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Winter 2020

## The Planet, 2020, Winter

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# THE PLANET

THE MOVEMENT WINTER 2020 ISSUE



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## DEAR READER,

The 50th anniversary of Earth Day is this year. Earth Day is a movement spawned out of a need to teach, understand and improve our connections to our place on Earth. The movement is interpersonal, it is transboundary and it is why this magazine exists.

How can one define the things that are emblematic of the movement?

Writing.

Activism.

Choices.

Fear.

With this issue we'll tell you stories about all these things and more. How do you choose to be buried without impacting the earth? How can we feed billions without polluting the air? How are the youth of the world fighting to preserve their future? How has the movement changed?

There's so much history tied up in the movement that if we tried to summarize it we would need a few libraries. For every story in this magazine, there are many more that people never hear: People making the choice in the grocery store out of concern for the future, suffering dread as the planet burns and tearing down the artifacts from a history of indelicate construction.

The foundations of the movement are tied to that day in 1970 with people asking, "What about the earth?"

That simple question has echoed through the decades and created countless movements of its own. I ask one thing of you, as you're reading this magazine.

How are you taking part in the movement?

If it's all you can do to read this magazine and go on with your day, that is enough. If you make a choice for the future, that is enough. The Planet is my movement. I ask you, what is yours?

Alex Meacham

Editor-in-Chief

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PHOTOGRAPH BY ZACK JIMENEZ

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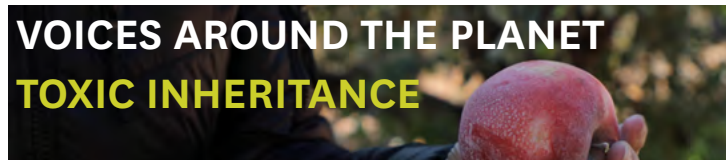
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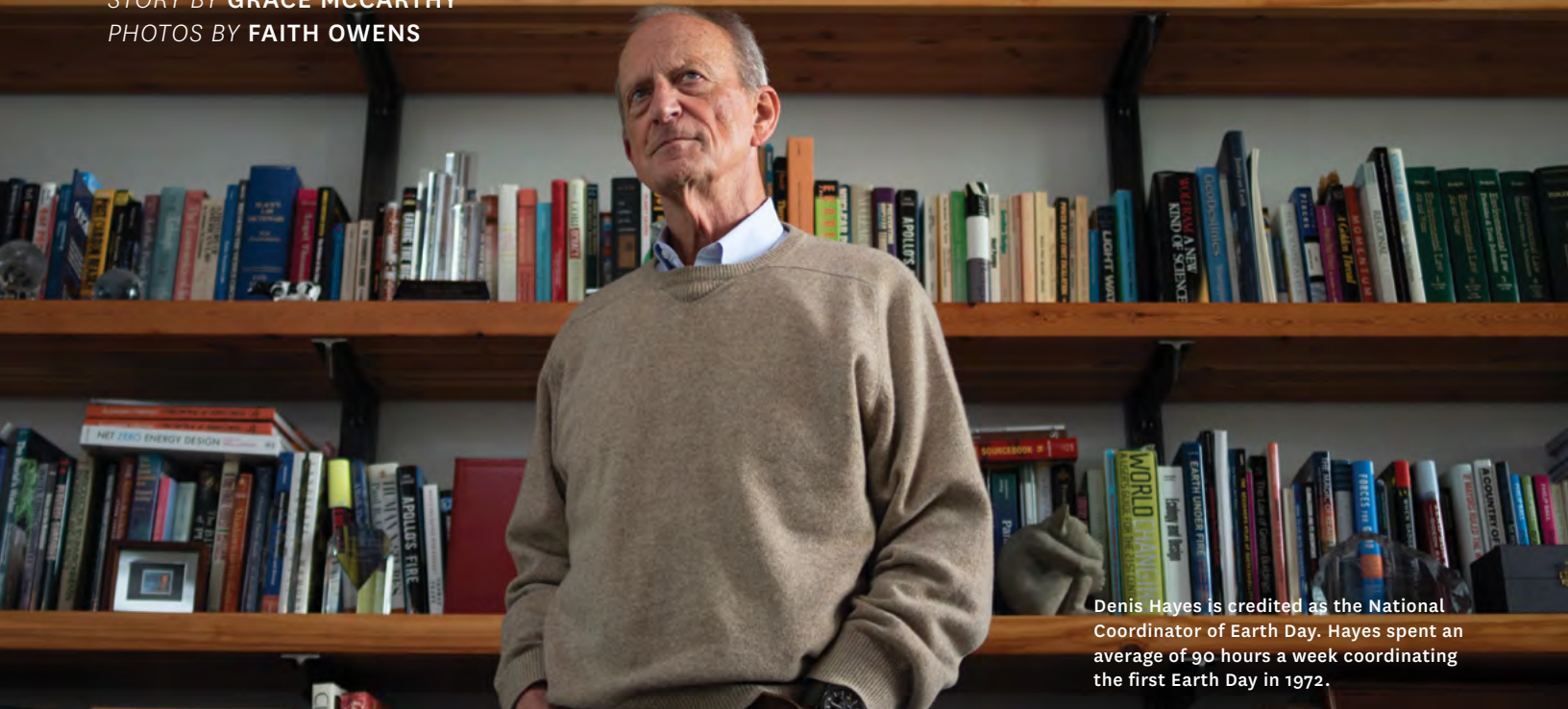


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# MR. EARTH DAY

STORY BY GRACE MCCARTHY

PHOTOS BY FAITH OWENS



Denis Hayes is credited as the National Coordinator of Earth Day. Hayes spent an average of 90 hours a week coordinating the first Earth Day in 1972.

**FOR DENIS HAYES**, there had been no environmental movement. It was the '60s and civil rights, the Vietnam War and women's liberation were igniting pandemonium in the country, contrasting the submissive tone of the '50s. "Silent Spring" by Rachel Carson evoked criticism of the use of pesticides in 1962 and notice was growing of the gritty, slate-gray air over Los Angeles and the green sludge of the Detroit River. Still, the words "environmental movement" weren't echoed until April 22, 1970.

The first Earth Day led 20 million people to flood streets and participate in teach-ins as the birth of the modern environmental movement. Hayes, the national coordinator of Earth Day 1970, was at its helm. Fifty years later, Earth Day's relevancy is sustained by a new generation looking to solve an array of problems from climate change to environmental justice— all while Hayes works to maintain the legacy that he and millions of grassroots activists created.

Hayes' involvement with Earth Day began with a call from Wisconsin Sen. Gaylord Nelson, the founder of what would become one of the most observed secular holidays in the world. Nelson asked the 25-year-old Hayes to drop out of his graduate program at Harvard University's Kennedy School of

Government and become the event's national coordinator. Hayes organized youth activists to reach out to high schools and colleges across the country to conduct environmental teach-ins on air and water pollution. A New York Times ad which catalyzed the event dubbed it Earth Day.

"We had no money," Hayes said. "It was lots and lots of all nighters. It was like cramming for exams every week."

Hayes started Earth Day 1970 at a sunrise ceremony with tribes at the National Mall in D.C., before flying to New York City for Earth Day's largest event that year with over one million people in the streets. Chicago was the third stop before ending the day back in D.C., talking to national news. Carbon footprint was not a known issue at the time, Hayes swiftly pointed out.

"I only brought \$12," Hayes said. "I was just so freaking tired it hadn't occurred to me that I needed to stop at a bank and get money."

The money didn't last long. On his ride from the JFK airport, Hayes said he was faced with one option: stiff the cab and run into the New York City crowd. To this day, he overtips taxi drivers and advocates for activists better managing their sleep.

The work paid off for the youth activists

and Earth Day helped set the agenda for some of the first national environmental legislation, including the creation of the Environmental Protection Agency and the Clean Air and Clean Water Acts.

"They were dismissed by some of my colleagues at the House as being just a bunch of kids," said Pete McCloskey, co-chair of Earth Day 1970 who served in the U.S. House of Representatives from 1967 to 1983. "They looked a little scruffy sometimes but they sure were effective."

Now at 75, Hayes sits in his downtown Seattle office with a 50th anniversary New York Times Earth Day ad on his desk. His sleep schedule has improved - slightly. Instead of working 90 hours per week on Earth Day, he works 30 as board chair emeritus to the Earth Day Network. He is also the CEO and president of the Bullitt Foundation, a nonprofit that endows environmental organizations in the Pacific Northwest.

Hayes helps with whatever is needed for the D.C.-based Earth Day organization from his office, touted as one of the greenest commercial buildings in the world after its renovation on Earth Day 2013.

Evidence of Hayes' lifetime is reflected by his floor-to-ceiling bookshelf lined with

hundreds of topics from environmental law to energy storage. Remnants of the fabled '70s are brought to life by tangible evidence like the five-foot Madagascar dragon tree, Fred, that Hayes' wife gave him following Earth Day 1970 when he went to work as director of the Solar Energy Research Institute under the Jimmy Carter administration. Fred lived in D.C. with the couple before they moved to California, where Hayes taught at several universities including Stanford, and then to Seattle to head the Bullitt Foundation.

Hayes' resume also includes globalizing Earth Day to 141 countries for 1990—something he wouldn't have imagined 20 years before.

"The aspiration was to make it as big and impactful as possible, but there was never going to be an Earth Day 1971," Hayes said. "In fact, I tried to kill it when I saw little sprouts popping up."

Hayes said he feared subsequent Earth Days would not live up to the original and would trivialize the environmental movement, possibly even reducing the event to another tacky consumer holiday. Reality exceeded his expectations when the global approach to Earth Day 1990 helped illuminate issues previously unaddressed.

"People had no idea what climate change was," said Christina Desser, the executive



director of Earth Day 1990 and former California environmental lawyer. "Recycling was not something people seemed to care much about."

Hayes grew up on the banks of the Columbia River in Camas, Washington, son of a paper mill worker who entered the industry at 12-years-old and worked until retirement. From a young age, Hayes said he could feel the toxicity from the town's monolithic industry.

*ABOVE: Dennis Hayes grew up in Camas, Washington. He recalls vivid childhood memories in which plumes of pollution rose from the local papermill's smokestacks.*

*BELOW: Denis Hayes Street in Camas runs through the grounds of Hayes Freedom High School. Denis Hayes, considered the National Coordinator of Earth Day, grew up in Camas and is known as a local legend.*



"I woke up every morning for the first 18 years of my life with a sore throat," Hayes said. "The mill put out sulfur dioxide and hydrogen sulfide. There was no Clean Air Act, there was no regulation of any kind."

Sulfur acidity ate through the roofs of residents' cars but they didn't realize they were breathing it too, Hayes said. The mill would dump effluent into the Columbia River, noticeable by the thousands of floating dead fish Hayes would occasionally see while riding his bike. No one protested, Hayes said, and the stink smelled of progress and prosperity.

"As I grew older, I began to think that it has to be possible to make paper without destroying the planet," Hayes said. "And then that expanded into not only paper but everything else, as well."

The Bullitt Foundation endowed \$100,000 to Zero Hour, a nonprofit based on the intersectional movement of youth climate activists co-founded by 18-year-old Seattle activist Jamie Margolin. Zero Hour, founded in the summer of 2017 by teens frustrated with their elected officials, now has chapters from Appalachia to Argentina.

Margolin said she grew up not knowing a time when environmental issues weren't at the forefront of her mind. It wasn't until she started environmental mobilization after the 2016 presidential election and met Earth Day veterans like Hayes that she realized the holiday



she grew up seeing as an excuse for gimmicky craft projects had revolutionary roots.

"It wasn't anything meaningful," Margolin said. "Nobody taught me about the initial Earth Day movement. I didn't know it was a big protest and that legacy until this year."

Margolin said she is working to bring those roots back to Earth Day. She works 45 hours per week vocalizing the urgency of the climate

*TOP: The Bullitt Center in Seattle, Washington is one of the greenest commercial buildings in the world and home to Denis Hayes's office. When seen from an aerial view, it is an easy building to spot because the entire roof is covered by solar panels.*

*BOTTOM: Hayes received the Lifetime Achievement Award in Salmon Conservation in 2013. Hayes has many environmental awards displayed on his bookshelf.*





Denis Hayes continue to play an important role in the environmental movement. His phone calls range from strict business to casual reminiscent conversations.

crisis— from testifying at the U.S. House of Representatives to suing Washington state and Gov. Jay Inslee for greenhouse-gas emissions.

Hayes, who occasionally meets with Margolin and her father for dinner, said his advice for youth activists is outdated, that he believes in activists staying true to their values.

The challenges seem greater for the 50th Earth Day, said Adam Rome, an environmental historian at the University of Buffalo. Complexities of combating climate change outweigh more direct problems like cleaning up air and water pollution, he said.

“Stopping some bad things is a lot easier than building a whole new sustainable society,” said Rome. “I think climate change has forced people to realize, more than ever, that it won’t be enough to stop a few things that are harmful. We really have to rethink a lot of our basic institutions.”

Hayes plans to retire this year as the Bullitt Foundation winds down donations that

will cease in 2024. The next incarnation of the building will house environmental organizations leased for discounted rent. Fred, Hayes’ 40-year-old tree, will stay.

Since the first Earth Day 50 years ago, Hayes has seen environmental concerns shift from the now-regulated mill that polluted his town as a child, to the U.N. warning of a 2030 deadline to prevent irreversible damage from climate change.

Sometime this spring Hayes will receive an honorary degree from Western Washington University, recognizing his role in the environmental movement. Exactly where he’ll be during Earth Day 2020 remains uncertain. Hayes knows he’ll be part of the mobilizations— whether that’s in D.C., at the largest demonstrations expected in India, or with Pope Francis, who invited him to the Vatican. Hayes is weighing the impact of his carbon footprint as he decides where to be that day. Living with lessons learned, however, he’ll be sure to have

more than \$12 in his pocket.

For many, the 50th anniversary of Earth Day serves as both a reminder of accomplishments since the mid-20th century and what is left to be done.

“In the climate realm, it’s impossible to be too bold,” Hayes said. “Anything that we can do is worth doing.” 🌱

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**GRACE MCCARTHY** is a senior journalism student using storytelling to create greater conversation on environmental issues.

**FAITH OWENS** is a visual journalism major pursuing a minor in Salish Sea studies with the intention of using visual media as a form of advocacy for the environment and for whale populations.



# DON'T WORRY, BE HOPING

STORY BY LAUREN SANNER  
PHOTOS BY FAITH OWENS



**“THERE WAS A WEEK** where I didn’t go to school and barely left my house,” said Emma Savage, a first year student at Western Washington University. Tears came to her eyes as she shared her personal experience on the day she found out about the Amazon rainforest fires in 2019. She felt alone. Among her peers, it felt like no one was mourning the loss alongside her. She recalled having a panic attack in her car, pulling over to the side of the road and sobbing.

Emma’s story is one example of how the climate crisis can impact mental health.

Mental illnesses such as anxiety, depression and suicidal thoughts can result from continuous distress over the environment, according to the American Psychological Association. Those who experience climate change directly through environmental disturbances like wildfires may also face severe mental health impacts, such as post-traumatic stress disorder.

The relationship between the climate crisis and its impacts on mental health is starting to gain more attention. According to Andrew Bryant, a licensed clinical social worker and mental health counselor in Seattle, it could always get more focus. He tracked the spread of awareness himself by posting resources dedicated to the issue on his website, *Climate and Mind*. Bryant explained that he was posting once or twice a month, but stopped because he

couldn’t go through every new study.

Many organizations, communities and individuals are starting to tackle climate despair. Instead of fighting fire with fire, despair is being fought with hope, through spreading awareness, collaboration, creativity, or making one single change.

Younger people are at a high risk for feelings of extreme despair. Adolescents are particularly at risk because they may feel out of control. Not only that, but younger generations will “bear a disproportionate share of the burden” from the climate crisis, explained a 2016 study published by Princeton University. Children are largely left out of conversations regarding their future, but as they have the highest stake they should be essential to determining solutions, according to the United Nations Children’s Fund.

Elin Kelsey, an environmental educator based in British Columbia, recalled a United Nations Children’s Conference in Norway.

“When I asked [children] how they felt about the environment rather than what they thought about the environment, I was really overwhelmed by how even across language and everything else, it was this common feeling of fear and anger and despair.”

As an outspoken leader for spreading hope throughout the environmental movement, Kelsey’s work with ocean awareness, talks at

universities and books for children all deviate from the dominant narrative of doom and gloom.

“We often talk about the environment as if all the hard work is ahead,” Elin noted, “as if nothing has happened — and we’re standing at the starting line, and that isn’t true. We are standing on top of all kinds of work that is actively happening right now.”

One example is WWU student Matt Ferrell. Sitting in a library study room, he wears common student attire, a green canvas jacket and a Patagonia beanie. Little would anyone know, he’s putting the finishing touches on a play about how to face climate despair, and he’s planning to do it in a matter of weeks.

Ferrell explained the production will be split into two acts. The primary setting will be a group counselling session for folks facing climate grief. Though Ferrell admitted the first act will likely be depressing, the second act will aim to show some hope and solutions.

“What I’m hoping people get out of it is that it’s okay to have emotions about environmental loss and about something that is really fucking terrifying, frankly,” Ferrell said.

In Bellingham, there are several organizations and students committed to spreading hope-based climate solutions. WWU’s main campus sits nestled between the Sehome Arboretum and quirky neighborhoods that look over Bellingham Bay.



*Bellingham, Washington offers serene sunsets that draw crowds to witness their natural beauty. Sunsets are one small aspect of life that have the ability to remind people that there are moments in life that don't seem so heavy.*

One such hopeful organization is the Salish Sea Institute. Their goal is to promote stewardship and build a trans-boundary relationship between the scientists and communities of the Salish Sea. Ginny Broadhurst, the institute's executive director, decided to start the branch program, Hope for The Salish Sea, at one of Kelsey's workshops on Western's campus, held in February 2019.

"Why don't I just start a program of hope?" declared Broadhurst to a larger group. She received messages from interested students immediately. The growing program aims to share "positive news, accomplishments, science and opportunities for solutions" around the Salish Sea ecosystem.

Broadhurst is not the only one spreading hope. The idea is also gaining global attention.

Psychology professionals worldwide are proposing ways to address climate despair. Taking action in politics, taking personal time and maintaining healthy routines such as sleeping and eating are attainable behavioral strategies to tackle the climate crisis. Cultivating hope is a psychological tool to show people that change is possible.

Bryant, the Seattle counselor, has developed a new strategy to help clients, FTUA: Feel, Talk, Unite, Act. According to Bryant, once people talk about their feelings they usually



feel less isolated. Uniting with others that have similar feelings also helps. These steps allow people to take action that is "meaningful, useful, and fits who you are." There is no wrong action to take. Everyone is different, so they will take action differently, said Bryant.

After moving to Bellingham this past year, Savage said seeing the actions the community has taken changed her perspective. Now she has hope.

"Of course we still have a lot of work to do," she remarked. As climate despair gains more attention, hope will continue to grow with it. Like specks of sunlight, hope is starting to peek through Washington's overcast skies. 🌱

*ABOVE: Emma Savage is a student at Western Washington University who has felt the heavy impact of environmental grief. She has found hope in the fact that other people are feeling the same things she has experienced.*

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**LAUREN SANNER** is a junior studying environmental studies at Western Washington University. She hopes to teach others that no matter your lifestyle, anyone can make sustainable choices.

**FAITH OWENS** is a visual journalism major pursuing a minor in Salish Sea studies with the intention of using visual media as a form of advocacy for the environment and for whale populations.

# A DAM SUCCESS

STORY BY JOSEPH KOFFEL  
PHOTOS BY BRODIE PIRTLE



**IF ALL GOES TO PLAN**, there will be salmon in Bellingham's drinking water supply after this summer. There won't be chinook in the sink, but there will be chinook spawning on a stretch of the Nooksack River that has not seen salmon return to spawn in almost 60 years.

The chinooks' story is one of restoration. It's told by change on a river that leads away from the bottom of Mount Baker. About halfway down a dirt road, drivers pass a nondescript metal gate and a little further is the main source of Bellingham's drinking water, diverted from the Middle Fork of the Nooksack River by a dam. This is the site of a project spanning 18 years that may be part of

a bigger solution to reverse declining salmon populations through selective dam removal.

The Washington State Department of Ecology regulates a total of 1,233 dams in Washington state alone. In Whatcom County, that number is 45 and soon will drop to 44.

Voices are easily drowned out by the roaring of the Nooksack as it spills over the edge of the dam that stretches 46 meters wide and stands more than two stories tall.

The City of Bellingham dammed the middle fork in 1962. The sole purpose of the diversion is to channel water into a 22 kilometer long tunnel that supplies Lake Whatcom with additional water required to meet the needs of Bellingham. At the

**ABOVE:** The Middle Fork Nooksack River Diversion Dam, located near Deming, Washington, has been functional since 1962. To open up the river for several species of fish, the dam is being renovated, restoring salmon habitat.

**RIGHT:** Construction workers use an excavator to create a staging area for the project. Here they will place materials for the removal of the dam. Stephen Day, the project engineer, said the plan is to leave as little trace of the project as possible.

time, there were no requirements to provide fish passage.

The concrete dam blocks almost 26 kilometers of pristine spawning habitat, marking an end to the salmon's journey for the last 58 years. After spending more than seven years navigating the Pacific Ocean, instincts kick in and compel salmon to return

to the same stream they hatched in a lifetime ago using their sharp sense of smell. Salmon make this journey past predators, through rapids and up fish ladders to spawn the next generation. However, a dam is one obstacle they cannot surmount.

Compared to other proposed dam removals in the Pacific Northwest, the Middle Fork flies under the radar, according to Stephen Day, the project engineer for the City of Bellingham.

For the last three years, Day has worked toward the dam's removal. The city, along with the Nooksack Indian Tribe, the Lummi Nation and the Washington Department of Fish and Wildlife, proposed the removal in 2002, but after several studies concerning feasibility they shelved it due to lack of funding. Only after securing funding from a combination of private donors like the Paul G. Allen Foundation and contributions from federal and state entities, did the project receive the green light. In partnership with groups like American Rivers, construction started in January.

The removal project on the middle fork is expected to cost roughly \$20 million. This would be extremely cost effective compared to the dam removals on the Elwha River in 2011 and 2014 which cost over \$324 million and opened 113 kilometers of habitat.

Speaking over the sound of the river

## THE MIDDLE FORK DAM REMOVAL IS SIMPLY A WIN

STEPHEN DAY DAM REMOVAL PROJECT ENGINEER

and the rumble of heavy machinery, Day explained that the middle fork dam removal is simply a win.

A main component of the removal is re-engineering and constructing a new diversion system to replace the existing dam. The system will take water from the current dam site with a specially designed screen to prevent fish and other aquatic life from entering the system. It will divert the water into a portion of the existing pipeline which delivers water to Lake Whatcom and eventually to the general population.

This, combined with the removal of the dam, allows for both water diversion and habitat restoration.

Zander Albertson, an instructor of geography and environmental policy at Western Washington University, expressed the need to examine potential dam removal projects throughout the Northwest with a critical eye.

"Dam removal is great. I don't think



ABOVE: Stephen Day, the City of Bellingham's project engineer for the dam's removal, wants to restore the habitat for the fish. Day says the whole removal process started in 2002 and should reach its end this year.

it needs to be done on every river," said Alberston. While removing dams is vital for restoration efforts, there are additional factors that need to be addressed to combat declining



salmon populations, Albertson explained.

“Everybody that drives on I-5 through Puget Sound is directly, in a minute way, responsible for water quality problems,” said Albertson. “And dam removal isn't going to solve that.”

When looking at restoration efforts it's important to look at the whole picture with a multitude of variables. Albertson believes dam removal has to be understood as a larger conversation.

## WHEN LOOKING AT RESTORATION EFFORTS IT'S IMPORTANT TO LOOK AT THE WHOLE PICTURE

ZANDER ALBERTSON WWU  
PROFESSOR OF GEOGRAPHY  
AND ENVIRONMENTAL POLICY

Jay Julius, a father, a fisherman and the former Lummi Nation Chairman stressed the importance of respecting the place his people call home.

His family has lived in the Salish Sea since time immemorial and when talking about the cultural impact of projects like the middle fork, Julius described how the issue runs much deeper than just the removal of a dam. He spoke about the need to be truthful and pushes for others to think about a larger



picture of what dams represent.

“When you look at the compound effect of what we label as progress and what Americans do as progress - we've done great things,” said Julius. “But at the expense of who and at the expense of what? And is it at the expense of your future generations?”

Salmon habitat restoration is gaining traction. In 2018, the U.S. Supreme Court upheld a ruling to enhance salmon habitats in the controversial “culverts case,” which

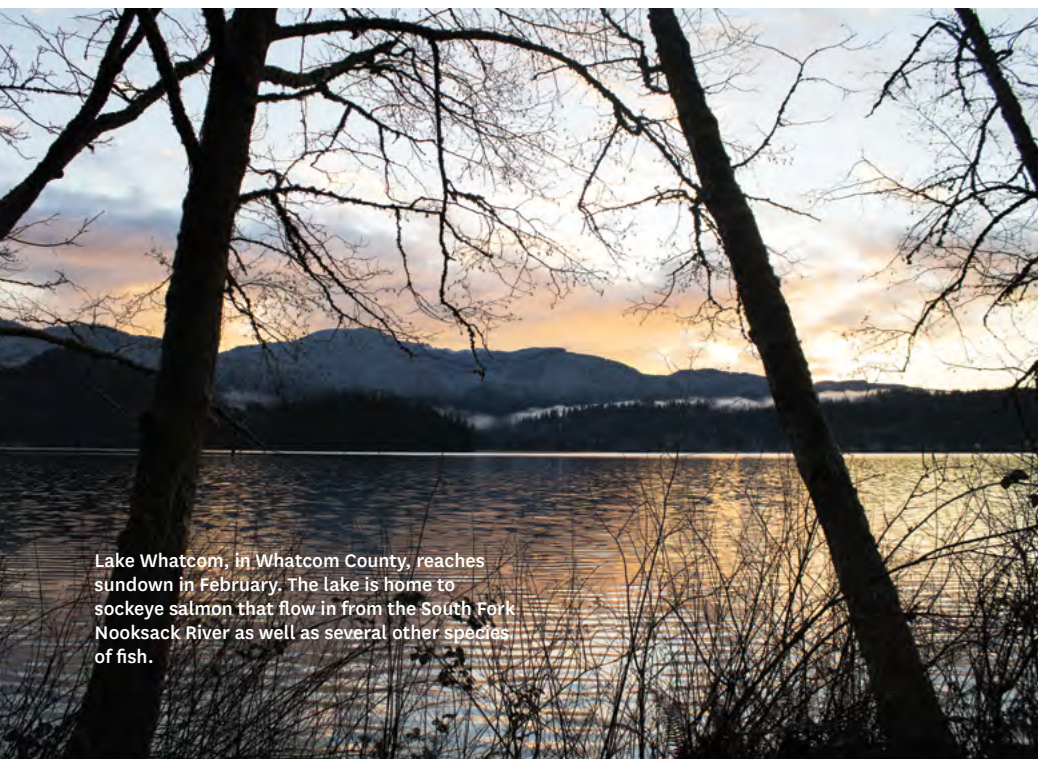
*ABOVE: The diversion tunnel for the dam sits on the left side of the dam, preventing water from flowing into the construction site. The tunnel is still functional and is not part of the removal because it diverts the water to Lake Whatcom.*

charged Washington state with fixing under-road passages that failed to connect streams. A massive win for salmon, Pacific Northwest tribes and restoration, the culverts case serves as an example of this idea of a bigger conversation around restoration.

Later this year, four dams on the Klamath River in Oregon and California will be removed as well. These removals signal a societal shift towards seeing the value in river restoration, said Albertson.

It is important to remember that fixing declining salmon populations is not solved by just removing dams, said Albertson. Projects like the one on the middle fork and the Klamath rivers give returning salmon one less obstacle to overcome.

“Dam removal has to be understood not as the silver bullet, but as a larger conversation,” said Albertson. 🗨️



Lake Whatcom, in Whatcom County, reaches sundown in February. The lake is home to sockeye salmon that flow in from the South Fork Nooksack River as well as several other species of fish.

**JOSEPH KOFFEL** is a geography major and a lover of all things outside. He's passionate about the mountains, water resources, sustainable practices and wildland fire.

**BRODIE PIRTLE** is a visual journalism major at Western Washington University. He is from Spokane, Washington and is an aspiring photographer.



# POWER TO THE OXEN

STORY BY **AMELIA BINEHAM**  
PHOTOS BY **SIMRAN DHALIWAL**

**GARRETT FRANZ REACHES** for a wooden brush with tough bristles as the two oxen, weighing roughly 900 kg each, stare confidently into the distance. The two intimidating animals, Lars and Tim, stand over 2 meters tall. Lars, the slightly taller of the two, has a more sophisticated presence than his mischievous partner Tim.

Rain had pattered on and off all day, dampening the earth and creating pools in the fields. Mud covers the oxen's hooves and Franz's rubber boots. Franz brushes Lars and Tim's backs, gliding the brush over their muscular bodies, before they head out for a day of work.

**ABOVE:** Garrett Franz, a Whatcom County draft farmer, steers his team of oxen, Tim (right) and Lars (left). According to Franz, he is currently the only oxen draft farmer in Washington State.

**RIGHT:** Garrett Franz, who farms with oxen, stands in the River Farm community greenhouse. Garrett is a passionate draft farmer and is committed to living self-sufficiently.

Franz is a Whatcom County farmer who has adopted the traditional practice of using draft animals in place of tractors to plow his fields. He is working with oxen to reduce his carbon footprint by eliminating the use of fossil fuels.

Environmentally sustainable agriculture is a goal that farmers all over the world are striving for in order to maintain a system that will last for future generations. This form of agriculture would generate a resilient environment that is both healthy and profitable.





Using draft animals is a method that is still practiced in some developing countries but is a rare occurrence in the United States. Since the industrial revolution, the U.S. and other developed countries have switched to mechanized agriculture, which has increased efficiency and overall production. Fossil fuels contribute more than 70 percent of the environmental impacts associated with mechanized agriculture, according to a 2013 study from Sustainability Science.

Tim and Lars, who make an effective

farming machine, are obedient animals. Without proper training and earned respect, these two could easily run off and destroy any fence in their way.

They eat over a bale of hay a day which amounts to roughly 60,000 calories. That would be equivalent to eating 30 large cheese pizzas everyday. They use that fuel to pull plows across the farmland. They are connected with a yoke, a wooden device that lays across their necks and attaches to various tools used to work the fields.

Franz explained that the working duo will perform their best at ages five to eight, and could manage around 1 ½ hectares of crops.

“The energetic connection to the land and to your food is really important,” said Franz. He explained the connection to the soil and relationship with the animals creates a sense of satisfaction that a tractor would not be able to emulate. Working with oxen is a much slower process and a larger emotional investment. It takes a great amount of patience, repetition and time to understand the oxen and build



ABOVE: A Whatcom County raspberry and blueberry farmer prepping his land for the upcoming season. This family runs the farm using mechanized farming equipment on 40 acres of land in Ferndale, Washington, just north of Bellingham.

their trust, explained Franz.

The oxen are driven by voice command and body position, said Franz as he walks around in circles. He makes a short clicking noise the oxen recognize and respond to by following in his steps.

In addition to Tim and Lars, Franz owns a team of working steers - or oxen-in-training -

named Ben and Bob. They will be considered working steers until they know their jobs and are big enough to effectively work.

“Ox is a working title, like doctor or painter,” said Franz.

Franz is not the only one exploring the practice of draft farming. This winter, draft farmers across the Pacific Northwest gathered in Arlington, Washington to participate in Farmer to Farmer. This program promotes sustainable agriculture by creating a platform for farmers to meet and share knowledge about different techniques. The farmers gathered in a circle in an old garage, sitting in folding chairs. They discussed the difficulties and benefits of working with animals.

“If I go out there and do something with a machine I just continue in that frantic, frustrated, going really fast state,” one of the visiting farmers said. “Where with a horse I’m stepping back and I have to enter a different energetic plane that I find is really good for me.”

The positive psychological benefits of working with animals are a trend among some draft farmers.

**THEY’RE VERY RESPONSIVE. THEY MIRROR YOU BACK TO YOU ... RELATING TO THEM IN A WAY THAT YOU JUST CAN’T RELATE TO A MACHINE.**

**MELANIE CUNNINGHAM OWNER OF SHAKEFORK COMMUNITY FARM AND FARMER**

Melanie Cunningham and her husband own Shakefork Community Farm in Carlotta, California and work with draft animals. Cunningham talked about the perks of getting to work with oxen on the farm.

“They’re very responsive. They mirror you back to you and it’s just been a huge catalyst for growth,” said Melanie. “Relating to them in a way that you just can’t relate to a machine.”

The Cunninghams and Franz both have an emotional attachment to the labor of draft farming.

Although there are benefits to

working with the animals, there are potential negative impacts that should be considered. One of the concerns of using draft animals is the production of methane that comes from livestock waste. Excess nitrogen and phosphorus from the waste can cause pollution due to runoff into nearby rivers. However, the manure that livestock produce can be used in fields to benefit crops.

Dr. Andy Bach, an associate professor of environmental geography at Western Washington University, said livestock waste is a great fertilizer for soils. He also discussed the concerns of soil health when it comes to agricultural practices.

Animal plowing compacts soils less than mechanical plows. Heavy machinery has a much greater impact than the hooves of an ox. Healthy top soils are composed of organic material and if it gets compacted the soils ability to retain water and plants’ ability to gain nutrients from the soil decreases.

“All plowing breaks up the organic matter which increases its decay rate so plowing always causes the organic matter to go down,” said Bach. “It’s going to be a negative impact.”

According to the Journal of Environmental Engineering and Landscape Management, the gas emissions and equipment noise from tractors lead to ecological imbalances, unhealthy soils and can have a negative influence on human health. Practicing draft farming could mitigate these concerns.

At the end of the day, Tim and Lars walk quickly back to the barn, knowing food and a back brushing are next on the day’s agenda. Franz removes the wooden yoke, ties them to their stall and once again pulls out a large bristle brush and begins to stroke their backs.

The transition to more sustainable agriculture is a complex process to tackle. Franz is an example of someone who has fully taken on the role of wrestling the modern norms of farming. 🌱

**AMELIA BINEHAM** is an environmental studies major who is passionate about sustainable farming and encouraging others to explore the outdoors. She loves to rock climb and roast veggies.

**SIMRAN DHALIWAL** is an urban planning and sustainable development student who is inspired by natural and built environments. He is passionate about architecture, urban design and landscape photography.



# BATTLE IN SEATTLE

STORY BY MELANIE JOHNSON

**TWENTY-ONE YEARS LATER,** participants of the 1999 World Trade Organization protests, known as the Battle in Seattle, look back at the boat-rocking event that has rippled across the last two decades.

For an entire week in the fall of 1999, a gathering of over 40,000 protesters amassed in downtown Seattle, nearly 8% of the city's population at the time. They flooded the streets in an attempt to stop a conference that intended to take corporate globalization to a more rigorous level. During that fateful week, Seattle was the destination of the World Trade Organization's Third Ministerial Conference. The unelected members of the WTO were about to make significant decisions behind closed doors that would ultimately affect farming, labor rights and environmental health. However, in the progressive culture simmering through '90s Seattle, protesters wouldn't allow them to make undemocratic calls so easily.

The WTO formed in 1995 out of the General Agreement of Tariffs and Trade, which came into effect in 1948 as an international agreement to facilitate the flow of trade. This meant reductions in tariffs and other regulations. The WTO is an organization with the power to override national governments in the name of free trade.

The WTO accepted the White House's invitation to host the Ministerial Conference in Seattle. These meetings bring together all countries or customs unions within the WTO to negotiate trade agreements.

The protestors viewed the goals of the WTO in the 1999 meeting as detrimental to human rights.

Farmers felt the threat of the regulations, especially those in the global south. Indian activist Vandana Shiva spoke about the rising suicide rate in India among farmers because of the WTO's tightened seed restrictions. They enforced government-binding rules created by GATT which determined the seeds that could be bought and grown by farmers. According to Shiva, these rules impeded farmers' ability to work, put them in crippling debt and completely jeopardized India's food security.

Not only Indian farmers were threatened. The WTO's free trade agenda included the

ability for U.S. agribusiness to pay foreign farmers extremely low wages for their products and facilitate distribution of produce from the global south. This would drive prices so low that farmers in the U.S. could not compete.

"Labor unions, environmental groups, and activists for many other causes increasingly condemned the WTO for favoring corporate interests over social and environmental concerns," said Washington state historian Kit Oldham.

## BLOCKING 10 DIFFERENT INTERSECTIONS, EFFECTIVELY SHUTTING DOWN THE DOWNTOWN AREA

DANA LYONS MUSICIAN AND ENVIRONMENTAL ACTIVIST

The WTO was criticized by Bridges, a trade news organization, for the over-implementation of trade-related intellectual property rights. Bridges suggested that developing countries weren't given enough time to properly protect their rights. The WTO had a plan to cut tariffs on timber trade and whole log exports, which environmentalists feared would increase deforestation across the globe.

The U.S. government banned purse seine nets for over a decade because they killed dolphins while catching tuna. The WTO enforced the overruling of this ban.

"If they didn't like that [dolphin protection] law that we the people created in democracy, they could pass a law that said 'that inhibits free trade' and supersede that law," said Dana Lyons, a Bellingham-based musician and environmental activist, who took to the Seattle streets in 1999.

Another fishing-net policy set by the WTO, which endangered sea turtles, caused a mob of people dressed as turtles to join the march in the streets.

Lyons' friend, Ben White, organized the sea turtle costumes. They used Lyons' tour bus as a dressing room.

"There were like 200 sea turtle outfits," Lyons said, "and the marching bands and the music. It was . . . an incredible party."

The Battle in Seattle was many things: a celebration, a series of teach-ins, a civil march, a strategic blocking of intersections and entrances and a police riot, according to Patrick Gillham, a sociology professor at Western Washington University and expert on the protests.

"There were so many people, there were so many different plans," said Gillham.

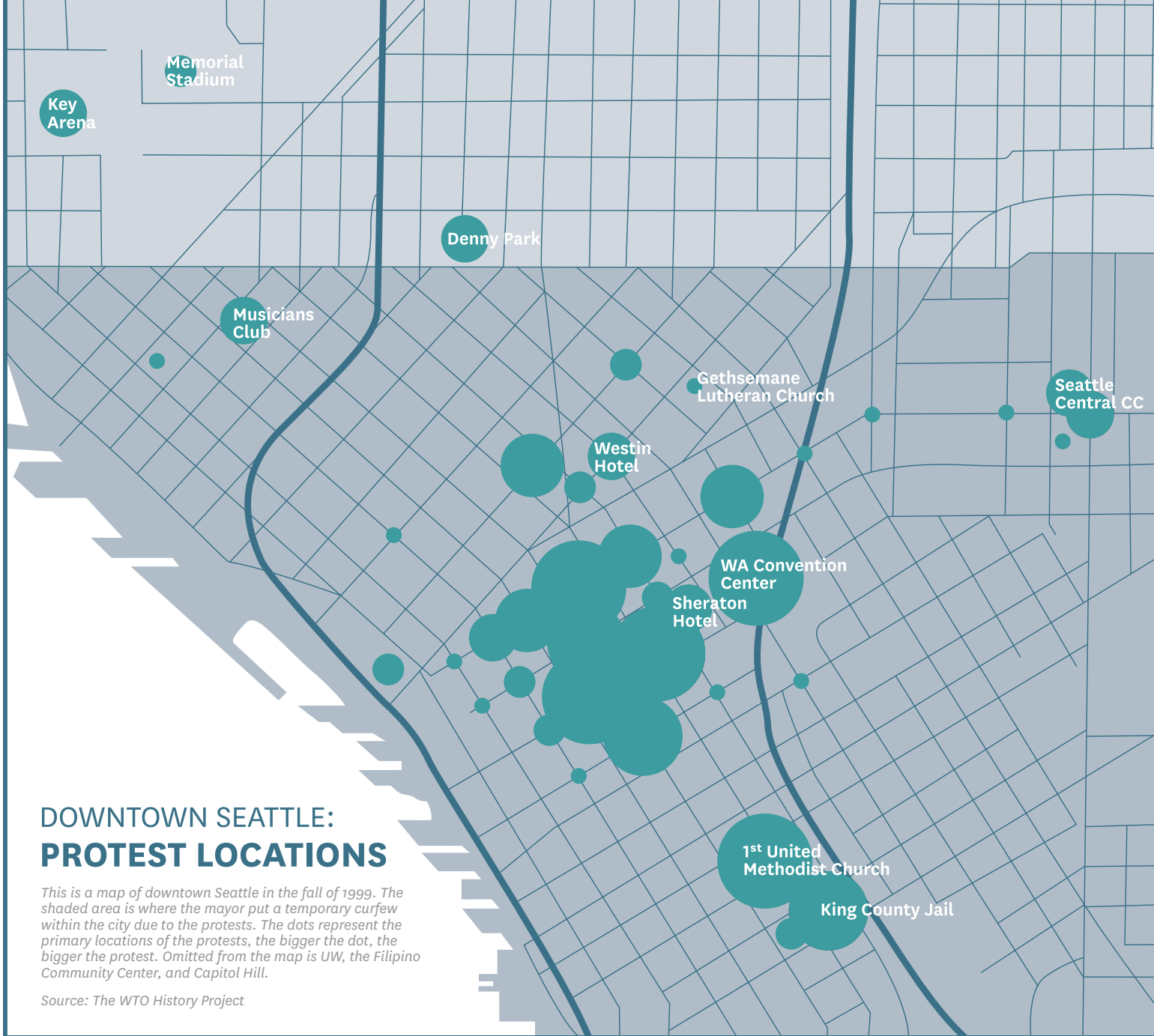
Lyons reported approximately 200 people blocking 10 different intersections, effectively shutting down the downtown area. In an attempt to control the overwhelming crowd, police resorted to tear gas, concussion grenades, rubber bullets, batons and mass arrest. The activists, however, were well prepared for police interference.

Protest organizers spent a year training people in safety tactics and preparing them for police intervention, a unique aspect of the Battle in Seattle. One organization that worked to prepare for the protest was the Direct Action Network (DAN), a confederation of groups opposed to organizations like the WTO. The groups orchestrated the plan that ultimately shut down the meetings.

The DAN coordinated the human blockades of intersections surrounding the Washington State Trade and Convention Center, where the conference was held. Strings of people linked together with their wrists stuffed in piping lined the crosswalks. When officers read them their Miranda rights, they chanted back, "We choose to remain silent!" according to Nancy Haque, a DAN organizer in 1999, who is now executive director of Basic Rights Oregon.

Keith Rockwell, a spokesperson of the WTO, said the protest outside did not cause the failure of the ministerial conference in 1999. Instead, he attributed it to disagreements and complications occurring within the meeting.

"There is neither the time nor the capacity to iron out so many differences in so short a time," Rockwell said. "The protests didn't make things any easier."



Rockwell concluded the WTO negotiations would have failed “if they had taken place in isolation in the Mojave or on the surface of the moon.”

Still, the success of the protests in 1999 prompted the WTO to seek more isolation in order to insulate itself. It hosted conferences on private islands and otherwise remote locations where protesters would have difficulty accessing. They held one conference in a canyon in the Rocky Mountains of Alberta, Canada, with a 32 kilometer perimeter established around the location to keep protesters out. Despite this, some activists tried to scale down from the top of the canyon.

“They’re relentless,” said Lori Wallach, director of Public Citizen’s Global Trade


Watch, a significant organizer for the protest. “They are like some kind of corporate whack-a-mole game where at each stop they pop up with the same anti-environmental deregulatory globalization agenda.”

The Battle in Seattle raised public awareness of the trade policies of the WTO and international corporate powers. This resulted in the formation of new activist organizations, such as the Community Alliance for Global Justice, which works towards food security, trade justice and more.

“I think the lasting lesson of the Battle in Seattle is that if there is a serious enough threat to democracy and the environment, that citizens can organize themselves,” said Lyons, who said that people power is the only way to protect the planet.

“I love the student walkouts,” Lyons said. “The older generations are stuck . . . my generation has not been able to figure out what to do about [climate change], and they’re providing leadership.”

Youth protestors have demonstrated plenty of frustration for the mess left behind.

“I think big protests like the WTO will happen again, and I think they’re going to happen soon,” said Lyons, “and I’m hoping to be singing at some of the parties.” 

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**MELANIE JOHNSON** is a behavioral psychology major at Fairhaven College. She is interested in the social side of human environmental interaction. She loves birds.

# YOUNG VOICES, BIG CHANGE

STORY BY **KASSIDY HALUSKA**  
PHOTOS BY **ZACK JIMENEZ**

**A TEAM OF 14 TEENAGERS** meets every Sunday within the colorful walls of a Greenpeace office in Vancouver, British Columbia. They are the coordinators of a group called “Sustainabiliteens.” They gather from throughout the metro-Vancouver area. They cram extra chairs around a large rectangular table and discuss the details of the next city-wide climate strike. Earnest and giggly excitement fills the room. Their strike in September drew more than 100,000 people. For the next one they’re hoping for even more.

Fifteen-year-old Lilah Williamson said it was the largest protest in the history of Vancouver. “There’s really no controlling a crowd that big so basically we completely shut down the city,” said Williamson.

Like many other teenagers around the world, Sustainabiliteens are making history with their climate activism. They ignited a powerful youth movement in Vancouver and they’re just getting started.

Williamson’s climate activism started in elementary school. She followed her father to meetings for Climate Reality, a nonprofit climate organization founded by Al Gore. Williamson didn’t understand the severity of the subject until she saw pictures of polar bears and monkeys struggling with the effects of climate change. As an avid animal lover, this motivated her to act.

A little over a year ago, Williamson’s involvement in the climate movement soared as she began organizing climate strikes with Sustainabiliteens. At the time, teen climate activism was gaining worldwide momentum following the work of Swedish teenager Greta Thunberg, who began striking from school every Friday to protest climate change in 2018. Soon, youth around the world were forming a global movement.

When Williamson joined Sustainabiliteens, the team had fewer than 10 members. Since then the group has grown to about 60 members. They form five teams to spread work evenly.

Every week, a couple of coordinators from each team meet to discuss large-scale plans. In the past year, they have held many protests including climate strikes and die-ins, where the group lays down together on the ground in a public space and plays dead. They also held funerals for their future where they dress in black and stage a funeral service, such as one at a B.C. fossil fuel conference, to influence decision makers. These death-themed events are symbolic of the consequences of runaway climate change.

This work takes up a significant amount of time. Williamson said she spends three to five hours per day during the week on activism, alongside school and other activities. On the weekends she dedicates upwards of seven hours a day.

She said members of Sustainabiliteens often joke that organizing feels like a full-time job but they don’t get paid. Even so, there’s nothing else Williamson would rather be doing.

“I cannot be living my daily life when there’s literally a crisis going on,” said Williamson.

Before a Sustainabiliteens meeting, Williamson meets friends outside of Vancouver City Hall, where a growing crowd has gathered for a February climate demonstration supporting the Wet’suwet’en Nation. She greets her pals with hugs. People hold signs declaring “BUILD OUR PIPELINE” and “RESPECT INDIGENOUS LAND.”

As the rally begins, indigenous speakers stand on the building’s expansive steps addressing the crowd. They share stories from their experiences with protests on Wet’suwet’en land aimed at blocking construction of a natural gas pipeline through traditional indigenous territory in northern British Columbia. Williamson and her friends cheer along in solidarity.



**ABOVE:** A speaker addresses a large crowd standing in solidarity on the lawn of City Hall in Vancouver, B.C. Several people spoke at the event encouraging action to protect Wet’suwet’en people and their rights.

**LEFT:** A group of people, including Wet’suwet’en leaders, play drums and sing during a performance. The large crowd grew steadily during the demonstration and later marched in nearby streets.



“It’s so important that we work together and we learn from [First Nations people] and prioritize their voices as much as possible, because in mainstream media and just in the mainstream view in general, non-indigenous voices are prioritized over indigenous voices,” said Williamson.

Imagining a better future for everyone is one of the key elements of the youth climate movement, said Williamson. This means combining their environmental work with social justice.

“I think what’s really powerful about my generation’s iteration of the climate movement, is that it’s kind of a combination of all these movements that we’ve seen before, because we’re recognizing that climate change is not a lone issue,” said Williamson. “It’s not just a big climate catastrophe, it’s actually an opportunity for a better world and for better solutions to a lot of the problems that we’re experiencing that aren’t even climate related.”

The climate strike movement drew a lot of attention to youth climate awareness worldwide. The fierce youth protest caught the attention of Matthew Ballew, a social psychology researcher at Yale University. He noticed that more young people were taking public actions. With a team from Yale and George Mason University, Ballew studied the ways different generations in the U.S. view climate change.

They found that millennials, ranging from 24 to 39 years old, are less politically divided on the topic of global warming than older generations and generally agree that global warming is real and human caused. “Clearly times are changing,” said Ballew.

They also found that younger generations rank climate-related issues as a higher priority in voting, which may come into play for the 2020 elections.

While most of the members from Sustainabiliteens are too young to vote, that doesn’t stop them from creating tangible political progress.

Last January, Williamson and other Sustainabiliteens went to Vancouver City Hall and protested in support of a motion to declare a climate emergency. They gave speeches to the council and held a small strike outside. The motion passed unanimously.

While the declaration was a major success

for Sustainabiliteens, they now want to turn words into action. This year, Sustainabiliteens want to work with politicians to create “real change” in Vancouver using the attention they’ve acquired through protest, said Williamson.

Teens emphasize the need for more initiative from people in power. Williamson said adults often say things like “oh, good job, the world is in such good hands,” but it’s in your hands, it’s not in our hands yet.”

Young people have created a sense of urgency and made the issue a priority, but now it’s time to turn that energy into action.

“That’s the responsibility of everyone,” said Williamson. “We have so much power when we come together.” 🌱

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*RIGHT: Lilah Williamson, a 15-year-old climate activist, spends her free time as a member of Sustainabiliteens. This is a group of teens from across Vancouver, B.C. who work to engage their community to take action on issues including climate and justice.*

*BELOW: A protester holds a sign advocating for climate justice during a rally at City Hall in Vancouver, B.C. A large crowd gathered to stand in solidarity with the Wet’suwet’en people and protest the expansion of the fossil fuel industry on their land, people and their rights.*



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**KASSIDY HALUSKA** is an environmental science major with a love for both science and storytelling.

**ZACK JIMENEZ** is a photographer and videographer who is studying journalism. He is passionate about environmental journalism and enjoys portrait photography.

# HUXLEY HISTORY

STORY BY TONY PETERSON  
PHOTOS BY BRODIE PIRTLE



**FIFTY YEARS AGO**, attending a college of the environment was unheard of. Then teachers at Western Washington University decided conversations about the environment needed to change and the university's Huxley College was born in 1970.

"Only by abatement of environmental destruction will our futures as a human species be possible," according to a university committee leading the planning of Huxley. The economic boom after World War II led to the civil rights movement and the hippies, said Gene Myers, a Huxley College professor. Paired with a desire to make change, Huxley College came into being. Expectations have changed over the past 50 years of environmentalism. The days of co-op living and campus campouts are echoes of the past, said Myers. As Huxley College puts it, students are preparing for a changing world.

Myers' connection to Huxley spans 42 years. Every surface in his office has a tale to tell: an old nature photograph from his father, beaver bones from students and a pot of rock-like plants called lithops. Myers recounted the history of Huxley, his own stories a map of its evolution.

According to Myers, modern environmentalism erupted during the upward momentum of the 1960's and faced its first real challenges under the Reagan administration. In 1978, Myers began his undergraduate career at the university, an activist from the start. He contributed to the first edition of *The Planet* when it was still named *The Monthly Planet*, in an article about "freely reaping the sun's gifts" at Teddy Bear Cove.

**TOP:** *The Environmental Studies Building at Western Washington University is home to Huxley College of the Environment. Huxley is celebrating its 50th anniversary along with the 50th anniversary of Earth Day.*

**BOTTOM:** *Gene Myers, in his office located in Arntzen Hall at WWU. Myers is a professor for Huxley College and teaches courses in the environmental education undergraduate program.*



The red and blue pipes inside the Environmental Studies building are meant to simulate the veins and arteries that pump blood to the human heart.



Zander Albertson, a recent Huxley graduate, decided to stick around and teach after completing his master's degree in environmental studies. Albertson said the future of environmentalism needs college students to keep having conversations with people of different viewpoints to enhance their ability to understand and empathize, a crucial skill of an environmentalist.

"[Environmentalism is] not just... worshipping at the altar of wilderness," said Albertson.

Huxley has evolved over the past 50 years, but its grey, concrete face has not changed much since it finished construction in 1973. Steve Hollenhorst, dean of Huxley, described "this building in all its dreadfulness," as the

most important location at Huxley and speaks about it with a genuine smile.

"It's this brutalist Soviet style," Hollenhorst said, "... reminds me of the FBI building in D.C... or city hall in Boston... and it's too bad because your building is the physical expression of what you want to be."

The interior opens to an atrium filled with blue and orange air ducts. The building's connections to Arntzen Hall via a sky bridge and a shared basement make for a disorienting experience to the uninitiated. Today, the building struggles with leaky ceilings and lead in the water.

Hollenhorst says the next five to ten years could bring a building that "expresses more of what we're thinking about in terms of energy,

emissions and healthy working environments."

The goal of Huxley has always been environmentalism, but society has struggled with accommodating the movement for a long time.

A 1988 opinion article by Aaron Coffin, published in *The Planet*, acknowledged the environmental movement isn't "exciting," that in a world of "MTV and Datsun 280 Z's, environmentalism just does not cut it when it comes to entertainment."

Coffin acknowledged the necessity of a healthy balance with the environment, likening the public to a petulant child unwilling to listen to mother nature: "If you don't clean up this room, there won't be any T.V. in the 21st century."

Huxley has endured and risen to tackle each challenge with the same resilience and determination that it encourages in its students, according to *Green Fire*, a history of Huxley.

The future of environmentalism will have a place to grow and flourish at Huxley for another 50 years. 🌱

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**TONY PETERSON** is a geography major at Huxley College of the Environment; a lifelong WA resident, he is a born storyteller and visual artist with a desire to connect.

**BRODIE PIRTLE** is a visual journalism major at Western Washington University. He is from Spokane, Washington, and is an aspiring photographer.



This banner hangs high in the Environmental Studies building with the names of all the Huxley alumni. The college was the first interdisciplinary environmental college in the world.

# THE HATCHERY HASTLE

STORY BY LAUREL MESSENGER  
PHOTOS BY FAITH OWENS

Hatchery incubation rooms have hundreds of drawers in which female eggs are placed for initial fertilization. When full, these drawers have constant water flow to mimic a natural stream environment.

**WALKING UP TO** the long rectangular raceway, a concrete tank filled with flowing water less than two meters deep, the water appears dark and alive with movement. Another step closer reveals the source of the movement — the water is teeming with thousands of baby coho salmon. Here at the Lummi Nation's Skookum Creek Hatchery in Acme, Washington, the fish can mature until the day they are released into the wild. Hatcheries are designed to help to recover and maintain the depleting salmon population.

The salmon and the Lummi Nation's way of life are constantly challenged through politics and environmental degradation, said Lisa Wilson, a Lummi Nation tribal member and Endangered Species Act manager for the Northwest Indian Fisheries Commission.

While the tribe has relied on its hatchery to help boost local salmon numbers, it is now caught up in a debate over a controversial plan to build a new hatchery on Bellingham's waterfront. A group led by a prominent Bellingham businessman wants to raise salmon numbers through a new, private, nonprofit hatchery in the Bellingham area that would be self-sustaining through money raised with the salmon returns. Promoters present it as a way to help increase salmon production to save the orca's main food source. But others warn it could threaten existing salmon populations, or direct resources away from successful hatchery programs.

Due to commercial fishing, the number of chinook salmon declined in the late 19th century. Salmon also faced destruction of habitat and blockage of fish routes due to the building of dams,

according Phillip Levin, an expert in zoology at the University of Washington. Now, hatcheries are in place to support salmon populations.

Currently in Washington there are nearly 80 hatcheries operated by the Department of Fish and Wildlife (WDFW). The tribes operate about 50 facilities and the U.S. Fish and Wildlife Service independently operates 12, according to Eric Kinne, the hatchery division manager for WDFW.

The new hatchery is meant to be modeled after the Douglas Island Pink and Chum Hatchery (DIPAC) in Alaska, said Doug Thomas, prominent businessman and the chairman of the San Juan A.R.E.A. Sea Life, the group behind the new hatchery idea. A nonprofit private hatchery, such as DIPAC, has never been built in Washington state.

According to Thomas, one of the main differences with the private hatchery compared to the ones already established in Washington is that the proposed hatchery could pay employees and bills by using the money earned from their claimed percentage of the salmon returns. Maintenance of the facility wouldn't have to rely on state funding outside of startup funds.

"What's the danger in trying something different?" said Thomas. "Or do you want to just keep doing what we've been doing for 40 or 50 years and hope for different results?"

Currently, those pushing for the hatchery are hoping to receive funds from the State of Washington for a feasibility study. In January, the Senate held a public hearing and read the bill for the hatchery feasibility study. Multiple stakeholders stated their opinions about implementing a new hatchery into the current

Washington system. They are still awaiting a decision to be made by the Senate.

Sen. Ann Rivers, the primary sponsor for the bill, said this new hatchery would be a good solution to increase food for the orcas.

"The reality is that we have only 10 to 12 years before extinction of our Southern resident orca whales, so I just don't really feel like we have time to lose on this," said Rivers.

According to Thomas, chinook, coho and chum are the initial salmon intended for the new hatchery. Chum salmon grow the fastest and therefore are a larger economic contributor to the hatchery operations, said Thomas. He compared the hatchery to having an athletic program at a university. The football team is responsible for generating the revenue that makes it possible for other teams to exist. In this scenario, the chum is the football team that makes the money that allows chinook and other salmon to become part of the system.

According to Kinne, the hatchery division manager, orca diets mainly consists of chinook salmon, followed by coho and chum. Kinne testified neutrally at the Senate public hearing. According to Kinne, organizations like WDFW are always looking for new ways to increase the salmon population in hatcheries, as well as the orca population. However, this enhancement of fisheries has to be done responsibly, said Kinne.

Dr. James Helfield, an associate professor of environmental sciences at Western Washington University, believes a commercial hatchery to feed the orcas is a bad idea. Helfield is concerned that the new hatchery is meant to produce biomass and this could put healthy populations



Through the co-management parties, there are already other programs established trying to help increase the salmon population, according to Kinne.

The WDFW and the other co-managers already have proposals funded by the legislature to increase the production of salmon by 26 million, while keeping their conservation goals in mind, Kinne said.

According to the letter from the tribe, those in favor of the hatchery are requesting \$2 million from the legislature for a feasibility study. The Lummi Nation believes the request for that much funding would compete with the systems the tribal hatcheries already have in place and would clash with the co-management goals.

According to Kinne, Alaska doesn't have systems like co-management. They also don't have to divide the fish among the treaty tribes, recreational and commercial stakeholders. This is what makes their model harder to implement in Washington state, said Kinne.

Although they are not in favor of this new model, Wilson and the Lummi Nation are supporters of hatcheries.

"If it wasn't for hatcheries, we wouldn't be able to exercise our treaty rights," said Wilson.

The Lummi Nation believes the current project isn't a feasible solution, said Wilson. While they talked with other stakeholders throughout the debate, they felt as though their concerns were not being heard. The proponents for the hatchery are steamrolling through the process, said Wilson.

Down at the location sites for the proposed hatchery, the water of Bellingham Bay ripples and glistens against the shore of Waypoint Park. To either side are the suggested locations for the new hatchery – the old log boom or the ASB Pond.

Currently, the land, salmon and Lummi Nation wait for their fates to be decided. 🌊

**LEFT:** Tom Chance is the Salmon Enhancement Program Manager for Lummi Nation in Bellingham, Washington. He has worked at Skookum Creek Hatchery in Acme, Washington for eight years.

**BELOW:** Bellingham Technical College currently has a hatchery at Whatcom Creek, which is close to Bellingham Bay's shores. One element of this ladder mimics the natural upstream progression of a salmon that is returning to their native stream (in this case, the hatchery).

**LAUREL MESSENGER** is a senior at Western Washington University pursuing journalism and environmental policy, with a special passion for issues regarding salmon and their ties to ecosystems and culture.

**FAITH OWENS** is a visual journalism major pursuing a minor in Salish Sea studies with the intention of using visual media as a form of advocacy for the environment and for whale populations.



at risk if conservation is not considered.

The Lummi Tribe has opposed the new hatchery. Tribal officials warn the hatchery co-management system established in Washington will complicate the proposal, as well as take away needed resources from hatchery plans the Lummi already have in place. The Lummi Nation addressed these concerns in a letter to Thomas.

"Washington Department of Fish and Wildlife and Lummi Nation and other Puget Sound Treaty tribes are the established Co-Managers of the fishery resources," according to the letter to Thomas.

The Lummi Nation pointed out adding another separate entity to the management system could weaken the relationship between these groups.

**BELOW:** There are currently two proposed locations for a proposed private hatchery, if it is approved. Both of the sites are located on the grounds of the demolished Georgia Pacific pulp plant.





# THE PRICE OF CHANGE

STORY BY EMMA OLPINSKI  
PHOTOS BY SIMRAN DHALIWAL

**BELLINGHAM, WASHINGTON** is a city of bicyclists, composters, bring-your-own-bag enthusiasts and homeowners heating with fossil fuels.

In the face of the current climate crisis, Bellingham aims to be a front-runner of sustainability in cities, with the goal of being emission free by 2035. To accomplish this goal, Bellingham will have to take serious action to restrain its reliance on fossil fuels, including natural gas.

In 2018, Bellingham formed the Climate Action Plan Task Force to find tangible routes to being emission free by 2035. The task force issued several recommendations for how this could be accomplished so quickly. A controversial recommendation proposed by the task force is to ban gas heating systems in favor of electric heat pumps or other electric alternatives by 2040. Critics warn this could put a costly burden on Bellingham homeowners.

Though this proposed transition is not city policy yet, it has created a divide between concerned homeowners, organizations and corporations.

Charles Barnhart is a member of the task force and an assistant professor at Western Washington University's Institute for Energy Studies. He said the Cascade Natural Gas Corporation (CNGC) and the Building Industry Association of Whatcom County (BIAWC) lobbied against the task force's recommendations during the public comment section of every meeting.

"When topics emerge that have impacts on our community, it's our responsibility to participate in the conversation," said Alyn Spector, Energy Efficiency Policy Manager at the CNGC. "I don't consider this lobbying."

CNGC partnered with other housing stakeholders and released an open letter in 2019. The letter expressed concerns about the lack of public and corporate inclusion in the formation of the task force's recommendations.

The open letter included an infographic created by the BIAWC depicting the amount of work the association deemed necessary to carry out the Task Force's recommendations, Spector said.

"We have no reason to believe that the analysis developed by the BIAWC was inflated," said Spector.

However, members of the task force have questioned information in these flyers.

"They would cherry pick values that make the new technologies look as expensive as possible and cherry pick values that would make the existing gas-based technologies as cheap as possible," said Barnhart.

The task force found that in Bellingham, the average cost of a gas furnace in new buildings is approximately \$7,000, while the cost of a new electric heat pump can range from \$8,600 to \$21,000. Despite the hefty upfront cost, studies by the energy consulting firm Energy and Environmental Economics in California found



## NATURAL GAS VERSUS ELECTRIC HEAT

Source: Climate Action Plan Task Force



Gas furnace:  
**\$7,000**

Electric heat pump:  
**\$8,600 to \$21,000**



**\$8,000 to \$12,600**  
energy savings over 20 years

that switching from gas to electric for space and water heating resulted in savings ranging from \$8,000 to \$12,600 on energy bills over 20 years.

“Going forward, month after month, your energy bills are going to be lower,” said Barnhart.

The promise of decreasing energy prices is not enough to curtail the concerns of all, though.

“At least 30 percent of Bellingham homes are cost-burdened in their housing, meaning they can’t afford it,” said Perry Eskridge, executive officer of the Whatcom County Realtors Association.

According to Eskridge, any time housing is made more expensive in an already-stressed market, it exacerbates the problem.

As the members of Bellingham’s community who would be impacted by the proposed ban, homeowners have also begun voicing strong opinions on this topic.

“While I do not agree with many of the things the City of Bellingham does, this is

one they’re getting right,” said Bellingham homeowner Bill Baumann.

According to Baumann, installing an electric heat pump system will have far greater savings for the planet and the environment than continuing to burn gas in homes. His support

for the task force’s recommendations are rooted in concern for the impacts of a changing climate.

“Climate change will make existence for people younger than 60 difficult in the years to come,” said Baumann.

Baumann is far from alone in his views.

**LEFT:** The headquarters of Cascade Natural Gas company in Bellingham, Washington. This company argues that transitioning from natural gas could significantly impact energy costs, home sales and the city’s economic health.

**RIGHT:** Charles Barnhart, President of Bellingham Climate Action Task Force, stands in front of Bellingham City Hall. Barnhart worked alongside his colleagues for over 18 months on their proposal. The Climate Action Task Force submitted their final report in December 2019.



Many other citizens of Bellingham are viewing the transition away from natural gas as an inevitable and necessary part of addressing the current climate crisis.

“I know we transitioned from burning wood in Bellingham to electric and gas, and now we can transition again to solar and electric, so it’s promising,” said Wendy Scherrer, another Bellingham homeowner.

This support does not come without challenges, though. Skepticism continues to exist about the affordability of switching to electric heat, even for people in favor of the clean energy transition.

“Right now, being a retired person on disability, it’s challenging,” said Scherrer, “unless there was a financial incentive to actually do it.”

According to Barnhart, systems could be adopted by the city to help homeowners cope with the cost of electric heat pumps, such as a system called on-bill financing. Homeowners’ monthly bill would remain the same, although only a fraction of the cost would be for the energy actually being consumed. The remaining cost of the heat pump would make up the rest of the bill, said Barnhart.

“So you wouldn’t even notice the financial difference until three years later; all of a sudden you’re saving money,” said Barnhart.

Though the task force has proposed potential solutions for addressing cost concerns, the city council hasn’t moved to put this ban into place. However, Bellingham’s goal of reaching zero-emissions within the next 15 years still has the potential to create a sweeping impact.

“There’s this psychological phenomenon called the first follower. There’s this great YouTube video of somebody at the Sasquatch Festival at the Gorge and he’s dancing crazily” said Barnhart. “He’s just dancing alone for like a minute. And that took a lot of guts to

do that. And then somebody else runs up and starts dancing with him. And as soon as that second person, the so called first follower, starts dancing too, there’s this huge flood of fifty to hundreds of dancers; all dancing at once.”

It is unclear if Bellingham is the first follower, but many cities, including Boulder, Colorado and Burlington, Vermont, are also

thinking in similar ways and getting on the dance floor, Barnhart said.

The proposal to end one city’s reliance on natural gas may seem small, but it is a revolutionary idea. Once these ideas begin to resonate, Bellingham’s population of 90,000 people can cause something wonderful to help reduce climate change, said Barnhart. 🌱



ABOVE: A natural gas meter at Barkley Village in Bellingham. If the task force’s proposals are implemented, this kind of energy infrastructure would no longer be used in Bellingham.

BELOW: Puget Sound Energy’s Encogen Generating Station pummels steam into the Bellingham sky. This facility is powered by natural gas and would be directly impacted by a proposal to phase out natural gas use in the city.

**EMMA OLPINSKI** is a junior at Western pursuing a degree in environmental studies with a minor in creative writing. She aspires to work in the field of environmental justice.

**SIMRAN DHALIWAL** is an urban planning and sustainable development student who is inspired by natural and built environments. He is passionate about architecture, urban design and landscape photography.



# HUNTING FOR HUNTERS

STORY BY COLBI JENSEN  
PHOTOS BY ZACK JIMENEZ

Brian McConnell holds his longbow outside his home in Everson, Washington. He frequently practices with his collection of bows in his backyard.

**LET'S GO STUMP HUNTING**, said Brian McConnell, hunter and master tracker. McConnell disappears into the woods behind his home in Everson, Washington. The light breaking through the shade of the trees reveals a narrow ravine split by a small creek. McConnell points out a mushroom on a rotting log more than 15 meters away, draws his bow and shoots. The arrow thumps into the soft wood, narrowly missing its mark.

Further up the trail, McConnell calls attention to faint imprints in the damp dirt and leaf litter. The edges of the print are soft from rain. He deduces that a deer had been through the area since the night before. Tracking is a skill he uses to find his target species when he's hunting and McConnell is a master. Besides his family, hunting is his life.

"I wake up thinking about it every day," McConnell said, smiling through a thick beard,

"after thinking about what I want to eat."

The stories of hunters like McConnell are becoming more scarce. People have an interest in learning to hunt, but some cannot because the knowledge is disappearing. As hunting activity declines, environmental discussions are losing powerful voices of those who are connected to the land and systems around them. These voices have played an important role in modern conservation, and people like

Brian McConnell, an avid hunter and tracker for 40 years, speaks about his experience as a First Hunt Volunteer. The program pairs experienced hunters with people who want to learn how to hunt.



McConnell and the First Hunt Foundation are working to keep them alive.

It's hard to imagine the American conservation movement being what it is today without the influence of hunting.

Teddy Roosevelt was a president famed for hunting. He created the U.S. Forest Service and designated land roughly twice the size of Mississippi throughout the U.S. in part to protect the environment of the species he loved. This legacy illustrates how hunters impact the protection of land to this day.

As the current population of hunters age, they lose their ability to participate in the sport, says Kristen Black, manager of communications at the Council to Advance Hunting and Shooting Sports. Now, hunting advocates are working to counter this decrease by getting a new generation involved.

Rick Brazell is the founder of First Hunt, a nonprofit that works to help connect experienced hunters with those who would like to learn but don't have the means. He is concerned that people are losing connection

to their hunting heritage and that those same people are the ones voting on wildlife management and budget issues. Brazell depends on volunteer mentors to teach hunting and keep hunting culture alive.

This program is how Alisha Silbaugh, a retired veteran living in Kitsap County, found McConnell. She wanted to learn how to hunt for herself and to teach her son when he is old enough.

Silbaugh and Brazell went on a turkey hunting trip together. Although Silbaugh didn't get one, she still learned a lot from McConnell, she said. With the knowledge he gave her, she was able to take her son with her this last fall and get their first turkey. Silbaugh believes that if kids are allowed to learn about the sport in places like state parks there would be more community interest in conservation.



**RIGHT:** McConnell points out white-tailed deer tracks in a wooded area near his home. He said the pattern and size was made by a white-tailed deer and estimated that it was from the previous night as the print had degraded.



McConnell's story is more traditional. Growing up in the southwest corner of Arkansas, he learned to hunt squirrel and deer from his father and grandfather at the age of six.

It has been an important part of his life for 40 years, but his home isn't full of decades worth of trophies. A collection of things his family has found in their time outdoors decorate each surface: large feathers, intriguing bits of driftwood and shed antlers.

By introducing new hunters to his life, he opens their eyes to a practice they might not be aware of. "Not all hunters are these bloodthirsty crazy people," he said. "This is how I feed my family."

As communities lose hunters, McConnell has concerns about losing people that are connected to the land and have seen it change.

Through his own life hunting in Whatcom County he has seen forested areas become harder for people to access as companies put fences up around private land that was once open to the public. Where McConnell grew up, timber harvesters clear-cut diverse lowland hardwood forests and replaced them with pine plantations.

If people aren't going out in the woods, he points out, they won't see if people are dumping garbage or clearcutting land.

"There's so much conservation that goes on that hunters are responsible for" he said.

But to him it's more than conservation. To McConnell, hunting is inseparable from being human. 🍄



**TOP:** Brian McConnell pulls an arrow from a battered deer target that sits partly exposed in the tree line surrounding his yard. He also likes to take his son around their property to practice shooting on tree stumps.

**BELOW:** Brian McConnell aims his compound bow during a practice session outside his home. According to McConnell, compound bows are easier to aim and can shoot targets at a greater distance.

**COLBI JENSEN** is an avid fisher person and an environmental education student at Huxley College. They aim to empower others by encouraging them to learn from the land they are on.

**ZACK JIMENEZ** is a photographer and videographer who is studying journalism. He is passionate about environmental journalism and enjoys portrait photography.

# OLD FARM, NEW TREES

STORY BY SAVANNAH SMITH  
PHOTOS BY FAITH OWENS

The New family's trees grow amid stumps that remain from logging that happened on the land in the 1930's. Some of the stumps will start new growth and grow into what are called "nurse trees."

**ROUGHLY 64 HECTARES** of forest in Arlington, Washington remained untouched for 76 years. A trickling stream full of fish bones, over-mature trees ready to fall at any second and endless fields of blackberries waiting to take over. At this point, a decision must be made.

Dar and Dave New inherited the Nourse Farm in 2006, gaining enough land for the entire population of Washington to stand side-by-side in. They decided to manage the tree growth and restore their river for salmon spawning. A forest management plan promotes a healthy salmon-bearing stream and a comfortable home for animals and plants. This hefty management brought about a recreational space, several animal and plant species and an eventual revenue source for the New family.

Dar and Dave are the third generation to own the Nourse Farm but the first to convert it to an actively managed tree farm. Dar's grandfather originally bought the land as a place for family recreation, then gave it to his youngest son who ran cattle on the flat lands but left the forest alone. Eventually ownership found its way into Dar's hands.

"I didn't know anything about forestry at the time," Dave recalled. They consulted a forestry expert to help create a forest management plan and embarked on a lifelong journey.

Despite owning the property for 14 years, Dar and Dave still find surprises. They discovered infant fish bones in the stream running through their forest, which was only a trickle at its strongest. It must have once been a salmon-bearing stream.

"That really struck me," Dave said. "How could they stay in the stream if there was no water in it?"

Collaborating with a fish biologist, they decided to utilize the divot in the ground remaining from an old rail cart path winding along the property. They planted cedar and spruce along its sides and placed large woody debris in the path to restore the stream channel. Now the stream is deep enough to cover the knees and it's easy to spot fish all throughout.

The American Tree Farm System presented the New family with the 2019 Outstanding Tree Farmer of the Year award, recognizing them as private owners of a forest who actively manage and promote sustainable forestry. They are honored as reputable leaders and models for the forestry community.

Their 64 hectares are now a part of the Conservation Reserve Enhancement Program and the Washington Farm Forestry Association, where Dave is a board member of the Whatcom chapter.

An overgrown forest would be costly for the family and would defeating the purpose of a recreational space. Dar recalled it being a hard decision to destroy mature trees and plant others for the intention of harvest as a "tree-hugger." Thinning a forest is a management tool that reduces risk of fire, alleviates stress on surrounding trees and increases the value of timber.



# Nourse Tree Farm

LEFT: The New Family Tree Farm welcomes visitors with large woodcut signs. Among these signs are multiple awards, including 2019 National Outstanding Tree Farmer of the Year.



Dar has vivid memories of roaming the forest, fishing, berry picking, camping by the river and running through the trees throughout her childhood. After she and Dave received the land, she wanted to create that experience for her loved ones.

Dar and Dave converted their unmanaged space of recreation into a vast environment of Douglas firs, alders, maples and other species. On their wildlife cameras, they have spotted deer, coyotes, bears, hawks, owls, cougars and many other forms of wildlife. The duo transformed their space into an area for family, friends and nature.

According to the WFFA, 56 percent of the United State's forest lands are privately owned and provide 30 percent of U.S. drinking water and 90 percent of forest products.

A successful farm and flowing stream isn't their only goal with the property. "We have to pay for our taxes somehow," said Dave. "And we want to be able to help pay for our grandkids' college."

After about 50 years of growth, Dar and Dave plan to chop the timber they planted. They will sell the Douglas fir and alder wood to their neighbors so they can use the wood for houses. The money they receive from selling the wood over the next 50 years will help them keep up with the costly maintenance their farm requires.

There are roughly 10 million family-owned tree farms like Dar and Dave's. Although their forest is intended to be harvested, it provides shelter for species during its time standing and gives them a fulfilling lifestyle. 🌲

**ABOVE:** Dave and Dar New's daughter, Jen Parker, and her son, Alex, help tend to the tree farm and its gardens. The Parkers carry on the New family's lineage on the farm.

**BELOW:** Dar New (left) is one of the primary caretakers of the Nourse Tree Farm. Her grandfather purchased the land in 1942, and she frequented the property growing up.

**SAVANNAH SMITH** is an environmental studies major through Huxley. She grew up in the Pacific Northwest, rooting her passion in the outdoors and nature surrounding us.

**FAITH OWENS** is a visual journalism major pursuing a minor in Salish Sea studies with the intention of using visual media as a form of advocacy for the environment and for whale populations.





# GREEN BURIALS

STORY BY SARAH LEDWITH-ZUMWALT

**EVERYBODY DIES.** There are roughly 300 million people alive in the U.S. today, begging the question, ‘what’s to be done with the bodies?’

The current industry standard involves preserving the bodies in the ground with a toxic mix of embalming chemicals including formaldehyde. This conventional burial releases a massive amount of carbon, equivalent to the average weight of a football player. Methods of green burial are being introduced that could pull a toddler’s weight in carbon back into the earth, according to the Green Burial Council (GBC), an advocacy group for sustainable death practices.

Bodies can now be disposed of in a number of eco-friendly ways. Collectively, they are known as green burials. A burial is considered “green” when the body has not been embalmed and the casket or shroud is completely biodegradable and non-toxic, according to the GBC.

Cremation could be an ideal space saving option. Joining the ranks alongside flame-based cremation, hydro cremation is a potentially greener option. This newer, water-based process uses 1/8 of the energy that a traditional

cremation does. According to a 2014 study, the process results in a reduction of more than 75 percent of the carbon footprint.

It’s like a warm bath, said Allen Flintoft, co-owner of Flintoft’s Funeral Home and Crematory in Issaquah, Washington.

Officially called alkaline hydrolysis, hydro cremation reduces a body to liquid and bone which makes for a green disposal process. The body is placed inside a stainless steel tube and sprayed with an alkaline compound dissolved in water. In less than 12 hours, with the addition of heat, tissues dissolve from the bones and reduce to a liquid, similar to a dishwasher rinsing food off plates. The system developers claim the liquid is safe and nontoxic. The “bath water,” as Flintoft described it, can be poured away and the remaining bones are pulverized and returned to the grieving.

Flintoft admitted hydro cremation has not been a much-requested service. As with anything new, people have to get used to it. It has to become part of the culture, said Flintoft.

Tucked away at the edge of a traditional

cemetery in Ferndale, Washington, is The Meadow, a natural burial site.

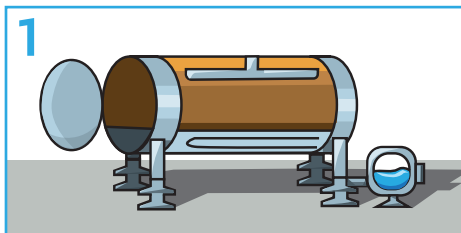
Standing in The Meadow evokes an ancient, almost mystical feel with a circular berm in the middle of the site. Nature seems to be reclaiming it, with long grasses and uncultivated plants. All around there are raised mounds in various stages of reclamation.

There is no mistaking that shape, it’s something that crosses cultures, said Brian Flowers, a green burial coordinator. We instinctively recognize ourselves.

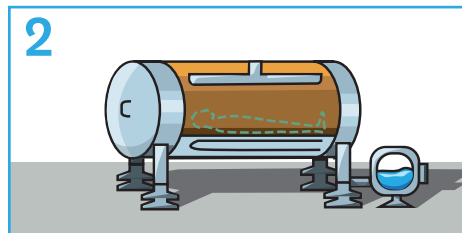
According to Flowers, this resting place is a nearly two hectare natural burial ground. To be buried here, the body cannot be embalmed or placed in a lead lined coffin. Everything must be 100 percent biodegradable, said Flowers

Lashanna Williams is a death doula who helps people and families prepare for their death. “With the knowledge that the earth needs us to do something different with our bodies, the desire to be less harmful to the environment and the return to a more natural existence, people are reaching out,” said Williams. 🌱

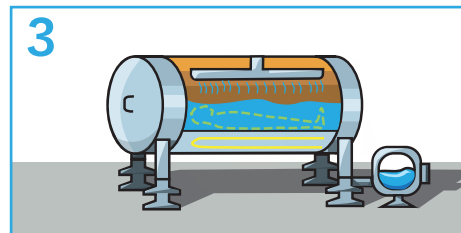
## THE HYDRO CREMATION PROCESS



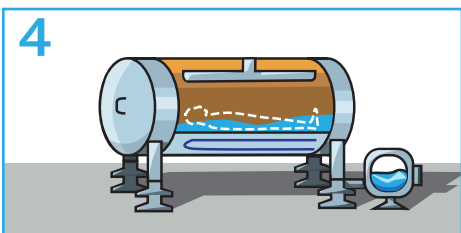
1 The corpse is placed in a stainless steel chamber. The two notches on the legs of the chamber are for weighing the body. The water tank that is attached to the chamber is a recirculation pump for fluids, and there is a heating coil at the bottom of the chamber.



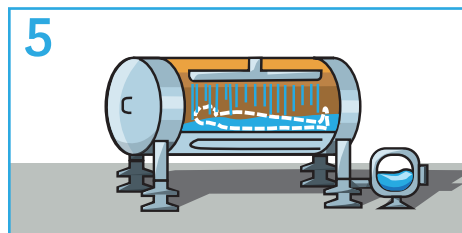
2 When someone decides to go with hydro cremation, they are first weighed from within the chamber.



3 Then, the heating coil heats the chamber to 150 degrees Celsius and the metal sprayer above the body releases a fluid mixture of 95 percent water and five percent potassium hydroxide onto the body. The recirculation pump mixes the liquid and heat throughout the chamber. This process speeds up decomposition so much that the body is liquid after about an hour and a half, except for a few small bone fragments.



4 Cool water runs through the coil, cooling down the liquid in the chamber. Then the fluid is drained.



5 The final step is a rinse of the remaining bone fragments at 120 degrees Celsius. After about 20 minutes, the hydro cremation process is complete and the door to the chamber is unlocked.

Source: Funeral Consumers Alliance of Minnesota

**SARAH LEDWITH-ZUMWALT** is pursuing an environmental studies degree at Western. She is driven by an interest in exploring the environment we live in and the issues affecting us all.



# TOXIC INHERITANCE

STORY BY JESSE NICHOLS  
PHOTOS BY JESSE NICHOLS

Barbara Cohn, director of the Public Health Institute's Child Health and Development Studies program, uses frozen blood samples to study the long-term health impacts of DDT.

*This story is part of a multimedia project by Grist, produced by Planet Magazine alumni Jesse Nichols and Regan Bervar. See the full video at [grist.org](http://grist.org)*

**MORE THAN 50 YEARS AGO**, scientists at the Kaiser hospital in Oakland, California started a simple experiment: When a pregnant woman would come in for routine maternal care, they were asked to give a sample of blood, to be frozen for future research. They didn't know it at the time, but those samples would later be key in understanding the long-term health impacts of DDT.

Dichlorodiphenyltrichloroethane. Not a name that rolls easily off the tongue. But in the mid-20th century, the chemical was considered a "miracle" insecticide, as familiar as a trusted friend and safe for human exposure.

In World War II, U.S. forces used DDT to prevent diseases like malaria or typhus. In a 1946 promotional film from the Army Air Forces, a grainy black-and-white B-25 bomber can be seen spraying a trail of the chemical in a fine, white mist.

"Instead of bombs, the B-25 now sprays DDT

over large areas," boasts the narrator. "Epidemics can now be prevented or stopped suddenly."

After the war, the U.S. still had large stockpiles of DDT, sprayer planes, and a workforce of trained pilots. Chemical companies saw agriculture as a promising new market in which they could deploy those resources. By 1959, farmers across the country were applying more than 30,000 metric tons of DDT to crops each year, according to the Environmental Protection Agency.

"People thought of this chemical as a miracle, because it was very good at controlling the mosquito that transmits malaria," said Barbara Cohn, director of the Public Health Institute's Child Health and Development Studies program. "It was one of the most ubiquitous exposures in human history."

Just a few years later, DDT's "miracle" reputation took a hit. Rachel Carson's 1962 book "Silent Spring" highlighted the chemical's impact

on ecosystems, which included causing exposed birds to lay eggs with thin, breakable shells.

"In nature nothing exists alone," Carson wrote. "If we are going to live so intimately with these chemicals eating and drinking them, taking them into the very marrow of our bones — we had better know something about their nature and their power."

Carson's warnings about DDT and other pesticides sparked a backlash against the chemical and planted the seeds of the modern environmental movement. By 1972, concern about DDT had risen to such a fever pitch that the EPA banned it altogether.

But what of the millions of people who had been exposed to the pesticide? In the ruling, the agency called it a potential human carcinogen, yet noted that we may never have the data needed to know for sure. That prediction has mostly stayed true: although many communities have anecdotally shared stories of unexplained breast

cancer clusters near the fields where DDT was sprayed, a causal link seemed impossible to prove. Many studies that took place in the decades after the chemical was banned have had trouble definitively linking DDT exposure to cancer.

In the early 2000s, Cohn found a new source of potential answers in the bank of frozen blood taken from pregnant women at Kaiser during the '50s and '60s. The library, which had grown to include blood samples from around 15,000 women, was a priceless cache of biological data from which DDT's effects could be analyzed.

"These data, which are 60 years old, are the only data like this in the world," Cohn said.

Cohn's team got to work: they tested each woman's blood sample for DDT, then searched California's cancer registry to see if she eventually developed breast cancer. They found that women who were exposed to DDT at specific periods in their life were more likely to develop breast cancer later in life. In other words, a woman's cancer risk wasn't just determined by how much DDT she was around, but when she was around it.

Timing matters when it comes to chemicals - like DDT - that disrupt the hormone system, said Sheela Sathyanarayana, associate professor of pediatrics at the University of Washington. These chemicals are riskier during periods of hormonal activity, like prenatal development or puberty.

"You have to look at the right time period for endocrine-disrupting chemicals," Sathyanarayana said. "I do think you could miss [their health impacts] if you weren't looking at the correct time period."

In the years since she started analyzing the women's frozen blood, Cohn has extended the scope of her original research to look at the health outcomes of the subjects' children. The mothers in the study had a fivefold risk of developing breast cancer before menopause if

they were exposed to DDT before puberty. Their daughters, who were exposed to DDT in the womb, had around a threefold risk of developing breast cancer, according to the findings of her 2015 study published in *The Journal of Clinical Endocrinology & Metabolism*

"I think [Cohn's] work is really strong," Sathyanarayana said. "It's probably the strongest evidence linking a chemical to breast cancer that I know of."

Now, Cohn is starting to look at the third generation: the granddaughters. As female babies are born with ovaries already full of millions of egg cells, a pregnant woman's

exposure could have impacts not only on a female fetus but on the grandchildren that result from that individual's eggs decades down the line. Many of the women in Cohn's third study generation are now in their 20s, so it may take several more years to determine if their cancer risk is also linked to DDT. If and when those women do develop cancer, Cohn wants to make sure her program is there to study the answers.

"We do what we can with the data that we're given, and we have to protect our opportunity to know more," Cohn said. "Now, it turns out that may be more important than we thought." 🍏



**ABOVE:** Pam Hynes holds an apple at her childhood orchard in central Washington. Hynes, who is a breast cancer survivor, was exposed to DDT as a child.

**LEFT:** Decades ago, farmers used DDT to manage pests in this central Washington orchard.



# THE PLANET MAGAZINE



**FROM TOP RIGHT:** Colbi Jensen, Emma Olpinski, Caroline Erdmann, Tony Peterson, Simran Dhaliwal, Makayla Piña, Warren Cornwall, Hannah Sperber, Joseph Koffel

**MIDDLE ROW FROM RIGHT:** Grace McCarthy, Eun-Hee Seo, Melanie Johnson, Kassidy Haluska, Ashley Koeffler

**FRONT ROW:** Quynh Trinh, Faith Owens, Savannah Smith, Laurel Messenger, Amelia Bineham

**PLANET REPORTERS NOT PICTURED:** Zack Jimenez, Sarah Ledwith-Zumwalt, Brodie Pirtle, Lauren Sanner, Amanda Bennett

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## HAPPY BIRTHDAY TO HUXLEY COLLEGE!

*From: The Planet Magazine*

It's the 50th anniversary of Huxley College and The Planet is happy to be a part of Huxley. We would love to have your support! Here's how you can help The Planet continue our tradition of excellent, accurate environmental journalism, run by students:

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to be included in the magazine! If you're a Huxley alumni, or someone who would like to tell an environmental story, see our Voices Around The Planet website for information about the kinds of stories we'd like to see.

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-The Planet



*Ask the questions that have no answers.  
Invest in the millennium. Plant sequoias.  
Say that your main crop is the forest  
that you did not plant,  
that you will not live to harvest.  
Say that the leaves are harvested  
when they have rotted into the mold.  
Call that profit. Prophecy such returns.*

*-The Mad Farmer Liberation Front (excerpt), Wendell Berry*