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THE PLANET

THE POLITICS ISSUE SPRING 2016



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**DEAR READER,**

Recently, I had the opportunity to visit the nuclear site at Hanford, Washington, one of the largest cleanup sites in the world. During World War II, the United States created the Hanford site to produce a plutonium bomb.

Hanford tells a story of collaboration — scientists, lawmakers, industries and citizens working together on one of the largest engineering feats in human history: creating and dropping the first-ever plutonium bomb less than 900 days after its start.

Hanford also tells the opposite story. Waste from that project has created a 200,000-year legacy of decay. Nearly three decades after the last reactor at Hanford shut down, scientists, lawmakers, industries and citizens are still fighting over what to do with the waste, with no clear answer in sight.

This quarter, our reporters covered similar stories, on the fault lines between politics, science and the environment.

In this issue, we traveled to the banks of the Duwamish, a river at the center of a legal battle between the City of Seattle and Monsanto over chemical contamination. We discovered how sprigs of moss have revealed previously unknown sources of heavy metal air pollution in Portland, Oregon.

We met a former NFL player working on an initiative to ban the export of horses for their meat, and our trail correspondent rode along on the multi-decade journey to create one of the country's newest national scenic trails.

I hope this magazine will inspire you to think about the voices and forces behind every complex challenge our world faces.

*Jesse Nichols
Editor-in-Chief*

In the Winter 2016 Resilience Issue, the article "Power of Paris" contained errors. Two captions for photos on the bottom of page 23 were placed below the wrong images. The caption for the far right photo was mistakenly switched with the caption for the center right photo, misidentifying Erlend Moxter Knudsen and Daniel Price. These errors have been corrected in the digital version of the issue, located on our website. Visit www.theplanetmagazine.net/issues to see the full corrections.

THE PLANET MAGAZINE is the quarterly student publication of Western Washington University's Huxley College of the Environment. We are dedicated to environmental advocacy through responsible journalism.

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Seattle sues Monsanto over PCB contamination in the Duwamish River.

ON THE COVER

I stood in amazement as Sarah Jovan gave moss emotion. She delicately held the specimen in her hand and revealed the unmatched qualities it possesses to organically monitor air quality. Moss performs similar to expensive human-made technology simply by existing. It is not easily overlooked once you become aware of its subtle superpower. I'll never again view moss simply as a soft green clump.

-Jessie Raetz



A tree in Portland, Oregon stands covered in the same moss species used by the U.S. Forest Service to monitor the city's air quality. Using moss as a screening tool serves as an accurate, low-cost addition to the current Oregon State Department of Environmental Quality air monitors.

UNNOTICED INDICATOR

STORY BY SHAUNA BARROWS | PHOTOS BY JESSIE RAETZ

*Sarah Jovan
strides through
a picturesque
neighborhood in
Portland, Oregon.
She halts beside
an inconspicuous
tree on the corner
and peers at its
branches.*

“YUP, IT’S EXTREMELY ABUNDANT. It’s on all of these trees.” Jovan plucks a particularly plump, vibrant green specimen of moss with delicate star-shaped tendrils wedged firmly between two branches.

“Orthotrichum lyellii,” Jovan says.

Jovan is a U.S. Forest Service research ecologist who specializes in lichen and moss. She is a member of the team of researchers who discovered unhealthy levels of airborne cadmium and arsenic throughout hotspots in Portland. Both are heavy metals with adverse health effects, including developmental anomalies in children, cardiovascular problems and cancer.

In the wake of the discovery, government agencies have been scrambling to determine the source of the hotspots and establish a solution to the air pollution. Meanwhile, Portland community members have ignited a grassroots movement that gathered widespread attention.

Dead center of this scene sits a very unlikely catalyst for such unrest: moss.

Scientists have used moss and lichen for over 20 years to determine forest air quality. However, the study in Portland is the first to use moss to pinpoint air pollution hotspots in a city.

Government regulators typically use more high-tech measures to watch for unhealthy air. The Oregon Department of Environmental Quality has several air monitors strategically stationed around Portland. The DEQ uses the monitor readings to build models of what the overall air quality for the city should look like.

Several years ago, researchers were puzzled when these models began to show lower levels of cadmium and arsenic than what its monitors were actually reading.

“That was telling us we had underestimated, and we didn’t fully know or understand the sources of these metals in the Portland area,” said Sarah Armitage, an air quality specialist at the DEQ. “That’s what got us started.”

In 2013, the DEQ teamed up with the Forest Service to find where these high readings were coming from.

The breakthrough was partly a matter of lucky timing. When Jovan and her team prepared to collect and analyze Portland moss samples, they weren’t initially focused on the presence of heavy metals.

“Originally we had decided, ‘Oh, hey, let’s just tack on metals to the analysis,’” Jovan said. “We knew it would be interesting to have that much information.”

The decision to analyze the heavy metals in the moss samples proved to be a revealing addition to the DEQ’s current air monitoring system.

While the monitors are excellent indicators of city-wide air quality trends, their shortcoming lies in their inability to pinpoint the sources of pollution. The monitors may be strategically placed, but lack the moss’s natural ability to identify local hotspots.

Mosses, unlike plants, don’t have root systems. Instead, the species takes in nutrients directly from the air. As the leaf-like tendrils of moss grow, they effectively store the air’s

nutrients. The tendrils become biological catalogues, where every absorbed substance is stored directly in its tissue. By analyzing tissue samples, scientists can accurately determine the amount of chemicals in the air directly around the moss.

The Forest Service's laboratory work and moss analysis cost \$35 per sample, Jovan said. The current DEQ air monitors each cost up to \$150,000 per year to operate. Moss's economic advantage and accuracy could revolutionize air quality regulation and monitoring, acting as precise scientific instruments in conjunction with current DEQ modeling.

Widespread moss monitoring could increase accurate detection of pollutant concentrations and encourage more effective air regulations. Armitage said other states,

researchers and community members will likely take advantage of moss to screen for air pollutants.

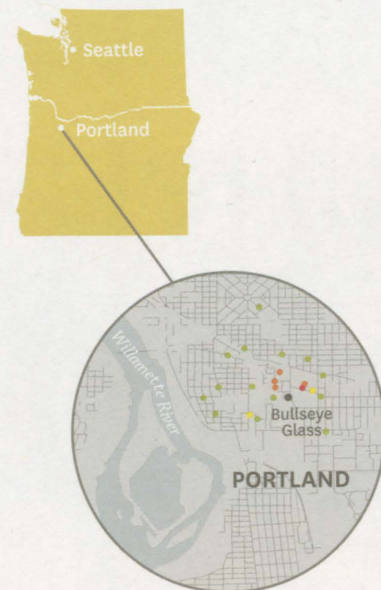
Since the Forest Service's discovery, the DEQ has been scrambling to improve air quality standards and monitoring methods.

The agency embarked on a mission to add a new layer of regulatory oversight and a risk-based permitting program for facilities in the state to help the pollution situation, Armitage said.

The DEQ identified two local art glass factories as the potential sources of the heavy metals. The factories, Bullseye Glass and Uroboros Glass Studios, responded to DEQ pressure and public criticism by filtering or stopping the harmful emissions in wake of the moss study.

CADMIUM LEVELS

MEASURED IN MOSS SAMPLES IN EAST PORTLAND



CADMIUM: PARTS PER MILLION



Locals living near the glass factories were especially alarmed by the results of the study. Approximately 3,300 individuals came together to form the Eastside Portland Air Coalition with the goal of improving Portland's air.

Jennifer Jones and Marny Spoons are both active members of the coalition whose families have been directly exposed to the air pollution near Bullseye Glass. People from the coalition participate in nearly every DEQ meeting regarding future air policy, and work to understand the science behind both the moss study and heavy metal health risks. Spoons acts as their science interpreter, simplifying the data for community members.

"That is the one power in this movement," Spoons said. "When all this information comes to us, we have a way of disseminating it down into edible pieces."

The coalition hasn't just interpreted the DEQ's statements, they have also analyzed the raw data of the moss study themselves.

"We've had a lot - a lot - of [Freedom of Information Act] requests for our data," Jovan said. The Forest Service makes a point of releasing raw data in simple forms, allowing individuals to use it for their own follow-up.



Forest Service research ecologist Sarah Jovan examines a cluster of *Orthotrichum lyellii*, a variety of moss used to measure air quality. The moss on this Portland tree can help pinpoint air pollution sources.



In addition to understanding the science, the coalition is pushing for policy changes. Its primary goal is to add source monitors to all factories. Source monitors are air quality monitors placed directly at the top of production stacks. This improves accuracy because exact pollutant concentrations are collected the instant they are released into the atmosphere.

Though their political goals are locally focused, both Jones and Spoons said their fight isn't just for the affected communities in Portland.

"This is not just a glass problem," Jones said.

"And it's not just a Southeast Portland problem," Spoons added. "People are watching us across the country and they're writing to us asking how they can start a movement like we did."

Frequently, people shy away from participating in similar environmental movements, often unwilling to acknowledge there is a problem unless it's directly affecting them, Spoons said.

"My kids went to school for 12 years in the airshed [shared by Bullseye Glass] and suddenly, there was room on my plate," Jones said.

Both Jones and Spoons said their motivation to take action is driven by the proximity of the issue. The discovery of the hotspots encouraged them to tackle an environmental issue such as this. They made room to care.

"I'm glad that people are so engaged suddenly, and interested," Jovan says. She drops the moss sprig she's been holding, and it disappears into the greenery covering the tree's roots. 🌱

ABOVE LEFT: Jennifer Jones (right) and Marny Spoons (left), members of the Eastside Portland Air Coalition, examine a mossy tree near their neighborhood. Since the Forest Service study, many Portlanders have pushed for policy changes at the local and state levels.

ABOVE RIGHT: Jovan holds a piece of moss in her outstretched hand as she explains how moss directly absorbs nutrients from nearby air, storing substances in its tissue like an archive.

SHAUNA BARROWS is a Western Washington University student studying environmental education and English. An avid plant fanatic, she plans to attend graduate school for botany or lichenology.

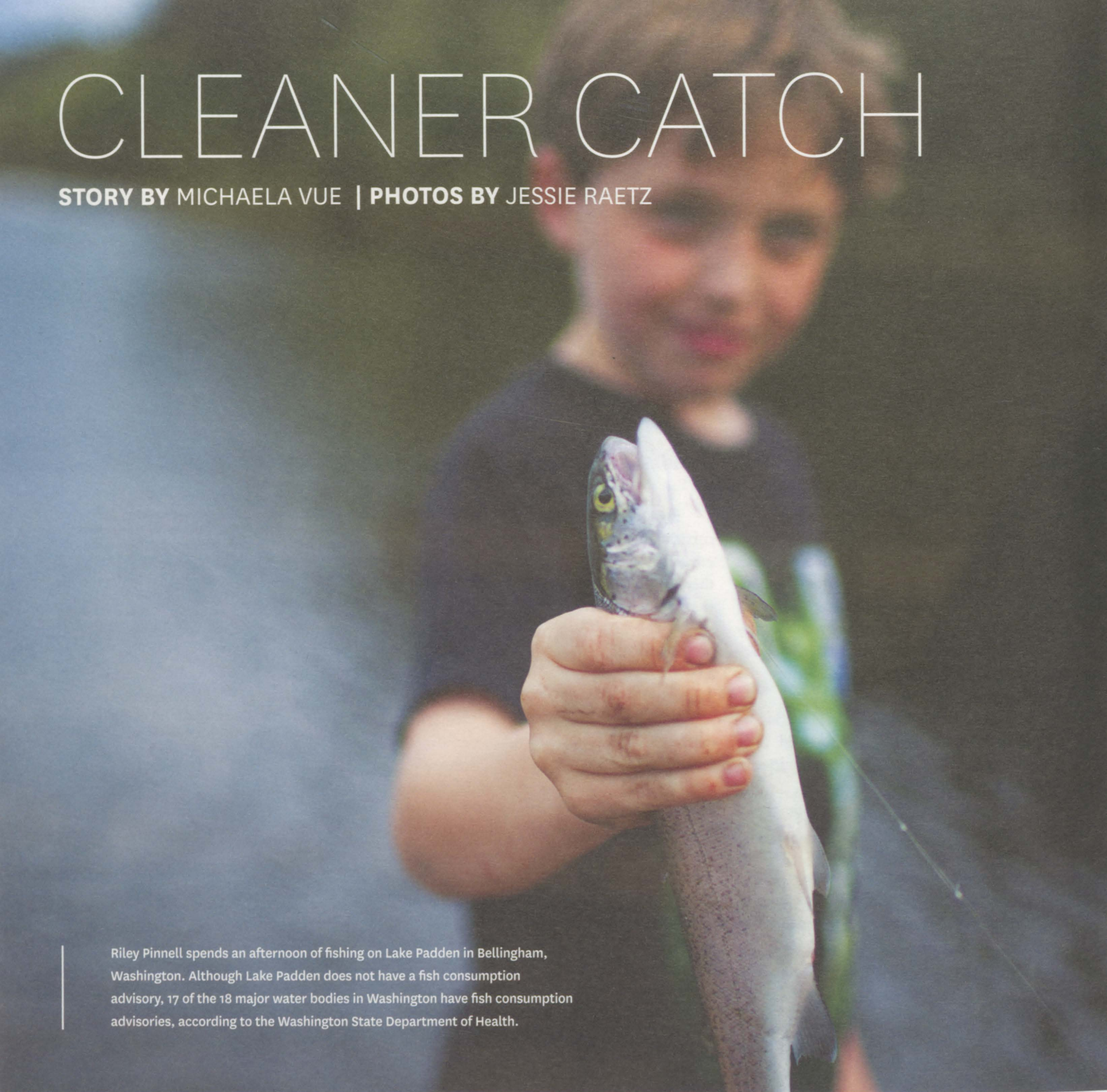
JESSIE RAETZ is often seen with her trusty steed, the camera, in hand. While not in school at Fairhaven College, she spends her time as an entrepreneur and adventurer.



A DEQ air monitor is placed strategically outside a childcare center in Portland to measure heavy metal air pollution potentially caused by a nearby glass manufacturer. The DEQ air monitors measure for a variety of toxicants in the air.

CLEANER CATCH

STORY BY MICHAELA VUE | PHOTOS BY JESSIE RAETZ

A young boy with dark hair, wearing a dark t-shirt, is holding a large, silvery fish vertically. He is looking at the camera with a slight smile. The background is a blurred outdoor setting, likely a lake or river.

Riley Pinnell spends an afternoon of fishing on Lake Padden in Bellingham, Washington. Although Lake Padden does not have a fish consumption advisory, 17 of the 18 major water bodies in Washington have fish consumption advisories, according to the Washington State Department of Health.

In 1992, the Environmental Protection Agency declared the amount of fish people in Washington could safely eat. At 6.5 grams per day, it is roughly enough to fit on a cracker. Today, members of the Squaxin Island Tribe in Washington eat an estimated 300 grams per day, over 46 times the EPA's recommended amount.

THAT GAP BETWEEN government regulations, and the reality of how much is eaten, is at the center of a lawsuit and a disagreement between state and federal officials. This number, known as the fish consumption rate, helps determine how clean the water must be to ensure eating fish doesn't pose health concerns. Some worry the current recommendation increases risk of exposure to chemicals, particularly for recreational fishers, Asian Americans, Pacific Islanders and Native Americans.

"For people like myself and my family that eat a lot of fish and shellfish, we'll still be exposed to those [toxicants] without any light at the end of the tunnel that the problem will get fixed," said Jim Peters, a water quality policy advisor and member of the Squaxin Island Tribal Council.

The EPA delegated their job to update the fish consumption rate to the Washington State Department of Ecology. In September 2012, the Department of Ecology announced they would update the ruling, but have yet to finish it. When Ecology didn't finalize a ruling the EPA supported, the federal agency stepped in and published a separate proposed ruling in September 2015.

Under the Clean Water Act, the EPA had to finalize the rule in 90 days. When they missed that deadline, five community organizations sued, including the Puget Soundkeeper Alliance.

"Really, this case is all about time," said Janette Brimmer, an attorney for Earthjustice, an environmental law firm representing the Puget Soundkeeper Alliance. "Every day that goes by is another day that people aren't adequately protected, and we've been waiting years."

Several stakeholders in the dispute, including the state, the EPA, Puget Soundkeeper Alliance and Northwest Indian Fisheries Commission, agreed to raise the fish consumption rate to 175 grams per day.



The commission includes 20 Washington tribes, which signed treaties guaranteeing fishing rights with the federal government in the mid-1850s.

But there's a disagreement over how to account for the ways people are exposed to several toxic chemicals.

The fish consumption rate regulates chemicals and chemical polluters under the Clean Water Act, which made it unlawful to discharge pollution without a permit. Roughly 400 polluters in Washington state must have permits, including municipalities, industries and farms.

Since 2011, the majority of fish consumption advisories — announcements recommending people limit how much fish they eat — have relied on five main contaminants, including mercury and polychlorinated biphenyls, or PCBs, according to the EPA. The contaminants accumulate within fish at higher rates than they do within water, persisting for years at progressively higher concentrations as they move up through the food chain.

According to the Washington State Department of Health, 17 of the 18 major water bodies in Washington currently have fish consumption advisories due to high levels of PCBs, mercury or both. This includes water flowing into Puget Sound, which surrounds Squaxin Island.

"These are the two chemicals poisoning us the most, and they are the two chemicals the state is proposing not to regulate," said Chris Wilke, the executive director of the Puget Soundkeeper Alliance.



"EVERY DAY THAT GOES BY IS ANOTHER DAY THAT PEOPLE AREN'T ADEQUATELY PROTECTED, AND WE'VE BEEN WAITING YEARS."

JANETTE BRIMMER
EARTHJUSTICE ATTORNEY

TOP: The proposed rate of 175 grams per day (left) surpasses the current EPA consumption rate of 6.5 grams per day (right).

BOTTOM: A fisherman at Lake Padden shows off his catch with the hook still in its mouth. Recreational fishers, in addition to Asian Americans, Pacific Islanders and Native Americans, have a higher rate of exposure to chemicals in fish.

Kelly Susewind, water quality program manager for Ecology, said the department felt it was unfair to hold water polluters accountable to the EPA's desired level of regulation, but not other entities whose emissions end up in the water, such as air polluters.

The EPA wanted to pass a more stringent ruling on water polluters by considering the other means of contact those exposed may already have with mercury or PCB contaminants.

The state's proposed ruling had two open public comment periods. The first closed in March 2015, and the most recent closed April 2016. Susewind said Ecology will look over the most recent public comments to consider making changes to chemical regulations.

Additionally, the state's rule is different than the EPA's rule, because it includes what the state refers to as implementation tools. This would allow polluters additional time to comply with regulations by removing the state's 10-year compliance time limit on a case-by-case basis.

“WE WANT TO CONTINUE EATING FISH, AND THE BEST WAY TO DO THAT IS TO CLEAN UP THE WATER.”

JIM PETERS

SQUAXIN ISLAND TRIBAL COUNCIL MEMBER
AND WATER QUALITY POLICY ADVISOR



Overall, Wilke said he prefers the EPA's rule over the state's, because it doesn't exempt PCBs and mercury from regulation, and doesn't allow polluters to have unlimited time to comply with the rule.

“It really appears that the state is unable to put forth a strong rule based on science, based on what's going to protect people because they are being bullied around by special interests,” Wilke said.

Brimmer said Boeing and the pulp and paper industry have been leading the opposition against updating the rule.

Boeing declined to comment, and the Northwest Pulp and Paper Association did not respond in time for publication. Both have made public comments in the state's ruling.

Western Washington University environmental science professor and toxicologist Ruth Sofield said industries are the biggest target for pollution because of their historic contamination requiring cleanup.

Sofield said Ecology's studies show the new source of contamination in Puget Sound is surface water runoff.

“It's not these factories and pulp and paper mills that are new sources,” she said. “It's us living the lives that we live contributing to the runoff.”

Sofield said Ecology did a good job with their ruling and the standards for industries.

“The thing about ‘What is protective enough?’ is that science doesn't answer that question,” Sofield said. “That's a public policy management decision, not a science question.”

The final public comment period for the state's ruling is set for early August 2016. The case against the EPA awaits a summary judgement.

For now, Peters hopes the new fish consumption rate will allow his children and future generations to safely continue their fishing traditions.

“It's not acceptable for us to stop eating fish,” Peters said. “We want to continue eating fish, and the best way to do that is to clean up the water.”

MICHAELA VUE is a journalism student studying public relations at Western Washington University. She believes there is great power and great impact in telling true stories.

JESSIE RAETZ is often seen with her trusty steed, the camera, in hand. While not in school at Fairhaven college, she spends her time as an entrepreneur and adventurer.

ABOVE: Two fishermen check their recent catch at Lake Padden. In nearby Lake Whatcom, the DOH recommends children and pregnant women avoid eating smallmouth bass completely, and to limit perch intake to once per week.


LEFT: A group of anglers stand at the edge of a dock at Lake Padden. A new fish consumption rate would more accurately reflect how much pollution people are exposed to while eating fish caught in Washington.




URBAN JUNGLE

STORY AND PHOTOS BY | KATY COSSETTE

The hum of cars on Interstate 5 sounds like drumming from underneath the highway, but that's not the major obstacle to falling asleep, said Alabama, a man who takes up residence under the freeway. "It's the junkies that keep you up. You wake up in the middle of the night and you got some guy standing over you," Alabama said. "They've been up for weeks and they don't ever say a word to you."



Hundreds of homeless residents live in the Jungle, a collection of makeshift shanties and tent communities under Interstate 5 in Seattle.



Andrew Majak William, also known as “The General,” is a long-term resident of the Jungle. The I-5 and East Duwamish Greenbelt Conditions Assessment Report states that most outreach services that would benefit Jungle residents do not go into the highway and greenbelt area for safety reasons, leaving residents with limited access to medical services.

THE JUNGLE is a homeless encampment in Seattle, Washington, located under I-5 and on the west side of the Beacon Hill greenbelt. Spanning 60 hectares, the encampment is littered with trash, human waste, butane tanks and used drug paraphernalia. In May 2016, Seattle Mayor Ed Murray announced a plan to move residents out from under the interstate and offer housing and health services, according to a press release from the Office of the Mayor.

The urgency of the circumstances of the Jungle was brought to the City of Seattle's attention after a January 2016 shooting in which two people were killed and three were severely injured.

“EVERYBODY OUT HERE IN THE HOMELESS WORLD IS NOT BAD. THERE ARE A LOT OF GOOD PEOPLE OUT HERE.”

ALABAMA

JUNGLE RESIDENT

An earlier proposal made by Washington state Sen. Reuven Carlyle called for cleanup services and a 2,438-meter fence to be built around the Jungle. Carlyle said he also strongly supports access to mental health counseling services, addiction services and transitional housing.

“Early in the legislative session, the City of Seattle and the state recognized that the incidences of violence, sexual assault, danger – and of course, two murders – associated with the Jungle, required action. It became untenable to allow [this] to continue, without some kind of responsible approach,” Carlyle said.



As of Murray's May 2016 announcement, the city plans to work with Seattle's Union Gospel Mission to offer services and move residents out before cleaning up the area. Most outreach services do not go into the highway and greenbelt area for safety reasons, according to the I-5 and East Duwamish Greenbelt Conditions Assessment Report. This makes it difficult for residents to access drug treatment, housing and career services.

“Everybody out here in the homeless world is not bad,” Alabama said. “There are a lot of good people out here.”

ABOVE: Jacobo Miguel Pinon Jr. plays his harmonica over the rumble of cars passing on the freeway above. He wears an American flag bandana in his camp residence of four years. Pinon refuses to use a tent on the account of other people needing it more than him.

BELOW: Remnants of camps left behind litter the Jungle, a homeless encampment based under I-5 in Seattle, Washington.

KATY COSSETTE is a visual journalism pre-major at Western Washington University. She is interested in covering human issues like homelessness through photography.



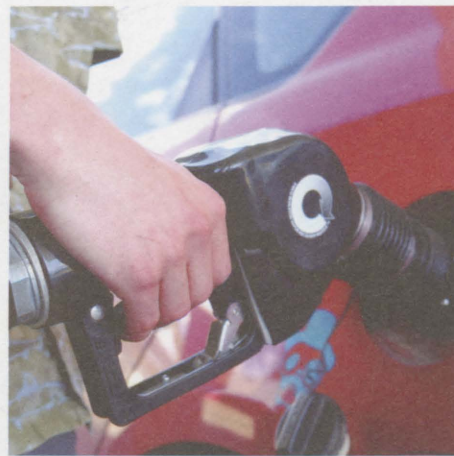
WARNING: WARMING

STORY BY ANJALI LEGRAND | PHOTOS BY ERYNDAE THORVALDSEN



Emily Kelsall, 18, is a senior at Collingwood High School in Vancouver, British Columbia. Kelsall worked on a campaign to put climate change warning labels on gas pumps in North Vancouver.

High school senior Emily Kelsall was only a sophomore when she joined a campaign to fight climate change. Since then, the Vancouver, British Columbia resident helped pass a bylaw on Nov. 16, 2015 in the city of North Vancouver to require warning labels on gas pumps.



OUR HORIZON, a non-profit organization in Canada, started the campaign in Vancouver to place labels on gas pumps. The labels warn against ocean acidification, increased extinction rates and respiratory issues caused by carbon dioxide emissions.

This advertising campaign got its start six years ago, as lawyer Robert Shirkey sat in rush-hour traffic. He was listening to radio coverage of the BP oil spill in the Gulf of Mexico. He remembered hearing the words, “shame on BP” repeated on the radio and looking out at people sitting in their cars. They seemed detached from this issue affecting the environment, Shirkey said.

Two years later, Shirkey left his practice to found Our Horizon.

In 2014, Kelsall heard Shirkey on the radio discussing his campaign to label gas pumps with climate change warnings. This inspired her to reach out to Shirkey and get involved.

Shirkey said he believes the campaign could not have been as successful without Kelsall.

Kelsall educated herself on the issue of climate change and got involved in the campaign because she felt she would be making a difference, rather than observing the situation as it worsened.

“I thought, ‘This is an opportunity for me to make a difference, to make a change,’ and the great thing was it was kind of laid out for me,” Kelsall said. “Rob had the idea, he had the concept. All I had to do was go out and fight for it. And I did.”

Forty-nine percent of greenhouse gas emissions in the city of Vancouver come from transportation, according to the North Vancouver Staff Report and Bylaw.

Kelsall lobbied local businesses and politicians to support the bylaw.

“I talked to one politician who said, ‘Let’s be honest — it’s not going to be passed at the [Union of British Columbia Municipalities]. Let’s be frank here,’” Kelsall said.

Despite the words of discouragement, Kelsall wrote and presented her arguments to the North Vancouver City Council, which passed the bylaw and implemented it into law in November 2015, Kelsall said.

Some opposition to the campaign came from social media. Shirkey said they often receive comments from citizens pushing for affordable electric vehicles and increased public transportation before implementing the labels.

Shirkey said the comments help validate the idea behind the campaign.

“In creating a little bit of discomfort with the status quo, it actually stimulates broader demand for alternatives,” Shirkey said.

Some Canadian industries also oppose the labels, and responded by proposing their own labels, Shirkey said. The labels would include ways to save gas rather than the effects of climate change.

Shirkey said while the companies are trying to portray the labels negatively, the only true negative involved is the combustion of fossil fuels leading to climate change.

“Don’t get mad at the stickers. Get mad at the thing the sticker is trying to convey,” Shirkey said.

The gas pump labels have been compared to the warning labels introduced to tobacco products in the United States in 1965. The rate of smokers has since decreased significantly, although the effectiveness of such labels remains up for debate, according to the Campaign for Tobacco-Free Kids.

In 2004, a study in the *Journal of Public Policy & Marketing* tested the effectiveness of similar labels. The study showed when consumers were already aware of a product, they were more likely to listen to warning labels. Additionally, the amount of additional warning information influenced whether it was retained. However, as a product’s cost increased due to a warning label, consumers were less likely to be influenced.

As for the future, Shirkey said he wants to shut down Our Horizon after fulfilling its purpose.

Kelsall said while she doesn’t plan on pursuing a career in the environment, she will always be an environmentalist who stands up for the planet.

“It’s easy to say it’s my work, but it’s not really. It’s so many people’s work,” Kelsall said. “I’m incredibly humbled that I’m a part of it.”

ANJALI LEGRAND is a junior studying journalism at Western Washington University. Her passions are writing and traveling, and she hopes to have a career that involves both.

ERYNDAE THORVALDSEN is a Western Washington University sophomore studying urban planning and sustainable development. A Wisconsin native, her biggest passions in life are photography, food and playing in the snow.

ABOVE LEFT: Gas stations around North Vancouver are preparing to add warning stickers to their gas pumps to alert customers of the effects fossil fuels have on the environment. This bylaw passed in North Vancouver, and several councils throughout British Columbia are considering similar labels.

ABOVE RIGHT: One of the proposed labels for gas pump handles will read, “Use of this fuel product contributes to climate change which may put up to 30 percent of species at a likely risk of extinction.”

It's a Saturday afternoon near Redmond, Washington and a black horse is waiting in a stall for her food. Though she is roughly 4 to 5 years old, she has the body of an older, more fragile creature. Her neck is extremely thin and disproportionate to the rest of her body, which looks like flesh tightly stretched over jagged architecture. The only part of her resembling any natural shape is her large stomach, indicating she will give birth any day. She doesn't have a name, and her only known history is that two weeks prior, she was in Bastrop, Louisiana, where she was to be shipped out of the country and slaughtered for meat.


STORY BY BAILEY JO JOSIE

PHOTOS BY CALEB ALBRIGHT AND BAILEY JO JOSIE

EQUINE

EQUINE



A black mare with a white blaze on her face, standing in a grassy field. The horse is the central focus, with its head lowered slightly. The background is a soft-focus green field with some trees in the distance. The lighting is natural, suggesting a sunny day.

The black mare, rescued from an auction house the day she would have been sold to slaughter, is recovering from malnourishment. Her recovery will be pivotal in the long term health of her unborn foal.

ITY



LEFT: Allen Warren pets one of his horses at Horse Harbor Foundation. Many of the horses he has rescued will never be ridden again because of injuries or lasting behavioral problems.

RIGHT: Horses in the United States are often regarded as companion or work animals, instead of food animals. Unlike other livestock, medical histories for horses are rarely tracked to Food and Drug Administration standards and many horses are medicated with chemicals unsafe for human consumption.

THROUGH SOCIAL MEDIA and spur-of-the-moment donations, Sharon Hunter, long-time horse rescuer and advocate for a total ban on horse slaughter, saved the black mare. Hunter is part of the Horse Defender Coalition, or HDC, founded by Hunter's son-in-law, the former Seattle Seahawks football player Joe Tafoya. Tafoya created the coalition to help pass anti-slaughter laws in Washington state. The most recent proposed policy, Initiative 1486, could be on the 2016 ballot.

Initiative 1486 calls for an outright prohibition on the slaughter of horses and other equine animals for the purpose of human consumption. Along with slaughter, the initiative makes the trade, sale or transport of horses meant for slaughter a felony offense.

Horse slaughter isn't illegal in the United States. But the industry has moved beyond U.S. borders because of a slew of state regulations that started passing in 1998, making it difficult for the industry to operate in the United States. The last U.S. horse slaughterhouse shut down in 2007. Now, horses are sent to Canada and Mexico to be killed for their meat. From there, the meat is exported to European and Asian countries, where it's more widely considered a food.

Initiative 1486's backers say they are concerned with the health and welfare of those who end up eating slaughtered horses.

In 2015, Tafoya co-founded the Washington Horse Defense Coalition with Allen Warren, the executive director of the nonprofit horse sanctuary Horse Harbor Foundation in Poulsbo, Washington.

The two worked together to introduce House Bill 2327 in Washington state the same year. The bill, which would have outlawed trafficking horses for meat, did not pass.

The two men disagreed on what to do next and eventually parted ways. Warren now associates himself with the Canadian Horse Defense Coalition, and Tafoya created the HDC. Warren intends to reintroduce House Bill 2327 in the 2016 session, saying it didn't pass the first time because bills presented in odd-number years rarely do.

Meanwhile, Tafoya used the bill as a template for Initiative 1486, but instead focused the proposed policy on the dangers of equine drugs.

"The facts are that if a horse has a drug that has been banned by the [Food and Drug Administration], it shouldn't be consumed by humans, but they are," Tafoya said, describing the medications administered to U.S. horses that end up at foreign slaughterhouses.

"Virtually every horse in the United States is given these medications throughout its life," Warren said. "The most dangerous one is called phenylbutazone, or 'bute,' as we call it."

Phenylbutazone is an anti-inflammatory drug used on horses, though it was once marketed for human use. It was discontinued for human use when toxicity reports found its side effects included nausea, vomiting, dizziness and in severe cases, effects relating to bone-marrow depression.

Phenylbutazone is not approved for use in food animals, like pork or beef, said Juli Putnam, an FDA spokesperson.

"There is no acceptable residue level for it in [animal] tissues," Putnam said in an email. "In the past, the FDA has sent several warning letters to dairy operations that sold culled cows with residues from drug products containing phenylbutazone."

Because Americans don't generally consume horse meat, the FDA does not evaluate food safety in equine drugs or test for consumption safety, Putnam said.

This means the responsibility of testing U.S. horses exported for slaughter is out of the hands of the U.S. government.

But not everyone believes the initiative is necessary or feasible.

Auburn, Washington-based equine veterinarian Henry Friedlander said any medications in a horse will leave its body by the time it leaves the country and is slaughtered.

"It's going to take too long for that animal to be slaughtered, from the time it was given the medication, for there to be residue in the meat," Friedlander said. "And that's why it's a weak argument."

Friedlander said although he doesn't agree with horse slaughter, the blame should be placed on owners who send their horses to auction.

"If the horse owners stop dumping the horses, the problem wouldn't exist," he said.

Jon Klander is a retired poultry farm employee from Everson, Washington. Klander frequents the Everson Auction Market for beef cattle and chickens to butcher. He said he also buys horses from the auction so he can find them homes on Craigslist. Sometimes though, he will send them to slaughter.

Of the efforts made by Tafoya and Warren, Klander has little optimism.

“[Kill buyers] will take [horses] to Texas or Idaho and then they’ll export them,” Klander said. “It’s stupid. It’s a waste of time because there’s no way to enforce it.”

Despite the conflicts over the bill, Hunter is adamant Initiative 1486 will become a reality.

“I’m so angry that my family could be eating these horses that have got all of these medications. I’m upset over the lack of responsibility,” Hunter said, as she watched the black mare eat her grain and hay. Along with the black mare and her expected foal, Hunter has rescued well over 50 horses, and hopes to one day open up her own horse sanctuary.

“I want to find 10,000 acres to put horses on,” she said.

The United States Cattlemen’s Association, or USCA, opposes all bans on horse slaughter, said spokesperson Kelly Fogarty.

“[The] USCA came out opposed to a ban on horse slaughter, and we remain opposed,” Fogarty said in an email. “It is all too often that our members find unwanted or neglected horses simply discarded on their land — this is unacceptable, and often times a terrible result of the ban on horse-processing facilities, as animals once sent for processing are now simply abandoned.”

For Hunter, Tafoya and Warren, it doesn’t matter what the other side believes about horse slaughter — what’s most important to them is working to save the lives of animals like the malnourished, pregnant black mare. 🐾

BELOW LEFT: Joe Tafoya holds his proposed Initiative 1486, which aims to ban the act of killing, transporting, selling, bartering, or trading equines for the purpose of human consumption. The initiative needs 300,000 signatures to be placed on the ballot for Washington state citizens.

BELOW RIGHT: One horse rescued by Tafoya’s family still has its green tag from the auction house, where it was bought nearly two months before. The green tag, a sign that it would have been killed the day it was bought, is glued to the horse’s skin and could not be removed without injuring it.

TOP RIGHT: While in the kill pens many horses contract respiratory issues such as strangles, a disease characterized by an excess of mucous discharge from the nose and eyes. This horse, which was rescued while infected, had to be quarantined and given phenylbutazone, a dangerous chemical to humans, according to the FDA.

BAILEY JO JOSIE is a visual journalism major. She loves nature and animals and always tries to learn more about them.

CALEB ALBRIGHT is pursuing a visual journalism major and an entrepreneurship minor. He hopes to use his photography to travel the world and inspire others.

“THE FACTS ARE THAT IF A HORSE HAS A DRUG THAT HAS BEEN BANNED BY THE [FOOD AND DRUG ADMINISTRATION], IT SHOULDN’T BE CONSUMED BY HUMANS, BUT THEY ARE.”

JOE TAFOYA

FOUNDER OF THE HORSE DEFENDER COALITION



OLYMPIC
NATIONAL PARK

HOW TO BUILD A TRAIL

STORY AND PHOTOS BY | ROBERT DUDZIK

Volunteers from the Skagit-Whatcom-Island Trail Maintaining Organization hike down Blanchard Mountain near Bellingham, Washington to work on a section of the Pacific Northwest Trail.

In 1969, after hiking a trail built by volunteers in Yorkshire, England, long-haul hiker Ron Strickland was inspired to build a trail of his own. He spent the next four years scouting routes for an east-to-west trail, now known as the Pacific Northwest Trail.

ADOPTED INTO THE National Trails System Act in 2009, the PNT is one of the newest long-haul trails in the United States. Over 1,900 kilometers long, this trail runs from Glacier National Park in Montana to the Washington coast. But seven years after its designation as a national scenic trail, the PNT is still a rough network of trails. Almost 640 kilometers of its length are on roadways, posing danger to thru-hikers.

"Highway 9, northeast of Port Townsend, [Washington] it's a very narrow two-lane road with no shoulder and it has trees over it so it's dark as well. And similarly Highway 20, there's no shoulder and there's a lot of fast-moving traffic," said Alistair Desmoulin, who hiked the PNT in 2015. "I know, I almost tripped in front of a vehicle on Highway 20."

In order to move the trail away from the roadways, the Pacific Northwest National Scenic Trail Advisory Council is working with private landowners. But even with easements, handshake agreements or buying the land outright, some private landowners are digging their feet in, keeping the PNT off their land.

"Some people, as is your right in the constitution, can say, 'No, don't step on my land,'" said Reed Waite, the interim executive director of the Pacific Northwest Trail Association.

Similarly, the Pacific Crest Trail, a designated national scenic trail since 1968, remains unfinished, still working with private landowners decades after its creation.

Some tax incentives, like the timberland tax program, can help keep property taxes down on forested land owned by timber



companies. This program has kept hundreds of thousands of hectares from being developed and closed off from public access, said Jeff Chapman, the private land representative on the advisory council.

The advisory council held its second meeting in May 2016. By the next planning meeting in November, Matt McGrath, head of the advisory council, hopes to establish alternate trail routes and coordinate with nearby towns through the regional subcommittees.

The future of the PNT is still unclear, but hikers, including Strickland, are looking forward to how the trail will develop.

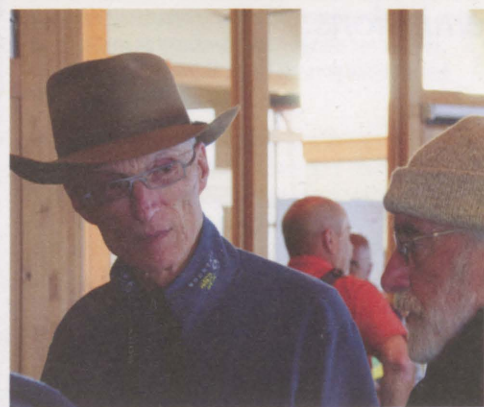
"The Pacific Northwest Trail is alive for the viewers," Strickland said. "It brings out the best of our region." 



ABOVE: Sawdust flies as Gene Joy, president of the Skagit-Whatcom-Island Trail Maintaining Organization, saws a stripped tree in half.

RIGHT: Ron Strickland, founder of the Pacific Northwest Trail, listens to a member of the public during the second planning meeting for the trail in Port Townsend, Washington in May 2016. Strickland was inspired to design a long-haul trail of his own in 1969 after he hiked a trail built entirely by volunteers in Yorkshire, England.

ROBERT DUDZIK is a senior studying visual journalism with a concentration in environmental studies. He hopes to one day work for National Geographic and travel the world with his photography.





COST OF CARBON

STORY BY KENJI GUTTORP AND PLANET EDITORIAL STAFF | PHOTOS BY ERYNDAE THORVALDSEN

An initiative on the November ballot could make Washington the first state in the United States to put a direct cost on carbon dioxide emissions.

INITIATIVE 732, proposed by the Seattle-based nonprofit organization Carbon Washington, seeks to address climate change through a carbon tax. Though it may be groundbreaking for U.S. climate policy, the initiative faces opposition from conservative legislators and environmental nonprofits alike.

Supporters say the measure will harness market forces to help tame climate change.

"People tend not to think about economics or capitalism as ways to protect the environment," said Yoram Bauman, the founder and co-chair of Carbon Washington.

Duncan Clauson, Carbon Washington's campaign co-director, says the carbon tax applies a cost directly to the source of the pollution: the energy industry.

The tax would price carbon dioxide emissions at \$15 per metric ton for the first year, and \$25 per metric ton for the second year. After that, the price would increase at a rate of 3.5 percent with inflation every year until it reaches \$100 per metric ton.

The initiative would simultaneously reduce other taxes. Supporters say such an approach would keep the government's overall tax revenue unchanged.

The annual price increase is similar to a carbon tax the government of British Columbia implemented under Premier Gordon Campbell in 2008.

Some opponents of Initiative 732 claim the carbon tax is regressive, said Werner Antweiler, an associate professor of economics at the University of British Columbia Vancouver School of Economics. Regressive taxes generally impact low-income people the greatest, as they often spend a larger proportion of their income on gas and transportation.

The framework attempts to limit negative effects the tax may have on consumers and producers by lowering the state sales tax a full percentage point. The carbon tax would also provide funding for the Working Families Tax Rebate, a measure passed in 2008 but never funded by the state legislature. The rebate would provide over 400,000 low-income households with \$1,500 rebates.

Initiative 732 would also eliminate the business and occupation tax, or B&O, on manufacturing. That tax is based on the total revenue businesses collect, regardless of their performance.

ABOVE: Cars drive through Seattle, Washington. Increased taxes on carbon could raise the price of gasoline by about 25 cents per gallon, according to Carbon Washington. The initiative proposes offsetting these increases with cheaper sales tax.

Implementing the initiative's carbon tax would raise about \$7.7 billion in revenue over four years, according to estimates published by the Washington State Department of Revenue. However, after the reduction in sales tax and B&O, and the addition of the Working Families Tax Rebate, they estimate a net loss of about \$633 million in state revenue by 2021.

Bauman disputed the calculations put out by the state, claiming it didn't include taxes on emissions produced by energy exported out of Washington. He also said the state calculated revenue lost to the Working Families Tax Rebate at too high a rate. Clausen estimates the state will make about \$10 million in net revenue from the tax after four years.

Carbon taxation has been contentious in Washington state.

Sen. Doug Ericksen, a Republican from Washington's 42nd District, which includes parts of Bellingham and Whatcom County, said it would be a massive, punitive new tax on energy with no environmental benefit for the people of Washington.

A carbon tax could raise energy costs. Washington has one of the lowest-emitting electric grids in the United States. Still, more than half of Washington's energy comes from fossil fuels, according to the U.S. Energy Information Administration. Carbon Washington estimates the cost of gasoline could also increase up to 25 cents per gallon.

On the other side of the aisle, the Washington State Democratic Party also opposes the initiative, because of projected revenue losses and because it doesn't dedicate carbon tax revenue to clean energy projects.

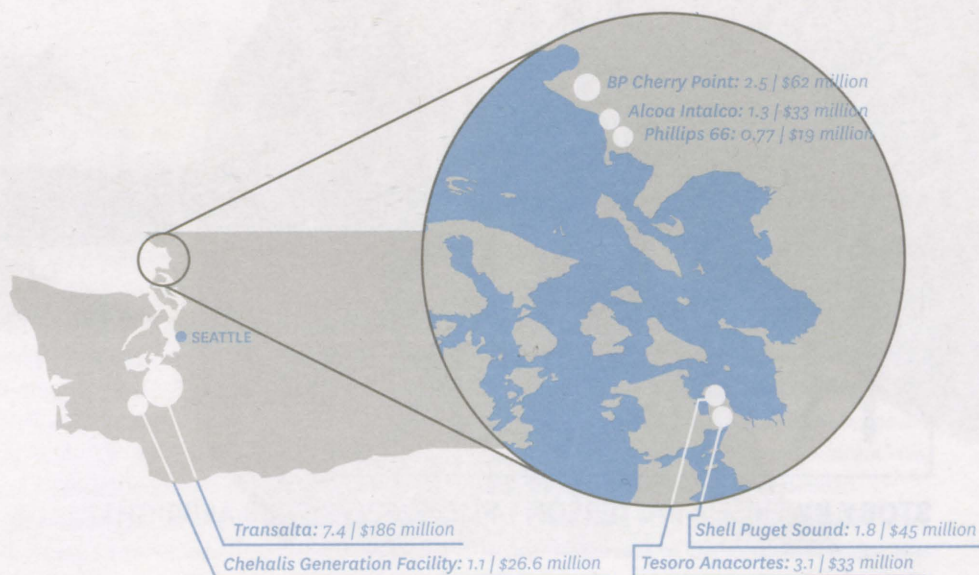
Climate Solutions, a clean energy advocacy nonprofit, worked with the Alliance for Jobs and Clean Energy to create an alternative carbon tax proposal. That plan would steer some of the tax dollars toward clean energy projects.

"In Washington, we have seen drought, we have seen forest fires," said Vlad Gutman, the Washington Director for Climate Solutions. "People understand that those are only going to get worse with climate change. So people have a sense that we should be investing in the solutions that will slow the march of climate change."

WASHINGTON'S EMISSION GIANTS

Millions of metric tons of CO2 emitted in 2014 | Millions of dollars potential revenue in 2014

This map of Washington state highlights the seven highest regions of CO2 emissions in 2014. If initiative 732 is passed, Washington state corporations would eventually pay \$25 per metric ton of CO2 emitted in a year. A portion of this money would be rebated to working families at the end of the year — up to \$1,500 for 400,000 low-income households across the state.




LEFT: Cement companies such as this one in Seattle are some of the largest sources of industrial carbon emissions, according to the U.S. Environmental Protection Agency.

KENJI GUTTORP is a native to the Pacific Northwest studying political science and journalism at Western Washington University. He enjoys the simplicity of sharing stories and culture through food.

ERYNDÆ THORVALDSEN is a Western Washington University sophomore studying urban planning and sustainable development. A Wisconsin native, her biggest passions in life are photography, food and playing in the snow.

THE PLANET EDITORIAL STAFF is a team of Western Washington University students pursuing journalism and environmental science. They can be commonly found reading through the AP Stylebook, listening to podcasts or staring longingly out their office windows.



Marijuana can have many issues while growing, from fungus outbreaks to parasitic insect infestations, so growers are adamant about checking their plants regularly.

HIGH RISK

STORY BY TRISHA PATTERSON | PHOTOS BY CALEB ALBRIGHT

In May 2016, two months after a string of major marijuana recalls in Colorado over concerns of pesticide contamination, Washington state implemented emergency rules regulating pesticides and created a framework for similar pot recalls. The new rules come almost four years after Washington voters opened the door to a recreational marijuana market.

DISTRIBUTION OF INITIATIVE 502 TAX FUNDS

Source: 502data.com, initiative 502 fiscal impact statement

YOUTH DRUG PREVENTION
\$68,000,000

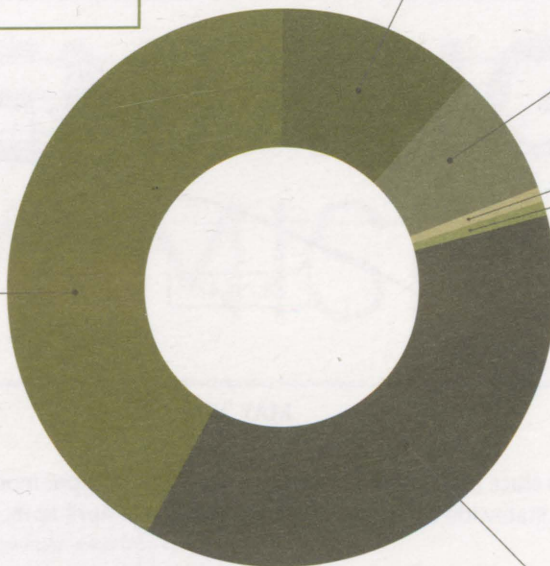
MARIJUANA PUBLIC HEALTH EDUCATION
\$44,000,000

PUBLIC ADMINISTRATION
\$5,000,000

EVALUATION & RESEARCH
\$5,000,000

GENERAL FUND & LOCAL BUDGET
\$216,000,000

HEALTH CARE
\$244,000,000



MARIJUANA IS FEDERALLY classified as a Schedule I drug, a classification the Drug Enforcement Administration gives to drugs with high potentials for abuse and dependency, such as heroin or LSD. Despite this, numerous states have legalized pot for recreational or medical use, including Washington, Colorado and Oregon.

Since marijuana remains federally illegal, medical and recreational cannabis exist in legal limbo. Cannabis policy is subject to state agencies' best discretion, despite uncertainties about the safest way to cultivate, process and consume this crop.

Determining which pesticides are safe to use on cannabis crops is just one of many gray areas, made especially ambiguous by a lack of funding for public research into the effects of pesticides on cannabis consumers.

Marijuana can be inhaled or consumed orally, and many states classify it as a food product, said Erik Johansen, an employee of Licensing Services at the Washington State Department of Agriculture.

"It's almost like a cross between tobacco, hops and greenhouse vegetable production," Johansen said.

The Environmental Protection Agency works in conjunction with state agencies to regulate and monitor pesticides and their allowable residues on crops. These agencies set strict guidelines for pesticide residue limits on products sold within the United States. Farmers are required to only use pesticides specifically labeled for each crop.

Marijuana growers and state regulatory agencies look at pesticide labels where the usage directions are broad enough to use on marijuana. Typically, these pesticides are used on food crops, which is why many states classify marijuana as a food crop, Johansen said.

This means there is no federally designated limit on pesticide residue that can be present on marijuana crops because the EPA isn't concerned with pesticide regulation for a federally illegal drug, Johansen said.

The new state emergency rules include provisions to regulate pesticides and concentrations. However, there is still no legal requirement to test for these pesticides. Under the new rules, recalls can only occur if a complaint, lab test or spot inspection exposes illegal or unsafe pesticide use.

Until further regulation concerning pesticide testing is established, state agencies

must rely on independent testing labs as the scientific backbone to keep consumers safe.

The Werc Shop, a California-based independent testing laboratory, is one of these labs. The Werc Shop tests medical cannabis for pesticides and its behavior when exposed to certain pesticides.

Jeffrey C. Raber is the chief operating officer of The Werc Shop and a lead scientist studying the effects of pesticides on cannabis.

In 2013, Raber and his colleagues tested the amounts of pesticide residue in cannabis smoke. The lab tested for four of the most common chemicals used on pot at the time— bifenthrin, diazinon, paclobutrazol and permethrin.

Depending on the smoking method used, almost 70 percent of the pesticide residue was recovered in the smoke. The lab suggested the potential for pesticide and chemical residue exposure to cannabis users is substantial and cause for concern, especially for those who use cannabis medicinally.

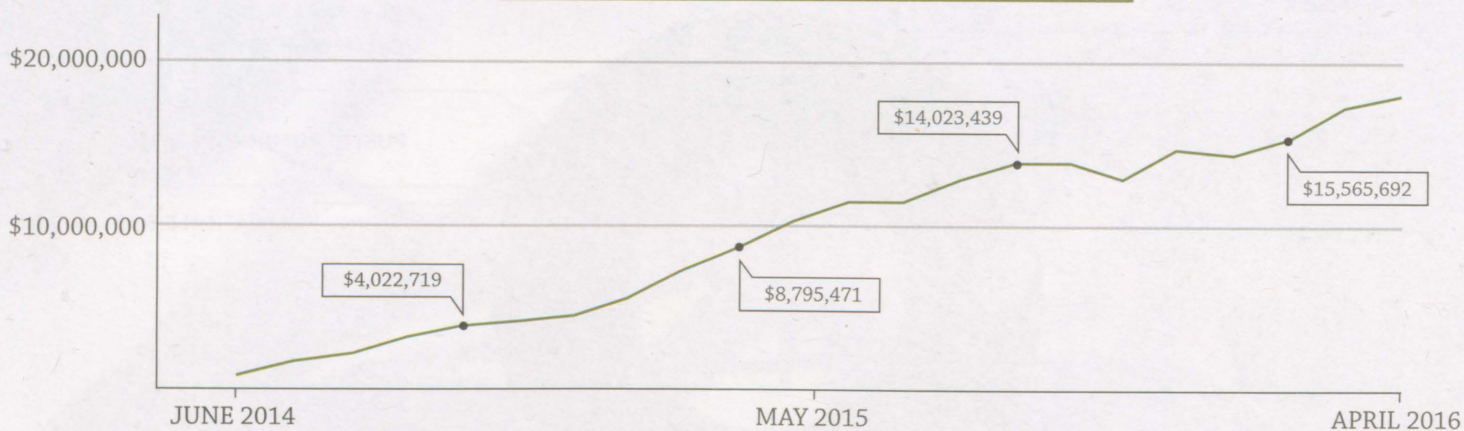
Pesticide toxicity symptoms appear most quickly when the marijuana is smoked, according to the U.S. General Accounting Office. The primary cause of death from these pesticides is respiratory failure.



BOTTOM LEFT: Pesticides found in stores are most often geared towards small gardens and home use. Colorado recalled marijuana treated with certain pesticides, including fungicides with toxic fumes and insecticides predominantly used on ornamental plants.

BOTTOM RIGHT: Since its legalization, state recreational marijuana industries are growing quickly, but many users don't know of the pesticides being used on products they purchase. Using a filtered water pipe or bong such as this one can minimize pesticide intake.

MONTHLY MARIJUANA TAX REVENUE COLLECTED



Retail marijuana sales in Washington state have been growing at about \$786,000 per month since its legalization in July 2014. Statewide sales peaked at \$18.1 million in April 2016.

Immediate adverse reactions to pesticide residues are rare, making it difficult for researchers to pin down exactly what might make a patient sick, and turning the issue of pesticides and pot into an issue of chronic exposure, Raber said.

Starting in July 2016, recreational and medical cannabis cultivators in Washington will need to test for potency, foreign matter, moisture content and microbial contamination on every batch they produce, Raber said.

This process can be expensive, especially in Washington, where growers have to pay for testing, Raber said.

Some cannabis shops are starting to demand their suppliers test for pesticides, even though it's not currently required.

As a result of the trending popularity of organically grown crops, some growers are voluntarily choosing to forego chemical pesticides in exchange for oils, bioengineered microbes and integrated growing techniques.

"Growing organically is growing with integrity," said Carolyn Bowie, the administrative director at Perma Cannabis. Perma Cannabis is a Tacoma, Washington-based producer and processor using deep-water hydroponics to grow cannabis.

Like many other cannabis growers in legalized states, Perma Cannabis has felt pressure from the industry and from consumers to grow organically. But the road to organic growing isn't as simple as it seems.

"Our master grower has tried a lot of different methods in growing, from soil, hydroponics, nutrients, light methods and everything in between," Bowie said.

Growing a beneficial crop is a top priority for organic growers, like Perma Cannabis,

because many cannabis users are medical patients, Bowie said.

While cannabis has a reputation for being a hardy, pest-tolerant crop, the plant is sensitive to certain fungi, pests and viruses. Botrytis cinerea, or gray mold, will rot buds from the inside out and can demolish an entire crop if unchecked.

Marijuana crops can be subject to the ravenous appetites of caterpillars, inchworms and cabbage loopers. European corn borers, a species of moth native to Eastern Europe, feast on marijuana crops and cause lesions in the stalks of the plants, weakening the stem.

"When you look at an entire room full of pounds of [marijuana], it makes sense that people go to desperate measures to preserve that plant and preserve their harvest," Bowie said.

Bad habits from the underground portion of the marijuana industry can carry over to the legalized market when growers, who have never operated under regulatory framework, don't think twice about applying pesticides to crops that could be a patient's medicine.


"It carries the baggage of the black market," Bowie said.

In a 2015 study done by the Cannabis Safety Institute, researchers found cannabis extracts tend to concentrate pesticides, leading to high levels of pesticide residue in the final product.

The study found 12 percent of the tested cannabis flowers and concentrates showed pesticide residue levels much higher than federal guidelines for other consumable crops. King County officials advise consumers to avoid smoking or ingesting marijuana if they are concerned about pesticides in cannabis.

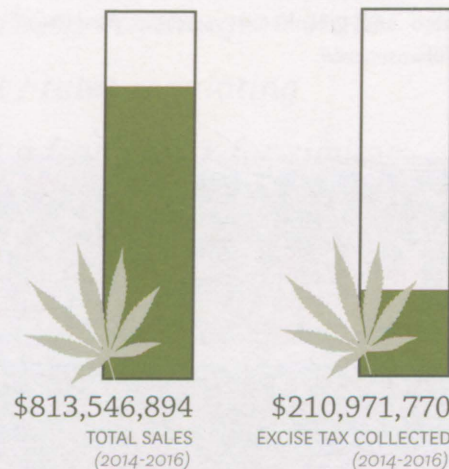
However, Raber said he is confident that under the right conditions, using the proper methodology, growers can use pesticides without any adverse effects on the consumer.

Ideally, a portion of state tax revenue would be prorated for cannabis research, Raber said. Under this model, research would be accessible to regulators and the public.

"You have to present information, give open access and say, 'We believe these are the best things in the interest of the entire mass of the public, not just this or that group,'" Raber said. "It's about good scientific method applied to policy." 

TRISHA PATTERSON is a junior studying public relations and environmental policy. She has a passion for investigative journalism, soil science and backpacking.

CALEB ALBRIGHT is pursuing a visual journalism major and an entrepreneurship minor. He hopes to use his photography to travel the world and inspire others.



DEFENDING *the* DUWAMISH

The PCB-contaminated Lower Duwamish River feeds into Elliot Bay. Cancer risks caused by PCBs are approximately 20 times higher in the Duwamish River than in Elliot Bay.



STORY BY FREDERICA KOI WEY | PHOTOS BY KATY COSSETTE

At her home in the South Park neighborhood of Seattle, Washington, Paulina Lopez sits at her kitchen table. Small plants hang in the window above the sink. Bright potholders and children's art hang on the cabinet doors. Despite the rain falling outside, the color and light in the room evokes an outdoor market from her home country, Ecuador. Lopez moved to South Park about 10 years ago, because she wanted to raise her family in a neighborhood where they could hear Spanish, purchase Latin American products and live near a river, like she had growing up. Pollution in the Duwamish River, however, has stopped Lopez's children from safely playing in it.

NOW, THE CITY of Seattle is trying to force biotech giant Monsanto to clean up the Duwamish. On Jan. 25, 2016, Seattle joined six other U.S. cities in filing lawsuits seeking millions of dollars to clean up contamination from polychlorinated biphenyls, or PCBs, chemical compounds produced solely by Monsanto for decades. The pollution has added to the environmental and health effects residents already face in the Lower Duwamish River Valley.

The Duwamish River is a Superfund site, falling on the list of hazardous waste sites the Environmental Protection Agency determined require federal attention. Roughly 8 kilometers of the river qualify for extensive cleanup, according to the EPA. The agency released its final plan for cleaning up the river in November 2014, at an estimated cost of \$342 million. The City of Seattle is suing Monsanto to help cover the cost of the plan, a \$27 million stormwater treatment facility and potential costs from future pollution.

BOTTOM LEFT: Alberto Rodríguez is the Environmental and Community Health Programs Manager at the Duwamish River Cleanup Coalition, a nonprofit involved with cleaning up the river.

BOTTOM RIGHT: Paulina Lopez is Community Engagement and Outreach Manager at the Duwamish River Cleanup Coalition. Many of her fellow residents call her their "mayor." Lopez moved to South Park with the intention of raising her son, Paulito by a river similar to the one she had growing up in Ecuador. She works to teach communities surrounding the Duwamish River about the toxicity of the river in order to raise awareness in the rest of Seattle.

THE LAWSUIT

Seattle claims the PCB contamination is Monsanto's responsibility. Monsanto was the only company producing PCBs from 1935 to 1979, according to the official complaint filed by the City of Seattle. The city also claims Monsanto knew about the environmental and health effects associated with PCB exposure, and neither warned consumers or stopped producing PCBs once they were aware of the compound's harmful effects.

"Once they knew those things and continued to produce and market them, they [became] responsible for the damage that was caused," said Laura Wishik, the environmental protection director for the Seattle City Attorney's office.

Under current regulations, whoever directly disposes of waste into a waterway or maintains the waterway is responsible to pay for its cleanup, according to Washington state's Model Toxics Control Act. The lawsuits from Seattle and the six other cities currently suing Monsanto ask the court to expand this environmental liability beyond current regulations to include parties like Monsanto, which did not directly dispose of the chemicals or hold direct responsibility for the waterway's maintenance, Monsanto spokesperson Charla Lord said in an email.

Monsanto claims the cleanup costs are the responsibility of third party industries that purchased products from Monsanto containing PCBs. Additionally, they claim that because PCBs were legal and useful in electrical equipment at the time, Monsanto cannot be

held accountable today for a product produced 40 years ago.

PCBs were used for a variety of purposes, including paint and electrical equipment insulation. Manufacturing, processing, distributing and using PCBs was outlawed in 1979 under the Toxic Substances Control Act, but because PCBs do not easily break down in the environment, they continue to pose environmental and health risks. Exposure to PCBs can cause cancer, reduced immune system function and reproductive system disorders, among others, according to the Agency for Toxic Substances and Disease Registry.

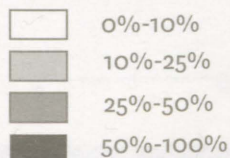
If the lawsuit fails, the money for the cleanup will come from Seattle residents' electric and drainage bills, Wishik said. The Clean Water Act recently changed, requiring cities to pay for stormwater treatment and the cleanup of contaminated sites, driving Seattle to sue Monsanto, she said.

PCBs also bioaccumulate, meaning the concentration of PCBs increases with each step up the food chain. By the time humans consume resident fish from the Duwamish, the amount of PCBs in those fish is much greater than the level in the sediment or fish lower in the food chain.

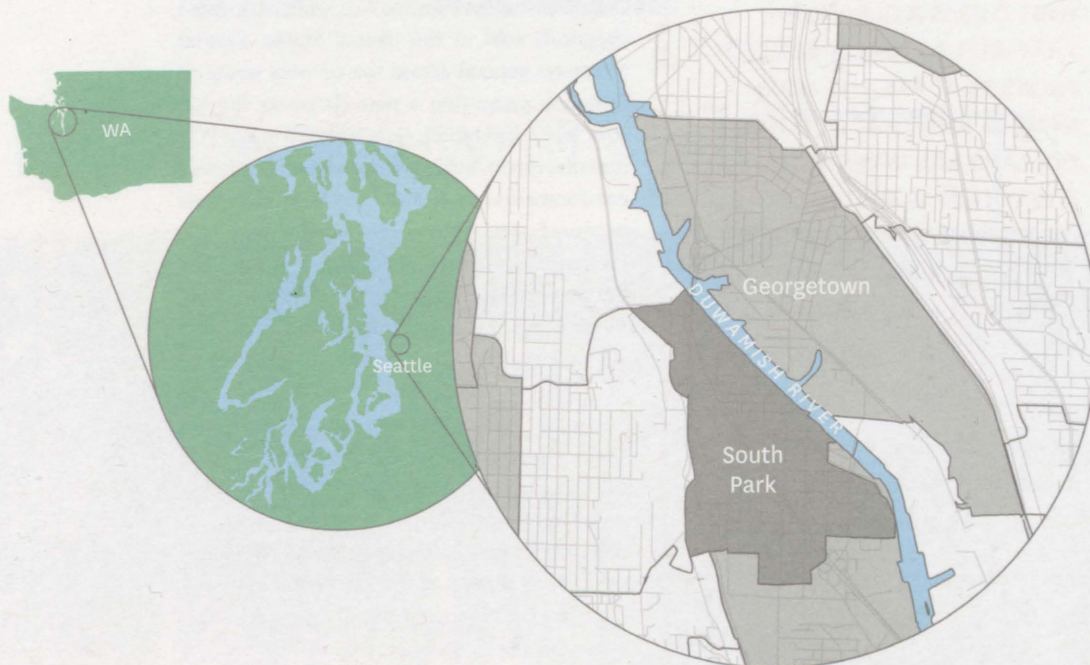
"People want to play in the river," said Lopez, who is the community engagement and outreach manager for the Duwamish River Cleanup Coalition. "But then there is this thought, 'This is not safe. What if my kid puts mud in his mouth or his binky gets mud on it? Is it safe to bring back?'"



LATINO POPULATION BY NEIGHBORHOOD



A PERCENT OF TOTAL NEIGHBORHOOD POPULATION.



THE COMMUNITIES AFFECTED

The residents of South Park affectionately call Lopez their mayor. She works for the Duwamish River Cleanup Coalition, or DRCC, a nonprofit organization working with the communities along the Duwamish River to ensure their voices are heard by the EPA. Lopez’s work involves educating residents about the pollution and helping them participate in the cleanup process.

“This river is getting cleaner and the communities are getting healthier every day,” said Alberto Rodríguez, Lopez’s colleague at the DRCC. “And it’s not necessarily because of the DRCC. It’s because of those community members that have been fighting this fight since the very beginning. It’s because of people like Paulina Lopez.”

One of Lopez’s goals is to increase awareness about the state of the river and encourage all Seattle residents, not just in Georgetown and South Park, to advocate for its health.

“It should matter to everyone,” Lopez said. “We are one city and one river, but the impact is only on low-income people.”

A high portion of the residents in Georgetown and South Park are recent immigrants and people of color. Poverty rates in these neighborhoods are higher than the county average and health status is poor compared to the rest of Seattle, according

to a Health Impact Assessment conducted by representatives from the University of Washington, Just Health Action and the DRCC.

One of the main routes of exposure to PCBs for people living near the Duwamish River is fish consumption, said Dr. William Daniell, an associate professor of Environmental and Occupational and Health Sciences at the University of Washington.

Many residents of Georgetown and South Park are unaware of the toxicity of the water, said Linn Gould, executive director of Just Health Action, a non-profit organization doing environmental justice work in the Seattle area.

She recently worked with a group of Vietnamese immigrants who depend partially on subsistence fishing from the Duwamish. The signs posted along the river warning of the potential dangers of eating the fish are often ineffective. Language barriers can prevent these immigrants from further investigating to verify the information, Gould said.

Different cultural backgrounds can also influence people’s decision to fish in the river, Rodríguez said. In Vietnam, similar signs warn fishermen of river toxicity. However, the Vietnamese government often places these signs in clean areas where the fishing is good in order to prevent overfishing, Rodríguez said. For this reason, Vietnamese immigrants could be choosing to fish in the Duwamish

“IT SHOULD MATTER TO EVERYONE. WE ARE ONE CITY AND ONE RIVER, BUT THE IMPACT IS ONLY ON LOW-INCOME PEOPLE.”

PAULINA LOPEZ
COMMUNITY ENGAGEMENT
AND OUTREACH MANAGER
DUWAMISH RIVER CLEANUP COALITION

River because they believe the same thing is happening in Seattle.

Even for people who don’t regularly consume fish or touch river sediment, the river pollution adds to the other environmental and health issues faced by residents of Georgetown and South Park, Lopez said.

“When you put everything together, it is in the everyday,” Lopez said. “You have a contaminated river, but then you also have a very polluted area because of the air that exists here. And then you don’t have a grocery store. And then you have asthma rates that are super high. And then you don’t have enough trees. Then you start thinking, ‘OK, it’s a cumulative thing.’”

“WE NEED TO MAKE SURE THAT THIS IS A CLEANUP THAT WILL ACTUALLY BENEFIT THOSE THAT ARE THE MOST IN NEED AND THAT OUR TAX DOLLARS ARE INVESTED IN A WAY THAT IS ACTUALLY GOING TO WORK. EVERYONE SHOULD BE RESPONSIBLE FOR ASKING FOR A CLEANUP THAT TRULY GETS US THERE.”

ALBERTO RODRIGUEZ
ENVIRONMENTAL AND COMMUNITY HEALTH
PROGRAMS MANAGER
DUWAMISH RIVER CLEANUP COALITION

MOVING FORWARD

Congress is in the process of revising the Toxic Substances Control Act, which regulates chemicals sold in the United States. Several attorneys general across the country wrote to Congress protesting a new clause in the bill they fear could limit a state’s ability to sue PCB manufacturers, such as Monsanto, for adverse environmental or health effects of chemicals produced currently and historically.

Keith Gaby, spokesperson for the Environmental Defense Fund, said in an email they’re hopeful the House and Senate will reach a compromise by late spring 2016.

Despite the fact the new language was dubbed as “the Monsanto bailout clause” by some, Monsanto denied the clause was a gift to the company or directed specifically at it.

The Seattle City Attorney’s office is hopeful the new language will not be included in the final version of the bill, Wishik said.

The DRCC’s current strategy is to compel some of the industries responsible for the pollution to take action, Rodríguez said. It will cost less for the responsible industries to start addressing the cleanup now instead of waiting for the EPA to force them to later, he said.

“We need to make sure that this is a cleanup that will actually benefit those that are the most in need and that our tax dollars are invested in a way that is actually going to work,” Rodríguez said. “Everyone should be responsible for asking for a cleanup that truly gets us there.” 📍

FREDERICA KOLWEY is a junior designing a degree through Huxley College of the Environment called environmental justice through journalism.

KATY COSSETTE is a visual journalism pre-major at Western Washington University. She is interested in covering human issues like homelessness through photography.

BOTTOM LEFT: A fisherman in Puget Sound since he was 16, Terry Thomas is aware of the regulations on fishing in the Duwamish River in Seattle due to contamination from PCBs. He tries to limit himself to only eating salmon, the safest choice, according to the Washington State Department of Health.

BOTTOM RIGHT: Terry Thomas caught and shucked Spot Shrimp in Elliot Bay on May 14, 2016, the only day of the year that fishermen are permitted to fish for all shrimp species. The Spot Shrimp often contains high levels of PCBs, especially in specimens taken from urban areas in Elliot Bay and the Duwamish River, according to the Washington Department of Fish and Wildlife.



PACIFIC NORTHWEST TRAIL



AT 1,930 KILOMETERS, the Pacific Northwest Trail, one of the newest national scenic trails in the United States, runs from Glacier National Park in Montana to the Washington coast. The Pacific Northwest National Scenic Trail Advisory Council continues to struggle with private landowners while working to establish a trail corridor, pushing hikers to walk for about 640 kilometers on dangerous roadways.

ROBERT DUDZIK is a senior studying visual journalism with a concentration in environmental studies. He hopes to one day work for National Geographic and travel the world with his photography.

THE METRIC SYSTEM

The Planet, an independent publication rooted in science, has switched to the metric measurement system because it is widely used in scientific literature. Constantly converting from the imperial system is difficult, so see our table of common references online at theplanetmagazine.net/metric-system.

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“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”

MARGARET MEAD