The Climate Issue:

- Why Does Climate Change Matter to the Columbia?
- How We Fight—and Win—to Protect the Columbia from Fossil Fuel Pollution
- Talking to Kids about Climate Change
River Notes
A LETTER FROM THE DIRECTOR

I studied glaciers and climate change on field expeditions to Antarctica, Alaska, and New Zealand. Confession: I began this work as an excuse to spend more time on glaciers. I love water in all its forms, and the frozen kind has always been my favorite. But then the data spoke to me: the earth is warming and the ice is melting. While evaluating ice core data from East Antarctica in a lab, I started applying to law schools. The data demanded action and advocacy.

These days, I spend a lot more time creating legal strategies than traversing glaciers. I do miss the ice, but part of my job is fighting the world’s largest fossil fuel projects to defend our climate, our glaciers, and the river we love. And the best part? I have the pleasure to work with Columbia Riverkeeper’s amazing members and supporters—now 16,000 strong—every day.

This newsletter is about climate change: the impacts on the Columbia River and how we are making a difference right now. Thank you for standing up for clean water—and frozen water, too. Together, we are winning crucial victories.

Brett VandenHeuvel
Executive Director
Artist Brian Holmes Maps the Columbia River and the Issues Facing the Region

By Liz Terhaar, Communications Director

What does a map tell you about a place? Depending on the spatial and geographic data, it can tell you a lot. Chicago-based artist and essayist Brian Holmes is researching the Columbia River for his participatory mapping project, “Learning from Cascadia,” with help from Columbia Riverkeeper. Brian is an art and cultural critic with a taste for philosophy and on-the-ground intervention.

This interdisciplinary project features mapping technology, art, and social issues displayed in thematic layers. He addresses timely topics like fossil fuel infrastructure, dams, and the Hanford Nuclear Site in an interactive digital map. The Pacific Northwest College of Art (PNCA) in Portland will feature Brian’s art as part of the exhibition, “The Earth Will Not Abide,” this fall. He is collaborating with students at PNCA and other community members along the Columbia.

Riverkeeper is helping Brian with his online multimedia atlas by providing content about clean-water campaigns in the Pacific Northwest and sharing information about our work and staff experiences. Once complete, the public will be able to interact online with the map.

“I act like a writer telling a story, or a painter painting a picture, of an organization,” said Brian.

‘Learning from Cascadia’ is an artistic atlas, composed and coordinated by an inquisitive stranger. It is inspired by all those who have created the bioregional identity of the Pacific Northwest …. The atlas also explores current social and political conflicts over environmental issues, such as water quality, toxic waste, land-use change, species survival, and more.”

SAVE THE DATE:
September 6 – October 20, 2018

“The Earth Will Not Abide,” an exhibit hosted by the PNCA’s Center for Contemporary Art & Culture, at the Dorothy Lemelson Innovation Studio, 511 NW Broadway, Portland, OR. Featuring works by Brian Holmes, Ryan Griffis, Sarah Ross, Alejandro Meitin, Claire Pentecost, Sara Siestreem, and Sarah Lewison with duskin drum. The exhibition poses questions about the ecological and social viability of industrial agriculture and extractive land use. Media for the exhibit includes video, creative mapping, paintings, and installation. For more information, visit ccac.pnca.edu.
Why does a river organization like Columbia Riverkeeper dedicate so much energy to fighting fossil fuel projects? First, fossil fuels threaten clean water. Think oil spills, pipelines that degrade salmon streams, coal dust in the river, and aerial deposition of mercury from coal-burning power plants. But we have additional motivation to fight fossil fuel infrastructure: climate change is harming the Columbia River and our communities right now. And giant fossil fuel corporations want to build more infrastructure—pipelines, fracked gas refineries, shipping terminals—to lock our region into continued reliance on dirty energy. Together, we are taking a stand to protect clean water and our climate.

With each victory over fracked gas, oil, and coal, we are protecting clean water and our climate. This article explores four (of the many) impacts of climate change—salmon in hot water, extreme heat waves, fire danger, and streams running dry—harming the people, animals, and plants in our region right now. In addition, the article describes scientists’ projections of future impacts. Our work is urgent and full of hope. By defeating fossil fuel infrastructure today, we support the rapid transition to clean energy, which will increase prosperity in the Pacific Northwest.
Four impacts of climate change in the Pacific Northwest

Salmon in hot water
The mighty Columbia River is synonymous with salmon. When tribes alone inhabited the Columbia River Basin, as many as 30 million salmon returned to the river each year. Despite significant declines, these salmon runs hold tremendous cultural and economic value for tribes and other river communities throughout the Pacific Northwest. While we struggle to restore the Columbia’s imperiled salmon runs, climate change is warming the river, making it even harder for salmon to survive.

Salmon need cool water. Warm water encourages disease-causing bacteria and fungi, delays salmon migration, and depletes salmon’s energy reserves. How warm is too warm? Adult salmon have difficulty swimming upstream when water temperatures approach 68 degrees Fahrenheit. Salmon that have stopped or slowed their migration, and languish for days or weeks in warm water, begin dying from stress and disease before they can return to their home streams to spawn.

Average summer water temperatures in the Columbia River have steadily increased over the past 60 years, and will only get hotter if climate change intensifies. Fifty years ago, the Columbia was too hot for salmon migration for only a week or two during the very peak of the summer. Now the Columbia frequently remains above 68 degrees Fahrenheit from mid-July until mid-September, making salmon migration during that time difficult or impossible. The Fish Passage Center, a federal science agency, explained that “under a climate change scenario, the long-recognized and largely unaddressed problem of high water temperatures...becomes an ever-increasing threat to the survival of salmon in the Columbia River Basin.”

That threat became a stark reality in the summer of 2015. Roughly 250,000 adult sockeye salmon, including 96 percent of the critically endangered Snake River sockeye run, died prematurely in the Columbia and lower Snake because the rivers were too hot. Though it’s convenient to call 2015 an outlier, climate scientists predict that the air and water temperatures that killed so many salmon in 2015 will become increasingly common.

To protect salmon, we must stop burning fossil fuels. In addition, altering and removing dams on the Snake and Columbia rivers can help solve water temperature problems. The Columbia and Snake dams create large, shallow reservoirs that trap the sun’s heat and warm up the rivers. If we operated the dams differently, and removed the lower four Snake River dams, we could directly address the hot water crisis that threatens salmon survival.

Extreme heat waves
Across the Pacific Northwest, hotter days and nights are growing more common. Climate change will increase the intensity, frequency, and duration of extreme heat waves during the summer, with dangerous consequences. Heat kills more people in the United States in most years than floods, tornadoes, or hurricanes. Our region’s cool, rainy reputation leaves many people unprepared to deal with extreme temperatures and heat waves.

The Pacific Northwest—like many other parts of the world—has seen record hot spells in recent summers. Climate change has already doubled the frequency of heat waves in some regions. And more extreme heat is on the way, even if we substantially reduce our global greenhouse gas emissions. Government scientists predict that heat waves in the Pacific Northwest over the next 30 to 60 years will be roughly twice as common as they are now and last twice as long. Summer temperatures that would have been extreme in the 1950s will become commonplace in coming decades, and we will see more record-high temperatures.

Extreme heat waves are dangerous. Heat is among the top weather-related causes of death in the United States, responsible for an average of 1,500 fatalities per year. One recent study in Washington state found a 50-percent increase in heat-related hospitalizations during summers with serious heat waves. Residents of the Pacific Northwest may be at particular risk, even though heat waves here are less severe than in other regions. Many Oregonians and Washingtonians don’t think of heat as a health risk, may not know the signs of heat stroke, and may not have access to air
We boat, fish, swim, and draw drinking water from our many rivers. Properly restored, these streams can once more support healthy salmon runs. But only if there's enough water to keep our rivers and streams flowing.
conditioning. A nationwide study found that “areas along the West Coast showed very high vulnerability [to heat waves], even though their current climates are temperate.”

Like many other consequences of climate change, extreme heat waves will cause the most harm to the most vulnerable members of our society. Because urban areas collect additional heat, elderly and poor people living in large cities face the greatest risks. Older people tend to be less resilient to the physical stress of prolonged heat waves. And in the Pacific Northwest, where many homes lack air conditioning, low-income communities may not have access to, or the ability to pay for, relief from the heat.

**Fire danger**

Residents of the Columbia River Gorge and the Portland metro area won’t soon forget last summer’s Eagle Creek Fire: weeks of smoke and haze; road closures; evacuation alerts; and vacant downtowns in Gorge communities that usually bustle with summer visitors. And while we had it bad, the deadly fires that ravaged California communities later in 2017 were downright catastrophic.

Across the nation and the globe, climate change is increasing the frequency and intensity of wildfires. Large wildfires in the United States currently burn more than twice as many acres each year as they did in 1970, and the average wildfire season now lasts two-and-a-half months longer. Less snow, earlier snowmelt, and warmer air temperatures—all linked to climate change—lead to the hot, dry conditions that boost fire activity. Warmer, drier conditions also make fires harder to put out.

The Pacific Northwest’s forests will be especially susceptible to wildfires as our climate changes. In Oregon and Washington, the mountains of the Cascade and Coast ranges traditionally have wet winters and relatively cool summers, leading to infrequent forest fires. But if the average temperature increases by one degree Celsius in this region—including the Gorge—the number of acres burned each year could rise by more than 400 percent. In the forests of northeastern Oregon, the number of acres burned each year could increase by more than 500 percent.

While we fight climate change, we’ll also need to change the ways we manage and live with wildfire. Old ideas about wildfire suppression should be discarded; immediately putting out every forest fire, no matter the location, is incredibly expensive and allows dangerous amounts of fuel to build up over time. Forest management, like thinning around rural communities, may play a limited role. But powerful timber corporations and elected leaders should not use fire danger as an excuse to increase clearcutting and salvage logging that harm water quality, fish, and wildlife.

**Streams running dry**

Washington, Oregon, and Idaho are famous for beautiful, wild rivers and streams. The Wenatchee, Yakima, Deschutes, Clackamas, and Selway—just to name a few in the Columbia Basin—evoke a powerful connection and sense of pride for many Pacific Northwest residents. We boat, fish, swim, and draw drinking water from our many rivers. Properly restored, these streams can once more support healthy salmon runs. But only if there’s enough water to keep our rivers and streams flowing.

Climate change threatens to decrease water levels in western rivers, especially during the summer. Most surface water in the West comes from snowmelt, but snowfall is declining and projected to decline faster if climate change continues. With less snowmelt to feed rivers throughout the summer, and warmer air temperatures increasing evaporation, many rivers won’t have much water left in the summer and fall. Some streams in the Columbia Basin may run dry altogether.

In response to declining snowpack, some suggest building new dams to trap rainfall and spring runoff. But dam construction would sacrifice the very rivers we seek to protect and restore. We already live with the legacy of thousands of large and small dams throughout the Columbia Basin. Dam construction is the past; dam removal and healthy, free-flowing rivers are our present and future.

One Columbia Basin stream already facing acute water shortages is Fifteenmile Creek. From its headwaters in the eastern foothills of the Cascade Mountains, the creek flows into the Columbia River near The Dalles, OR, and provides an important spawning area for threatened steelhead. Fifteenmile Creek receives about 70 inches of precipitation each year—mostly as snowmelt—but irrigation already competes for scarce water in the summer, sometimes running the stream dry and killing young fish. Further decreases in snowfall and precipitation could push this imperiled population of steelhead over the brink of extinction.

**Hope for a brighter, cooler future**

The threats from climate change are real and daunting, yet we see reasons for hope all around us. The Pacific Northwest is combating climate change by refusing to host coal and oil export terminals and by decreasing our reliance on fracked gas for power. Instead, your voice is driving a transition to clean, renewable energy and setting an example for the rest of the United States and beyond. Together, we can protect the Columbia Basin’s people and places from the worst impacts of climate change while protecting clean water.
How We Fight to Protect the Columbia from Fossil Fuel Pollution—and WIN

By Dan Serres, Conservation Director

As highlighted by the article on pages 4 to 7, we are in the fight of our lives to stop dirty fossil fuels and transition to clean energy. The good news? You are making a difference right now. As a member of Columbia Riverkeeper, you have a tremendous impact on greenhouse gas pollution in the Pacific Northwest. Over the past decade, you defeated the region's largest fossil fuel proposals. From stopping liquefied natural gas (LNG) developments on the Lower Columbia River, to blocking mind-blowing quantities of coal exports, to persuading Washington Governor Jay Inslee to deny North America's largest oil train terminal, your efforts register on a global scale.

Together, we have helped prevent:
- **Coal** - more than 132 million tons per year, destined to travel through the Columbia River Gorge in dozens of mile-long coal trains, to ports in Oregon, Washington, and British Columbia.
- **Oil** - more than 760,000 barrels per day shipped in “bomb trains” to new or expanded oil-by-rail terminals in Oregon and Washington.
- **Fracked Gas** - more than 2 billion cubic feet of fracked gas per day (more than Washington and Oregon combined use in a day), by defeating pipeline, power plant, and LNG terminal proposals. And we continue to fight projects in Kalama and Port Westward that would use or export another 640 million cubic feet.

Altogether, you helped stop 471 million metric tons of carbon pollution per year. That’s almost four times the carbon pollution of the Keystone XL pipeline, and more than seven times Oregon's total in-state greenhouse gas pollution. Incredible!

Not only did you take a stand for our climate, but you made a difference for clean air and water as well. Fossil-fuel projects pose tremendous safety and toxic pollution risks to millions of people across the Northwest. When we fight fossil fuels, we are fighting for clean water and healthy communities.

Together we are strong
To win against powerful coal, oil, and gas interests, we must work together with allies. Riverkeeper engages with community activists from eastern Oregon and Washington all the way to the mouth of the Columbia River.

People may fight dangerous fossil-fuel projects because the projects harm local businesses, water resources, forests, farms, or public safety. We are fortunate to work with firefighters, fishers, foresters, farmers, health professionals, educators, and union leaders who see fossil fuel risks in their communities and stand against injustice. Whether seeking to protect critical salmon habitat, the safety of schools near rail lines, or a stable climate for our children, we seek common ground and a path away from dangerous fossil fuels. We strive to learn from one another and stand in solidarity across traditional political boundaries.

We also salute the incredible work of Columbia River tribes that stood up to coal exports and oil-by-rail. Several tribal nations presented rock-solid arguments to state and federal decision-makers on the dangerous impacts of coal exports and oil-by-rail. According to the Columbia River Inter-Tribal Fish Commission, “[Our] opposition stems not only from the climate effects of continued fossil fuel use, but also the present danger of transportation risks. Continued reliance on fossil fuels would have long-lasting, harmful impacts to the environment and the natural resources upon which tribal cultures are based. This alone is reason enough for opposition to expanding fossil fuel transport through the region, but adding in the risk of catastrophic environmental damage from spills and derailments and the correct course of action is even more obvious.”

We are honored to work in solidarity with these tribes to protect the Columbia from the perils of oil-by-rail and other dangerous fossil fuel projects.
The Battle Continues: Linking Grassroots Power to Expert Advocacy

The “Thin Green Line”—the Northwest’s remarkable effort to block fossil fuel expansion projects—is driven by everyday people who take time to connect with their friends, neighbors, and public officials. Riverkeeper works to link these people with one another, empower them with technical information, and fight for their rights in the courtroom.

The fight continues. Fracking companies desperately seek outlets for their climate-disrupting methane. Two massive fracked gas-to-methanol refineries proposed in the Lower Columbia River would consume nearly as much fracked gas as the entire state of Oregon. Meanwhile, shippers of tar-sands crude are eyeing the Lower Columbia River for outlets for oil that is so thick and polluting, it sinks upon spilling, a huge threat to salmon recovery in the Columbia River. And the backers of the Millennium coal terminal continue to litigate over a rejected coal export scheme in Longview, WA.

The Columbia River has two futures. The first: a superhighway for fossil fuel exports—oil tankers, refinery smokestacks, flares, and piles of coal eight stories high—enriching multinational corporations. The second: strong, healthy communities and thriving local businesses united by clean air, clean water, and sustainable salmon runs. Thank you for choosing clean air and water. When it comes to the onslaught of fossil fuel infrastructure on the Columbia, the actions you take in your community have global climate impacts.
There is never a dull moment on the Columbia! Here are some highlights.

ENVIRONMENTAL EDUCATION
NICHOLS NATURAL AREA, HOOD RIVER, OR; SPRING 2018
With Columbia Riverkeeper science looks a lot like fun. Mrs. Hoezee’s Westside Elementary 2nd grade class learns about river dynamics and studies patterns in erosion and deposition. These students were just some of the 600 students, ranging from elementary to community college, who have visited the Nichols Natural Area with Riverkeeper this spring.

HAPPY EARTH DAY 2018!
NICHOLS NATURAL AREA, HOOD RIVER, OR; APRIL 21
Thank you to all the wonderful volunteers for their Earth Day restoration work at Nichols Natural Area. Sixty people collected more than 750 pounds of trash and removed a truckload of invasive plants along the Hood and Columbia rivers. Thank you to KIND Snacks and Freshies Bagels and Juice for the yummy snacks!

VANCOUVER VICTORY PARTY
Gaiser Hall, Vancouver, WA; April 5
We shared stories and enjoyed a performance by Holcombe Waller in celebration of the incredible, people-powered victory over Tesoro’s plans to build North America’s largest oil-by-rail terminal, and other dangerous, polluting coal and oil proposals.

ANNUAL PETE SEEGER BIRTHDAY CELEBRATION
CLINTON STREET THEATER, PORTLAND, OR; MAY 6
“In dark times we need to gather in community, and I could feel the joy radiating beyond the confines of the theater and spilling out onto Clinton Street,” said Lani Jo Leigh, co-owner of Clinton Street Theater. “Folks left rejuvenated, inspired and, in many ways, healed.” A huge thanks to Lani Jo and the whole Clinton Street Theater crew who once again hosted an amazing lineup of musicians for an evening of singing and cinema. Special thanks to musicians Joe Hickerson and Ted Kaye.
COWLITZ COUNTY SUPERIOR COURT VICTORY ON METHANOL REFINERY
KELSO, WA; MAY 8
The Cowlitz County Superior Court upheld the decision by the Washington Shorelines Hearings Board that the Port of Kalama and Cowlitz County broke the law by failing to disclose and evaluate greenhouse-gas pollution from the proposed Kalama methanol refinery. A coalition opposing the project—including Columbia Riverkeeper, the Sierra Club, and the Center for Biological Diversity represented by Earthjustice—call this another victory in the fight against fracking and fossil-fuel export. Opponents of the world’s largest fracked- gas-to-methanol refinery packed the courtroom and met afterwards with Columbia Riverkeeper’s Clean Water Attorney, Miles Johnson, to discuss the ruling.

LUMMI NATION TOTEM POLE JOURNEY
ECOTRUST BUILDING, PORTLAND, OR; MAY 12
The Lummi Nation has embarked on its 2018 totem pole journey, known as “Qwel Lhol Mech Ten” (Our Shared Responsibility). This 9,000-mile, 23-day journey is has a goal of returning Tokitae (also known as Lolita), a captive Southern Resident killer whale, from a Miami aquarium to her pod in the Salish Sea. While sharing the story of Tokitae and her importance, the Lummi will also focus on local indigenous-led efforts in the communities they visit. Follow the journey online: https://www.facebook.com/totempolejourney/.

Share your stories about the Columbia River and photos by emailing us:

info@columbiariverkeeper.org
Follow our work on social media, too.

DONATE TODAY!
Visit: www.columbiariverkeeper.org
or email: info@columbiariverkeeper.org
Thank you for your support!
At dinner the other night, my young daughter put me on the spot when she asked, “What did you learn at work today, Mommy?” Whether she was genuinely interested in my day or attempting to deflect the nightly interrogation about kindergarten, I faced a tough decision. How do I explain climate change, toxic pollution, and salmon extinction—topics I explore during a typical day at Columbia Riverkeeper—to a five-year-old?

Enter Mary DeMocker. In “The Parents’ Guide to Climate Revolution: 100 Ways to Build a Fossil-Free Future, Raise Empowered Kids, and Still Get a Good Night’s Sleep,” DeMocker lays out a lively, empowering, and doable blueprint for engaging families in the urgent endeavor of climate revolution. In the book’s brief, action-packed chapters, you’ll learn hundreds of wide-ranging ideas for being part of the revolution, from freeing yourself from dead-end science debates, to teaching kids about the power of creative protest, to changing your lifestyle in ways that deepen family bonds and reduce your impact on the Earth. Here’s a sneak peek of DeMocker’s tips:

• Talk to your kids about system change, not just changing the light bulbs.
• You don’t have to become eco-superheroes. Supporting existing efforts and innovations makes a difference and makes sense for busy families.
• Move money from big banks that fund oil pipelines to community credit unions that invest in clean energy while supporting local businesses and schools.
• Amplify the voices of those most impacted by the climate crisis: young people.
• Be part of the 3.5 percent. That’s the percentage of the population needed to spark successful non-violent movements, so join a grassroots group.

The guide includes 100 chapters divided into eight sections, such as “Save Time and Money,” “Care For Your Soul,” and “Raise Empowered Kids.” You can read it start to finish, or crack it open and see what title appeals to you. Each chapter has a short story—DeMocker chose the funniest or most moving moments from her 21 years of parenting—and ends with two to 10 ideas for busy parents to try.

When asked, “Aren’t parents too busy to take on climate change?” DeMocker responds, “We are so busy, aren’t we? That’s why we need easy, affordable, fun ideas that fit into busy family lives. Many of the ideas take only a minute or two and cost very little or nothing. I want to emphasize that this book isn’t about doing more. It’s about doing some things a little differently.” As a tired mom of a two-year-old that hasn’t slept through the night in nine months, that’s exactly what I need to hear. Happy, empowered reading.
A Young Leader’s Perspective on the Tesoro Savage Victory

By Dan Serres, Conservation Director

During the five-year effort to protect Vancouver from two oil train terminals, dozens of young people stepped up to provide testimony, enthusiasm, and inspiration. Ernesto Zurita-Ruiz was one of the stars. As an outstanding student at Heritage High School (and now an engineering student at the University of Portland), Ernesto spearheaded a young team of researchers who testified to Washington’s Energy Council about potential air, water, and greenhouse-gas pollution from the nation’s largest proposed oil-by-rail terminal.

“It was important for me to speak on the oil terminals proposed for Vancouver because of the irreversible risks that would have affected the low-income neighborhoods by the site and railroad tracks of these projects,” said Ernesto. “Ultimately, Governor Jay Inslee’s rejection of the project safeguarded the health and safety of these underrepresented neighborhoods.”

Ernesto also joined dozens of Vancouver residents who persuaded a Hearings Examiner to require an environmental impact statement for the NuStar oil terminal proposal in Vancouver, a decision that ultimately led to the cancellation of that project. Ernesto did his homework (literally, in this case) and crafted compelling testimony that highlighted some of the biggest risks of the oil terminals for people living close to the tracks. He also spent hours knocking on doors as a volunteer for the non-profit organization OneAmerica to educate the Vancouver community about the oil train issue. Ernesto stood out for his consistent willingness to help on many fronts. I asked Ernesto about obstacles that prevent young people from similarly engaging in their communities.

“Younger generations are an energetic, massive group very capable of guiding and shaping the course of our communities and nation,” Ernesto said. “However, I am witness to the discouragement of these generations from engaging in activism and civic participation due to a feeling of not being taken seriously from the current generation of policymakers and businessmen. Older generations can support and empower younger generations by encouraging them to be active in issues they are passionate about, to let them know that there are people across all generations willing to support them in their fights and struggles.”

Ernesto and his family root their concern for Vancouver’s future in the experiences of low-income and immigrant residents of Vancouver. Ernesto saw the connection between immigrant rights and environmental justice very clearly.

In the wake of the victory over oil terminals in Vancouver, Ernesto is working with his father, Glicerio, a leader with OneAmerica, on the effort to pass Initiative 1631, a new carbon-pollution fee in Washington that will be used to invest in clean energy and new jobs for communities throughout the state.

“As a young adult, my generation will soon inherit the reins of our community, nation, and Earth,” Ernesto said. “However, I will also inherit the consequences of the policies and inactions of older generations. Volunteering with OneAmerica to gather signatures for Washington’s I-1631 is my civic duty in guiding all generations to safeguarding a clean, habitable, and prosperous future for generations to come.”

Through all of his work, Ernesto shared a calm, reasoned positivity that set an example for activists of all ages. We are thankful for Ernesto’s work and excited to see where his activism leads his community next.
Columbia Riverkeeper’s Brett VandenHeuvel interviewed Fergus Green, a researcher at the London School of Economics and Political Science. Fergus co-authored a paper called, “Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies,” published in the journal Climatic Change on March 12, 2018.

The paper argues that policies restricting the supply of fossil fuels (e.g. reducing or stopping extraction and supply infrastructure) have numerous advantages over restrictive demand-side policies (e.g. cap and trade of greenhouse gas). In other words, a good way to reduce the use of fossil fuels is to stop extracting so much in the first place.

Your paper discusses how building fossil fuel infrastructure can lock in future use of fossil fuels. Can you explain this problem?

Fossil-fuel infrastructure includes coal-fired power stations and mines, gas wells, oil rigs, and oil wells, as well as transportation infrastructure like ports and pipelines. These are typically built with a long economic lifetime, often multi-decades. Once the infrastructure is built, those costs are sunk so the operators will continue to produce as long as price of their products covers the marginal cost of production. That means the infrastructure is going to be used unless the price of the product falls very low. When infrastructure is built, you effectively “lock in” the production or the use of that infrastructure for a long time. One of the economic reasons in particular for supply-side policy is that if demand-side policy, such as carbon pricing is not sufficiently strong to deter would-be investors in upstream infrastructure, then supply-side policy can bridge the gap. It can stop infrastructure from being constructed and so avoid this lock-in effect.

Have you seen an underappreciation of supply-side policies to prevent the lock-in of fossil fuel infrastructure?

I see it time and time again. I think to some extent disparagement of supply-side policies is a case of public relations spin by a vested interest or government officials who want to promote fossil fuel supply infrastructure. But perhaps the more tragic example is that the climate policy community has sort of aided and abetted the marginalization of supply-side policy. Really they should be full-throated advocates of both demand and supply-side policy, when in fact they’ve tended to advocate demand-side policy almost exclusively.

We are facing large fracked gas (also known as natural gas) projects in the Pacific Northwest, in some cases justified as “better than coal.” On the broader global scale, do you see fracked gas as a growing concern?

I think it’s a big problem because [natural] gas is, at best, only a very partial, shortterm improvement and, at worst, it is actually worse than coal—it depends on technical details (such as methane leakage rates that vary from well to well, and assumptions about the extent of the global warming effect caused by methane, which is a contested scientific issue). The challenge is to phase down all fossil fuels. Coal is the most urgent, but they are all urgent. We need to apply the full range of policies to all fossil fuel production, transport, and consumption. That’s the point of our paper—when you look at the climate policy toolkit, we’ve been tying one hand behind our backs for far too long by ignoring the power, usefulness, and political capability of supply-side policy. We hope the paper will contribute to some change in that regard, at least in the climate policy community who should be advocating for the full range of policies.

Check out Fergus Green’s climate research online at fergusgreen.net.
This July, you will likely see barges, fishing boats, and windsurfers aplenty on the Columbia. If you are fortunate, you may also experience the sight of tribal canoes traveling traditional waters to strengthen their cultural ties to the river and one another.

The canoes represent a renewal of indigenous canoe culture, sparked by an annual event known as the Canoe Journey. The Canoe Journey is a celebration of canoe culture; tribes come together to sing and dance, share food and art, carve paddles, and dig out canoes. Each year, a different Pacific Northwest indigenous community hosts the inter-tribal Canoe Journey. The 2018 Canoe Journey, hosted by the Puyallup Indian Tribe, is expected to draw nearly 90 canoe families.

The Portland All Nations Canoe Family, Chinook Nation, Cowlitz Tribe, Confederated Tribes of Warm Springs, and Kalispel Tribe of Indians will begin their journey to Puyallup on the mighty Nchí-Wána (Columbia River) near the mouth of the John Day River. The pullers in their canoes—supported by canoe family members on shore—will travel downriver to the Pacific Ocean.

The Portland All Nations Canoe Family invited Columbia Riverkeeper to support the Canoe Journey as a partner in fundraising and water-quality education for the youth during the journey. We will paddle alongside for a portion of the Columbia River canoe journey—if we can keep up in our kayaks!

The Portland All Nations Canoe Family formed in 2013 in association with the Native American Youth and Family Center. The Portland All Nations Canoe Family is a multi-tribe canoe family connecting urban Native Americans to the canoe culture with a mission “to honor our ancestors, to inspire our youth, to document the history of the canoe journeys in the Pacific Northwest, and to contribute significantly to the lives of our urban Native American community by building on cultural strengths and assets.” The master weaver, carver, and canoe-maker John Edward Smith of Skokomish built the Portland All Nations 30-foot canoe, which is distinguished by a wolf figurehead on the canoe’s bow. Elder Frank Alby named the canoe “El Lobo.”

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Portland All Nations Canoe Family serves as a way to connect and strengthen indigenous culture despite centuries of efforts to extinguish it. Portland is home to the ninth-largest urban population of Native Americans in the nation. Federal policies played a significant role in the demographics of Portland’s urban native community, including the forced removal of Indians from tribal homelands, termination of tribal governments, and the relocation of Native Americans to urban areas.

Come July, I look forward to turning my eyes towards the Columbia, catching a glimpse of El Lobo passing over salmon and under basalt columns, and celebrating the cultural revival this journey represents.