird species, and they are an important feeding stop for thousands of migrating water birds each year.

Baykeeper’s agreement with the federal government

called for measures that went beyond national environmental requirements. It mandated that the federal government first remove paint chips and metals from the decks of all 57 ships. Over 140 tons of paint and rust chips were collected in large barrels and taken to a hazardous-waste-disposal facility. The government was also required to clean the hulls in dry-docks in order to remove invasive species and peeling paint without harming the bay, as well as implementing annual stormwater-pollution controls, such as water filters and maintenance sweeping, to keep rain from sending more contaminants into the bay. Finally, the government had to remove the ships in the worst condition first, in order to clean up the most urgent pollution threats as quickly as possible.

Representatives from Baykeeper, Arc Ecology, NRDC and the Regional Water Quality Control Board conducted an on-site inspection each year. “Each time we found problems with some of the remaining ships, we made recommendations for improvements, and to their credit, the federal government

implemented the new pollution controls,” said Choksi-Chugh.

Most of the ships that were removed have been dismantled and recycled. Some were dismantled locally at a former naval shipyard on Mare Island, in nearby Vallejo. The last two ships, the Cape Borda and the Cape Breton, were transferred to Mare Island for an initial cleaning, and traveled from there to Texas to be fully dismantled and recycled for parts.

Since the cleanup began, more surplus military ships have been transferred to Suisun Bay for storage. But the federal government is now required to comply with the Clean Water Act and use pollution controls to prevent contamination from these additional ships. “Moreover,” said Choksi-Chugh, “as a result of our legal action, the government indicated they would also apply the same pollution controls they agreed to in San Francisco Bay on mothballed ships nationwide.”

Experts estimate that the cleanup and removal of the Ghost Fleet has prevented an additional 50 tons of heavy metals from being blown and washed into San Francisco Bay.



PHOTO BY HUDSON RIVERKEEPER



THE PATROLS HAVE NEVER STOPPED. HERE ARE 10 FAST FACTS ABOUT HUDSON RIVERKEEPER'S CURRENT BOAT AND ITS REMARKABLE CAPTAIN, JOHN LIPSCOMB, WHO HAS BEEN AT THE HELM SINCE 2000:

- 1 The R. Ian Fletcher is the second Riverkeeper patrol boat. The Hudson River Fishermen's Association launched the first one from the Hudson River Maritime Museum in Kingston, N.Y., on May 14, 1983.
- 2 The R. Ian Fletcher was built in 1983 in Bivalve, N.J., to work commercial shellfish beds in Delaware Bay.
- 3 It's built of cedar planking on oak frames.
- 4 Hudson Riverkeeper bought the boat in 1990, and it was refurbished and launched as the "R. Ian Fletcher" in 1998.
- 5 Her engine is a Volvo Penta six-cylinder diesel installed in '98 by Captain John Lipscomb and his crew when he was the manager of Petersen's Boatyard in Upper Nyack, N.Y. The engine was donated by Volvo.
- 6 Dr. R. Ian Fletcher was a noted expert in fluid dynamics, oceanography, physical ecology and biomathematics who applied his dedication to science and his great knowledge to benefit the Hudson. He helped Hudson Riverkeeper win many historic cases, such as the battle against Westway, a \$2 billion plan to build a highway on pilings in the Hudson River on the west shore of Manhattan.
- 7 Since 2000, Captain Lipscomb and the R. Ian Fletcher have patrolled New York Harbor and the Hudson Estuary to Troy, N.Y., 150 miles north. By 2014, its range had expanded to include 120 miles on the Mohawk River to Rome, N.Y., and 35 miles on the Upper Hudson to Fort Edward.
- 8 Captain Lipscomb and the R. Ian Fletcher log nearly 1,000 hours and 6,000 river miles a year. Her homeport is Westerly Marina in Ossining, N.Y.
- 9 The boat is also the floating lab for Riverkeeper's Water Quality Testing Program, and a platform for collaborative scientific research by EPA, Columbia University's Lamont Doherty Earth Observatory, Woods Hole Oceanographic Institution, Cornell University, Queens College of the City University of New York, and the State University of New York College of Agriculture and Technology at Cobleskill.
- 10 Every winter during layup the Fletcher is modified and improved under the skilled guidance of Chris Brennan of Brennan Boatbuilding, formerly of Ossining, N.Y., now based in Wittman, Md.

THE LITTLE PATROL BOAT THAT CHANGED THE WORLD

Hudson Riverkeeper was the world's first Waterkeeper Organization. Commercial and recreational fishermen founded it as the Hudson River Fishermen's Association in 1966 in response to massive pollution from several industrial facilities.

In 1983, the association hired former commercial fisherman John Cronin as the first full-time Riverkeeper, and launched a 25-foot wooden outboard boat to patrol the Hudson for polluters. On his first patrol, Cronin discovered Exxon oil tankers rinsing their holds in the river and stealing

its water for use in the company's refinery on the Caribbean island of Aruba. Exxon stopped these practices and paid \$2 million in fines. Since then, Riverkeeper patrols have resulted in tens of millions of dollars in fines to polluters and led the Hudson River's remarkable resurgence. These patrols inspired a global movement that now counts more than 300 Waterkeeper Organizations and Affiliates on six continents and 44 countries.

ABOVE LEFT, CAPTAIN JOHN LIPSCOMB WATCHES AS THE R. IAN FLETCHER IS LOWERED INTO THE WATER AFTER WINTER MAINTENANCE. MIDDLE, JOHN CRONIN, THE WORLD'S FIRST FULL-TIME RIVERKEEPER, ON PATROL IN THE HUDSON RIVER. RIGHT, THE FIRST RIVERKEEPER BOAT, A 25-FOOT WOODEN OUTBOARD, WAS LAUNCHED IN 1983. SINCE THEN, RIVERKEEPER PATROLS HAVE RESULTED IN TENS OF MILLIONS OF DOLLARS IN FINES TO POLLUTERS AND LED THE HUDSON RIVER'S REMARKABLE RESURGENCE.



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RIGHT, MOBILE BAYKEEPER CASI CALLAWAY COLLECTS WATER SAMPLES AT A POPULAR LOCAL SWIMMING SPOT. FAR RIGHT, CALLAWAY IS A FREQUENT PRESENCE ON LOCAL MEDIA, ADVOCATING TIRELESSLY FOR THE MOBILE BAY WATERSHED AND KEEPING THE PUBLIC UP-TO-DATE.



PHOTOS BY MOBILE BAYKEEPER

AFTER 20 YEARS, THREATS ENDURE, AND SO DOES THE MOBILE BAYKEEPER

It has been raining for two days, and the sewers across the city of Mobile, Alabama, have begun to overflow from the torrents, sending thousands of gallons of untreated sewage into creeks and rivers.

Casi Callaway, now in her 20th year as the Mobile Baykeeper, has already been on the line with a reporter from the local TV station. “Sewage in our waterways is clearly a problem,” she tells him. She knows just where to point her finger – at the municipal water utility and its aging infrastructure.

“Since January 2017,” she continues, “the Mobile area has had more than 26 million gallons of raw sewage discharged into local waterways – most often because of aging lines incapable of handling rainfall. There needs to be a solution to stop these overflows.”

As the head of Mobile’s largest environmental advocacy organization, Casi knows full well that she has to keep pressing for improvements in the sewage infrastructure. But right now she must turn her attention to an even more urgent matter – a 600-acre coal-ash pond on the banks of the Mobile River at the Alabama Power Company’s James M. Barry Electric Generating Plant, about 25 miles north of downtown Mobile. This pond, unlined and with no protective barrier to groundwater, has received more than 21 million tons of highly toxic ash from the plant’s coal-fired units since 1965.

The facility’s location makes the situation even more dangerous, according to Casi. “The pond is surrounded by the Mobile River and sensitive wetlands in a low-lying area prone to flooding. It is held together by a dam made of dirt, clay, and coal ash – making it susceptible to collapse from the effects of a hurricane, heavy rain or structural failure.”

Mobile Baykeeper recently released a 232-page report describing the threats posed by the pond. Alabama Power has just announced its decision to cap the pond in place. And Casi’s phone is ringing off the hook with requests from local reporters to schedule interviews to discuss the breaking news.

“We’ve been investigating this issue for almost

three years now,” she tells one reporter. “Our findings demonstrate that Alabama Power’s coal ash is polluting our groundwater with dangerous levels of arsenic, selenium, lead, and other heavy metals.

“The worst case scenario would be a breach of the dam. Imagine another BP Oil disaster, but with 20 times the amount of toxins that were spilled into the Gulf instead spilling into the Mobile-Tensaw Delta and eventually downstream through the port of Mobile and Mobile Bay. Alabama Power needs to be a leader on this issue and dig up the coal ash and move it away from the river to a lined, upland landfill.”

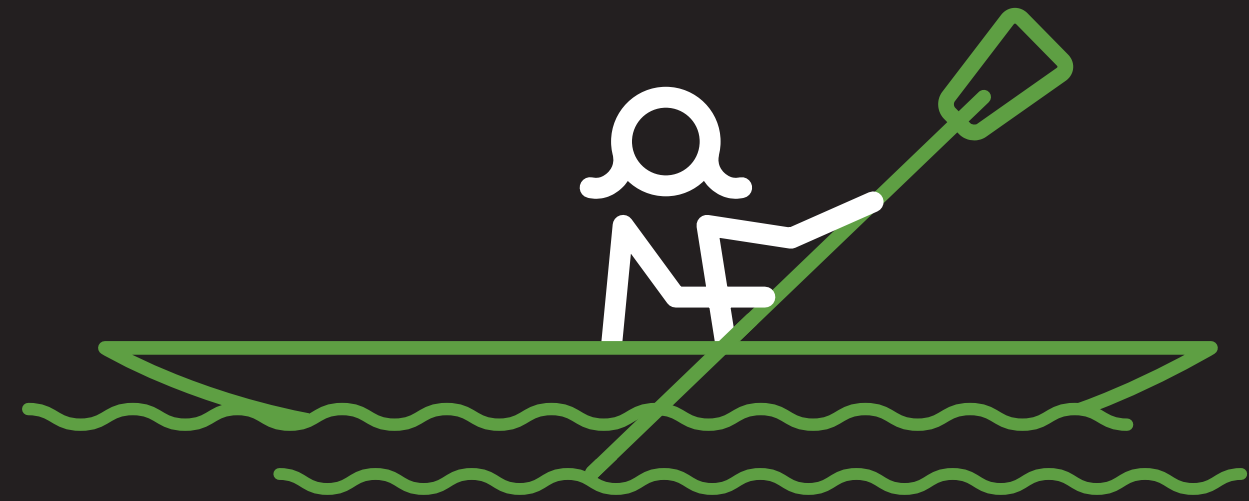
Casi is also preparing testimony that she will deliver before the U.S. EPA in Washington, regarding its proposal to weaken the very standards for coal-ash disposal that are protecting Mobile and many other communities from a possible disaster.

Later she meets with local decision-makers – first with the Army Corps of Engineers to ensure that all environmental impacts are weighed before deepening and widening the Mobile Ship Channel, and next with the Chamber of Commerce to advocate for restoration projects following from the BP oil disaster.

To many, juggling so many things would be overwhelming, but for Casi, it’s another day on the job. Ask her the key to her longevity and success and she’ll tell you it’s the willingness to collaborate. From elected officials and industry-leaders to business-owners and local fishermen, there’s no one she won’t work with to protect the Mobile watershed. But her approach may be tested as never before in her confrontation with Alabama Power. She’ll have to convince local citizens to send letters voicing their concerns; to work with leaders from the shipping, seafood, tourism and real-estate industries, whose livelihoods would be severely damaged by a coal-ash dam failure; and to educate fishermen, hunters, and boaters about the potential threats to their ways of life.

Casi says that, over her 20-year tenure, she’s learned that, above all, “you’ve got to stay positive and stay focused. Focus on that prize, no matter how far or distant it is. What we do isn’t easy, and being able to win is rare – really win, stop something or build something or don’t build something, it’s rare. But you can’t let that stop you. There’s just too much at stake.” – Hanlon Walsh, *Communications Director, Mobile Baykeeper*

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PHOTO BY TODD KRAEMER, PACIFIC WATERSHED ASSOCIATES

MAKING WAVES IN HUMBOLDT BAY

In late 2017 Humboldt Baykeeper rode a tidal wave of Clean Water Act victories

aimed at reducing pollution in California's second-largest natural estuary, filing four court actions, and winning each time.

The largest protected body of water on the West Coast between San Francisco Bay and Puget Sound, Humboldt Bay supports more than 100 species of fish, including green sturgeon, coho and Chinook salmon and steelhead trout, as well as Dungeness crab and more than 70 percent of California's oysters. The bay's bordering wetlands provide habitat for millions of migratory birds that travel along the Pacific Flyway each year.

The bay emerges from a land where redwoods are logged and marijuana is harvested, contributing to a variety of pollutants, including legacy dioxins from timber mills and pesticides from marijuana operations, that harm the waters and wildlife along California's north coast. Fortunately, the Baykeeper organization, though just a "teenager," is the area's spunky and visionary guardian.

Spawned by an effort to stop a proposed liquefied-natural-gas terminal, the Arcata-based Baykeeper was founded in 2004 to protect coastal resources for the health, enjoyment, and economic strength of the surrounding communities, providing education, scientific research, and enforcement

of laws to fight pollution. Baykeeper Jen Kalt, a botanist and long-time conservation advocate, has been there the whole time. She launched the organization's Citizen Water-Monitoring Program in 2005, and was policy director for three years before taking the reins in 2014.

Humboldt Baykeeper's four Clean Water Act enforcement victories in 2017 resulted in the awarding of \$130,000 to local nonprofit groups and municipalities to restore wetlands, monitor water quality, and build public bathrooms to be used by the homeless.

As a result of its suit against the California Redwood Company, alleging that the company was allowing contaminated stormwater from its wood chip dock facility and former mill site to enter Humboldt Bay since at least September 2011, the company contributed \$35,000 to Friends of the Dunes to enhance wetlands beneficial to the bay's water quality. It also installed equipment to treat stormwater and is conducting employee training to prevent stormwater runoff from entering the bay.

But despite Humboldt Baykeeper's banner year, Jen Kalt bemoans the current lack of enforcement of environmental laws across the United States. For authorities to enable businesses to operate outside of those laws, she says, is "an injustice to the people who believe in running their businesses in ways that follow the law and protect the environment."

The Clean Water Act has never been the only instrument in Humboldt Baykeeper's toolbox. Its "Toxics Initiative" includes a study to analyze levels of mercury in marine life, including lingcod, halibut, clams, and oysters, that are caught or dug up in the bay. The organization also leads motor boat and kayak tours of the bay to teach local residents about ecology, stewardship, and pollution. "Industries come and go," Jen Kalt says, "but if we destroy the bay and rivers, they're gone forever." — *Lesley Adams, Senior Organizer, Western U.S.*

PHOTO BY JEN KALT

PHOTO BY CLINTON STEEDS

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WHEN IT REACHES WATERWAYS, IT ABSORBS 10 TIMES MORE PESTICIDES, FERTILIZERS, AND CHEMICALS THAN OTHER KINDS OF PLASTIC, INCREASING TOXIN EXPOSURE TO FISH AND OTHER AQUATIC ANIMALS, AND POTENTIALLY MAKING ITS WAY INTO THE FOOD CHAIN.



ABOVE LEFT, "NO HOME FOR FOAM IN BALTIMORE" READS ONE SIGN HELD HIGH BY A PROTESTER BEFORE A CITY COUNCIL HEARING ON THE BILL TO BAN POLYSTYRENE CONTAINERS. ABOVE RIGHT, GWYNNS RUN, A BALTIMORE STREAM, SHOWS JUST HOW DAMAGING AN IMPACT PLASTICS ARE HAVING ON LOCAL WATERWAYS.



PHOTOS BY BALTIMORE HARBOR WATERKEEPER

BAN TO CLEAR HARBOR OF FOAM FOOD CONTAINERS

Soon, the only foam in troubled Baltimore Harbor will be sea foam thanks, in large part, to the work of the Baltimore Harbor Waterkeeper program of Blue Water Baltimore. The group and a coalition of other environmental, community, and student organizations, declared victory this spring against the use of expanded polystyrene (EPS) foam containers for take-out food and drink after a unanimous vote by the Baltimore City Council to ban the all-too-common plastic.

Unlike other forms of trash, EPS foam is impossible to fully clean up. It is petroleum-based and not biodegradable, so it crumbles into smaller and smaller pieces each time it is touched or disturbed. When it reaches waterways, it absorbs ten times more pesticides, fertilizers, and chemicals than other kinds of plastic, increasing toxin exposure to fish and other aquatic animals, and potentially making its way into the food chain.

"Blue Water Baltimore worked long and tirelessly with a

group of passionate public-school students and eight first-time councilmembers willing to stand up to the American Chemistry Council and plastics-manufacturing companies to protect the harbor and public health," said Baltimore Harbor Waterkeeper Angela Haren.

Baltimore City students, organized by the student-led organization Baltimore Beyond Plastics, and the Baltimore Harbor Waterkeeper team canvassed businesses, solicited letters of support, and successfully swayed previously skeptical City Council members. And at a rally prior to the council's hearing on the bill, they brought homemade monster figures and masks made of plastic foam lunch trays, and raised hand-painted signs. The hearing was packed with over 200 students from the second to the twelfth grades, several of whom testified. Their zeal, coupled with expert testimony from members of environmental and community groups and personal accounts of supportive business leaders, plus hundreds of signatures from other businesses, won the day.

The city's foam ban will go into effect in the fall of 2019.

KENYA LAKE VICTORIA WATERKEEPER LEONARD AKWANY IS ONE OF THE NILE BASIN REGION'S MOST FERVENT ADVOCATES FOR PROTECTING WETLANDS, FRESHWATER ECOSYSTEMS, AND BIODIVERSITY.



PHOTO BY KENYA LAKE VICTORIA WATERKEEPER

ALONG THE GREAT NILE, ALTERNATIVES TO TOO MUCH HYDROPOWER

WORKING TOGETHER ACROSS NATIONS, THEY ARE FORMING A STRONG GRASSROOTS VOICE FOR THE REGION, AND ADVOCATING FOR SAFE, RENEWABLE ENERGY SOURCES

The Nile, the world's longest river, is vital to the survival of over 300 million people. Endowed with about one-third of the world's fresh surface-water, the river has been, for millennia, the life source for grand and storied civilizations in an otherwise arid, almost unlivable desert.

But today the river, which flows south to north and spans 11 countries, is the scene of a major water crisis, with conflicts constantly erupting between nations around how the Nile River's water is used. Most recently, warnings have been sounded of a potential water war between Egypt and Ethiopia, as the Grand Ethiopian Renaissance Dam nears completion on one of the Nile's two main branches, the Blue Nile, where most of Egypt's water comes from.

Thus, it is alarming to see that the second of the six goals of the 10-year plan of the Nile Basin Initiative (NBI), a partnership of 10 Nile Basin countries for the sustainable management of the basin's water, is to "enhance hydropower development."

"For economic reasons and to remain attractive to state parties, there is an over-reliance in the 10-year plan on hydropower and multi-purpose dams as investments," says Kenya Lake Victoria Waterkeeper Leonard Akwany, Jr. He and his team have been advocating regionally for greater attention to wetlands, freshwater ecosystems and biodiversity. They played a key role in the NBI, also establishing as a goal to "protect,

restore, and promote sustainable use of water-related ecosystems across the basin."

"Through my consultancy work with the NBI on transboundary wetlands," says Akwany, who holds a master's degree in Environmental Science, Policy and Management from the University of Manchester, UK, "I have been pushing for an agenda that promotes truly environmentally sustainable solutions."

Kenya Lake Victoria Waterkeeper was founded in 2015 and is now one of three Waterkeeper Organizations in the African Great Lakes Region that are protecting the headwaters of the Nile's other branch, the White Nile. Lake Kyoga Waterkeeper in Uganda was launched in 2017, and Tanzania Lake Tanganyika Waterkeeper this year.

Working together across nations, they are forming a strong grassroots voice for the region, and advocating for safe, renewable energy sources, such as solar and wind, that are absent from NBI's 10-year strategy. The ambitious hydropower plans that it lays out for the region may not benefit the 60 percent of local communities that are not connected to the grid. In fact the NBI recognizes that demand for power "will eventually exceed hydropower potential" and that there will be an eventual need for alternative power sources.

"Now is the time to pay greater attention to safe, renewable energy, says Akwany. "Governments do not need to fight over the sun as a resource." – Sharon Khan, Recruiting Director, and Gabrielle Segal, Office Manager.



PHOTO BY DAVID HARRP, CHESAPEAKE BAY JOURNAL

“BEING A RIVERKEEPER
ISN'T JUST A JOB. IT'S A
WAY OF LIFE.”

UPPER POTOMAC
RIVERKEEPER
BRENT WALLS

FIGHTING FOR THE “NATION’S RIVER”

George Washington could have built his home anywhere on the Eastern seaboard. He chose the Potomac River, forever identifying it as the “Nation’s River.” Today, the Potomac watershed, home to more than six million people, is at constant risk of damage, pollution, and poisoning. The three Riverkeepers from the Potomac Riverkeeper Network face many challenges in protecting it.

“Keeping the Potomac – The Politics of Water,” winner of the 2017 Student Film Award of the American Conservation Film Festival, features these Riverkeepers’ efforts to address three big problems impacting the Potomac: agricultural-nutrient pollution along the Shenandoah River, a major tributary running through Virginia and West Virginia; a wastewater-treatment plant in Allegany County, Maryland, that pumps effluent into the upper Potomac; and coal-ash disposal ponds at Possum Point Power Plant in Dumfries, Virginia. The film was produced by graduate film students at American University’s School of Communication’s Center for Environmental Filmmaking.

Farmland manure and phosphorus runoff from fertilizer breed algae that kill great numbers of fish in the Shenandoah, and present Shenandoah Riverkeeper Mark Frondorf with a continuing battle. He works tirelessly to encourage farmers to fence their animals away from waterways, and has achieved much, but many farmers still do not engage in practices to protect the river from these dangers. He describes “Keeping the Potomac” as “a

useful tool to help inform our neighbors about the importance of the work we do.”

Upper Potomac Riverkeeper Brent Walls (above) is a leader in the fight against a wastewater treatment plant run by the Upper Potomac River Commission that discharges foul-smelling brown fluid 24 hours a day into an otherwise pristine section of the river. This noxious effluent, most of which flows from a paper mill, emits heavy amounts of nitrogen, at average temperatures of 100 degrees, directly into a section of the river commonly used for cold water fishing.

“Being a Riverkeeper is not just a job, it’s a way of life,” Walls says. “The North Branch Potomac was once considered dead from acid mine-drainage but is now bouncing back to support naturally producing trout, but the thermal and pollution impacts from the paper mill and the treatment plant are still keeping this river from achieving its full potential.”

The Potomac River from Washington, D.C. to Chesapeake Bay is served by Riverkeeper Dean Naujoks, who has struggled for years with the damage caused by Dominion Energy’s coal-ash disposal ponds, particularly at the Possum Point Power Plant. The film depicts Dean’s strenuous efforts to protect the river and the health of residents who are affected by this pollution.

“We wanted American University to convey the beauty of the river as much as highlight the hard-hitting issues impacting the river and communities fighting for clean water,” Naujoks says. “I think they captured both!”
– Emily Franc, Vice President, Development/Philanthropy, Potomac Riverkeeper Network

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PEOPLE BEFORE SWINE BARONS



PHOTO BY JOHN CARTER
PHOTOS BY WATERKEEPER ALLIANCE

Waterkeeper Alliance's "Pure Farms, Pure Waters" campaign has long drawn attention to the negative effects of concentrated animal feeding operations (CAFOs) on public health and the environment. Waste mismanagement at these facilities has fouled the air and polluted the water in many communities across the United States.

Those effects are acutely felt in North Carolina, which produces more pork than all but one state in the U.S. and houses the world's largest pork-processing plant. Industrial swine operations in that state manage millions of gallons of waste by storing it in unlined, open-air pits before periodically spraying it – often with large sprinkler guns that can aerosolize waste into tiny droplets – onto nearby cropland.

To make things worse, they are clustered in eastern North Carolina, in low-lying, flood-prone counties with sandy soils and shallow aquifers, where the numbers of African Americans, Latinos, and Native Americans living within three miles of an industrial swine facility are nearly twice as high as for non-Hispanic Whites.

In May, Waterkeeper Alliance and two North Carolina community groups, the North Carolina Environmental Justice Network (NCEJN) and the Rural Empowerment Association for Community Help (REACH), reached a settlement agreement with the North Carolina Department of Environmental Quality (DEQ) of a 2014 civil rights complaint filed with the U.S. Environmental Protection Agency. The complaint alleged that DEQ allowed industrial swine facilities to operate with "grossly inadequate and outdated systems of controlling animal waste" resulting in an "unjustified disproportionate impact on the basis of race and national origin against African Americans, Latinos and Native Americans."

Under the agreement, which was reached after more than a year

of mediation, DEQ committed to new policies to ensure compliance with federal civil rights laws, including a language access program and the development of a tool to identify and mitigate discrimination by assessing environmental, demographic, and health factors.

In addition, DEQ agreed to a number of changes in the draft permit that will be considered in the upcoming stakeholder process for the next swine general permit. "While these changes may seem technical," said Waterkeeper Alliance staff attorney Will Hendrick, "they're a big step in addressing air and water pollution from the swine industry."

Naeema Muhammed, executive director of the NCEJN, recognized the groundbreaking nature of the settlement but also cautioned, "The harmful effects of the hog industry on communities in eastern North Carolina continue, and all of us involved in this struggle must keep the pressure on."

Devon Hall of REACH added that "for too long people living in Duplin, Sampson, and other counties in the heart of hog country have had trouble breathing when they go outside. Even small changes in the permit can be important, like making clear that DEQ has authority to inspect without prior notice. It's unacceptable that DEQ has been giving facilities advance notice before conducting an inspection."

Larry Baldwin, formerly Waterkeeper Alliance's N.C. CAFO Coordinator and now the Crystal Coast Waterkeeper, had the last word, "For too many years, the 'lagoon and sprayfield' system of waste management has allowed feces and urine to blow through the air and flow from the sprayfields into our waterways and into nearby communities. There's still a long way to go, but the provisions in this agreement are a step in the right direction and provide more opportunities than ever before for people in eastern North Carolina to have a voice in decisions affecting their future."

DIVE

Into

Democracy

IN MARCH 2017, WATERKEEPER ALLIANCE launched "Dive Into Democracy," a weekly digital update of the unprecedented attacks by the pro-fossil-fuel Trump administration on U.S. environmental laws and regulations, many of which have been in place since the 1970s.

"We envisioned Dive Into Democracy as a way to help readers fight back at a time when our democracy is becoming increasingly corrupted by industrial polluters," says staff attorney Larissa Liebman. Dive into Democracy highlights how federal legislation, regulations, agency staffing, and other decisions impact our right to clean water. It also provides tools to take effective action, such as talking points to use when calling members of Congress and templates for submitting effective comments on rulemakings.

In our first year, we helped stop over 20 federal bills that threatened our environmental safeguards. We also asked readers to help build an expansive record of opposition to cutting public safeguards by

submitting comments on bad regulatory proposals, and more than 3.5 million people did just that. Our readers are fighting for a well-funded, effective U.S. Environmental Protection Agency, and helped defeat a disastrous nominee for a key Environmental Protection Agency position.

There is still a lot of work to be done — industrial polluters have a seemingly endless wishlist and will keep pushing for federal legislative and regulatory decisions in their favor. Unless we continue to be vigilant, we could see our bedrock federal environmental laws eroded. Trump's EPA continues to unveil new plans to weaken protections for human health and our environment, and these efforts must be opposed at every step.

Our democracy is at a turning point. The public's voice is increasingly being drowned out by corporate wealth and power. Only persistent, widespread citizen engagement will overcome this power imbalance.

PLEASE JOIN US AT WWW.WATERKEEPER.ORG/DIVEIN AS WE FIGHT FOR A STRONGER DEMOCRACY, AND A CLEANER, SAFER FUTURE.



“ENERGY TRANSFER PARTNERS AND SUNOCO’S EXISTING PIPELINES HAVE LEAKED EVERY ELEVEN DAYS ON AVERAGE FOR SIXTEEN YEARS.”

WORKERS AT A SPILL SITE ON THE ROVER PIPELINE IN STARK COUNTY, OHIO IN APRIL 2017.

PHOTO BY OHIO EPA

SPILLING THE TRUTH ABOUT ENERGY TRANSFER’S PIPELINES: 527 INCIDENTS IN 16 YEARS

In April, Waterkeeper Alliance and Greenpeace USA published a groundbreaking report on the pipeline company Energy Transfer Partners’ poor safety record, analyzing 16 years of operations for its hazardous-liquids and oil pipelines. Based on public data from the federal Pipeline and Hazardous Materials Safety Administration (PHMSA), the report – “Oil and Water: ETP and Sunoco’s History of Pipeline Spills” – and accompanying interactive map show that the company’s pipeline network has experienced 527 pipeline spills from 2002 to 2017. The report also presents evidence of spills, as well as pervasive water pollution, violations of permits, and stop-work orders during construction of new pipelines. Energy Transfer Partners (ETP) and Sunoco Logistics Partners merged in 2017.

“Energy Transfer Partners and Sunoco’s existing pipelines have leaked every eleven days on average for sixteen years,” said Greenpeace USA Senior Research Specialist Tim Donaghy.

million in property damage, and PHMSA reports that at least 67 of them, an average of more than four each year since 2002, contaminated water sources.

“ETP and Sunoco’s track-record of spills, including several striking examples of big spills, are indicators of a constant threat to communities and water. As one example, in October 2014 the Mid-Valley Pipeline spilled 189,000 gallons of oil and contaminated a ten-mile section of Tete Bayou near Mooringsport, Louisiana. This could happen again to communities along the pipeline routes,” Donaghy added.

Sunoco and Energy Transfer Partners are also participants in the much-publicized Dakota Access Pipeline, which aroused vehement resistance from Native American communities.

“Those Water Protectors were right,” said Donaghy. “That pipeline alone leaked four times in 2017. There is no fail-safe way to transport fossil fuels and fully prevent spills. Rapid

“That’s a red flag for a company that has an extensive network across the country and is building even more pipelines as we speak, in Louisiana, Pennsylvania and other states.”

The 527 spills have caused an estimated \$115



THE 527 SPILLS HAVE CAUSED AN ESTIMATED \$115 MILLION IN PROPERTY DAMAGE, AND AT LEAST 67 OF THEM, AN AVERAGE OF MORE THAN FOUR EACH YEAR SINCE 2002, CONTAMINATED WATER SOURCES.

TOP, PROTESTERS IN WASHINGTON, D.C., MARCH IN SUPPORT OF THE STANDING ROCK SIOUX TRIBE’S ACTIONS AGAINST THE CONTROVERSIAL DAKOTA ACCESS PIPELINE. BOTTOM, STAKES MARK THE BAYOU BRIDGE PIPELINE’S PATH OF DEVASTATION THROUGH LOUISIANA’S FRAGILE AND IRREPLACEABLE ATCHAFALYA BASIN.

PHOTO BY AMANDA J. MASON, GREENPEACE

PHOTO BY JULIE DERMANSKY, GREENPEACE

transition to renewable energy is imperative to dramatically reduce these incidents.”

ETP is also a partner, with Phillips 66, in the construction of the Bayou Bridge Pipeline, which Donna Lisenby, Waterkeeper Alliance’s Clean and Safe Energy Campaign Manager, warns, “represents a high risk to hundreds of waterways across the entire state of Louisiana. Extrapolating their abominable spill history indicates that Bayou Bridge pipeline would cause multiple spills during construction and at least eight significant spills during its first five decades.”

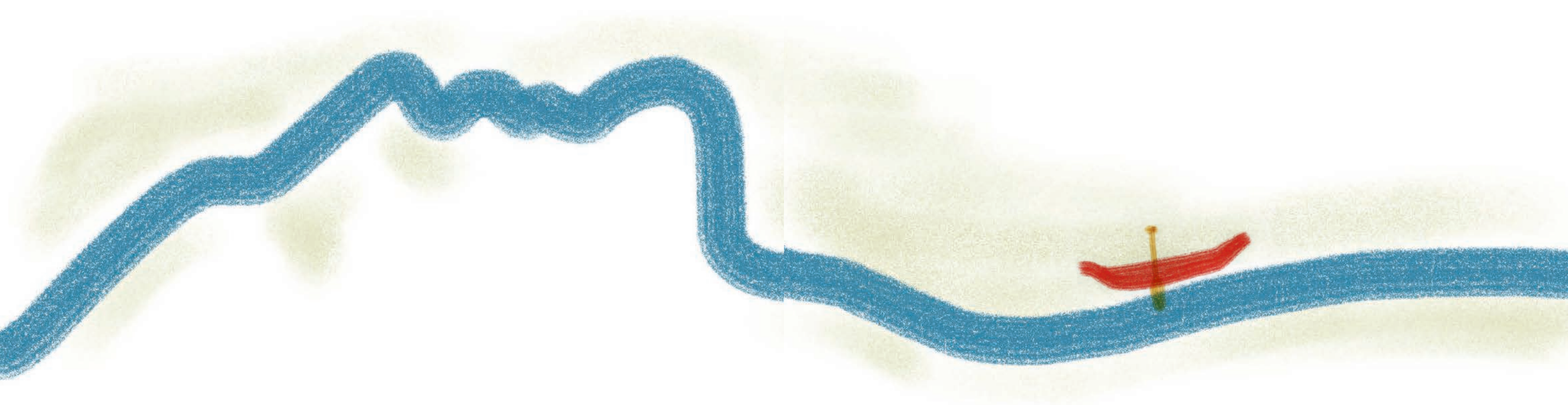
The pipeline will span 162 miles, carrying almost half a million gallons of oil a day across 700 water bodies. Its proposed

endpoint is in the southeastern part of the state, in Saint James, a rural community of about 2,100 residents, mostly poor and African American. Once a bucolic village of pasturelands and sugarcane fields on the banks of the Mississippi, St. James is now a densely packed industrial zone in the heart of Louisiana’s petrochemical corridor, commonly referred to as “Cancer Alley.” Pastor Harry Joseph of the Mount Triumph Baptist Church there is opposing the pipeline as a plaintiff in a case filed by the Tulane Environmental Law Clinic.

“We fear that something will happen in Saint James,” said Joseph. “It’s just a matter of time because of ETP’s history. We don’t want ETP here.”

I AM

THE RIVER



THE RIVER

IS ME

NEW ZEALAND'S WHANGANUI RIVER IS THE FIRST RIVER ON EARTH TO GAIN THE SAME LEGAL PROTECTIONS AS AN INDIVIDUAL. THE RIVER'S MAORI PEOPLE, WHO HAVE BEEN FIGHTING FOR THE DESIGNATION FOR 150 YEARS, SAW IT THAT WAY ALL ALONG.

By Gary Wockner
POUDRE WATERKEEPER

Rivers are made of water, and water comes from rain, and boy, did it rain! We had come to the North Island of New Zealand in February and just happened to hit one of the rainiest summer periods in local memory. It rained so hard that, the day before our scheduled three-day canoe trip on the Whanganui River, the federal government shut it down to recreational canoeing. Joining me were my partner, Catherine Ebeling, my friend, Colorado Riverkeeper John Weisheit and his wife, Susette Weisheit, and, from Australia, Yarra Riverkeeper Andrew Kelly.

When our journey did begin, it rained so much on the first day

and night that the government shut the river down again, stranding us in a hut on the riverbank. The Whanganui River has always been an important communication route to the central North Island, both for Māori and for European settlers. It is, however, also a difficult river, with stretches of white water and rapids in its upper reaches. The section we paddled, a little farther downstream, was wider and navigable by canoe. As we waited out the weather, we watched massive trees and logs careen down the waterway—along with several dead goats and sheep.

Yet the river, swollen and running fast, was alive. And how fitting that was, since the Whanganui, the longest navigable river in

New Zealand, is the first river on earth to achieve “personhood.” It’s a status gained after one of the longest legal battles in New Zealand history.

The night before our canoe trip began, we had dinner in the tiny town of Owhango with our hosts and outfitters at Owhango Adventures, which runs guided cultural river trips on the Whanganui. The meal was excellent – beef, potatoes, corn on the cob and salad. It was prepared by Maori sisters Dianah and Maki Ngarongo, who were born on the banks of the Whanganui and work with Grant Lethborg running the outfitting company, conducting the river tours and operating a lodge-restaurant. Grant is a New

Zealander of European ancestry, and a hulking former rugby player. After dinner, the women told us the compelling story of the struggle to secure personhood status for the river, and explained the Maori worldview that drives their claim to the river and the landscapes around it.

Dianah talked from the heart, warmly and eloquently, about the power of the Maori women who live along the river. She welcomed the prospect of my helping to “tell the story of the river to the world.”

Prior to European colonization, the area along the river was one of the most densely settled parts of New Zealand, with more than



100 Maori villages, which gave birth to a network of trade and communication stretching back at least 600 years. European settlers began arriving in large numbers in the early 1800s. By the 1880s, the Crown government had established a steamer service on the river, with little or no consultation with Maori tribal leaders, and mining operations had begun to extract minerals from the riverbed, virtually destroying Maori fisheries and degrading the river's ecological and cultural value.

The Whanganui tribe petitioned the New Zealand Parliament as early as the 1870s, continuing for decades to seek compensation and justice and to have their relationship with the river officially acknowledged, but with no success.

In March of 2017, the Maori finally won the battle. The victory gave "legal personhood" status to the river, allowed the Maori to designate a person to represent the river in court actions, and included land-settlement negotiations as well as a large financial settlement for the tribes in the area.

Gerrard Albert, the lead negotiator for the Whanganui tribe, had this to say after the bill's passage, "In Whanganui we have a saying: 'Ko au te awa, ko te awa ko au' – which translates into English as, 'I am the river and the river is me.' We have fought to find an approximation in law

so that all others can understand that from our perspective treating the river as a living entity is the correct way to approach it, as an indivisible whole, instead of the Western model of treating it from the perspective of ownership and management.

"Rather than us being masters of the natural world, we are part of it. We want to live like that as our starting point. And that is not an anti-development, or anti-economic use of the river, but to begin with the view that it is a living being, and then consider its future from that central belief."

The Whanganui Member of Parliament, Chester Borrows, added, "It's not that we've changed our world view, but people are catching up to seeing things the way we always have."

The river's new status means if someone abused or harmed it, the law now sees no difference between harming the tribe and harming the river because they are one and the same.

"The river has always been a living being for us," Dianah said. "It's sustained us physically, spiritually, and contains every essence of us as a people. We want the water and river in its natural state. We want to live sustainably on the river."

The next morning, Dianah and Maki joined us at the "put-in" and sang a Maori prayer that welcomed us to the river. Our self-guided trip, in three canoes, began as we slid into a small tributary, which met the Whanganui a hundred yards downstream. We were thrilled to be

paddling on the Whanganui, and to experience firsthand the river that has become a person.

That stretch of the upper Whanganui is a narrow rock-wall canyon with steep jungle forest spilling down to the river. The rains had brought to life dozens of large waterfalls, their clear flows crashing down the canyon walls into the muddy, swollen waterway. As we raced along in the fast water, we were mesmerized by the massive ferns and forest canopy. Sprinkling rain fell almost all of the first day but failed to dampen our spirits as we paddled toward the John Coull Hut, which we reached in late afternoon.

During our day of paddling, we hardly saw another person on the river, but as we arrived at the hut, we watched as more than 40 canoeists steadily streamed into it and the surrounding campground. The evening that followed was filled with food and laughter as the rains came down harder and harder all through the night. As morning broke, the hut manager told us the Department of Conservation, which manages recreation on the Whanganui, had again shut down the river to canoeists. We relaxed in camp all day, enjoying the company of the other international travelers and raptly watching the fast-flowing river and the massive trees and logs carried along in its torrents. It had risen more than two meters overnight.

One section of the river passes through Whanganui National Park in the southwest corner of the island, and is heavily protected and regulated by the New Zealand government. The upper stretch is open to canoeing and the lower stretch

It's not that we've changed our world view, but people are catching up to seeing things the way we always have."



TOP, POUFRE WATERKEEPER GARY WOCKNER, FROM FORT COLLINS, COLORADO, HAS TRAVELLED THE WORLD IN SUPPORT OF WILD RIVERS. ABOVE, MAORI SISTERS DIANAH AND MAKI NGARONGO, WHO WERE BORN ON THE BANKS OF THE WHANGANUI RIVER, CONDUCT RIVER TOURS AND OPERATE A LODGE-RESTAURANT. BELOW, THE WHANGANUI INLET AT RAKOPI, NEW ZEALAND.





PHOTO BY KATHRIN AND STEFAN MARKS



PHOTOS BY GARY WOCKNER



TOP, THE WHANGANUI RIVER'S NEW STATUS MEANS THAT THE LAW NOW SEES NO DIFFERENCE BETWEEN HARMING THE WHANGANUI TRIBE AND HARMING THE RIVER. MIDDLE, "THE RAINS HAD BROUGHT TO LIFE DOZENS OF LARGE WATERFALLS, THEIR CLEAR FLOWS CRASHING DOWN THE CANYON WALLS INTO THE MUDDY, SWOLLEN WATERWAY." BELOW, SUNSHINE BATHES THE FAST-MOVING WHANGANUI NEAR THE TAKE-OUT AT THE TOWN OF PIPIRIKI.

accommodates well-attended jet-boat tours that speed large numbers of tourists up and downstream.

New Zealand's "Water Conservation Order," a law similar to the U.S.'s "Wild and Scenic Rivers Act," protects 15 rivers across the country, but not the Whanganui. The 2017 legal settlement between the government and the Whanganui tribe protects the river through a different mechanism because of its special, indeed sacred, relationship to the Maoris.

The situation on the Whanganui is legally and politically complex, and it would be ill-advised to think of it as some sort of "pristine native" victory. The Maori's fight to get back their land and water rights has been filled with conflict and controversy, not only involving the New Zealand government, but also among Maori tribes. As Dianah Ngarongo explained, "This is not about an exotic tribal situation. We want self-sufficiency, self-reliance, and self-determination. We lost a lot of ancestors over the history of this fight. There's a lot of bureaucracy. But we're moving in the right direction"

Day three on the river brought sun and more paddling. Although the flow had not decreased, the debris on the river had disappeared. As we pushed off, we were whisked downstream as if we were aboard one of the jet boats. We relaxed and gazed in awe again at the magnificent waterfalls as we paddled side to side in the canyon to keep ourselves in the warm sun. Our second night on the river was supposed to be at a hut jointly managed by Department of Conservation staff and local Maori called the "Tieke Kainga," but the rain and strict regulation of the river kept us from extending our stay.

Our three-day adventure ended near Pipiriki, where Grant Lethborg picked us up and took us back to Owhango. At dinner again with Grant and Maki at their lodge-restaurant that evening, we chatted about the rain and the swollen, muddy river, and discussed the legal settlement and continuing negotiations between the Maori and the New Zealand government.

These are developments that river-conservationists around the world should look to as exemplary and continue to watch, but also, if they choose to follow them, be prepared for complex, controversial and long-term battles.

And when those struggles have ended, perhaps our grandchildren will reap the benefits of our efforts.

Editor's Note: Five days after the Te Awa Tupua (Whanganui River Claims Settlement) Bill passed, India's Uttarakhand High Court granted the same legal personhood to the river Ganges – indicating just how influential and innovative New Zealand's approach may be. **W**

Gary Wockner is an international environmental activist and writer, member of the Waterkeeper Alliance board of directors, volunteer for International Rivers, and author of the 2016 book "River Warrior: Fighting To Protect The World's Rivers".

AFTER CONQUERING A CORPORATE ENERGY GIANT'S PLANS FOR A MASSIVE COAL-FIRED POWER PLANT, MAULE ITATA COASTKEEPER RODRIGO DE LA O SETS HIS SIGHTS ON

THE SCOURGE OF SALMON FARMING

BY SERGIO MONCADA, ORGANIZER, LATIN AMERICA

After an epic, seven-year struggle that successfully halted the construction of the 750-megawatt, \$2 billion Los Robles coal-fired power plant along central Chile's scenic Maule coast, Maule Itata Coastkeeper Rodrigo de la O is back in the trenches, defending his and neighboring communities against the threat of a different sort of Goliath – Chile's largely unregulated, industrial-scale salmon-farming operations. Chile is now the world's second-largest producer of farmed salmon after Norway,



and 70,000 jobs in Chile depend on it. "But," Rodrigo says, "we are paying too high a cost."

A native of Santiago, Chile's capital, Rodrigo moved to the Maule region in 2004. Soon after, he founded the grassroots group Acción Ciudadana Pro Maule Costero (Citizen Action for Coastal Maule). He became the first Waterkeeper in Chile in 2009. A publicist and designer by training, Rodrigo is an unabashed idealist. But he's also a pragmatist and tireless

THE BATTLE CRY OF THE MOVEMENT: "NO A LAS SALMONERAS"; "NO TO LARGE SALMON FARMS."

PHOTO BY TODOS SOMOS CORQUECURA (WE ARE ALL CORQUECURA)



THEY WOULD PUT THE SOCIAL FABRIC AT RISK BY ENDANGERING PUBLIC HEALTH, PITTING RESIDENTS IN FAVOR OF THE FARMS AGAINST THOSE OPPOSED, AND TURNING ARTISANAL FISHERFOLK INTO PAYROLL WORKERS HIGHLY DEPENDENT ON AN INDUSTRY THAT, AS THE EXPERIENCE IN SOUTHERN CHILE HAS SHOWN, IS HIGHLY VULNERABLE. THE IMPACTS ON MARINE LIFE ARE EXPECTED TO BE TREMENDOUS.

fighter. It is this drive, he says, that helped him defeat the power-plant proposal of AES Gener, a subsidiary of giant U.S. energy corporation AES.

Maule is located 500 miles from the salmon industry's axis along the country's southern coast, and Rodrigo and his allies never imagined that they too would be in the crosshairs of the industry's powerful lobby. But in late 2015, they learned that the company Inversiones Pelicano, S.A. had filed environmental-impact declarations for a proposed \$28.6 million salmon aquaculture project consisting of 11 sites along a scenic 30-mile stretch of the Maule coast between the comunas (counties) of Cobquecura, Trehuaco, and Coelemu, an area famed for surfing and ecotourism, and home to sea lions and many others charismatic species, such as the Chilean dolphin (tonina) and 60-plus-foot long sei whales.

Eight of those projects would be built a mile offshore from Cobquecura and would annually produce more than 3,000 tons of salmon. The 11 sites would cover approximately 454 acres of water and include cages as deep as 200 feet.

If successful, Inversiones Pelicano and its industry could turn comunas like Cobquecura upside down. Like many

coastal settlements that dot this shoreline, it features picturesque houses and walls made of local slate. It also has a long, wide beach with wild surf that is popular with surfers; the beach fills up in February when Cobquecura hosts a national surf competition. Standing on the beach, you can hear the baying of sea lions from a rock outcrop about 160 feet offshore. The outcrop, known as the Piedra de la Lobería (Sea Lions Rock), is home to a colony of around 3,000 sunbathing members of that species, which have inspired a flourishing local ecotourism industry. Visitors pay fisherfolk to take them out on their boats to glimpse this large breeding colony, and the area has been designated a national nature sanctuary since 1992.

The news of Inversiones Pelicano's looming arrival in southern Chile alarmed the locals for many good reasons. Salmon are not indigenous to South America, and 25 years ago, Chile had no salmon industry to speak of.

As farming of this species grew, it brought with it a host of damaging effects to coastal communities in the south. With tens of millions of salmon confined in overcrowded pens, their excess food and feces falling to the sea floor, and dozens of processing plants dumping salmon

entrails directly into the ocean, it was only a matter of time before disaster struck. Soon dead zones formed in the waters around the pens. And the industry's overuse of antibiotics – not to treat disease but to prevent it – increased the risk of antibiotic-resistant bacteria infecting local communities and salmon consumers.

In 2016, an infection wiped out 20 percent of Chile's multibillion-dollar farmed salmon industry and an unprecedented algal bloom (or "red tide") carrying a poisonous neurotoxin spread for 1,200 miles along the coast of Patagonia, triggering a public-health



TOP AND ABOVE, LOCAL CITIZENS' AND ENVIRONMENTAL GROUPS AND UNIONS OF LOCAL ARTISANAL FISHERMEN JOINED COMMUNITY MEMBERS IN TAUCÚ, COBQUECURA, FOR A CARAVAN AND PUBLIC DEMONSTRATION TO PROTEST THE DANGERS OF LARGE-SCALE SALMON FARMS. THESE PERIODIC DEMONSTRATIONS HAVE KEPT COASTAL COMMUNITIES ON CONSTANT ALERT TO THIS LOOMING THREAT.

disaster and arousing angry protests by fishermen. Scientists contend that the red tide may have been caused by the rotting salmon in the open ocean and the massive piles of salmon feces smothering portions of the seafloor.

Hoping to avoid the fate of communities in southern Chile, Rodrigo and other local leaders established Todos Somos Cobquecura (We Are All Cobquecura), a coalition of environmental organizations, grassroots groups, and local residents from all walks of life – artisanal fisherfolk, members of local

sports leagues, tourism companies, local government officials, and concerned citizens.

In a surreptitious attempt to deflect scrutiny, Inversiones Pelicano filed separate environmental-impact declarations for each of the 11 sites of their project, rather than a more complex and thorough environmental-impact study for the entire undertaking. Chilean law establishes an important distinction between declarations, which are intended for projects with smaller impacts, and studies, which are for projects causing one or more major impact on the quantity and quality of natural resources and significant effects on the landscape.

The local response was immediate and continued through 2016 and 2017, and shows no sign of abating. Rodrigo and other leaders have organized marches, rallies, community meetings, photo exhibitions, consultations with lawyers, and meetings with local government officials and representatives in Chile's national legislature.

Their efforts have begun to pay off, as national and even industry-specific media report about this strong opposition. A debate has been ignited and is playing out in the court of public opinion, and now, most importantly, the project has temporarily been halted. In early 2017, under pressure from Todos Somos Cobquecura, the regional environmental authority opened up a 20-day period for the public to submit comments about the project. Rodrigo and other local leaders galvanized their communities and urged all interested parties to submit comments. More than 3,000 comments were received. In October 2016 Inversiones Pelicano asked for a one-year period to respond. In October 2017, it asked for an additional year. But meanwhile, Chile's environmental agency, tasked with reviewing environmental assessment declarations and studies, green lighted one of Inversiones Pelicano's eleven proposed farms, although construction has not yet begun.

These farms would affect the local communities in ways known and unknown. In addition to dramatically harming the coastal environment and its communities, they would put the social fabric at risk by endangering



PHOTO BY MAULE ITATA COASTKEEPER

LEFT, THE BAYS AND BEACHES OF CHILE'S PRISTINE CENTRAL COAST ATTRACT TOURISTS AND SURFERS FROM ALL OVER THE WORLD. BELOW LEFT, THE ROCK OUTCROP OF PIEDRA DE LA LOBERÍA (SEA LION'S ROCK), HOME TO A LARGE COLONY OF SEA LIONS THAT IS ONE OF THE MAIN ATTRACTIONS FOR THE FLOURISHING LOCAL ECOTOURISM INDUSTRY, WOULD BE PERILOUSLY CLOSE TO ONE OF THE PROPOSED SALMON FARMS. BELOW RIGHT, MAULE ITATA COASTKEEPER RODRIGO DE LA O (LEFT) CONFERS WITH A LOCAL FISHERMAN.

THE COMMUNITY WAS ORGANIZED, ACTIVE, AND EMPHATIC IN DEFINING THEIR OWN DEVELOPMENT PATH. OUR VICTORY WAS THE RESULT OF A MORE EMPOWERED SOCIETY THAT DEMANDS THE RIGHT TO ADVOCATE FOR OUR OWN INTERESTS AND FOR THE PRESERVATION OF OUR NATURAL HERITAGE FOR FUTURE GENERATIONS. WE'RE IN THIS FIGHT FOR THE LONG RUN. SILENCE AND INACTION EQUAL ACQUIESCENCE.

public health, pitting residents in favor of the farms against those opposed, and turning artisanal fisherfolk into payroll workers highly dependent on an industry that, as the experience in southern Chile has shown, is highly

vulnerable. The impacts on marine life are expected to be tremendous.

In a mid-2017 blog post, Rodrigo wrote, "Inversiones Pelicano . . . has been unable to answer many of the communities' questions, including

what benefits exist for the local communities, why the farms will use antibiotics banned in other countries, the extent to which antibiotics will be used, and how sea lions that approach the fish cages will be handled." Sea lions feed on salmon, as on other fish, and their attacks on salmon farms contribute to salmon escapes. As a result, several diseases carried by salmon may be transmitted to sea lions, other mammals, birds, and reptiles. Studies have shown that dolphins, for example, suffer skin lesions linked to salmon farms.

Many challenges lie ahead. Rodrigo is already seasoned enough to know that the fight will be long and there will be ups and downs along the way. "But that's not a reason to be discouraged," he says. Right now Todos Somos Cobquecura is evaluating its options and planning its next steps.

A new, conservative government assumed power in March, and the salmon-farming industry is confident that it will be friendlier to its interests than the former government, while Rodrigo and fellow activists are pushing for a regulatory assessment that would require Inversiones Pelicano to submit environmental-impact studies as well as declarations, and include proposals to mitigate the expected negative effects. Rodrigo and his fellow activists are also exploring ways to strengthen and expand protections for the sea lions of Piedra de la Lobería and their breeding ground.

Right now the prospects look good for



PHOTO BY MAULE ITATA COASTKEEPER

Rodrigo and his coalition. After the ecological catastrophe brought on by salmon aquaculture in southern Chile repeatedly made national headlines over the last two years, Chileans are now, more than ever, aware of and concerned about the impacts of aquaculture farms. Further, the recent successful effort of local activists to block the proposed Los Robles power plant has left them with keen organizing skills and the ability to use social media as an effective platform for mobilizing.

Efforts like Todos Somos Cobquecura attest to the vitality of the burgeoning environmental movement in a country still scarred by the long years (1973 to 1990) under the shadow of the



PHOTO BY GISELA SAEZ

dictator Augusto Pinochet.

Recalling the victory over the Los Robles power plant, Rodrigo says, "The community was organized, active, and emphatic in defining their own development path. Our victory was the result of a more empowered society that demands the right to advocate for our own interests and for the preservation of our natural heritage for future generations. We're in this fight for the long run. Silence and inaction equal acquiescence."

Encouraging words from an activist whose victory over a global energy giant has demonstrated that persistence pays off. **W**



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“A healthy river is much like freedom.
Easy to lose. Harder to get back.”

- an inmate, Quehanna Boot Camp Watershed Steward Prison Project

The six prisoners stepped uncertainly out of the non-descript white van. They were young men, clad in brown-and-red work clothes and wearing freshly polished military-style boots. They told me later they didn't know what to expect, and, to be honest, neither did I.

We were in the Pennsylvania Wilds, a sparsely populated part of the Susquehanna River watershed comprising two million acres of public forests, and home to some of the most spectacular wild lands east of the Mississippi. They would be staying six months, as residents of the state Department of Correction's military-style Quehanna Boot Camp, where they would be subject to strict discipline and the shrill shouts of drill instructors. It appears an unlikely place for rebirth, but Corrections' staff gamble that most boot-camp inmates have the capacity to change their behavior for the better.

At this isolated facility there are no fences, no barbed wire, and no guards with guns staged on high towers. Instead, there are swaths of birch trees, abundant wildlife, a canopy of red pine, an understory of ferns and wildflowers, free-running streams, and large, domineering elk, brought here in an attempt to recover the species that was once native to the land. The recovery was succeeding. They had been given a second chance.

“Good morning,” I said, keenly aware that I was wearing badly scuffed hiking boots that were in need of a good polishing. “I am Carol Parenzan, your Middle Susquehanna Riverkeeper. I don't expect you to know what that means just yet, but by the end of the week you'll have a better understanding

of what I do and how each of you can help me and other Waterkeepers be protectors of our streams and rivers.”

I was met with blank stares.

“You're not here with me to be my workhorses,” I continued. “I won't ask you to do anything I wouldn't do, too. We are partners for the next five days. The only difference between you and me is that I haven't made that one bad decision – yet.”

A smile. A grin. A nod of the head. Six bodies relaxed just a bit.

“Yes, ma'am,” they replied in unison.

They had arrived here from various places. Two called the Philadelphia area home. Two were from Pittsburgh. One said he was headed to Arizona after his release, and the last was planning to return home to North Carolina. Two of the six had never dipped their toes in freshwater. Not a stream, not a lake, not a river. Rivers and streams were not their friends. They were from the city; freely flowing water was foreign to them. They feared what they did not know.

It was time to put them at ease: “Our rivers can only be as healthy as the land that surrounds them,” I said. “Today, we're going to start by discovering the meadows and forests around us.”

Their eyes seemed fearful as they swatted away pestering gnats that were drawn to their deep exhales. What about those elk? Bears? Coyotes? Poisonous snakes? Biting spiders? Ticks carrying disease? We would have to help them find their comfort zones before we could begin to address concerns in the watershed.

Healing Waters

Six Pennsylvania inmates learn to look at the natural world like a Waterkeeper, and to change their lives in the process.

BY CAROL PARENZAN, MIDDLE SUSQUEHANNA RIVERKEEPER



As a group we walked briskly toward a shelter where we would set up a week-long class and begin our discovery. Each prisoner was handed a blank journal and asked to write his initial thoughts about what he expected. That evening I and Tina Hayes, the young AmeriCorps VISTA volunteer who was working with me, would read their entries to better prepare us for the remainder of the week.

We began with an exercise called “one small square,” in which we would focus our observations on a one-square-foot grassy area near the shelter. After about ten minutes, I asked, “What do you see?” As I had expected, having conducted a similar exercise with other kinds of groups, their responses were sparse. It was time to nudge them a bit, give them permission to stretch.

“Let’s observe these same spots for another ten minutes,” I said. “This time, don’t be afraid to look a little closer, move grass blades out of the way, and place your face just inches from your square area. Get comfortable. Lie on your bellies. Really get in there and look.”

In just a few seconds, voices rose, reporting that an ant was carrying a chewed piece of leaf, that they noticed some scat (although the observer had another name for it), some dispersed seeds, a dropped berry, a footprint, and more. They were taking baby steps in military boots.

“You’re becoming scientists!” I proclaimed. “We have a special term for individuals like you – citizen scientists, and citizen scientists play a critical role in the work that Waterkeepers do.”

We headed back under the shelter. I distributed my nature guides – small books and laminated foldouts that dealt with tracks, scat, birds, insects, wildflowers, trees, waterfowl, weeds, and more. They enthusiastically explored the guides, attempting to identify what they had observed, and they recorded their findings with words and drawings in their journals. We repeated this exercise in a nearby meadow, and again in the woods. As they continued to record their observations, their confidence grew, their notes became more detailed, and their identifications more exact. They were indeed becoming citizen scientists.

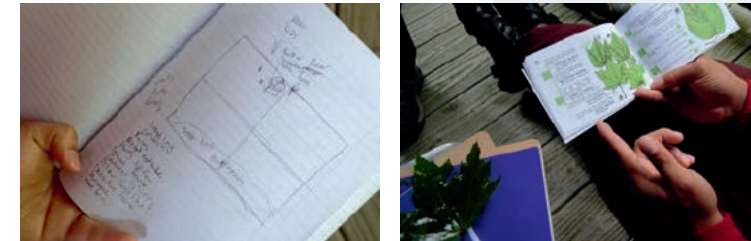
It was time for lunch.

“I’m going to slip away during the lunch break,” I announced, wondering where they thought I might be headed. “When I return, I’ll have a surprise with me. We need it for our afternoon session, which I think you’ll enjoy.” I wound my way through the mountain terrain along ripples and rapids

“You’re becoming scientists! We have a special term for individuals like you – citizen scientists, and citizen scientists play a critical role in the work that Waterkeepers do.”



PHOTOS BY MIDDLE SUSQUEHANNA RIVERKEEPER ASSOCIATION, INC.



PHOTOS BY MIDDLE SUSQUEHANNA RIVERKEEPER ASSOCIATION, INC.

ABOVE LEFT, COLLECTING AND IDENTIFYING MACRO INVERTEBRATES. LEFT, STREAMSIDE AND IN WADERS, AN INMATE RECORDS HIS OBSERVATIONS IN HIS JOURNAL. ABOVE, THE INMATES USED NATURE GUIDES THAT COVERED EVERYTHING FROM ANIMALS TRACKS AND SCAT TO WILDFLOWERS, TREES, WATERFOWL, AND WEEDS.

to the cottage we were calling home for the week. When I returned by car to our worksite, I found six sets of guarded but curious eyes watching me carefully as I opened the back passenger door. Out jumped a young Chesapeake-red, long-haired Nova Scotia Duck Toller. “Meet Susquehanna,” I said. Five of the six surrounded the dog, and with permission, affectionately scratched and pet this 35-pound ball of energy. I assured the one unengaged member of the group that he could simply observe. Here, perhaps, was another fear to overcome.

Susquehanna, also known as Suss or Sussey, is the “conservation canine” for Middle Susquehanna Riverkeeper Association. He is being trained to detect sewage leaks throughout the watershed, working with me on a consulting team contracted to municipalities, engineering firms and even other Waterkeeper Organizations to investigate stormwater systems, runoff, septic fields, and manholes in search of that troubling scent of sewage.

Over the next two hours, the prisoners took part in Susquehanna’s training by hiding scent-boxes and working with Susquehanna to find them. I stepped back. They stepped in – all of them, including the hesitant one. They were functioning as a team.

All week long, after working mornings on the kinds of skills required of a Waterkeeper, we would take Sussey for long training walks in the afternoon and practice our observation skills. And before we left each of the five worksites, we would conduct a garbage sweep and leave those spots cleaner than we’d found them. As the week progressed, our observation squares became larger, closer to water, then in water, and these fledgling citizen scientists began to learn about tree-mapping and sizing, water chemistry and testing procedures, collecting and identifying macro invertebrates, and much more.

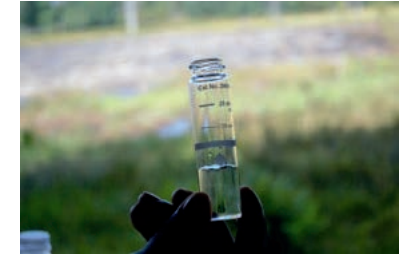
They began to appreciate the



PHOTOS BY MIDDLE SUSQUEHANNA RIVERKEEPER ASSOCIATION, INC.

“They began to appreciate the deep connections between land and water, and understand the human influence on both.”

LEFT, QUEHANNA BOOT CAMP INMATES WARM UP TO THE MIDDLE SUSQUEHANNA RIVERKEEPER’S AMAZING WATER-QUALITY CANINE “SUSSEY.” RIGHT, OVER THE COURSE OF THE WEEK, THE SIX YOUNG MEN LEARNED THE KINDS OF SKILLS REQUIRED OF A WATERKEEPER, FROM MAP READING TO WATER SAMPLING.



PHOTOS BY MIDDLE SUSQUEHANNA RIVERKEEPER ASSOCIATION, INC.

deep connections between land and water and understand the human influence on both. Having begun by examining a small square, they advanced to observing a small watershed, and spent their final day studying a creek that had been affected by a tributary tainted by drainage from an abandoned mine and a small wastewater-treatment plant. The team’s confidence grew. Those members who had feared working in and around water now sat on rocks in the middle of the Susquehanna River, writing in their journals. They were proud of what they’d accomplished, and so were their mentors. The seeds we had planted were yielding fruit. Before long, I hoped, they would return to their communities and become spokesmen and advocates for their home waters.

In August we will go back to the Pennsylvania Wilds to work with six new residents at Quehanna Boot Camp, and Sussey will find new hands to train him. Our plans are someday to enhance this experiential learning program with a green-jobs

fair for all the inmates at the correctional facility, and then to create an “eco-preneurship” program for inmates beyond Quehanna Boot Camp but within the Susquehanna watershed. Finding a job after incarceration is a daunting challenge, and we hope to provide mentorships in which prisoners can explore and develop green-business ideas, focusing their minds during incarceration and offering hope for their lives afterward.

I extend my appreciation to several people and organizations that enabled us to launch the Quehanna Boot Camp Watershed Steward Prison Project.

Thank you to the staff at the camp and the Pennsylvania Department of Corrections – for your trust. To Melinda Hughes and her organization, “Nature Abounds” – for assisting with stream-assessment skills. To Tina Hayes, our AmeriCorps VISTA volunteer – for taking thousands of photos during the week for us to select from. To the Unitarian Universalist Congregation of the Susquehanna Valley – for financially supporting our week in the Wilds. And, surely – to the six young-adult residents for having the courage to begin to change their lives, and mine as well. **W**

PICTURING THE SUNDARBANS

PHOTOS AND TEXT BY LYNNE BUCHANAN



The Sundarbans (translated from Bengali as “beautiful forest”) is a region along the Bay of Bengal in India and Bangladesh that spans thousands of square miles of land and water, and includes the world’s largest contiguous mangrove forest. Recognized by UNESCO for its “Outstanding Universal Value,” its biological diversity and the ecosystem services it provides, part of the Sundarbans that lies in Bangladesh was designated as a World Heritage Site in 1997, a decade after the Indian area received the same designation.

The image to the left shows one of the many mangrove tunnels that grace the approximately 200 islands in the Sundarbans. But rising sea levels are causing these islands to disappear, which is happening here faster than almost any other place in the world. Indeed, some scientists believe the Bay of Bengal is rising twice as fast as other water bodies, and have predicted that the entire Sundarbans could be under water in 15-to-25 years.

Located in the world’s largest natural delta, which is formed by the basins of the Ganges, Brahmaputra and Meghna Rivers, the Sundarbans are home to 334 species of saltwater-tolerant trees and 269 species of wild creatures, including Royal Bengal tigers, Ganges River dolphins and crocodiles. In 2015 it was estimated that eight million people lived in or

near the Bangladesh side of the Sundarbans, while five million lived in or near the Indian side. Eighty percent of the people depend on fishing for their livelihoods, but the ecosystems that support this industry are threatened by climate change, cyclones, deforestation, increased salinity, oil- and coal-spills, pollution from rivers that flow into the delta, and reduced flow resulting from dams and grabs of fresh water by India.

But the most serious threat to the Sundarbans’ survival is the proposed 1320-megawatt Rampal power plant now under construction in Bangladesh, which would burn five million tons of coal a year that would have to be transported through this delicate ecosystem. “If the Rampal coal plant is built, it will require hundreds more coal ships and barges to travel through the Sundarbans,” my host Sharif Jamil, who is the Buriganga Riverkeeper and coordinator of Waterkeepers Bangladesh, told me.

According to government officials, the plant is projected to come online by 2019. Environmentalists are also concerned that the plant will draw its water from the Passur River, a lifeline to the Sundarbans, and will discharge wastewater back into that same river. They believe this will threaten the viability of the mangroves, which act as an important “carbon sink” – an absorber of carbon dioxide – for the entire planet.

A REGION IN CRISIS



BOATS AT THE FISHING VILLAGE OF DUBLAR CHAR IN THE SUNDARBANS

In addition to polluted water from coal-ash ponds, the Rampal plant would cause severe air-pollution that would contribute to global warming and affect the health of people, trees and ecosystems. *The Daily Star* in Bangladesh has reported that this pollution would “cover the entire Sundarbans ecosystem, Satkhira, Khulna, Noakhali, Comilla, Narsingdi and Dhaka districts in Bangladesh and Ashoknagar, Kalyangar, Basirhat and Kolkata of West Bengal.” The all but unbreathable air in Dhaka, Bangladesh’s capital city, would become even worse. Nasrul Islam, in his book *Bangladesh Environment*

Movement, History, Achievements and Challenges, states that Dhaka has been described as “a gas chamber for slow poisoning,” and reports that it is destroying the bodies and brains of its citizens, especially children. (I can attest that this is true because one sweltering day in the district I almost succumbed to carbon-monoxide poisoning.)

A Greenpeace study found that the plant would cause “at least 6,000 premature deaths and low birth-weights of 24,000 babies during its 40-year life.” UNESCO has recommended immediate cancellation of the Rampal project.



REMOVING COAL FROM THE SHELA RIVER

In May 2016, a bulk-cargo vessel carrying 1,245 metric tons of coal sank in the Shela River, which also runs through the Sundarbans. It was the fourth incident in two years. The image above shows that, almost two years later, coal is still being cleaned up at the site.



SHARIF JAMIL ADDRESSES THE FISHERMEN OF DUBLAR CHAR

Given that the Sundarbans are located in the world's largest delta, it is no surprise that fishing is the principal means of livelihood. Additionally, the region provides food security for much of Bangladesh, among the most densely populated countries in the world, because many of its rivers, especially those around Dhaka, are so polluted that their fisheries have been destroyed.

During my trip to the Sundarbans, Sharif Jamil took me to visit the Dublar Char fishing village. It was almost dusk when we arrived and I was struck by the incredible beauty and peacefulness of the scene. I could see why people in other parts of the country would come here for five months of the year to fish, despite the dangers they face from man-eating tigers and crocodiles. Sharif spoke to a gathering of about 3,000 fishermen about the Rampal plant and its threat to their livelihoods. He spoke with them about their rights and the actions Waterkeepers Bangladesh was taking to oppose the plant. "We are beside you in this fight," he said.



RINSING SMALL FISH TO MAKE CHAPA SHUNTKI



From late October until the monsoons come in April, the fishermen collect and dry fish to make the fermented product *chapa shutki*. After being rinsed, the fish are dried and then sorted. Polluted water has reduced the size of the fish, which are an essential food source for 165 million people.



FRESH TIGER TRACKS ALONG A NARROW CANAL IN THE SUNDARBANS

The Royal Bengal tiger has been on the International Union for Conservation of Nature's Red List of Threatened Species since 2010, and a 2015 census showed that the population in Bangladesh was down to 106 from 440 in 2004. The nation's forestry department is currently undertaking another census lasting two years. Because the presence of tigers discouraged fishermen from entering the dense forests, they helped protect the mangroves, but increased salinity and flooding is now forcing the fishermen deeper into the Sundarbans, threatening the survival of both mangroves and tigers.

The following image, taken at the end of February, roughly a month before the start of monsoon season, shows a shrinking stream in the Sundarbans UNESCO World Heritage Site.

REDUCED FLOW ALONG THE PADMA RIVER



TRUCKS HEADING TO THE RAMPAL POWER PLANT CONSTRUCTION-SITE

The image above was taken just before the scheduled start of construction of the Rampal power plant in March. Bangladesh and India are jointly undertaking the \$1.7 billion project, slated to be completed by 2019-20. It is estimated that the plant could produce 38 million tons of highly toxic coal ash over the course of its operational life.

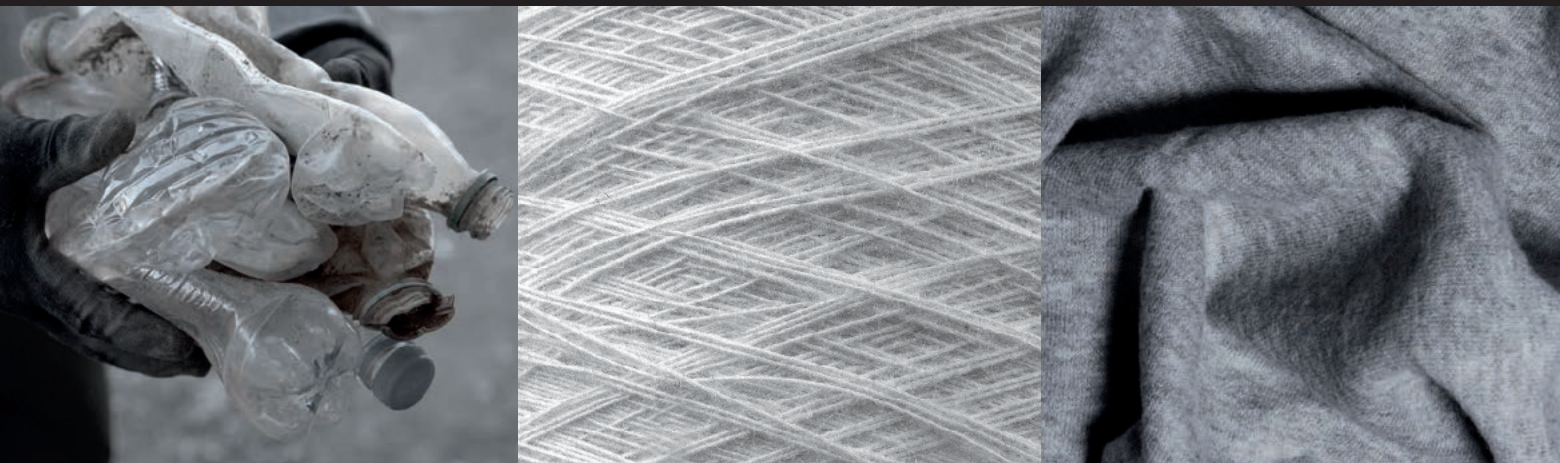
Lynne Buchanan is a fine art photographer who specializes in work on the environment. Her book, Florida's Changing Waters: A Beautiful World in Peril, will be published by George F. Thompson Publishing in 2019.

Waterkeeper Alliance
180 Maiden Lane
Suite 603
New York, NY 10038

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cleaning up our Marine
Environments.

Waterkeeper® Alliance's Ocean Plastic Recovery Initiative mobilizes a vast network of Waterkeeper® Organizations and Affiliates around the globe to establish recycling infrastructure and plastic recovery efforts to stop plastic pollution from entering our oceans. This network operates recycling facilities where recovered plastic is consolidated, sorted, and baled. BIONIC® acquires the processed plastics in exchange for a donation calculated at the baled commodities' fair market value that will provide much-needed support of the Waterkeeper Organization or Affiliate's ongoing work to protect and preserve their watershed.

