Spring 2008

The Planet, 2008, Spring

Page A. Buono

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Green Brew
A quencher for the conscientious drinker

Salmon Be Dammed
The toxic salvation of Columbia's finest

Your Next President
Environmental records and promises
Dear Reader,

Different relationships fill different needs—so goes the story of people’s individual connections and interactions with each other, as well as with the world around them. The motivation for some is based on years spent together, some on admiration and awe, others founded in curiosity and intrigue and still more based on money or necessity.

Spring issue of The Planet highlights a variety of people’s relationships with the environment and the shape they take: businesses relying on nature for innovative technology, a local hero who has dedicated most of his life to studying and teaching about the environment, the bleak story of a Northwest icon in peril. Unfortunately, in many of these relationships the environment is overwhelmingly the giver—and it receives virtually nothing in return. We see this in the story about a mass of waste floating in the Pacific and the pending addition of 32 species of slugs and snails to the endangered species list. On the flip side, programs like the one on Lopez Island exhibit the ability to have a mutually beneficial relationship. The story in this issue about the candidates should help voters make an informed decision about the commitment of the future president to the environment.

I hope this issue of The Planet gives you the chance to think about your connection with the world around you, and creatively pursue alternate ways of maintaining the quintessential relationship of our existence.

We appreciate your readership and welcome comments or questions in the form of email, letters or conversation.

Sincerely,

Page A. Buono

Corrections:
Photographer Sholeh Moll’s name was spelled wrong on the title page of the Winter issue.

Thank You:
We would like to thank all of the guest speakers, Jenny and Emily for their contribution and Bill for his faith in our abilities and commitment to both the magazine and all students involved.
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To reduce their environmental impact, breweries are taking steps to preserve the natural world the industry relies on.

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Dave Vitt, 28 holds a handful of hops at Fish Brewing Company. (Photo by Elizabeth Olwin)

Pale Ale is filtered at Fish Brewing Company in Olympia, Wash. (Photo by Todd Linder)
Whether shotgunning a PBR or pouring a high gravity microbrew into a pint glass, few people realize the amount of work and resources that go into making their beer, let alone the impact both can have on the environment.

From grain, hops, water and yeast to boiling, fermenting, bottling, labeling, packaging and shipping, brewing uses an astounding amount of energy and natural resources to arrive at your local beer aisle. The U.S. brewing industry has grown from 44 breweries in the late 1970s to 1,449 in 2007, many breweries are taking steps to minimize the environmental impact of an industry heavily reliant on a healthy environment.

All beer, from a light American lager like Pabst to a midnight black Guinness Extra Stout, requires energy and four natural ingredients: water, grain, hops and yeast. Beer is nearly 90 percent water, and its flavor characteristics are in part defined by the brewery’s water source. Water is also used to clean brewing equipment, bottles and kegs. A typical U.S. brewery uses four to six barrels of wastewater per one barrel, or 31 gallons, of beer. The U.S. brewing industry produced 211,489,982 barrels of beer in 2007, according to the Brewers Association. That equals 1.2 billion gallons of wastewater or nearly 3 million large hot tubs.

Some breweries are taking steps to reduce the impact. New Belgium and Sierra Nevada Brewery have both installed water treatment plants to help clean brewing waste before it is dumped into their municipal treatment plant. Every day at each of their on-site treatment facilities, the breweries process 84,000 and 300,000 gallons respectively. Inside these anaerobic environments, organisms introduced into the wastewater break down
As the U.S. brewing industry grew from 44 breweries in the late 1970's to 1,449 in 2007, many breweries are taking steps to minimize the environmental impact of an industry that relies heavily on a healthy environment.

Chris O'Brien, author of "Fermenting a Revolution: Drink Beer and Save the World," proposes some ways to reduce the impact of the shipping and packaging process of beer. O'Brien introduced the concept of "beer-o-regionalism," which is consuming beer in your local area to cut down on the waste created by packaging and shipping beer. By drinking locally, people support their local breweries and strengthen their local economy.

Breweries continue to reduce their craft's environmental footprint. Studies are being conducted to reduce wastewater, recycle materials, explore the life cycle of bottles and improve shipping methods. Sierra Nevada sustainability coordinator Cheri Chastain said it is important to think of new ways to minimize breweries' waste.

"Our industry relies so heavily on the natural world that we have to take steps to protect it," Chastain said.

So the next time you're sipping a pint, take a moment to reflect on all the work and time it took to get in your hand, and don't forget to recycle the bottle or can.

Luke Widtfeldt studies journalism and public relations. He has been published in The Western Front.
Meet Al Hanners, who at age 91, was presented with the 2008 RE Sources Environmental Heroes Lifetime Achievement Award.

Hanners may not be faster than a speeding bullet and he certainly can't leap tall buildings in a single bound — he'll be the first one to tell you that he moves rather slowly these days. But behind his thin, snowy white hair and matching bushy eyebrows is a man who has devoted nearly a century to learning, teaching and sharing about our planet.

"He's a person that is an inquiring mind — he just constantly wants to learn about new things," said Vikki Jackson, a close friend and colleague of Hanners' since the early 1990s. "He's 91 now and he can still never be satisfied with the status quo. It's amazing that he can't just sit back and put his feet up."

Hanners is the fifth person to be awarded the lifetime achievement award in the six years since RE Sources created the Environmental Heroes program, said Crina Moyer, the program director for RE Sources.

Hoyt said the award begins with a nomination from someone in the community. From there, the nomination goes to a panel made up of board members, employees and other community members, generally former winners, who make the decision.

"We're recognizing [the winners] as being great stewards of our community who show passion for our environment," said Megan Artz, the outreach and membership coordinator at RE Sources. "It's just a way for them to be thanked and highlighted for their efforts."

And what an effort Hanners has made over the years.

Hanners doesn't like to accept secondhand information, but prefers to figure things out for himself. In fact, Hanners, who has been considered the leading expert on willows in the Northwest, has never even taken a biology class. He taught himself.

"It was a blessing, because I wasn't brainwashed," Hanners said of his lack of formal education. "Some of it was so God-damned complicated. So I did it my own way; instead of sticking to what some biologist sitting in an office said, I went into the field."

Hanners went into more than the field; he explored almost every field he could. Armed with his pick-up truck, canoe, microscope and camera, he trekked through mountains and backcountry, paddled through lakes and oceans, camped, discovered and dug up all sorts of plant species. He didn't like the way textbooks were written, so he
wrote his own. He wanted to make nature easier to understand.

"I felt that if people can't identify plants, they can't care about them," he said. "When you care about it, you don't want it to get eliminated."

His main research focuses since he began studying nature have been willows and wetland plants, said Marie Hitchman, who has known and worked with Hanners since he moved to the Northwest from Toronto, Ontario in 1981.

"He has a very curious mind," Hitchman said. "He's always wanted to tackle things that other people didn't want to deal with. At one point he took it upon himself to identify and locate the 21 species of willows in the state of Washington and he managed to locate about 20 of the 21, which is a feat."

Hanners is very straightforward about his accomplishments and blunt about what he feels he should get credit for, but he's also quick to say he's had help. He's gotten assistance from friends, people like Jackson and Hitchman.

He's proud that some of his writings have reached the internet despite the fact he never learned to type. His more than 70 articles for Whatcom Watch were written in long hand and transcribed for publishing, as were his books, such as "Northwest Beginning Birding," which he wrote for the local Audubon chapter in the 1980s. Jackson and Hitchman have helped him publish some of his works on his various studies, but pictures are his pride and joy.

Hanners took photos for books he's written and donated his pictures for use on the RE Sources Web site and at Western's Herbarium. Hanners has photographed 25 species of marine algae, 55 different marine animals and 279 species of native plants.

He became a self-proclaimed naturalist after moving to the Pacific Northwest, but said he's always been interested in nature.

Hanners grew up on his grandfather's farm in Wisconsin because his father died from pneumonia a day after he was born. He graduated from high school at 16 and worked as a farm hand for two years before heading to college.

Hanners attended the University of Wisconsin-Oshkosh and then received his bachelor's and masters degrees in geology from the University of Wisconsin-Madison. He attended Kansas University to work on his doctorate, but was called away during World War II to work for the government at the U.S. Coast and Geodetic Survey in a magnetic station in Pearl Harbor.

He spent most of his career traveling the world as an oil geologist for Texaco and was, at one time, the Chief Geologist for all of Latin America.

"He used to mesmerize me with amazing stories about going into the jungle exploring for oil," Hitchman said. "They'd literally go flying in on a little air strip to go tromping around looking for oil in the middle of the jungle."

Texaco sent him to a variety of places including Latin America, Canada and the Middle East, but Hanners said his work abroad was a product of the times.

"Why did I work foreign? Because I could get a job," he said. "Have you ever heard of the Great Depression? Well, I grew up in it."

Hoyer said she didn't think working as an oilman affected Hanners' eligibility for the award.

"You can't really fault someone for doing something that we really didn't know was bad at the time," Hoyer said.

Hanners retired in 1981, and moved from the East Coast of Canada to the Northwest and became more involved with nature. Since then he's written books, such as his birding guide, which has been almost a bible of sorts for birders, and columns for Whatcom Watch. He was also the president of the local chapter of the Washington Native Plants Society and the vice president of the local Audubon chapter, has campaigned for politicians and sailed throughout the world.

"One thing I always wanted to do was pass on what I've learned to other people," Hanners said. "I learned when I was a child that I should leave the world better than I found it. I think you can't do that now, because the world's in a whole hell of a mess. It doesn't make me feel good, but it makes me feel better because I'm doing what I can."

These days, Hanners sticks more to his own home than the field. His health isn't the greatest and he's a few steps slower than he used to be, but he's very proud of the fact that at his age, he's still licensed to drive.

He doesn't have the same passion to write anymore, but said he plans to publish his memoirs if he can overcome a nagging case of writer's block.

He likes to keep in touch with his four children and loves to watch the chickadees, his favorite birds, come to visit the hand-made birdfeeders he crafted for his backyard.

He loves to read and spends a lot of time in his den where the walls are lined with bookshelves. Novels, magazines and newspapers spill onto his armchair, table and floor and a television sits centered in front of an inviting couch. He's comfortable, a bit lonely since his wife passed away last November, but always eager to learn. He still has a feisty spirit which leads him to challenge anything and everything that he disagrees with, Jackson said, but that's just Al.

"He's definitely an independent individual: he knows what he wants to say and he works very hard to substantiate whatever he's going to do," she said. "He's very opinionated, but in a wonderful way. He makes sure whatever he's going to say he can back up. He can be stubborn, but if he feels he has good grounds he sticks to it. If you challenge it, you better come back with equally good ammunition. It makes for some good debates."

Hanners said he's honored to have received the lifetime achievement award from RE Sources. When he took the stage to accept the honor April 19, dressed in his typical stacks and thick wool sweater, he brought the crowd to its feet — twice. Echoes of applause, shouts and hollers of appreciation echoed across the walls of the Northwood Hall. Two of his four children were able to attend and both watched with pride as their father's achievements were honored.

Al Hanners may not be a comic book icon like Superman, but to the people who know him, he's a hero in his own right.

"He lives the way he talks about things. He's very conscientious in the things he does, who he votes for, how he lives his life and goes about what he does in his life," Jackson said. "He is an environmental hero in the sense, not as a public entity and being out there promoting all these different things as an activist, but more privately in educating people."

Casey Gainer is a journalism major. He has been published in The Bellingham Herald, The San Diego Tribune, Klipsun Magazine, The Western Front and The Whatcom Horizon.
Business seems harmonious at The Bagelry where people come to have a bagel and a cup of coffee, and prepare for the day ahead. Construction workers in paint-stained Carhartts lean against the window counter and teenagers snack and gossip before school. Even the delivery man gets in line after dropping his shipment off, enticed by the smell of toasted bread and uncooked dough. Franz Kafka wrote that all life’s questions disappear when the mouth is full, which explains why a notice taped to the cash register warning patrons of higher food costs is attracting questions.

Written by Kelly Lemons
Photos by Kevin McMillan

Making bagels is what owner Ken Brian does best, but he’s been forced to raise prices because of soaring flour costs. A 50-pound bag of flour has ballooned from $9 to $26 in the last 14 months. He’s never seen anything like it during the 24 years he’s been in business. And these prices may last for ten years as food shortages continue across the world.

“I can hardly keep up,” Brian said. “If this keeps up I’ll be running up and down that ladder [to change menu prices] like a gas station attendant.”

Brian said his customers have been sympathetic to the 15 cent increase per bagel, but it remains unclear if and when these price increases will stop or when people will stop buying. One thing is clear: the days of cheap food are numbered, if not over, and many are blaming biofuels.

Biofuels are fuels such as ethanol and biodiesel obtained from corn and soybean crops. But when resources are limited, the choice between food and fuel can be charged. A 2008 World Bank report
states that the grain needed to fill an SUV tank with ethanol could feed one person for a year. On April 29, scientists at the International Food Policy Research Institute suggested a temporary halt of biofuel use could cut food prices by 20 percent.

The rising cost of staple food crops is one of the biggest challenges to growing both food and fuel. The amount of crops diverted toward ethanol and biodiesel is nowhere near the projected levels needed to meet the goals of legislation passed over the last few years, yet this nascent industry is already impacting food costs worldwide.

Higher gas prices are raising the cost of crop production, a cheaper dollar is increasing demand on American crops, and demand for corn ethanol is contributing to high costs for wheat, corn and soybeans.

Farmers in eastern Washington may have found a way to fuel cars without driving up food prices by planting alternative crops that don't compete with staple crops for land. They are taking advantage of obscure and rarely used plants that can be grown without replacing existing food crops or using the prime land on which food crops grow.

Washington State adopted biofuel legislation in 2006 to lower greenhouse gases, reduce America's reliance on foreign oil and help farmers. The federal government passed the Energy Independence and Security Act (EISA) in 2007, among other things, toward creating a 36 billion gallon biofuels market in the U.S. Biofuels can be obtained from a variety of existing crops, and fit easily into our infrastructure while emitting up to 70 percent fewer pollutants. However, some opponents say increasing fuel efficiency standards by one mile per gallon could accomplish the same reductions.

Charles Antholt, economics professor at Western Washington University with more than 20 years experience in international agriculture, said the high prices for crops reflect traditional supply and demand models. Biofuels interact with the market like any other product, and now that crops are being diverted away from wheat and soybeans to grow corn, price increases should be expected.

Antholt said the market is intended as a way to limit the unknows for farmers and secure prices for next year's crops. But when reserves become low, traders who are buying those "futures" will bid up the actual price as they try to predict how much of a crop will be needed to satisfy demand.

The effects on crop prices are startling. Corn and soybeans have more than doubled over the last two years, and wheat has almost tripled.

"You've got to be careful with biofuels," Antholt said. "The big problem is corn ethanol. It's not a disaster waiting to happen, it's happening."

And it's happening with the best crop production on record. The International Grains Council reported a grain harvest of 1.6 billion tons last year, the highest ever recorded. Nonetheless, demand is still outweighing supply and the total stock of grains declined by 53 million tons. Considering the U.S. used 30 million tons of corn for ethanol production, it's clear biofuel production is raising feedstock prices, according to the World Bank.

Using the most optimistic conversion rates for last year’s harvest, corn was converted into 2.9 billion gallons of ethanol, well below the 15 billion gallon goal of the energy act. There is not enough land to grow the corn-based ethanol needed to replace petroleum, so researchers are asking where the rest of the ethanol is going to come from and if there are alternatives for farmers who want to cash in on the biofuels market.

Hal Collins from the USDA and Steve Fransen from WSU work with 20 other scientists at a research center in Prosser, Wash., trying to answer that question. The center tests 14 different crops on 130 acres throughout Washington State devoted to research and demonstration projects for biofuels.

"We want to find out what kind of alternatives we have for biodiesel," Collins said. "The whole issue of fuel for food is muddled. There is a lot of criticism that the biofuel industry is causing food shortages and it's not totally true."

Collins said there are more than six million acres of cropland that could be used for ethanol and biodiesel crops in Washington, but said it is unlikely most of that land would be devoted to biofuels because farmers would lose too much money.

"The reality is that farmers will need a subsidy or incentive to grow crops for biofuels right now because they can get $12 for a bushel of wheat rather than 20 cents a pound for canola," Collins said. "They're gonna grow wheat."

A mixed blessing. While farmers in Washington won't switch from staple food crops to grow biofuels, there is little incentive to grow biofuel crops at all without subsidies like those in place for corn-based ethanol.

In order to reach the 2 percent mandate, Washington needs 300,000 acres of canola. Sounds...
reasonable. However, to meet the 20 percent goal, three million acres would be required. That's half of all available farm land, but Collins is sure current farming practices will keep that from happening.

The plan is to create techniques for growing a variety of crops for multiple markets. Collins and Fransen said crop diversity can give farmers flexibility to choose crops so that everyone isn't farming the same crops, which wreaks havoc on the market.

"If we can get biodiesel from a bunch of different crops then the markets won't get saturated and the prices won't drop out from beneath them and render their crops worthless," Collins said.

Rene Featherstone from Lentz Spelt Farms, fifty miles south of the Grand Coulee Dam, is growing camelina, a short, hardy herb with tiny yellowish seeds that smells like broccoli when crushed for oil. This crop is generating a lot of excitement at the research center, and the Lentz Spelt Farm has gone from 10 acres three years ago to 170 acres this season. The crop performs well in marginal conditions and doesn't need fertilizer or pesticides to grow in Washington.

The 240 acres at the Marlin farm has been in the Lentz-Hardt family since 1898, but when the land couldn't grow wheat competitively anymore, Featherstone suggested camelina. It grows well without irrigation in Central Washington's dry climate, and although it contains less oil than canola, it has more uses. Featherstone said they sell camelina as a food supplement to Barlean's in Ferndale and for biodiesel to Natural Selection Farm in Sunnyside.

"Everyone ignored this old oil seed from the Bronze Age," Featherstone said. "It can be used to make soap, perfume, skin care products, and livestock feed, all of which make more money than biodiesel."

Featherstone said that politicians pay lip service to biofuels in Washington State. There are low interest loans for people who crush the seed, and people who blend biodiesel get a penny tax cut for every percent of biodiesel added to petroleum fuel but nothing goes directly to the farmer.

Ted Durfey, who currently owns the only in-state seed crusher Featherstone can send his seeds to, has a more cavalier outlook on biofuel's impact on food prices.

He said biofuels create additional crops for farmers in the area, but it's important to know camelina will not interfere with staple crops like wheat.

"If you have marginal ground, you're not going to grow wheat or any other crop," Durfey said.

"Camelina produces on very marginal land and it's a very cheap crop to grow."

His $1.2 million crusher can produce up to 2,000 gallons of biodiesel per day and he said there's 2,000 acres of camelina in Yakima and another 4000 acres in Morrow Ore. coming to him, which should bring in around 480,000 gallons of biodiesel.

With three more crushers expected to go on line in the near future, demand for camelina and other oil seed crops is likely to increase. There is an estimated one million acres of marginal land in Washington that could prospectively bring in around 80 million gallons of biodiesel, roughly 30 million gallons more than needed to meet the 2 percent mandate. But much of that land is in the Conservation Resource Program, which has become critical habitat for many species in the state.

Americans have more choices than growing crops for food or fuel. We are substituting one tradeoff with another in order to meet reductions only though biofuels, when efficiency and conservation may accomplish the same goals.

Kelly Lemons is an environmental journalism and creative writing major. He has been published in The Planet, The Western Front, The Bellingham Business Journal and The Blooming Wistonia.
Innovations
Written By Jessie Knudsen

Suspended from translucent threads of a ghostly hammock, the argiope aurantia, commonly known as the North American yellow garden spider, bounces on a carefully constructed circular web that hangs heavy with droplets of dew. The morning sun illuminates her prized creation, as one of nature’s most mysterious and innovative engineers waits patiently for breakfast to arrive.

The recipe for the spider’s silk was once a mystery, but humans have finally unraveled its secret. This biomaterial has motivated scientists to dedicate years of research to understanding the physiology of a creature no larger than a silver dollar. The ongoing effort to synthesize spider silk is just one example of a growing trend, known as “biomimicry,” which is blurring the line between nature and technology.

Biomimicry is modeling modern innovations after systems, designs and technologies found in nature. Public recognition of environmental issues such as climate change and dwindling natural resources has mobilized international efforts to incorporate sustainability and nature into the future of design. Humans are expanding their view of planet earth from unconditional provider to include another role: genius in effective design.

Biomimicry, meaning ‘to imitate life,’ was coined in 1998 by author and environmental consultant Janine Benyus. According to her first book, “Biomimicry, Innovation Inspired by Nature,” the principles of biomimicry are rooted in our ability as humans to adapt to the current state of our environment using nature as our guide. As innovative as it may seem, this concept has been present in scientific research for years, according to Arunus Oslapas, professor and the industrial design program coordinator for the engineering technology department at Western Washington University.

Oslapas first experimented with biomimicry at the University of Illinois in 1984. Using research on natural hinges, he created the mechanical equivalents of both dragonfly wings and crab claws, which he later applied to the design of a foldable backpack tent.

The rattlesnake fang was the inspiration for the hypodermic needle, submarines use the principle of the fish’s bladder as an underwater ballast and Velcro was inspired by a burdock burr caught in a Swiss engineer’s sock, Oslapas said.

“The impact that biomimicry has had on the field of industrial design is profound; but on the same token it’s so logical to copy nature,” Oslapas said.

But only in the past decade have major clients such as NASA, General Electronics and Boeing contracted consultants like Benyus begun to work alongside designers and engineers to draw inspiration from nature.

The Nexia Technologies BioSteel spider silk fiber program in Canada has led the race to commercially produce synthesized spider silk since 2002, according to their Web site. Researchers isolated a specific protein from spider DNA and transferred it into a goat genome. By extracting fibers from the goats’ milk, they were able to spin them into silk.

Although BioSteel silk is only in the beginning stages of development, scientists hypothesize that a perfected version of the biomaterial would be

Humans are expanding their view of planet earth from unconditional provider to include another role: genius in effective design.
biodegradable, flexible, water proof, and five times stronger than steel. Proposed spider silk products like bullet-proof fabric, bottles, and artificial ligaments could revolutionize the medical, textile and industrial fields.

The Nike Air Talon is a men's lacrosse cleat that gives athletes superior lockdown and gripping capabilities due to its structural similarities to a talon. In her book, Benyus said nature is the greatest inventor. Luxury car manufacturer Mercedes-Benz might agree. It is no coincidence the design of the 2008 Bionic concept car bears a striking resemblance to a scaly underwater reef-dweller known as the boxfish. Engineered by a team of automotive researchers, biologists and bionic scientists, the Bionic is the product of a merge between biology and technology.

Modeled to mimic the smooth contours of the tropical boxfish, the Bionic can maintain a maximum speed of 190 mph, according to a Mercedes Benz press release. The fuel-efficient Bionic also borrows the fish's minimal intake for maximum performance approach to energy consumption. The direct-injection diesel engine consumes 4.3 liters of fuel per 100 kilometers, making the car 20 percent more economical than other mid-sized competitors.

The most interesting biometric design Oslapas said he has seen a student produce was also inspired by fish. The underwater breathing offish inspired the air purifying jacket that senior Noah Diulios created for a project.

"[The jacket] incorporates gills on the front which take in air, purify it and redirect the clean air into the user's face," Oslapas said.

The "Lotus Effect" was trademarked in 1997 by a group of German botanists who observed a network of microscopic points coating the leaves' exterior. Because both water and dirt particles are repelled by the waxy surface, dirt particles are carried away by water drops like debris picked up by a rolling snowball.

The texture of the lotus leaf has been replicated and marketed worldwide as a cleaning product for kitchen utilities, walls and bathtubs. German-based paint manufacture Sto-Lotusan introduced house paint that guarantees a clean exterior for five years without the use of detergents or sandblasting. The product received conflicting reviews from consumers in Europe and Asia concerning the longevity of its effect but is currently being redeveloped at Sto-Lotusan for expansion as an auto paint and roof protectant.

Since 1998, biomimicry has been adopted by both large corporations and individuals as a useful strategy in efforts to preserve the planet. Possibilities currently being explored for the future include using cell-sized robotic devices to "grow" products by manipulating raw materials on an atomic level, batteries that grow like abalone shells and entire self-sustaining communities.

However, according to Benyus, the underlying motives of the humans who invent and manufacture natural innovations will ultimately decide biomimicry's effect on the environment.

"The aero plane was inspired by bird flight, a wonderful example of biomimicry, but it was quickly employed to drop bombs on people." -Janine Benyus, "Biomimicry, Innovations Inspired by Nature."

Jessie Knudsen is a senior majoring in public relations. She has been published in The Western Front.
In a wildlife park in Eatonville, where large bison wander free and bighorn sheep climb the hills, a tiny animal is being carefully monitored. In a quiet enclosure, away from the curious eyes of the public, the endangered Columbia Basin pygmy rabbit is staging a comeback.

After nearly becoming extinct, the rabbits were listed as endangered in 2001. Disease, predation, habitat loss and a dwindling gene pool all contributed to the near demise of the population. They were dying off more quickly than they were reproducing, so scientists stepped in and all 16 of the last wild rabbits were captured and secured.

Now, a breeding program involving Northwest Trek Wildlife Park, Washington State University (WSU) and the Oregon Zoo is giving the bunny population a boost so they can be released back into the wild.

The rabbits are being crossbred with a stronger population of Idaho pygmy rabbits in an effort to fortify their immune systems. Because this population was isolated from other pygmy populations by the Columbia River, it’s possible that some inbreeding may have occurred. Also, as dams were built in the Columbia River, more land became usable for farmers, resulting in less land for the rabbits, according to The Scientist magazine.

In the wild, rabbits depend on sagebrush for food and soft soil for digging burrows. They are not just the smallest rabbit in North America, but the only one known to dig burrows. Other rabbits typically build nests above ground.

This sagebrush habitat is home to other animals besides the pygmy rabbit, including sage grouse, sage sparrows and Washington ground squirrels. The fact that pygmies are on the decline indicates that other animals could also be in danger. The dramatic decrease of this species from its historic range signals an unraveling of the ecosystem, said Dina Roberts, an endangered species biologist with the Washington Department of Fish and Wildlife, in a written statement.

The rabbits are not just cute, they are a vital part of the food chain and their absence can affect larger animals that in turn lose a food source, said Lisa Shipley, a wildlife ecologist at WSU. It may be difficult to see all that’s going on in arid Eastern Washington, but there is a desolate beauty if you look closer, she said.

“It’s not as charismatic but just as vitally important as some of our old-growth forests,” Shipley said.

Understanding how to maintain important species in ecosystems makes it possible to learn how to modify human actions and balance human needs with preserving Washington’s amazing natural diversity, Roberts said.

Things are looking up for this beleaguered bunny. With the Idaho rabbits introducing new genes into the population, the rabbits are beginning to multiply. It may seem strange to think that rabbits could have trouble with breeding, but the pygmies are a challenge.

Despite their cuddly appearance, they can be aggressive toward each other, and in the wild they prefer a solitary existence in their own territory. Becky Elias, a research assistant at WSU, said the females especially can become hostile after mating, and want nothing to do with their partners.

Ed Cleveland, the head animal care technician at Northwest Trek, said they can’t even keep two litters in the same enclosure because of the fighting that would ensue.

The pygmy rabbits also have a distinct breeding season and smaller litters, Elias said, which makes them different from other rabbits that breed all year round. A pygmy mother may have just two litters of four kits in a year, while other rabbit species might have a few litters of seven or eight kits. With such small numbers, the wildlife workers at the breeding facilities are especially vigilant in taking care of the rabbits.

“With endangered species breeding, every one counts,” Elias said.

Health problems have also plagued the pygmy rabbits, so workers watch carefully for signs of trouble. Often, a rabbit might simply “look funny,” Elias said, and workers will only have a few hours to step in and rescue a rabbit before it dies. They do rounds every day, checking how much each rabbit has eaten and looking for signs of illness.

The pens at WSU are equipped with infrared cameras so workers can monitor the rabbits at night and intervene if there is trouble.

The life span is only about five years for a healthy rabbit, so anything the workers can do to keep them safe and healthy is beneficial. The rabbits are usually kept far from the noise and activity that visitors bring so that nothing can frighten them and throw off their breeding cycle. At Northwest Trek, Cleveland steps into a shallow pool of disinfectant before entering the area to avoid tracking in germs. They don’t use lawnmowers to maintain the grounds either, he said, since the noise might stress out the bunnies.

The workers try not to handle the rabbits too much, only entering the pens if there’s a problem with a sick rabbit or a mess that needs cleaning up. “They’re wild animals and we want to keep them wild,” Elias said.

Occasionally, however, a kit will need to be hand-
raised because its mother has died, or a sick adult will need some attention, and then it's difficult not to get attached. A full-grown pygmy only weighs about one pound, and these little balls of fuzz are pretty hard to resist.

"If I have to hand-raise any of them," Elias said, "I'm instantly in love with them."

The goal of the breeding program is to get enough healthy rabbits ready to go back into the wild so they can sustain their own population. In March 2007, 20 rabbits were released in Eastern Washington to see if they could survive and reproduce. Things did not go well, and within days most were picked off by predators—leaving only four females. There was some evidence that two litters were born, but there are no signs of any left in the wild.

There are no releases planned for this year because the numbers aren't high enough. Since so many predators find the bunnies tasty, workers need to build their breeding stock to at least 100 or more rabbits before releasing them. Then, perhaps, enough of them can avoid the coyotes, badgers, foxes, owls, and bobcats long enough to reproduce successfully.

Shipley said some releases in Idaho with non-endangered rabbits helped workers understand what works and what doesn't. Next time they might release pregnant rabbits and perhaps give them some supplemental food and create artificial burrows to give them a head start. Even the time of year might be an important factor.

"Obviously, you don't want to put them out when there's a hawk migration," Shipley said.

At WSU, expectant mother rabbits set up their natal burrows in a cozy greenhouse, since the warmer environment helps kits survive. All the rabbits get salads in the morning, made with fresh clover, dandelion and kale grown in greenhouses. At the Oregon Zoo, they're growing sagebrush, the pygmy rabbits' food of choice, because it's difficult to find growing in the wild.

It may seem like a lot of fuss for just one animal, but it's possible that by spending so much time learning about this unique rabbit and how to rescue it, an entire ecosystem might be saved. The pygmies are a warning sign.

Robin O'Neill is a journalism major and has been published in The Western Front.

The dramatic decrease of this species from its historic range signals an unraveling of the ecosystem.

A pygmy rabbit sticks its head out of a burrow at Northwest Trek.
For many of us, the defining image of the Pacific Northwest is a wild steelhead or Pacific salmon leaping white river rapids or darting through currents.

Though weary from swimming upriver and facing constant danger from predators, adult salmon and steelhead never stop. Only death prevents them from completing their lifelong journey from riverbed to sea and back again, where they spawn so the cycle can begin anew.

The scene embodies the region’s indomitable natural spirit as few others can. It’s found on many of the rivers that run from the mountains seaward, but not on the Northwest’s largest and most important river, the Columbia. Wild salmon and steelhead will likely never again leap the Columbia’s rapids.

Fourteen major hydroelectric dams clog the river. These dams produce much of Washington’s hydroelectricity and irrigation water, but have replaced rapids with reservoirs and turned the Columbia’s once-mighty current into a torpid crawl. Very few of these wild fish are left. Just a century ago the Columbia’s steelhead and Pacific salmon runs were the world’s most populous, but have been so depleted that 13 stocks are now listed on the Endangered Species Act.

Despite spending nearly $8 billion since 1982, federal recovery efforts have largely failed to reverse dwindling fish counts. An estimated population of more than 10 million wild fish in 1900 now numbers fewer than one million, most of which are artificially bred in hatcheries.

"We didn’t mean to kill them," said Michele DeHart, manager of the Fish Passage Center in Portland. "As a society, our intent was never to destroy. But we deluded ourselves into thinking we could have it all. We thought we could have maximum development and healthy fish runs as well."

PEOPLE FIRST, FISH SECOND

On May 5, the Bush administration released its latest plan on how federal agencies are to operate dams in the Columbia River, and efforts to revive wild salmon and steelhead populations are nearing a critical tipping point, said Todd True, an environmental lawyer with Earthjustice in Seattle.

The plan calls for the Bonneville Power Administration, one of three federal agencies in charge of managing the Columbia, to spend approximately $600 to $700 million every year to increase stocks of hatchery-raised fish by controlling predatory birds, fish and animals and improving habitat damaged by development.

In 2003 and 2005, U.S. District Court Judge James Redden in Portland threw out similar plans because they didn’t address what he felt was the principal culprit behind the salmon and steelhead’s decline—fluctuating river flows.

When demand is low, like at night when lights are off and people are asleep, the storage reservoirs rise and the current slows. The reservoirs fall and the current quickens as demand rises in the day. This gives the agencies an economist’s dream of always having the right supply of product to meet the present demand, but devastates juvenile salmon migrating downstream, DeHart said. Those fish need consistent, natural flows to propel them to the ocean, she said. They need the Columbia to be like a river.

Wild salmon and steelhead will likely never again leap the Columbia’s rapids.

Judge Redden agrees, and said he has ordered the agencies to spill more water over the top of their dams, which wastes money — it’s water that could irrigate crops or produce hydropower — but helps fish.

The latest operating plan largely ignores his demand, said True, who represents Earthjustice in the dispute. Redden could again declare the operating plan not in compliance with the Endangered Species Act, sending the process back to square one.

The fight for increased flows for fish has gone on in federal courts for almost two decades, and doesn’t appear close to resolving itself. But the constant throughout has been: The lawyers keep arguing. Salmon and steelhead keep dying.

A BALANCING ACT

To DeHart, saving the fish boils down to a bal-
The river remains a finite resource, so water must be reallocated to balance human uses with fish needs.

"The problems on the Columbia have always been there," she said. "And now we don't have any easy little things left to do. Fixing this is going to require big actions that need courage."

On a river as big as the Columbia this is no easy task. The river is one of world's largest; from its headwaters in the snowpacks of British Columbia, the river flows 1,200 miles to the Pacific Ocean. It has the greatest flow of any American river aside from the Mississippi. The 180 million acre-feet of water that flows down the Columbia every year could cover California a foot deep.

The number of people using the river's resources further complicates the balancing act. People across the Pacific Northwest and as far south as Los Angeles depend on the Columbia for power. In Washington, hydroelectricity accounts for 72 percent of the state's energy consumption, and the largest contributors are on the Columbia, according to an April 2007 report from the Washington Department of Ecology.

And with warming climate around the globe, greater pressure will be put on hydroelectric generation because it produces no carbon emissions, which leaves less water to be spilled over the dams for the fish, Dehart said.

THE OLD AND THE NEW

Since the late 1950s, when the majority of dams were completed, two generations of Pacific Northwest residents have lived never knowing the Columbia of old; before its flow became harnessed pools, before its bottom was dredged to provide smooth passage for barges as long as football fields.

The difference between the old and the new is lost on most who haven't lived here long enough to know or care, but not on the wild salmon and steelhead.

Of the Columbia's 1,200 miles, only the 51-mile stretch of the Hanford Reach, near the Tri-Cities in Central Washington, resembles the river before it was dammed and dredged. Accordingly, it's the principal spawning ground for the fall runs of Chinook salmon and steelhead.

These runs were the river's largest and once

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**Stage**

- Salmon egg
- Ocean stage
- Spawn stage

**Threat**

- Lack of oxygen, polluted water
- Fish, insects, birds
- Slow current, dam turbines
- Under-development, predators
- Fishermen, sea lions
- Lack of spawning ground

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Bonneville Dam (Photo by Todd Linder)
Illustration by Anna Locke
"We didn't mean to kill them. As a society, our intent was never to destroy. But we deluded ourselves into thinking we could have it all."

numbered in the hundreds of thousands. Today, about 50,000 mostly hatchery-raised fish will return to spawn.

The Hanford Reach is the last connection to the river they once instinctively knew. The Columbia has been so drastically altered by human hand in the last century it's now alien terrain.

At first glance it's apparent why this stretch is not dammed or dredged. Not even a mile away from the river, a small cluster of buildings resembling a barn and silo rise out of the desert. It's the Hanford Nuclear Site, one of the most toxic and radioactive sites in America.

A tank buried in the desert at Hanford leaks radioactive waste, and ground water washes a small portion into the river - right past spawning grounds holding millions of salmon eggs. As the eggs hatch and some of the Columbia's last born-in-the-wild salmon begin swimming downstream, they will first be propelled by a current tainted with radioactive particles.

This will be the least of the juveniles' problems on their migration downstream. Still to come: predatory birds and fish, hydroelectric turbines in four dams, and the risk of being diverted into an irrigation canal and spit out on a farm in Northeast Oregon, dying from a lack of oxygen because the current meets the slack water of a reservoir, among many others.

Many will die. Some will pass through dams and be diverted through a series of pipes into the back of an Army Corps of Engineer truck or put on a barge. These will take them safely to the ocean, but will not instill the knowledge of the river's terrain the fish need on the journey upstream. Few will actually navigate the river by themselves.

In 2000, by order of President Clinton just before he left office, the Hanford Reach became a national monument akin to the Lincoln Memorial or the Washington Monument.

Whereas the monuments in our nation's capital enshrine its greatest heroes, this 51-mile stretch of free-flowing river, memorializes one of its greatest environmental tragedies.

THE FUTURE

Balancing the allocation of resources on the Columbia will not be easy, DeHart said. This task is not for the fish advocates or the government agencies, she said. It's for the citizens of the Pacific Northwest and arrives on their doorstep every month in the electric bill.

"This would be hard for me to do everyday if I thought it was hopeless," she said. "There's a lot of possibilities for the future. I think the people of the Northwest won't let a resource like the fish, which defines life here, go."

Peter Jensen studies journalism and political science. He has been published in The Planet, The Bellingham Herald and The Oregonian.

Hanford Reach (Photo courtesy of Michael Jensen)
The sun that rises on the morning of Nov. 4, 2008 will greet the 44th president of the United States. It will also greet a world growing hotter, dirtier and more crowded every day.

But the horizon is potentially brighter. Presidential candidates Hillary Clinton, Barack Obama and John McCain all have plans to lower carbon emissions, curb climate change and boost renewable energy use. A closer look at their environmental platforms and past voting records hint at future possibilities in a society going “green.”

Environmentalism is no longer just for hippies, said Anne Jansen, Chapter President of Western Washington University Young Democrats. “Environmentalism has been de-stigmatized,” Jansen said. “It’s almost become chic.”

The American public clearly desires an administration willing to tackle tough environmental issues. Four out of five Americans support a five-year plan to phase out carbon-based energy, according to a poll by the Opinion Research Corporation. In the poll, 92 percent of Democrats and 78 percent of Republicans agreed that a national energy strategy should focus on aggressive expansion of renewable energy sources.

All three candidates have experience in environmental legislation, including energy and climate change policies. McCain was widely recognized by the environmental community for creating the first congressional climate-change bill with Sen. Joe Lieberman (I-Conn.) in 2003. Obama and Clinton both back a current bill that is considered the “gold standard” of climate law.

In past congressional elections Clinton, Obama and McCain were supported by large environmental groups. The League of Conservation Voters (LCV) named Clinton an environmental champion during her 2006 re-election to the Senate, and Obama was one of six state senators to receive a 100% Environmental Voting Record Award from the Illinois Environmental Council in 2003. McCain was also endorsed by the LCV for re-election to the Senate in 2004.

Overall, Obama has a lifetime voting record of 96 out of 100 on environmental issues, Clinton has a lifetime score of 90, and McCain a score of 26, according to the LCV. While ranking below the two Democratic candidates, McCain is above his party’s average.

But behind bipartisan agreement on the value of stronger environmental policy, significant differences exist between the Democratic and Republican candidates’ environmental platforms, as well as between Clinton and Obama.

Nuclear energy policy is the biggest divide. Both Democratic candidates are apathetic to increased nuclear energy use. Clinton does not support growth in nuclear power, and Obama is concerned about hazardous waste disposal, according to their campaign Web sites.

On the other hand, McCain’s climate and energy proposal promotes nuclear energy, according to his campaign Web site. In an interview with Grist, an online environmental news organization, McCain said that nuclear power is a necessary part of any equation to reduce greenhouse gas emissions.

Even so, the Republican candidate said he supports renewable energy, increased biofuel use and higher fuel-economy standards. McCain’s campaign also emphasizes the importance of linking the economy to a healthy environment, and believes many solutions lie in market-based approaches and technological innovation.

Despite the green veneer, McCain’s energy proposals are vague and his voting record is patchy. In 2003 he voted against an energy bill that would have required 10 percent of electric utilities to come from renewable resources by 2005, according to LCV. McCain also told the LCV that while he
Obama Clinton McCain

Fuel Efficiency
- Supports 40 mpg by 2020 and 55 mpg by 2030
- Supports 52 mpg by 2026
- Supports, but has no targets

Renewable Energy
- 25% renewables by 2025
- No renewable energy targets

Energy Consumption
- 20% reduction from projected levels in 2020
- 50% reduction from projected levels 2030
- Supports efficiency but has no targets

Int’l. Climate Change Treaty
- Wants high level talks with India and China
- Will only act if India and China do

Carbon Emissions
- 80% reduction by 2050
- 65% reduction by 2050

Pollution Cap & Trade
- Supports pollution cap and auction of permits
- Supports pollution cap.

is opposed to drilling in the Arctic National Wildlife Refuge, the status of the area should be reevaluated for multiple uses.

Unlikely McCain, Clinton and Obama have specific policy plans. In particular, both Democratic candidates call for carbon emissions 80 percent below 1990 levels in the next 40 years. They also want to boost fuel economy standards to 40 mile per gallon in the next ten years.

Clinton wants to increase fuel-economy by an extra 15 mpg over 20 years, while Obama wants to invest $100 billion more than Clinton in renewable energy.

Leadership style is a major difference between Clinton and Obama. Troy Abel, an environmental policy professor at WWU, wants the United States to be a world leader in environmental policy, but said it would depend on our next president. Abel supports Obama because he said Obama’s imagination will attract new people.

“We were leaders in the ‘70s,” Abel said. “I don’t think we’d be doing that in a McCain administration, or with Hillary.”

Obama is calling climate change one of the greatest moral challenges of this generation. He said he sees environmental issues as the number one national priority, and “part and parcel” to other issues like health care and poverty, according to an interview by the LCV.

In Congress, Obama introduced the Health Care for Hybrids Act, which would give automakers money for health care, so long as they invest their savings into raising fuel-efficiency. Like McCain, he wants to use incentives to encourage businesses to get greener.

On the international front, Obama wants to create a Global Energy Forum where the world’s major polluters can come together and focus on global energy and environmental issues. Domestically, he plans to create a skilled “green” workforce by transitioning blue-collar jobs from old polluting industries into green-color jobs in clean energy technology.

What also sets him apart from Clinton is his focus on environmental issues beyond energy and climate change. While they both want to reinstate the “polluters pay” superfund program and the 2001 Roadless Area Conservation Rule, Obama consistently votes to prevent offshore drilling and protect beach and marine habitat, which Clinton has not.

Jean Melious, an environmental law professor at WWU, said that good speeches don’t always translate into good policy, especially if the new president isn’t experienced enough.

“There’s a potential problem with Barack being an outsider,” Melious said. “He doesn’t have the contacts.”

One of Clinton’s energy plans would use money from oil companies to fund renewable energy research and development. She also wants to retrofit and modernize 20 million low-income homes to spur the green building industry and reduce electricity consumption.

During her time as First Lady, Clinton worked with Sen. Barbara Boxer (D-Ca.) to propose a Children’s Environmental Protection Act, to make health and safety standards closer to levels that protect children. On her Web site, she said she

"We were leaders in the ‘70s," Abel said. "I don’t think we’d be doing that in a McCain administration, or with Hillary."
What kind of power should we be using right now?

Celia Jackson is an environmental policy major. She has been published in The Planet.
Imagine an island of trash nearly the size of 8,500 Bellinghams floating in the middle of the ocean.

The water's awash with toothbrushes, laundry baskets, trawling nets, plastic bags and miles of plastic cord mixed with plastic bottles, rubber ducks, gym shoes and cigarette lighters.

Welcome to the edge of the Great Pacific Garbage Patch, the world's largest floating trash heap, 1,000 miles west of the continental U.S. and 1,200 miles north of Hawaii.

Coined 'Great Pacific Garbage Patch' by flotsam expert Curtis Ebbesmeyer, it collects trash brought by the swirling currents of the North Pacific Subtropical Gyre.

Between 70 and 80 percent of the trash in the Garbage Patch comes from a multitude of shorelines, the rest from neighboring waters and ocean vessels, swept into the ocean by storms and wind, according to Charles Moore of Algalita Marine Research Foundation in Long Beach, Calif.

Propelled by slow, clockwise-swirling ocean currents, the Garbage Patch engulfs random objects like an immense, nebulous amoeba. It can also split and 'reproduce' much like an amoeba, its plastic spawn washing ashore on beaches of Hawaii, Washington and Japan, according to Ebbesmeyer.

The Central Pacific may seem a million miles away, but the trash horizon is moving closer. The Garbage Patch likely exemplifies the future of many marine areas: subtropical gyres, potential swirling trash purgatories, cover 40 percent of the world's oceans, according to the book "Geosystems," by Robert Christopherson.

The Northwestern Hawaiian Island Archipelago is home to 7,000 species. A quarter of them live nowhere else: corals teeming with fish, invertebrates, and threatened green sea turtles. A pod of nearly 300 spinner dolphins reside in the Midway Atoll's protected lagoon waters. Seventy percent of the Laysan albatross population nests here, said Barry Christenson, Wildlife Refuge manager of Midway Atoll.

This is the refuge of the last 1,100 Hawaiian monk seals on earth.

Greenpeace estimates that 1 million birds and 100,000 marine mammals die in the Garbage Patch each year.
Map of the Great Pacific Garbage Patch

Midway Atoll National Wildlife Refuge staff pulled up 27,200 pounds of ocean trash in 2000, according to the refuges' Web site. Since 1996, nearly 500 tons of line, net and rope have been removed from the waters surrounding the Northern Hawaiian Islands.

"The hope was that we could find out where the nets are coming from, where they're concentrated at specific times of the year and remove them at sea," said Kris McElwee, Pacific Islands coordinator for the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program.

McElwee recently returned from a research cruise to detect and remove derelict fishing gear in the North Pacific Subtropical Convergence Zone, which encompasses a section of the marine reserve. McElwee's project grew out of the High Seas Ghostnet Project, which began in 2001. Researchers developed satellite maps to locate ocean conditions that favored debris accumulation. Once these areas were established, the project team flew over them to record information that would pinpoint debris.

Researchers attached solar-powered tracking buoys to some nets adrift in the sea, called 'ghostnets.' Tracking the nets while still allowing them to float freely in the open ocean helps verify how accurately mapping and remote sensing data predict debris migration.

In the Pacific Northwest, smaller boats are taking on derelict fishing gear removal, mostly nets and crab pots. The Olympic Coast National Marine Sanctuary (NMS) has run its survey and removal work for three years with a grant from the NOAA Marine Debris Program, said Nir Barnea, Marine Debris coordinator for the West Coast.

Plastic entanglement is not as pervasive a problem in the Pacific Northwest. Nets and crab pots are larger offenders, said Liam Antrim, resource protection specialist for the Olympic Coast NMS.

"The amount of resources removed by derelict gear is frighteningly high," Antrim said.

Removing nets which contain entangled animals is a testimony to the firsthand effects of seaborne trash. One particular net in Neah Bay snared multiple harbor porpoises, a seal and a sea lion, in addition to birds and fish, Antrim said.

In some areas animal bones lie below on the seafloor, scoured by nets, said Ginny Broadhurst, director of the Northwest Straits Commission.

"This is my favorite program to work on because the solutions are so evident. For every piece of gear we remove it's a success story. We find the gear and remove the gear and Puget Sound is healthier," Broadhurst said. "We set a goal of removing 90 percent of derelict gear by 2012, which will cost $5 million."

The San Juan Islands are the epicenter of Northwest Straits Commission's removal work. A historic fishing site, its rocky underwater terrain has acted as a trap for nets.

"In all our work we've pulled more than 700 nets," Broadhurst said.

Not only can plastic entrap, entangle or entwine animals, but it also acts as a floating habitat for toxic substances. Plastics are porous, like ultrafine sponges for toxicants. Small plastic particles with high surface-to-volume ratios can absorb and transport a million times the concentration of toxic substances, such as DDT and PCBs, as surrounding water, according to Moore's research.

Common chemicals in this group are proven endocrine disrupters, or 'gender benders,' which interfere with the function of natural hormones. In the most dangerous cases, they manifest as reproductive disorders and cancer, according to Moore.

In 2003, the United States generated 26,650 tons of plastic waste, according to a report by Franklin Associates for the U.S. Environmental Protection Agency. Pop bottles, containers and packaging accounted for nearly half of the total. That totals the weight of 59 Boeing 747s, fuel included, and just over two 747s in discarded pop bottles. The last half-century's gross production of plastic easily surpasses 1 billion tons, according to "The World Without Us," by Alan Weisman.

Moore, the scientist who has seen the most of the Garbage Patch, predicts two trends. First, smaller plastic particles will proliferate through photodegradation. Second, larger plastic parts will accumulate on the seafloor as they wear and sink.

Although the potential environmental impact of smaller debris and 'plastic plankton' is relatively unknown, Moore's Algalita Marine Research Foundation in Long Beach, Calif., recently won a research grant which will allow the team to begin researching effects of plastic particles on zooplankton.

Marine debris, particularly plastics and derelict fishing gear, is a global problem. Reliance on manufactured items like plastics have lead to their prolific ocean presence because qualities, like durability, enable them to persist in the marine environment.

"Marine debris is everyone's problem. It has an impact that is significant," Barnea said. "We all exert some control over marine debris either by what we do, or don't do."

Side De Cassis is studying human relationships with the physical environment. This is her first published piece.
Chad Mullavey, 18, rides the lower section of Cheech and Chong’s Wild Ride on Galbraith Mountain on May 11.

The fallen logs, steep inclines, water-filled trenches, and both natural and manmade obstacles make the mountainous terrain a biker’s paradise. Construction workers expose golden earth, pull out rocks and throw branches to the side as they commence building a trail.

A call, announcing the arrival of a biker, halts conversation. Seconds later a mountain biker zooms by. All watch as his bike effortlessly climbs the thin three-foot platform known as a skinny, then lands back on the ground and continues down the trail.

Summer is right around the corner, which means Whatcom County bicyclists are emerging from their winter hibernation to ride the trails of Galbraith Mountain. The popularity of Galbraith is the product of a unique partnership between two agencies: Trillium Corp. and non-profit organization Whatcom Independent Mountain Peddlers (WHIMPS).

According to their web site, Trillium is both a Pacific Northwest real estate company and a global investment firm that deals primarily in real estate and forestry interests in the United States and South America.

As owner of Galbraith, Trillium sets rules for what is allowed on the mountain. Trillium’s partnership with WHIMPS allows the community to give input about what they would like to see at Galbraith.

“IT’S ALWAYS BEEN OUR POLICY TO LET THE PUBLIC RECREATE on our timberland, with a few rules — no motorized vehicles, no open fires, no camping and no hunting,” said Jon Syre, president and CEO of Trillium Corp.

Galbraith has been a known hotspot for local mountain bikers since the 1980s, and due to a growing interest in mountain biking during the last decade, Galbraith has become popular for riders all over the Pacific Northwest. Galbraith’s 40 trails offer a variety of terrain for bikers, complete with manmade obstacles and woodwork.

“It’s almost like a Disneyland up there,” said John Hauter, owner of Fairhaven Bike and Ski.

Land and timber developer, Trillium, has owned parts of Galbraith since 1991, but Bloedel Timberland Developers used to own the majority of the property. In 2002, Trillium signed a land-swap agreement with Bloedel — trading 2,379 acres outside Galbraith for Bloedel’s 2,054 acres of Galbraith. As part of the land-swap agreement, Bloedel logged three blocks of the mountain, according to a 2002 Bellingham Herald article.

After logging, Bloedel left a lot of debris and brush, which barred access to many of the trails, said Bill Hawk, WHIMPS trail crew leader. So WHIMPS came along and started to clear out the debris and re-open the trails.

WHIMPS had been maintaining Galbraith’s trails on an unofficial basis before Galbraith was transferred to Trillium in 2002, said Bill Hawk, WHIMPS trail crew leader. So WHIMPS came along and started to clear out the debris and re-open the trails.

WHIMPS had been maintaining Galbraith’s trails on an unofficial basis when Galbraith was still under Bloedel’s ownership. When Trillium took total ownership of Galbraith in 2002, Mark Peterson, the President of WHIMPS, and Syre, signed an agreement that made WHIMPS the legal stewards of Galbraith.

“WHIMPS has been a proactive group not working against Trillium Corporation but with them in a cohesive and positive way,” Hauter said.

WHIMPS has helped Trillium keep track of the trails and communicate which trails are being constructed so there is no interference between them and Trillium’s logging, Syre said.

Syre attends most of WHIMPS’ meetings and takes an active part in deciding and regulating what types of trails and obstacles are built on Galbraith, to ensure they meet International Mountain Bicycling Association standards.

WHIMPS and Trillium decide the types of trails built on Galbraith, but as far as building them goes — the community is welcome to come and lend a hand. “Trail days” are put on by WHIMPS once every month and are usually sponsored by a local store that provides breakfast and lunch for any community members who come.

Since the ownership of Galbraith transferred to Trillium in 2002, Trillium has looked at the possibility of developing the mountain twice. According to Syre, plans for any development of Galbraith in the near future have been shelved.

Looking down the road fifteen years from now, there may or may not be development — fifteen years is a long time, Syre said.

“Trails will still exist up [at Galbraith],” Syre said. “In what shape or form, I don’t know.”

Keeli Archer is a journalism public relations major. She has been published in The Western Front.
Propelling with a single muscular foot, the snail marks its path with a silvery streak of slime. Scoping the scene with a pair of perky tentacles, its teeth roll outward to scrape and scoop bits of fungi from the forest floor. Could it be the Knobby Rams-horn, or the Cinnamon Jugga? Maybe it’s the Masked Duckysnail or the Burrington Jumping-slug. Odds are it’s just your typical pesky garden snail, chomping on the perfectly plump sun-ripened tomatoes. Beyond the safe confines of the garden, protection for some of these elusive, endangered mollusks is moving at a snail’s pace.

The Center for Biological Diversity, along with four additional environmental organizations, submitted a petition to the U.S. Fish and Wildlife Service to add 32 Pacific Northwest slug and snail species to the Endangered Species List. To this day, more mollusks have gone extinct than any other large group of animals. They have yet to gain protection by the federal government.

“They’re on the operating table and they’re about to die,” said Dave Wentz, science and conservation director at Conservation Northwest in Bellingham. “You want to make sure you have the best doctor in the room to prevent these species from getting worse.”

Rigorous habitat destruction, primarily due to logging, gave mollusks a spot in the ‘emergency room’ with undivided attention from the best doctor – in this case, protection by the Endangered Species List. Other contributors to their decline include recreational development, road construction and maintenance, cattle grazing, wildfires and urbanization, according to the official petition. Conservation biologists and environmental organizations hope the act will protect and repopulate the underdog species and prevent future extinction.

“Whether you believe that each species was created individually by God or whether you think that a species ended up here as a result of evolution, we need to protect them simply because they exist and we share the planet with them,” said Tierra Curry, conservation biologist for the Center of Biological Diversity. “All species are inherently deserving of protection and I think snails have the same right to exist.”

Despite their petite size, mollusks serve a significant role in the environment than they are often credited for. Slugs and snails are primary consumers in the food chain, meaning they prefer to chomp on greens. They’re also food for birds, snakes, amphibians, small mammals and even humans.

As master recyclers, mollusks use rows of retractable teeth to devour microorganisms, plants, fungi and decaying material and turn them into food for other invertebrates, fish, amphibians, reptiles, birds and mammals. According to “Field Guide to the Slug,” these small creatures are constantly growing new teeth and bare more rows of pearly whites than some sharks. They also recycle plant and animal matter in soil and water, which not only improves the water quality but also replenishes nutrients in the soil.

But beyond their daily duties in the ecosystem, one coiled creature in particular is charming its way to stardom in the scientific world. The Crater Lake tightcoil, a snail exclusive to the Pacific Northwest, can survive under thick blankets of snow in subzero temperatures thanks to its own natural anti-freeze solution. Given federal protection, this microscopic mollusk, barely measuring a quarter of an inch, could ignite impressive technological advancements.

The 32 petitioned species are located throughout an estimated 24 million acres of old growth forests in Oregon, Northern California and Washington. The petition includes 17 aquatic species and 15 terrestrial species.

Necessary to the survival of the aquatic species is an unpolluted, frigid flow of water. The remaining
land species thrive in cool, damp environments with rich ground vegetation and mild sun exposure. According to “Field Guide to the Slug,” all species can crawl about .025 miles per hour; this means a slug would have to creep and crawl for more than a day and a half to go one mile.

“They represent something really marvelous about life,” Wentz said. “These animals can live for such a long time and so many hundreds of thousands of generations, and become specialized to a particular piece of ground.”

“They’re on the operating table and they’re about to die.”

With their limited mobility comes another factor feeding into their steadily declining population: inherently low reproductive rates. Living anywhere from one to ten years, some species reach sexual maturity within a matter of months, while others require up to three years to develop. Once a mollusk has reached its prime, it’s equipped with both male and female genitalia. But it still takes two to tango. Upon meeting their mate, the two mollusks spend several hours engaged in a pre-intercourse ritual of slithering around one another in a circle, swiping their tails to and fro. Once the deed is done, anywhere from three to fifty eggs are laid in a cool dark place, as noted in “Field Guide to the Slug.” For some, reproduction is a once-in-a-lifetime event.

Their low reproduction rate makes them especially vulnerable to extinction. When the Northwest Forest Plan’s Survey and Manage program was abolished in 2007, mollusks were denied further protection. When intact, the plan embraced the conservation of both rare species and those that have little-known about them. It also required loggers to review a specific list of species, including both vertebrates and invertebrates, while surveying potential logging sites. According to the Center of Biological Diversity Web site, the Bush Administration cut the project to make way for logging initiatives. Without federal protection, Northwest mollusks are flirting with the possibility of extinction.

Because of logging, land-based slugs and snails face a reduction in canopy cover, an increase in ground temperature, decreased soil moisture and a transformation in the overall microclimate, according to the official petition. The aquatic species also struggle when trees are removed because water temperatures increase as a result of added sunlight exposure. Rising temperatures also have an adverse effect on dissolved oxygen levels in the water, according to the Center for Education Technologies Web site. And without adequate oxygen, mollusks suffocate.

Chris West, a member American Forest Resource Council, said logging is not to blame. Even though the Survey and Manage Program is no longer in effect, the law still demands loggers check for a specific list of endangered species and other vertebrates before clear-cutting. Invertebrates, like the 32 species of Pacific Northwest mollusks, didn’t make the cut.

“The environmental impact statement says blatantly that the program was cancelled to increase logging because it was interfering with desired logging levels,” Curry said. “They didn’t hedge at all with why they wanted to get rid of it. They wanted to be able to log more old growth timber.”

But West said their intent is not to log the last of the old growth forests, especially since 85 to 90 percent of the timber is off-limits to loggers. Although West believes in protecting species and honoring their right to live, he also said he values the benefits of logging. Unlike brick, steel, concrete and aluminum, wood is a renewable material. Whether or not the mollusks are added to the list, he said there will always be an extensive process for surveying wildlife habitat before logging.
Signs painted by the students of The Lopez Island School.
The Lopez Island School District has found a way to provide organic food for school lunches grown by the students. The program is called Lopez Island Farm Education (LIFE) and is a little more than two years old.

Makena Henrikson, a Western Washington University student, helped form a proposal to present to the Lopez Island School District to start the program. LIFE teaches children farm education by integrating gardening and agriculture into the curriculum. Children also learn hands-on by growing produce and harvesting it for school lunches in the “garden-to-cafeteria” program of LIFE.

Through the garden-to-cafeteria program and working with local farms, the Lopez Island School District is able to provide an estimated 70 percent of organic food for school lunches, Evans said. As often as possible, they try to buy the remaining 30 percent from the local farms on the island.

The Lopez Island School District has 250 students in kindergarten through 12th grade for the 2007-2008 school year, according to Superintendent Bill Evans. The school district is able to maintain the garden-to-cafeteria program through a local farm and garden on the elementary school’s grounds. Each homeroom in the elementary school has a raised garden bed. The homerooms consist of a mix of students from first to fifth grade. Teacher Nancy Carson has her students split into five different groups: watering, composting, weeding, tools and boots, and planting.

"I like weeding because sometimes there are other things you get to do after weeding, like plant flowers," said ten-year-old Brianne Swanson. Swanson said she also enjoys harvesting the plants because the students get to weigh them.

The school also has a mobile cooking unit. Evans recalled a time when second graders cooked
and ate a turnip in their classroom that they had grown, while they listened to a story about a farmer who grew a turnip that was so large he had to get help to carry it.

Michelle Heller helps fund the project, and her son is a sixth grader at the school. Heller said she invests in the project because she believes food preferences are established in childhood.

"We are finding that our kids are happy to eat vegetables and healthy foods because they grow their own vegetables," Heller said.

Evans said that the community has been extremely helpful in supporting the program and the district even has plans to add 12 fruit trees on the property.

"By teaching [students] healthy eating habits they are growing up and carrying that with them," Evans said. "It's like throwing a rock in the pond, it creates a ripple effect."

Evans and Heller said they believe other school districts could implement this type of program into their curriculums, even if it is something as simple as growing a plant from a seed in a classroom.

A recent bill passed in Washington State to make it easier for school districts larger than Lopez to provide fresh produce in school lunches. The "Local Farms Healthy Kids" bill was passed by a wide margin in Washington State to facilitate relationships between local farmers and school districts to purchase fresh fruits and vegetables for school lunches. The bill was created in hopes to lower childhood obesity as well as reduce shipping, refrigeration, and storage costs associated with purchasing from a large distributor, according to the Senate Democratic Caucus.

The Bellingham School District has tried to integrate as much local produce as possible into the school breakfasts and lunches said Mark Dalton, the food supervisor manager for the Bellingham School District. He said he is happy the bill passed, but said the school district still struggles to purchase fresh produce in mass quantities. The Bellingham School District serves 5,000 meals per day, but is only allotted $1 to spend per child for each meal. Before the "Local Farm Healthy Kids" bill passed, school districts had to buy food from the lowest bidding farm, which usually meant they couldn't afford the more expensive local produce, Dalton said. With the new bill, school districts aren't obligated by law to buy food that isn't organic or local on account of price.

Lyle Griess, a nutrition specialist, says that children should eat a well-balanced lunch to curb increasing childhood obesity rates. In order to keep kids healthy, Griess said, 75 percent of what is put on a child's plate should be fresh produce. An example of a well-balanced lunch for a child would be a portion of green beans, broccoli, whole grain bread and a deck-of-cards size portion of chicken or pork, Griess said. Children should stay away from soft drinks.

Eating local fruits and vegetables means less toxins in the body. When produce has to travel long distances, chemicals are sprayed on the produce to keep it from rotting, Griess said.

The "Local Farms Healthy Kids" bill opens channels of communication between schools and local farms and is a great start in the right direction, Dalton said. However, the large Bellingham School District does not have the funds or resources to purchase local produce for every meal.

The district participated in the "eat local" week put on by Sustainable Connections last September, Dalton said. Local produce was served in every lunch for a week, but in the end it cost the district up to three times as much as the regular school lunches. The district has trouble finding a consistent local produce provider for large quantities during the winter, when lunch food is out of season. Once the produce is brought to the school for lunch, the district has to pay to have it processed, Dalton said. Recently, the school district formed a relationship with Hendrickson Farm in Marysville. Hendrickson Farm contracts local farms to grow the produce and then the Hendrickson Farm processes it and ships it to Bellingham, Dalton said.

The Lopez School District's garden-to-cafeteria program is a great model, Dalton said. The "Rishi" garden on the elementary school grounds on Lopez Island is welcoming with a swinging gate, a pond, and a place to sit. On a sunny day in April the children water the sprouting cabbage and grade the compost; one boy rolls down the grassy hill, laughing. The children are waiting for their garden to grow.

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On Assignment
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Walking along the path I had a picture in my mind of what to expect of Lily Point, but when I arrived I was astounded. The view was simply amazing. I thought at first that a cliff shot would be best but wanted to take a look at the beach. It was here that I found this scene and it truly captures the beauty of the area. - Mike Funston
It is horrifying that we have to fight our own government to save the environment.

Ansel Adams