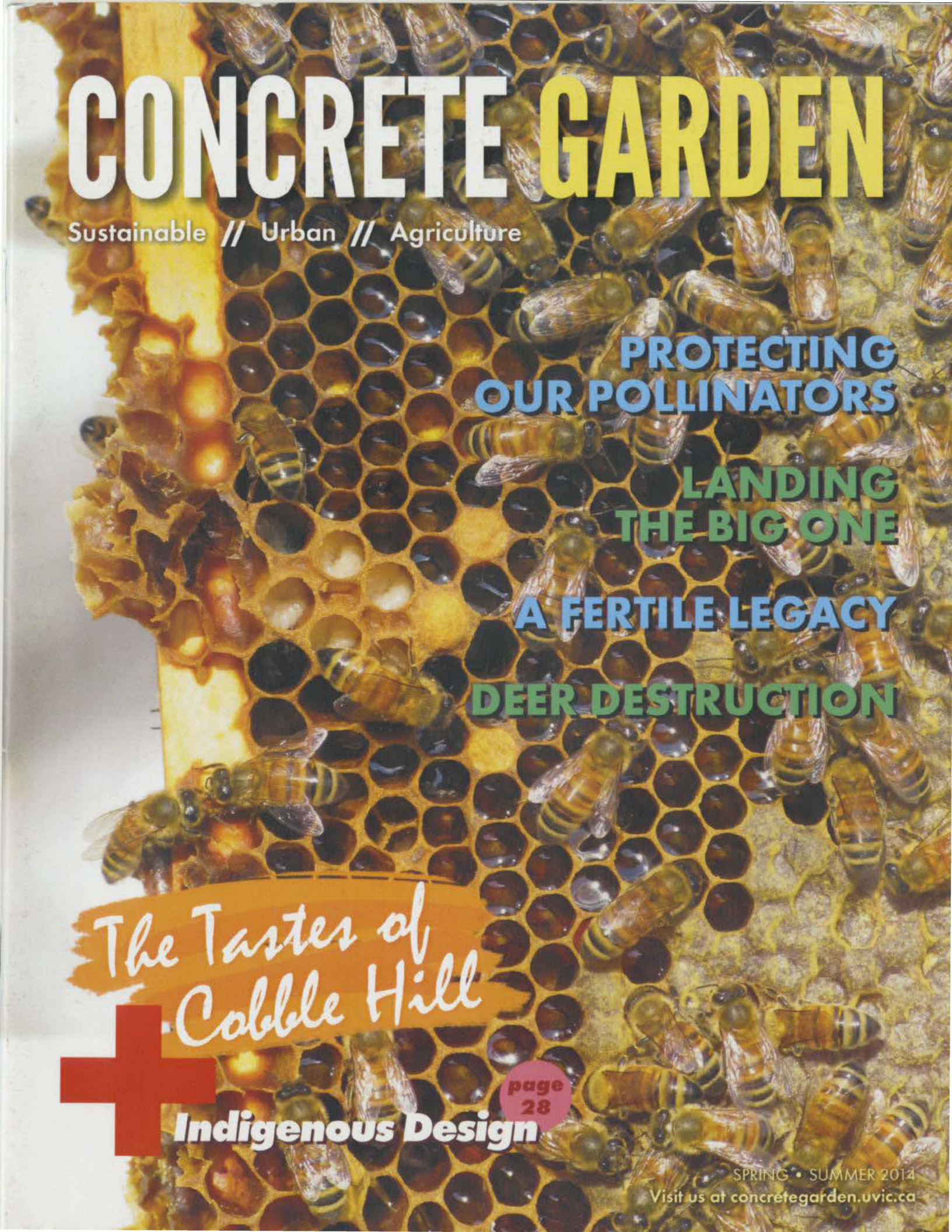

CONCRETE GARDEN

Sustainable // Urban // Agriculture

PROTECTING OUR POLLINATORS

LANDING THE BIG ONE

A FERTILE LEGACY

DEER DESTRUCTION

The Tastes of Cobble Hill

+ Indigenous Design

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SPRING • SUMMER 2014
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CONCRETE GARDEN

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FROM THE EDITOR

To Bee or Not to Bee

After I steep my tea, I always reach for the honey jar, nudging aside the cane sugar, white, and brown. Honey also sweetens my milk, marinades and curry. I love it on morning toast, drizzled over a layer of peanut butter. So when I see bees buzzing in my garden, I think of honey.

I've paid attention to bees since my first sting at age three. Only recently have I wondered what our gardens would look like without them. The U.S. National Resource Defense Council estimates that 30 per cent of the world's food crops rely on bees for pollination, yet every week a new story emerges about honeybee deaths from dangerous chemicals used on monoculture fields. Nearly one third of all bee colonies in the U.S. have been decimated since 2006, and the country could lose $15 billion in food crops along with its bees.

That's why, with the Garden City enveloped in the scents of summer, I'm excited to share "Bee City," an investigative look at the insects that work behind the scenes and the surprising role that cities could play in their protection. In this issue, we also track the buzz about how green the CRD's new green bin project really is when compared to a pedal-pushing alternative. In "Deer Haunting," our intrepid reporter and novice gardener tackles both sides of the urban deer debate when he is forced to defend his backyard bounty from a hungry intruder.

As for me, summertime in Victoria signals brisk mornings with a tea in one hand and a watering hose in the other, warm weekends cycling to farmers' markets across the region, and maybe enrolling in a soil-building workshop at the Compost Education Centre. Hopefully, our new issue of *Concrete Garden* can put some buzz into your own growing season, too.

Kimberley Veness

EVENTS ON THE ISLAND

Moss Street Market

May to October
Saturdays, 10 am to 2 pm

Moss Street Market, located at 1330 Fairfield Road, is Victoria's longest-running community farmers' market, featuring more than 25 organic farmers and 75 craft and food vendors from Salt Spring Island to Sooke. The market has become a favourite for locals and visitors alike. With organic produce, baking and preserves, artisan products, live music and a kids' craft tent, there is something for everyone. Vendors arrive early to unload fresh produce—from kiwis to mushrooms!—and colourful gifts onto their tables, anticipating the excitement the market brings every Saturday. Visitors can shake hands with the farmer who grew their fresh bundle of tomatoes or the baker who stayed up all night perfecting their favourite loaf of bread. With limited parking around the market, it may be better to walk, bus or bike.

Saanich Strawberry Festival

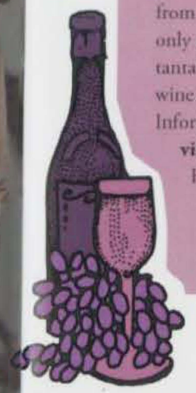
July 6
11 am to 3 pm

Few things pair better than summer and strawberries, and in July they unite for the Saanich Strawberry Festival. Part of the Saanich Summer Sunfest, a series of community celebrations, the 48-year-old festival honours the rich agricultural history of Saanich. The festival runs during the prime hours of a midsummer's day at Beaver Lake Regional Park. Shuttle bus service runs from Saanich Commonwealth Place to the lake's parking areas. Admission is free, and the festival offers a full day of events for all ages, including the traditional serving of strawberries and ice cream (starting at 1 p.m.), a pie-eating contest, hand-drum rhythm workshops, and a pirate school. Picnic areas will also be set up along the water's edge. Browse the informational displays from Saanich Parks & Recreation, Swan Lake Nature Sanctuary, and other organizations, while enjoying live music all day.

Taste

July 24 to 27
Friday, Saturday, Sunday

Sampling the over 100 varieties of wine at Taste, Victoria's sixth annual premiere food and wine tasting festival, will transport even the choosiest wine connoisseur to vino heaven. Beginning with "Taste the Difference" at the Grand Pacific Hotel, the festival opens Thursday with an evening of wine and cuisine focused on local sustainability. With 30 B.C. wineries all pouring wine made from B.C. grapes, and local restaurants and chefs using only local ingredients, the event marks the beginning of a tantalizing weekend. Events range from a sommelier-led wine seminar to "Everything is Better with Bacon." Information on events and tickets can be found at **victoriataste.com**. Proceeds go to the B.C. Hospitality Foundation.



Great Canadian Beer Fest

September 5 & September 6
3 to 8 pm **12 to 5pm**

Get ready craft beer lovers—the Great Canadian Beer Festival is coming back to Victoria! Held annually since 1993, the festival has grown into an internationally recognized event that brings brewers and beer lovers from all over the world to the Craft Beer Capital of Canada. Held on the first weekend after Labour Day at Royal Athletic Park, the beer festival is the best way to celebrate the end of summer. This year will include over 55 craft breweries from across Canada and the United States. Both days will be filled with beer tastings of the finest sort, good company, local live entertainment, and tasty cuisine from local vendors. **www.GCBF.com**

10 ACRES BISTRO

Marcelo Najarro is a busy man. Exiting the kitchen with a blue Band-Aid on one finger and a pallet knife sticking out of his double-breasted chef coat pocket, he is clearly not the hands-off kind of leader. After going to culinary school in El Salvador, Marcelo worked for the Hotel Marriott and the Hilton, before coming to Vancouver to work at the Blue Water Cafe. Now here in Victoria, he has been the chef at 10 Acres since September of last year.

As we chat, I admire the solid wood tables and gentle fireplaces of the 10 Acres Bistro. Previously Bon Rouge Bistro, the redesigned 10 Acres opened in June 2013 with a new commitment to the farm-to-table concept. The produce, meat, and even the honey served at the restaurant originate from their personal farm on the Saanich Peninsula.

"There is a lot to do, but a lot we can create," Najarro says. "We get to play around so it's been exciting." Marcelo explains that focusing on keeping the menu as fresh and as local as possible has been a challenge, but one that he enjoys. Not every kitchen gets the opportunity to work with whole, local pigs but that's the beauty of 10 Acres.

"I like what I do. I feel passionate about it. I think that's what keeps people going in this career, perfection and trying to do better than you did yesterday."

◆ **Adrian Paradis**

10 Acres Farm Squash Raviolis with Citrus Brown Butter & House Made Ricotta

Some things you will need for this recipe; cheese cloth for making the ricotta, a blender, a pasta roller, and if you can find one, a ravioli mold will help but it's not necessary. *Serves 6-8*

Pasta
- 3 1/2 to 4 cups of all purpose flour
- 4 extra large eggs (in our restaurant we will use 6 eggs from our farm since they are much smaller)
- 1/2 teaspoon of extra virgin olive oil

Squash Filling
- 1 large butternut squash
- 2 cups vegetable stock
- 1 shallot
- 2 garlic cloves
- 50 ml veg oil
- Salt to taste

Ricotta
- 4 cups whole milk
- 1 cup heavy cream
- 1 cup water
- 100 ml lemon juice
- 1 lemon zested
- Salt to taste

Brown butter
- 1 1/2 cups brown butter

To Finish
- 1 bunch fresh watercress
- 1 lemon zested
- fluer de sel

Preparation

For the ricotta, combine the milk, cream and water in a pot and place on the stove. Bring the mixture to a boil over a low heat. At this point you should season your milk mixture to taste. Once your milk has boiled add the lemon juice and let simmer for an additional 5 to 10 minutes then remove from heat. In a colander or fine-mesh strainer drape cheese cloth so that it is 3-4 layers thick. Place the strainer over a container to catch the whey. Strain your hot ricotta mix into the cheese-cloth strainer and let sit for at least 3 hours until completely separated. It's best to let your ricotta sit over night in the fridge in cheese cloth but isn't necessary. Once the ricotta is strained, transfer it to a mixing bowl and add lemon zest. Mix in small amounts of the whey until the cheese is nice and smooth but not to the point where it becomes runny like yogurt or sour cream. Transfer to a storage container and set aside.

For detailed instructions on how to make the pasta, brown butter, and squash filling, visit ***concretegarden.uvic.ca***

LITTLE JUMBO

Cocktails in an Earlier Era

Restaurant Review

You wouldn't imagine that such a restaurant was hidden down the hall of a lower Fort Street building. But like a treasure that can't be found unless you know where to look, Little Jumbo is one of Victoria's hidden jewels.

My girlfriend Regan and I opened the door late on a Thursday expecting to find a quiet place to have dinner. Instead, we found a cozy room full of boisterous patrons. We marvelled at the art deco décor. The hanging lights reflected off the tin ceiling. Rippled glasses stacked behind the bar transported us back to an earlier era.

Little Jumbo's style does more than create ambience. The restaurant pays homage to Harry Johnson and Jerry Thomas, the former of which published the 1882 *Bartenders' Manual and a Guide for Hotels and Restaurants*. Later in life, Johnson bought the Little Jumbo Saloon in New York from his rival, Thomas, who at the time was known as "the father of American mixology." Victoria's Little Jumbo does food and mixology with a local flare.

The man with the elephant tattoo on his arm who welcomed us at the door turned out to be manager Shawn Soole. Little Jumbo had been his idea, and we found the same black elephant repeated around the room. "We try to make everything as local and sustainable as we can without making a big deal out of it," Soole told us. "We don't think it should be something that's a marketing ploy."

Shawn Soole (bartender)

He seated us in the corner table, giving me the chance to sneak peeks of what others had ordered. Our server quickly presented us with a small aperitif, a brewed Silk Road oolong tea mixed with lemon and local honey before being chilled and carbonized—bubbly, palate-cleansing goodness.

Given the concept, we felt it necessary to order a couple of drinks. My whisky sour came beautifully mixed with a frothy top and a house-candied cherry. Regan opted for an absinthe and root beer cocktail, and the fennel and citrus flavour guaranteed it a place on her list of best drinks ever.

The menu is set up in a "choose your own adventure" style, so the proteins and sides are priced separately with meals made custom to order. Being a meat and potatoes guy, I ordered the duck breast with braised potatoes, while Regan chose the lamb shank with a cauliflower gratin.

The expertly cooked duck came sliced and topped with finishing salt. The sweet accompanying candied ginger left a potent taste that complemented the richness of the meat. Regan's lamb was lovely in its tenderness, though not too different from lamb shanks we've had in the past.

After our plates were clean, the dessert menu caught our eye. We decided not to fight the temptation and ordered cherry sugar-dusted donuts that oozed bourbon sauce. Though few in number, their crispy outside enclosed a deliciously fluffy interior. I enjoyed the meal immensely, but some of the portions sizes left me wanting. Adding on sides may be expensive but necessary if you want a complete meal.

Walking out into that hall way jarred us back into reality. But we recovered as we happily reminisced over the cocktails we shared. I wouldn't be surprised if we find ourselves back there again soon.

◆ **Adrian Paradis**

506 Fort Street / Downtown Victoria

THE FLAVOURS OF COBBLE HILL

Thirty minutes north of Victoria, Cobble Hill nestles into the southern end of the Cowichan Valley, encircled by mint-green fields and thriving vineyards. Its nine wineries, cidery, and multiple parks and outdoor areas make it a great day trip. Merridale Ciderworks offers daily tastings of organic ciders, a locally sourced bistro, and a wander through the apple orchard. For those who need more of a stretch, the Kinsol Trestle, along the Trans Canada Trail, provides picturesque views of the Koksilah River, while Bright Angel Park is perfect for a stroll among the trees.

This year marks the 105th annual Cobble Hill Fair, traditionally held on the last Sunday of August, with displays of local and organic produce, livestock, and family entertainment.

◆ **Britny Martlin**

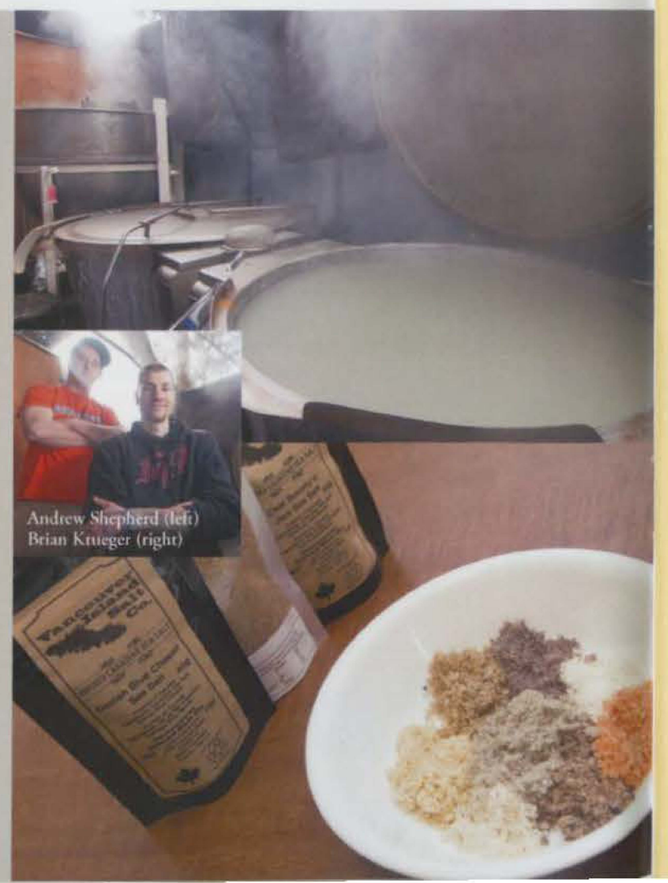
Salt Never Tasted So Good

Five years ago, **Andrew Shepherd** opened the **Vancouver Island Salt Company**. Today, the company uses 100 per cent recycled vegetable oil to fuel the salt-making kettles and is expanding, while trading in plastic packaging in for recyclable paper boxes.

Shepherd and his partner, **Brian Krueger**, are passionate about the salt-making process. They take quality-tested ocean water from Cherry Point, boil it in massive vegetable-oil-fueled kettles, creating an all-natural outdoor steam room, until the water evaporates and leaves pure salt in its place. The salt is then scooped into draining bins to be smoked, in old hand-made apple-puree drums, or infused with natural ingredients.

Shepherd describes their product as "salt as it comes." With Blue Cheese Salt, Paprika Salt, Jerk Salt, and about 30 other varieties, Shepherd and Krueger create salt to satisfy the choosiest taste buds.

Address: 4235 Telegraph Road Cobble Hill, BC
Phone: 250 882 4489



Andrew Shepherd (left)
Brian Krueger (right)

Balsamic Fit For a King

Beginning with a single family barrel in 1970, the **Venturi-Schulze Vineyards** continue to use ancient methods to brew balsamic vinegars amid organic and pesticide-free vineyards.

The stacks of balsamic-vinegar-filled barrels were handmade in Modena, Italy, and have the traditional Italian inscription indicating wood type. Instead of emptying the barrels, **Marilyn Venturi** and her team top them with the next year's vinegar, creating what she calls an "incredible blending and complexity." The blending room's multifaceted smell attests to that, while the varied tastes–with degrees of viscosity and flavour–will turn any balsamic skeptic into a devoted fan.

Tours and tastings are held Wednesday through Friday. Be sure to call ahead.

Address: 4235 Vineyard Rd
Cobble Hill, BC
Phone: 250 743 5630

BEYOND THE VEGGIE BED

Mary Haig-Brown's garden reveals a 100-year horticultural history

Driving to Mary Haig-Brown's house is like slowly coming up from underwater and feeling the air hit your lungs. As you leave the city behind, the stress of appointments and deadlines fade, replaced with robust bird songs and the crisp helicopter leaves of rhododendrons yet to flower. A longtime naturalist and friend of my mom's, Mary has agreed to give me a private tour of her venerable garden. For a newbie like me, I've hit the grower's jackpot.

I spent my early adult years living in downtown Vancouver apartments without so much as a window planter. I was busy writing and travelling and simply wasn't focused on what a home-grown tomato and arugula salad might taste like. Now I live in Victoria with space to garden, and the more I do, the calmer I feel. Sinking my hands into worm-rich soil has a surprisingly meditative quality, even when the grit sticks under my nails.

Gardening is a conscious act that requires my entire focus. I love it. Pulling weeds—especially when I succeed in yanking them up, roots and all—gives me the grand sense of accomplishment usually reserved for more daunting chores, like mucking out the fridge. Best of all, at 20 months, my daughter is old enough to experience the pleasure of digging dirt, pulling weeds, and likely eating a bit of both.

Constructed in 1910, the two-level Haig-Brown home tucks in neatly among the trees beyond Prospect Lake, facing a pond complete with a multi-tiered waterfall, a fish ladder, and a silver canoe propped on shore. It's the kind of place where my husband and I would surrender our credit cards for a weekend stay.

Mary greets me at the door. Her silvery hair is tied loosely in a bun. She's a striking woman with smooth olive skin and soft eyes, and I'm instantly at ease in her presence. When not hiking Mt. Kilimanjaro backpacker-style, babysitting one of her many grandchildren, or tending her garden, Mary advocates for food security, the protection of local watersheds, and the eradication of invasive species. She speaks about these issues calmly, but her eyes dance with the fiery passion of a die-hard soccer fan.

Mary's love for the natural world seems to have been passed on by her father, Roderick Haig-Brown, a prolific writer, fly fisherman, and magistrate, who died in 1976. A literary celebrity, Roderick wrote over 30 books and countless articles and essays about nature and fly-fishing. He also advocated for wilderness conservation through roles with groups such as the Nature Conservancy of Canada and the International Pacific Salmon Fisheries Commission. There is a provincial park named after him north-east of Kamloops, and a mountain in Strathcona Park that commemorates Roderick and wife Ann's work to preserve the park. Their family home on the banks of the Campbell River, where they raised their four children, has been well-preserved. It houses writers in residence through the winter months and doubles as a bed and breakfast in summer.

Roderick gardened avidly during Mary's childhood, but when he joined the army as a personnel officer in 1943, Mary's mother, Ann, took over and mastered the process of planting, tilling, harvesting, canning, and cooking for her children.

"What I love about my mother's relationship to the land," Mary says, "was how she embraced the entire process." Ann took gardening seriously. To feed her family, she chose and tended her crops with care.

We head out for the garden tour, walking by raspberry bushes, a seven-foot rhododendron, and a tranquil pond with a hint of sun gleaming on its surface. A combination of passion and practicality, Mary's entire property is one wild enchantment. An old apple tree seems to wind its way out of the waterfall, bowing to a brilliant magnolia as if engaged in a dance. The stems of bull rushes tickle the edge of the pond, protected from wind by the congregation of conifers standing just behind them. An otter's fervent head pops up every now and then from the pond as if not wanting to miss anything, and an unlikely duo of dogs—Fergus, the shih-tzu-lhasa-apso cross, and Tori, the rescued labrador retriever—wrestle their way down the grassy bank, this green haven their full-time playground. Up the hill, Mary's vegetable plots are ripe with mulch and the promise of summer pickings—in contrast with my garden, which currently features a whole lot of moss.

"See that triangular plastic thing there," she says. "That's our digestor." She explains how it works like a composter for non-compostable items, such as bread and cheese. I nod, thinking about my own waste disposal system at home: a garbage can.

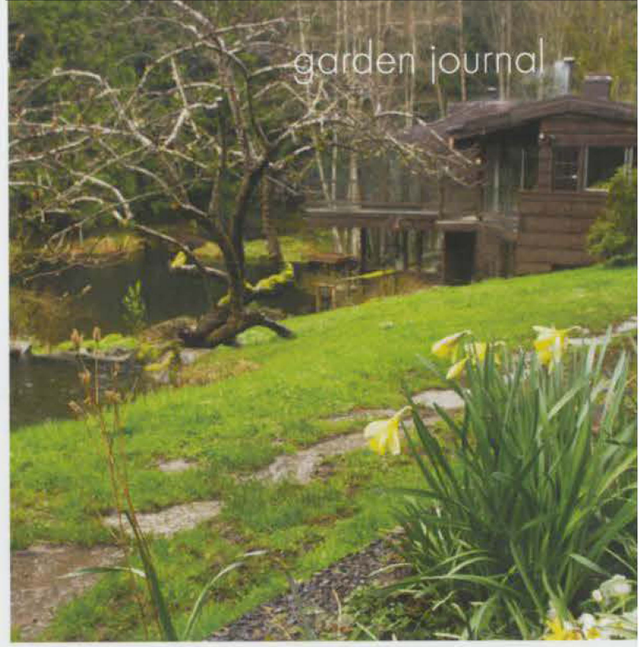
We walk up to a fenced-in plot with three raised bed planting boxes. A small gate takes us through the fence protecting her garden from foraging deer. "This section is all salad stuff," she explains. A few rogue onions and leeks found their way into the greens. Their willful tendrils reach skyward through the leafy canvas. She motions to the second box, which contains peas, both snap and pod. I wonder how long it must take to hand shell enough peas to fill one of those bags in the freezer aisle at Thrifty Foods.

As we tour the property, Mary describes her most recent conservation project: she's writing grant applications for Tod Creek watershed, a large swampy flood plain behind the Red Barn on West Saanich Road.

The flats have been home to farming communities for more than 150 years but are now shrinking. The bog is essentially peat soil made up of carbon—when carbon solids mix with oxygen, they evaporate into carbon dioxide, leaving less solid carbon to shore up the waters. The result? A subsiding bog that floods the area for ever-longer periods during the growing season. In recent years, farmers have been forced to use gas pumps to drain the land, but this process is expensive, noisy, and disturbs the neighbours. It also damages the soil and the stream habitat.

Mary and the Friends of Tod Creek Watershed have proposed moving the creek out of the ditch on the east side of the flats, near West Saanich Road, relocating it to the west side, closer to Mt. Work.

"It's shady over there, which is not good for agriculture," Mary



explains, "but it would be ideal for a stream like this and for the health of the fish inhabiting it." They anticipate healthier fish and a thriving riparian habitat, more productive farmland, and improved water management to accommodate both irrigation and excess winter runoff.

I asked Mary how urgent she felt moving the creek was. "Well, how hungry are you?" she replies. "And how much do you like buying Mexican cucumbers and giving them to your daughter?"

Mary's advocacy work for Tod Creek is like her gardening practices at home: intentional and for the greater good of the earth. She doesn't just plant veggies, she thinks about everything from where she purchases seeds, to what meals they will yield, to how the crops will impact the local ecosystem today and 100 years from now. It's like the 100 Year Plan for the 100 Mile Diet.

Then there's me. I grab seed packets, whatever looks good, with no rhyme or reason, and throw them into the ground like an impromptu singles' mixer.

My visit with Mary compelled me to give more thought to my garden and its impact overall. She learned some gardening know-how from her mom, and I would like to learn so I can pass that knowledge down to my daughter. This season, I even plan to hunt for a good composter and digestor.

I leave Mary's house eager to plant more veggies this year than last, and to think of the process as she does—one that flows from the seeds to the ground to our dinner plates and beyond. I'm keen to weed, till, and prep my beds, and to feel the earth between my fingers and under my nails. I can almost taste the fresh grated beets on my summer salad. And who knows, perhaps this year I'll grow cucumbers for my daughter for the first time.

◆ Heather Neale Furneaux

From Pedal to Petal

Community composters battle the green bins

THE WINTER WIND BLEW COLD LINES OF SWEAT DOWN MY CHEEKS AS I CYCLED THROUGH STREETS OF CHARACTER HOMES IN JAMES BAY. I STOOD UP ON THE pedals, hunched over the handlebars, and leaned into the bicycle, pulling hard to turn the wheel. It wasn't a particularly difficult ride either–not much incline and the road was paved smooth–but I wanted to push myself.

Every day, one of two employees from the Pedal to Petal community composting collective, or P2P as some call it, cycles a similar route. The difference? They tow a small trailer packed with buckets of food scraps that, by the end of a shift, can weigh up to 300 pounds. Thighs burning and arms weakening, they press on up steep hills, through wind and rain, all in the service of turning foul-smelling foodstuffs into delicious backyard crops. It's a simple system. It's like garbage collection, but with the benefit of zero carbon-dioxide emissions from transport, and the scraps are processed differently than conventional composting.

Once they complete their routes, employees haul their trailers to one of Pedal to Petal's many composting partners around the City of Victoria. These happy recipients make up a mosaic of compost users, including urban agriculturalists, small-scale backyard gardeners, neighbours and community houses full of students, all of whom receive the scraps free of charge. In a symbiotic relationship, Pedal to Petal secures access to nearby facilities and compost users get free, nutrient-rich compost for their soil.

Now they must compete with the Capital Regional District's (CRD's) mandated Kitchen and Garbage Scraps Program. This program offers pick up of kitchen scraps every other week, costing the average residential household $183.00 annually, which breaks down to a base cost of $3.50 per week. Pedal to Petal offers a sliding scale, ranging from $5.00 per pick up to the suggested amount of $7.99. Even with their new competitive pricing, up against the CRD the much smaller Pedal to Petal program is feeling the financial squeeze.

For Pedal to Petal, the end goal isn't to bring in the big bucks. Trevor Van Hemert, who runs a private web design company out of Fernwood, has been involved with Pedal to Petal since 2011. He envisioned structuring the business after a transitional model—the type of model does not depend on any set costs, like fossil fuels, to continue operating. According to Van Hemert, Pedal to Petal's deals-in-good-feelings way of doing business has earned them "the heart of the people."

Employees are paid on commission, which is 65 per cent of the earnings from every bucket they collect. The faster they work, the higher their equivalent hourly wage. Van Hemert isn't hustling the employees either. When asked about profit, Van Hemert laughed. "Let's just say, if we were on the stock market, nobody would buy us." But then his voice tightened. "Listen," he said, "the soil is the one profiting. It's the resource that matters."

For Van Hemert, that's not just a political talking point, it's his life. If Pedal to Petal were to be a profitable business, cost per pick up would have to increase considerably. But their sliding scale doesn't turn away clients unable to afford higher prices.

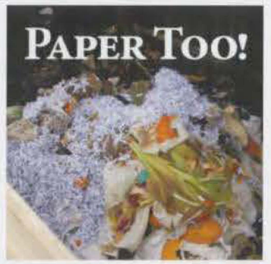
Despite Pedal to Petal's charitable values, the customer base has plummeted in the past year. It began on February 1, 2013, during "Armageddon Week," says Van Hemert. There were over 100 cancellations on that day alone—and at least 10 every day following. In the span of one week, Pedal to Petal went from serving over 500 customers to less than 200, and from employing 10 riders to just two. For Van Hemert, Armageddon Week was a predictable repercussion of the CRD's Kitchen and Garbage Scraps Program, which came into effect for the City of Victoria on the same day. He says the program has been problematic since it launched. "They [the City of Victoria] are still sending 50 per cent of the scraps to the landfill because the place they've got now isn't big enough," says Van Hermert.

This landfill is the Fisher Road Recycling facility in Cobble Hill, where the City currently processes their kitchen scraps. It's located about 50 kilometres north of Victoria, across the winding Malahat highway. The facility is a plan B to the former site in Saanich, whose license was suspended in August last year due to a putrid stench wafting through nearby neighbourhoods. While the CRD's program was created to find a greener solution to the City's organic waste problem, trucking the compost to Cobble Hill is like taking a big step back.

Regardless of the outcome, Pedal to Petal still takes the hit.

In early February, I heard from the CRD's solid waste and recycling operations manager, Tom Watkins. I had sent out a query to investigate if local businesses, like Pedal to Petal, were consulted to support or collaborate with the CRD's composting program. He responded politely by pointing out that kitchen scraps have to be processed in licensed composting facilities with specialized technology, a crack in the foundation of the Pedal to Petal business model—or so it seems.

Van Hemert seemed reluctant to breach the subject. "Well..." he drawled, "what we do is technically not legal and it's not illegal, it's somewhere in the grey area." CRD bylaw no. 2736 contains a stipulation that Van Hemert believes the CRD didn't write with businesses in mind, although, as Van Hemert argues, it remains applicable. The bylaw demands that all compost-processing facilities acquire licensing from the CRD. However, in Section 2 (clause 2.2) it excludes backyard composting from any licensing requirements.



Each of Pedal to Petal's composting partners process less than 20 cubic metres of food waste annually and receive scraps exclusively from residential dwellings, which adheres to the CRD's official definition of "backyard composting." Still, Van Hemert feels the CRD has not yet accepted this interpretation of the bylaw.

I hauled my bike up the moss-covered steps of my house and through the doorway. After leaning it against the wall, I sat down on the couch. I was worn out. I'd cycled to James Bay and back to the University of Victoria, and the ride had left me wondering if Pedal to Petal could work for an entire city. Van Hemert had said the only feasible way would be block-based implementation—a few streets taking care of their own compost, with some residences sharing the load of scrap processing. Van Hemert's plan would need community and city support, but in a grassroots city like Victoria, it just might work. **◆ Milen Kootnikoff**

Update: While Saanich maintains a five-year contract with Fisher Road Recycling, noise and garbage complaints has caused the CRD to ship its compost to Richmond. Talks continue on how to process compost closer to Victoria.

Deer Haunting

What's a gardener to do about the biggest pest in the city?

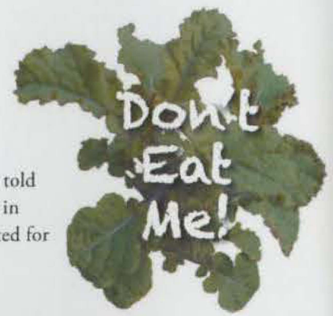
I AM STANDING IN MY BACKYARD IN THE DARK. THE WIND WHIPS MY bathrobe around my boxer shorts, and the aluminum baseball bat feels cold in my hands. My head clears for a moment. What the hell am I doing? Moonlight illuminates a dark webby mass, heaving next to the muddy remains of my garden.

Somehow, for the second year in a row, deer have ravaged my season's labour. All that's left of my garden are stalks and weeds. The deer—belly full of kale, broccoli and cabbage—has misjudged its exit strategy, however, and netted itself in my "deer proof" fence, now a tangled mess bucking on the ground. I'm still contemplating how to preserve 140 pounds of venison without a deep freezer when the animal breaks free and bounds into the night.

Victoria has a deer problem. The only solution: death to all ungulates. At least that was my initial reaction to the destruction of my garden last fall. Once I calmed down, I realized mass murder was a bit extreme. Still, something needs to be done. There's no denying Victoria's deer population is booming. A casual drive through the Uplands or Broadmead area could be considered an exotic wildlife tour for some big-city folk, as families of deer stop traffic fearlessly, trotting from lawn to lawn buffets.

In a city with plenty of grassy and forested space, the urban deer population only has two natural predators: the rare cougar that wanders down from the Sooke hills, and automobiles. Wildlife officers remove the cougars found in municipal parks or underground parking garages. (Staff at the Empress Hotel must have been more frantic on that infamous day in '92 than if they'd run out of Earl Grey just before high tea.) This leaves the deer to proliferate freely, to the exasperation of any driver whose fender has been mauled by one of these roadblocks, and to the farmers and gardeners who must contend with their insatiable appetites and tenacious agility.

I'm not alone in my venom towards these furry fence-hoppers. Every year between 1988 and 2007 in B.C., 9,800 wildlife-vehicle collisions caused an average of 380 personal injuries and four fatalities, according to statistics from ICBC and the B.C. Ministry of Transportation. They estimate that around 80 per cent of these collisions involve deer. That's nearly 22 insurance claims and one injury a day—hardly an epidemic, but nothing to be scoffed at either. Former Mayor of Central Saanich and farmer Jack Mar told the *Times Colonist* that deer cost him more than $10,000 in damages in 2012, while Larry Sluggett, a farmer on West Saanich Road, estimated for the newspaper that his property damage was over $50,000 from 2010 to 2012



Deer aren't necessarily the doe-eyed image promoted by activist groups. They knock over garbage cans to scavenge, can carry ticks that spread Lyme disease and can be aggressive. A video of a deer attacking a dog in Cranbrook, B.C. went viral in 2011, while a similar incident was reported in Oak Bay in 2012.

I reached out to Deer Safe Victoria, a local activist group concerned with the Capital Regional District's (CRD) efforts to cull the deer population. Spokesperson Kelly Carson proposed immune-contraceptives—shots of a sterilizing drug—as a method of population control. Carson raised the point that a cull only brings a rebound the next year, as new deer move into the unoccupied territory.

While I question Carson's assertion that $600 a year to cull the deer is a waste of tax resources, there must be better methods than yearly mass exterminations. Carson also made it clear that it was up to individuals to take responsibility for their own properties.

In 2012, suburban vigilantes did take matters into their own hands in the Cordova Bay area. Decked out in balaclavas and camouflage, two men made the news when they were spotted toting crossbows at night. Deer corpses were later found nearby. While some may applaud their efforts, Victoria Police asked for help identifying the hunters, as the killings violated wildlife regulations.

Oak Bay has tried almost everything—public education, bylaw enforcement, more signs and prohibitions on feeding the deer still left the municipality with 38 dead deer in 2013. Last November, the council voted to join the CRD's urban deer management pilot project. In 2014, $12,500 has been budgeted to cull up to 25 deer, with the butchered meat, hooves and antlers donated to the Songhees Nation.

Fencing is another proposed option, although it can be expensive, or ineffective. Sluggett alone spent over $3,000 fencing one hectare on his farm.

I balked at the price of the high-end fencing. My 2013 do-it-yourself project of eight-foot tall rebar stakes and deer proof plastic netting just didn't cut it, and still cost over $100 for a 12-by-six-foot bed. I tried alternatives, planting so-called "deer-proof plants" like rosemary and thyme, but the animals simply ate around what they didn't like. My hearty kale plants suffered most.

One morning in fall of 2012, I awoke to find every one of the stalks I planted that previous spring chomped to the dirt. Turns out my bamboo stake fencing was easily pushed aside by ravenous deer. Discouraged, I let my garden go fallow and ignored the purple stems poking from the dirt.

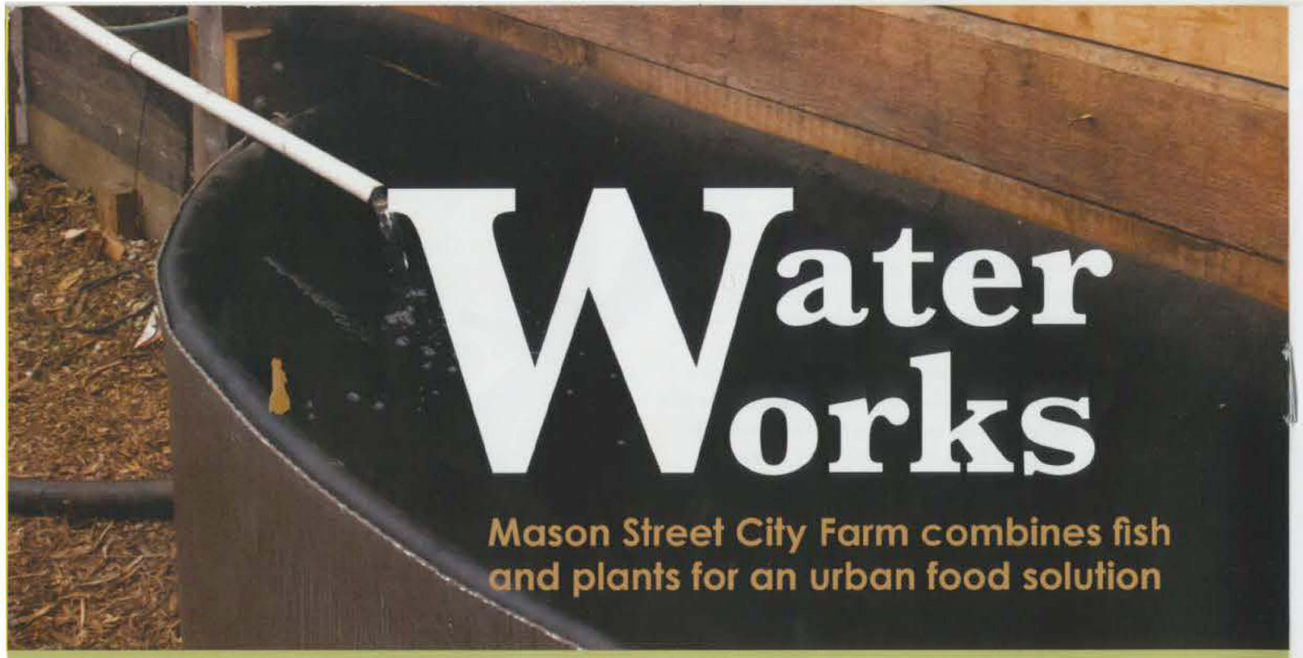
TO MY SHOCK, A MONTH LATER THEY BEGAN TO SHOOT NEW leaves. By spring 2013, it was impossible to tell they had been devastated by deer. One year later, the plants look to be making a slow but full recovery, although the tiny green leaves look ridiculous on the thick three-foot stems.

The stunning regenerative properties of the Brassica Oleracea species, of which kale is a part, have been well documented. A study done in 1987 by Minoru Murata and Thomas J. Orton confirmed a high average shoot-forming capacity in the kale family—no wonder the deer found my kale so tempting! For me, a student with limited time to spend tending to a garden, the prolific nature of kale means having an abundance of healthy greens from an easily manageable number of plants.

> Oak Bay has tried almost everything — public education, bylaw enforcement, more signs and prohibitions on feeding still left the municipality with 38 dead deer in 2013.

Under the damp spring sun, I plunge a final rebar stake into the soil. I'm using last year's stakes, but with an upgrade. Each rebar pole is zap-strapped to my even older bamboo stakes, extending an extra foot in height. It is my Frankenstein garden, my zombie project, and it will continue to return long after the deer don't.

To the soon-to-be urban gardeners out there, learn from my mistakes. A good fence is a worthy investment of both time and money. You lose a lot more cash in the long run buying your fresh veggies from a farmer who fenced properly. Or, if a tall fence is too much bother, stick to kale, and lots of it. ◆ **Jordan Kovacs**



Water Works

Mason Street City Farm combines fish and plants for an urban food solution

Nature is full of symbiotic relationships. Two species come together and evolve in harmony to benefit one another: flowers and bees, oxpeckers and rhinoceroses, trees and mycelium. And who could forget the famous sea anemone and clownfish? Though Disney may have simplified that twosome just a bit.

Today, one of the most productive symbiotic relationships is between fish and plants. It's simple. Fish produce nutrient-rich waste, and plants require nutrients to grow. This relationship, co-evolving over eons, has long been used by humans for agricultural purposes.

Two thousand years ago, farmers in southern Asia introduced fish into their rice fields. Not only did this practice fertilize the rice, it provided pest control and circulated oxygen to the plants. And the best part? Two-for-one crops at harvest time. Today, this ancient food production technique goes by the modern name of aquaponics.

Victoria Aquaponics is owned and operated by urban agriculture specialists at Mason Street City Farm. On this downtown farmstead, nestled between Harris Green and Balmoral Road, they grow greens and raise koi, as well as supply food to the Capital Region all year long.

Mason Street City Farm has a long history of innovative farming techniques. Over 20 years ago, homeowner Brett Black established Victoria's first urban homestead. At the time, it set the precedent for both city farming and poultry rearing in Victoria.

Angela Moran, an enthusiastic young permaculture graduate, took over the lease in 2006 with a vision to establish a farm-school and food-security hub. Moran raised chickens and grew organic vegetables on the property. After three years of steady expansion, long-time intern Jesse Brown stepped up as partner, bringing a reverence for the interconnected and self-managing structures of nature. Today, Moran and Brown aim to empower the local food movement through community awareness, education, and, of course, delicious fresh food.

The Victoria Aquaponics system fits with this mission by creating an efficient, environmentally friendly, and highly productive food system in the city's core. The project began in the summer of 2013 with a crowdsourcing campaign that raised more than $13,000 to support four summer interns and construct the aquaponics system.

Combining hydroponics and aquaculture, aquaponics turns drawbacks into assets. Hydroponics, a method of growing plants in water, requires expensive nutrients to feed the plants and periodic flushing of the system. Recirculating aquaculture demands removal of excess nutrients from the system along with constant cleaning and maintenance. But combine these two practices into a single closed-loop system, and the problems solve themselves.

It all starts with the fish. As trout, tilapia, or any other fresh water fish live and eat in the water, it becomes murky with sediment and turns into a rich soup of nutrients and ammonia. Not to worry. A water pump sucks up the refuse and circulates it into a grow bed. Then the magic happens right there in that veggie bed. Gravel or sand, known as the substrate, hosts two key bacteria: Nitrosomonas and Nitrobacter. Nitrosomonas convert ammonia into nitrites while the Nitrobacter turns nitrites into nitrates. The conversion eliminates toxic ammonia for the fish and transforms the chemical into an easily digestible plant food, nitrates. The plants flourish and gravity returns the clean water to the tank—it isn't rocket science, but it's equally as genius.

The advantages are tangible for farmers and backyard gardeners alike. A stackable, closed-loop system means less space, less labour, and more accessibility. Waist-high tables even make aquaponics a viable option for growers with disabilities or back problems. Aquaponics also uses less water. Brown touts water savings at about 90 per cent, losing only a small amount to evaporation and transpiration. Combined with a rainwater catchment system, Victoria Aquaponics catches most of their water in the rainy months, which minimizes additional water sourcing. Most promising is the potentially larger yields—an aquaponic system allows increased growing density without nutrient loss, and Brown cites says a perfect system could yield a 300 per cent bump in production.

Carson Hardy, another local aquaponics master, operates a small, 1,000-litre system in his backyard. "It's fun feeding the fish every day," says Hardy. "They get all excited and you look forward to it."

Through some trial and error in his backyard, Hardy found that leafy greens performed the best, but his experiment also sprouted tomatoes, peppers, and even broccoli. Likewise, after trying several vegetables, Victoria Aquaponics has focused on greens. Their production now consists of about 70 per cent salad mix, a combination of tasty baby and spring greens consistently proven as their best seller.

Victoria Aquaponics hope to avoid some common fish-rearing problems by using ornamental koi. Remarkably hardy, koi can withstand temperatures from freezing to 30° C. They eat almost anything—from kale and cucumbers to watermelon and worms— which keeps feed costs low. Koi are not great food fish, but they require no provincial permitting and each mature fish can fetch up to $2,500 dollars, depending on markings and size. This, combined with a home-built system, is another way Mason Street City Farm hopes to offset operating costs.

It's not all a bed of greens, however. An aquaponics system requires more infrastructure than traditional farming: a tank, water and oxygen pumps, grow beds, and pipes at minimum.

> Each aquaponics system is a little different, with its own set of tips and tricks that require a bit of patience and a lot of learning.

For more info and public workshops
victoriaaquaponics.com

Electricity is needed to power the pump and keep the system in circulation, which leaves farmers at the mercy of the local power grid. And all this takes money.

Once the infrastructure is in place, new systems tend to be temperamental, as water chemistry needs weekly adjustments. Each aquaponics system is a little different, with its own set of tips and tricks that require a bit of patience and a lot of learning. Hardy, who incorporates rainbow trout into his system, has difficulty keeping the water oxygenated. For Victoria Aquaponics, it's the pH level. "We're still developing trust with our own techniques," says Brown.

The Victoria Aquaponics system currently holds 9,000 litres. Through home design and with a little creativity, they have already created a blossoming system, overcoming many of the hurdles associated with aquaponics.

Next on the agenda: off-grid growing. Through generous community support and business partners such as Power To the People Electrical Services, Moran and Brown will soon connect their aquaponic system to solar panels. Over the upcoming year they hope to grow their community connections. "[We want to] partner with more and more businesses to work together and help each other," says Moran.

In the long term, Mason Street City Farm will continue to spread the good food gospel while they, and their fishy helpers, produce local, sustainable food in the heart of the city.

◆ Mathew Janeway

Bee City

As farmlands become food deserts, cities offer pollinators unexpected oases

BY QUINN MACDONALD

You head out to the store to get groceries for your family. On the way home, you start to feel strange. Dizzy and disoriented. Your step falters. You forget where you're going, where you've been, where you live. Something feels different in your head. Things are heavier. Darker.

You don't know it, but a chemical has bound itself to the acetylcholine receptors in your central and peripheral nervous systems, inhibiting neural activity throughout your body. Your brain no longer works properly. Your body won't respond to its commands.

You die. Now imagine this happens to your whole family, your whole community.

This is happening every day in North America—to our bees. For these essential insects, our farmlands have become flowerless deserts at best, toxic wastelands at worst. You've likely heard the news: whole colonies, millions of bees, dead or disappeared. After thriving for millennia, bees and other pollinators have been decimated over the past decade. In June 2013, 50,000 bees were found dead in a parking lot in Wilsonville, Oregon. The next month, Ontario beekeeper David Shuit lost 600 hives, or 37 million honeybees. He cried while describing his experience on the CBC.

For years, scientists couldn't explain the phenomenon, only name it. In 2006, they coined the term "colony collapse disorder" or CCD. Mounting evidence now points blame at neonicotinoids, a new type of pesticide used on crops such as potatoes, corn, wheat seed, tomatoes, apples, and lettuce. Derived from nicotine, "neonics" get absorbed by plants and permeate all their tissues, including pollen and nectar. They disrupt the central nervous system of insects at lower doses; higher doses cause paralysis and death. More than a third of our food depends on bees. Now that same food is killing them.

Ironically, cities like Victoria now provide a refuge. Here, bees can find food diversity and relative safety from pesticides. Just as urban and small-scale farming has evolved as sustainable alternatives to the industrial food system, backyard keepers may be the best hope to save our bees.

Headlights cut through the rain on a Thursday night in early January. It's just before 7 p.m. and the vehicles have started to fill the parking lot at St. Aidan's church. The occupants, bundled in rain gear and Cowichan wool, shuffle into the church and head downstairs to the basement. They haven't come for a typical sermon. They are here for 2014's first meeting of the Capital Regional Beekeepers Association (CRBA).

Secretary Irene Tiampo welcomes them and hands out copies of the latest issue of *Beeline*, the CRBA's newsletter. Rubber boots squeak on linoleum as members pick up nametags and wish each other a Happy New Year. Newcomers timidly swap introductions and space themselves out in the first few rows of seats. The CRBA uses the first half hour of every meeting as a workshop for new beekeepers, or "newbees" as they're affectionately called.

A grey folding table at the front of the room displays an array of equipment. Bill Johnson, a Kenny Rogers lookalike and member of the new beekeepers committee, asks the newbees to move to the front. Pieces of an empty hive, decked out with stickers, sit on the table so the mentors can demonstrate how they fit together. Johnson holds up a bottom board, which can come with or without an added screen. The main box sits on the bottom board, and above that comes the inner cover, a tray with a raised "fence." The inner cover stops the bees from sealing the hive shut with propolis, a kind of bee superglue they make from the resin or sap of trees and plants.

Boxes come in several sizes; this one's a "super." You can find plans for frames online or buy them at around a dollar a piece from stores like Buckerfields. The smell of honey fills the room as members pass some of their own trays around to show the different levels of honey buildup. The full, or "fully drawn," trays are surprisingly heavy, and the newbees begin to understand what experienced beekeepers mean when they talk about hard physical labour.

Some commercial beekeepers feed their bees corn syrup to quicken honey production (look for lower calorie counts), and artificially inseminate their queens, creating smaller, more vulnerable gene pools.


Joan Yarmie

As the room fills, the committee wraps up the presentation and invites the newbees to come take a closer look at the equipment. The group of young couples, students, and a few older people crowd the front. Their eyes pass over picks and pryers, a bee brush that looks like a softer version of what you'd use to clean snow off your car, a two-dollar hat with a sewed-on veil, and a pair of smokers. The newer one shines like the Tin Man's head after he gets cleaned up in the Emerald City; the other, dirty as an old stove pipe, Johnson made out of a juice can 35 years ago. Beekeepers use smoke to clear the hive while they extract honey, although some beekeepers prefer to sedate the bees with sugar water instead.

The next committee meeting will cover sourcing bees, many of which are ordered from New Zealand. By the time CRBA President Catherine Culley calls the meeting to order at 7:35, it's standing room only.

Short and slight with choppy blonde hair, Culley seems severe until her face breaks into a smile. A lifelong gardener, Culley had a hobby farm in Ontario for six years before she moved to B.C. in 2010. She'd heard about the bee decline, and when she and her husband bought a quarter of an acre in Saanich, she sought out the local beekeeping organization and made friends while serving the refreshments and washing dishes.

The sense of community and connection to the bees drew her in. Culley remembers the first meeting she attended on a Thursday night in January or February. The members were huddled together, discussing how their bees had fared over the winter. Not well, for most. It had been a hard winter. "I noticed so many people were just so desperately sad," says Culley. "We really care about our bees a lot, and that ties us together."

As far as beekeeping goes, Culley has fared well, especially considering she's only just coming through her second winter. She didn't lose any of her four hives the first year, but so far this winter she's out three of seven: one to wasps, one to cold weather, and one she donated to the Swan Lake nature house.

A hive almost starved that first winter. When she realized they were too weak and cold to eat, she dumped them into a box, covered a top screen with honey, and brought them into the house. She says this isn't the kind of dedication expected of commercial beekeepers, who have thousands of hives to worry about.

The CRBA both connects and educates the local bee community, says Culley. The association visits elementary schools and sets up booths at events like the Saanich Fair and Seedy Saturday. Curious community members can check their website for information and to find out about the swarm hotline—a number you can call if you see a rogue bee swarm.

For aspiring beekeepers who aren't ready to commit, or who don't have the space, the CRBA has a mentoring program that allows newbees to volunteer with more experienced beekeepers —a chance to learn, and maybe get some honey in return. However, more bees isn't necessarily always a good thing. The more bees, the higher the chance diseases can spread.

Bees are prone to many pests. A devastating one is American Foul Brood, which sounds like the title of a horror film. It travels in spores and melts bees' larvae from the inside, leaving behind the smell of rotten meat. There is no treatment, so infected hives must be burned, along with the beekeeping equipment.

The most common pest here is the varroa mite, which transferred from the Asian honeybee. Smaller and with a shorter life cycle than European honeybees, the Asian honeybee co-evolved to tolerate the mite. When the parasite jumped to its new host, the balance disappeared. The mites weaken and sicken the European species by feeding on their blood.

Brenda Jager is the provincial government's apiary instructor for the South Island and the Gulf Islands. (Local beekeeper Lyle Macgregor calls Jager "a freaking walking goddess of bees.") She inspects bees for disease and pests whenever they are moved between regions and provinces. She issues permits for the transfer and sale of bees, and does outreach with bee associations and gardening clubs. Jager also teaches new beekeepers how to provide for healthy bees.

It's Jager's fifth year on the job, but she says her life's been "bees, bees, bees" for the last 18. She now has 100 colonies of her own, and, as much as she loves the bees, she says the people are great too.

"There's a temperament," says Jager. "People who do bees tend to be a little intellectual, so they have stories to tell and all kinds of people do bees, so you meet people who have all sorts of backgrounds."

The treatment for pests depends on the beekeeper. The standard way has become to treat bees "prophylactically"—that is, with antibiotics. It works, but weakens the bees' immune systems and leaves them vulnerable to other diseases.

Jager cautions beekeepers against reliance on antibiotics. "I don't think we should just be throwing prophylactic treatments at the bees," says Jager. "I think it's a very bad idea, but you can't just leave them in the backyard." She knows some beekeepers are trying to out-evolve the varroa mite, but says that needs to be done in large numbers, and it could take anywhere from a few years to a few thousand.

Another option is integrated pest management. It does not involve prophylactics, but monitoring for signs of infestation and reduced treatments.

Veteran beekeeper Joan Yarmie sees the rise in urban beekeeping as a trend. Some newbees will become serious beekeepers; many who drop off will still spread awareness. When she first started ten years ago, the CRBA only had around 50 members. Now the association has upwards of 150.

After the big die-offs in Canada and the United States, people began asking Yarmie questions. "I go to a local coffee shop down here on Shelbourne, and the first thing they ask is: 'Well, how are the bees this year? Are they dead? How are they doing on Vancouver Island?'" She mimics their panicked tone. "So yeah, there's a big awareness—and that's a good thing."

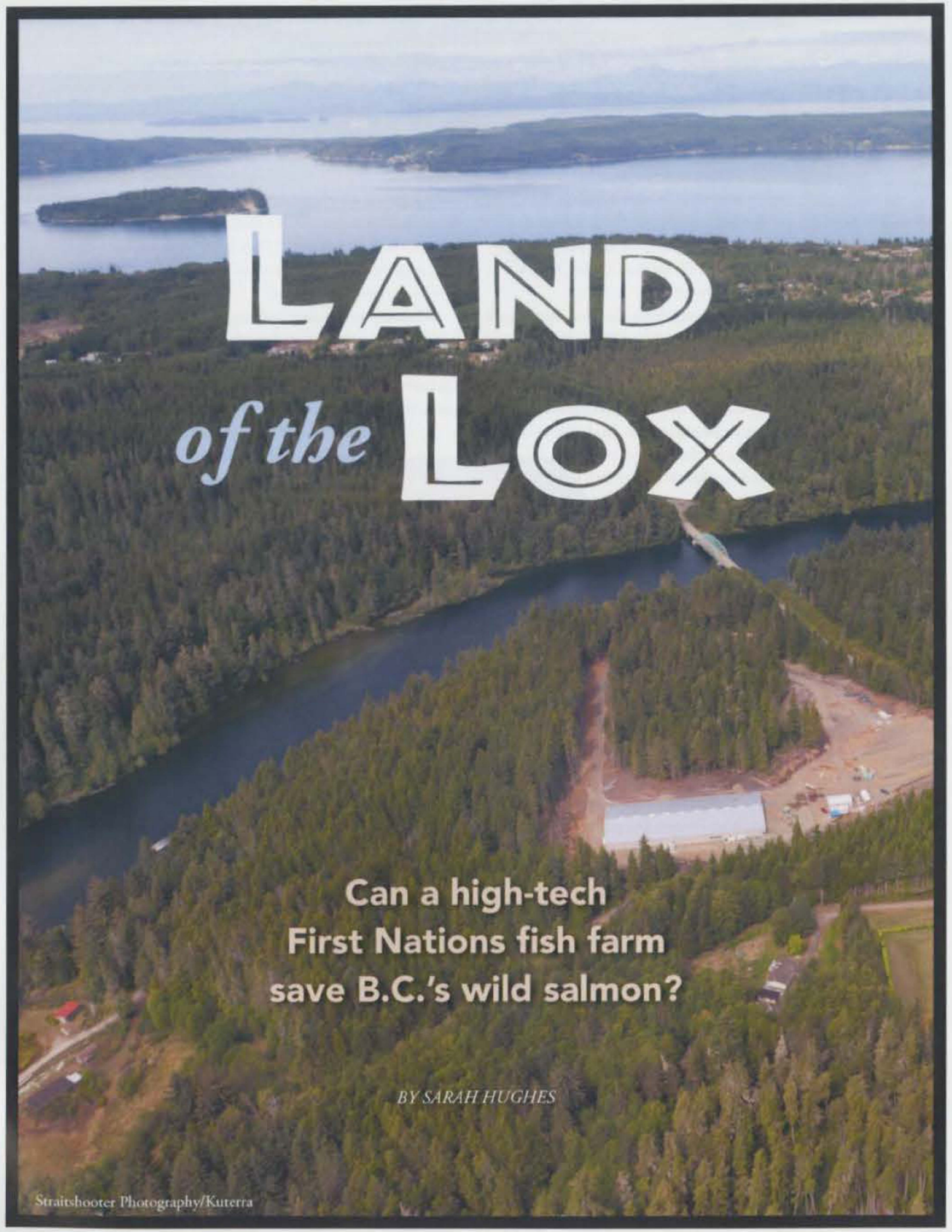
Yarmie came relatively late to beekeeping, but in the last decade she has become an expert and a prolific queen breeder. With her short grey hair, knit sweaters, and diminutive size, she seems like any other grandmother until she starts talking about bees. A self-described "social animal," Yarmie speaks with a folksy familiarity, but quickly, as one story reminds her of yet another.

Yarmie had a country childhood in rural Metchosin, but took a winding path to bees. After retiring as an administrator at UVic, she began Scottish country dancing. One of the few male dancers happened to be the bee inspector for Vancouver Island. He asked if she'd like to learn about bees by having a few hives in her backyard. When he never showed Yarmie took a course and bought two hives from up island. Two turned into four. And she was hooked. "It's a lot of work," says Yarmie.

"It's physical work. You have to be on top of it. You can't just say, 'Oh, I'll do it in a couple of weeks.' Then it's too late. . . But it's so interesting."

The Mason Bee

- Is one of 3,500 bee species native to North America
- Lives a solitary life in the forest
- Has a short life cycle of 6-7 weeks
- Can be kept in store-bought mason bee houses
- Spins tough cocoons that people harvest and sell
- Makes great pollinators, since they come out early when it's 15° C
- Won't compete with honeybees for food and territory



LAND *of the* LOX

Can a high-tech First Nations fish farm save B.C.'s wild salmon?

BY SARAH HUGHES

Straitshooter Photography/Kuterra

British Columbia has become a salmon-farming power, but not everyone is proud of the aquaculture boom on the West Coast. Since the 1970s, the development of fish farms to raise Atlantic salmon in Pacific waters—now over 100 sites— has been accompanied by vigorous public and scientific debate about the environmental pros and cons.

A new development in Port McNeill, on northern Vancouver Island, may finally bridge the gap between economists and environmentalists. This spring, the 'Namgis First Nation harvested their first "crop" at the Kuterra aquaculture facility. Thanks to a "recirculating aquaculture system" (RAS), salmon raised at Kuterra pose almost no risk to wild stocks—because the fish are raised on land.

RAS technology offers a sustainable solution to traditional ways of commercial-scale fish farming. The advanced facilities remove open-net pen fish farms from the ocean, where they can spread disease to wild stocks and face environmental hazards, and raise the fish on land in a containment system. In 2010, Statistics Canada listed nation-wide aquaculture production at $927 million, with close to half produced in B.C. With commercial fishing reeling in cash crop status, the decision to move facilities to land isn't black and white. Supporters of sustainable fish farming think RAS is the way of the future—if wild salmon hope to have one.

"We learned with avian flu not to let wild birds land in bird farms anymore," says independent biologist Alexandra Morton, who has spent 30 years studying the fragile dance between wild salmon populations and conventional open-net aquaculture. "That lesson is just tossed when it comes to these feedlots that are floating in our oceans."

The idea for the Kuterra project was sparked in 2011 by the Save Our Salmon Initiative (SOS), an organization launched by the Marine Conservation Foundation to advocate the protection of British Columbia's wild salmon. SOS communications director, Jackie Hildering, says the idea of the Kuterra facility was motivated by people who wanted to see fish farms out of the ocean. SOS partnered with the 'Namgis First Nation after they attended a series of sustainable aquaculture workshops put on by the Freshwater Institute in West Virginia, where RAS technology has been developed and used successfully for over two decades.

Five years ago the Freshwater Institute began raising industry-sized Atlantic salmon to prove the economic viability of closed-containment aquaculture systems. After much planning and fundraising, the majority of funding coming from Tides Canada, the sustainable aquaculture venture in Port McNeill was underway in 2012. Kuterra is now owned and operated 100 per cent by the 'Namgis First Nation.

Straitshooter Photography/Kuterra

There are stark production difference between RAS and conventional fish farms. The average production of an open-net pen fish farm is about 2,500 metric tons of fish for market every year—that's equivalent to filling about 183 standard dump trucks. When Kuterra reaches full production in the coming years, the RAS facility will produce about the same as one open-net pen. Kuterra currently produces about 470 metric tons of salmon annually. Kuterra's contribution may seem at first glance a drop in the international aquaculture bucket, but some supporters of sustainable fish farming agree this is a step in the right direction for the aquaculture industry.

"We hope that the present day open-net fish farms will look at what we're doing and agree that they should take the open-net fish farms out of the ocean," says 'Namgis hereditary Chief Bill Cranmer. "It's just a horrible, horrible risk that they're putting our wild salmon at." Chief Cranmer adds it's not only wild salmon being affected. He believes herring, shellfish, and other animals higher on the food chain also suffer.

Hildering notes that RAS technology has been used to farm salmon for over 20 years, but Kuterra was the first facility to raise Atlantic salmon, from smolt to harvest, in a land-based closed-containment facility in B.C. The yearlong process ended with the harvest of the first cohort in April 2014.

RAS technology is a full-circle method of raising fish. Facilities filter and reuse 98 per cent of the tank water, which means the fish can remain in the same water from the moment they enter the tank as smolts to the time of harvest. The water recycling drastically reduces the chance of outside contaminants entering the tanks, so the fish grow in a nearly disease- and parasite-free environment, virtually eliminating the need for antibiotics. Fish also grow twice as fast in the controlled RAS environment.

Fish waste, liquid and solid, is extracted and churned into a phosphorous-rich fertilizer for use on private farms or sold to the community. The liquid overflow will be filtered and percolated back into the ground, and the 'Namgis plan to use the effluent for an aquaponic system to grow food. A major criticism of open-net pens is how fish waste accumulates on the seabed and pollutes the water. If ocean currents fail to waft the waste away, it can linger and spread disease to fish in the pens or to wild salmon migrating past the pens.

Meanwhile, as debates about the Northern Gateway Pipeline and increased tanker traffic hold the public's attention, Chief Cranmer thinks people need to also consider protecting wild B.C. salmon from farm-spread diseases. "Oil goes away after awhile, but once you've killed the salmon they won't come back."

Chief Cranmer says that wild salmon are a deeply ingrained part of 'Namgis culture. "Our people," he begins, "we're connected to all the animals, all the fish and animals that live on the land. The salmon are so important that we compare the salmon to when people have twins in their family—that's a special gift from the Creator."

Kuterra and the 'Namgis First Nation hope to become as sustainable and self-sufficient as possible, with little to no impact on wild salmon. More importantly, they hope to prove a market exists for salmon raised on land not in the ocean. But what if alternative aquaculture—like recycling your newspaper in the age of global warming—is a case of too little, too late?

The October 2013 lifting of the moratorium of fish farm licenses by the Canadian government worries critics concerned about the long-term health of wild B.C. salmon. There are over 100 fish farms along the Central Coast, the two high density areas marked as the Broughton Archipelago and the Discovery Islands region. The Discovery Islands remain under moratorium because of proximity to the

"Oil goes away after awhile," says Chief Cranmer, "but once you've killed the salmon they won't come back."

Gerry Alfred (left) and Mike Jolliffe (right)

Fraser River basin, one of the largest spawning grounds for B.C.'s native salmon species, the Pacific salmon. The lift on the moratorium opens the Broughton Archipelago to conventional open-net pen expansions of the aquaculture industry's giants: Marine Harvest, Cermaq, and Grieg Seafood. These three Norwegian corporations make up almost 90 per cent of fish farming in B.C.

Chief Cranmer says the 'Namgis have talked with officials at Fisheries and Oceans Canada about the future of open-net pen production in B.C. Most aquaculture facilities plan to increase production at existing sites rather than apply for new ones.

"It's important for people to know that if salmon farming was removed from the oceans there would still be jobs in aquaculture, and they would be Canadian jobs and businesses."

"It's going to be even worse than before," says Chief Cranmer. "There are going to be more fish in those sites. It's going to be a disaster."

While Morton commends Kuterra, she is skeptical the facility can make a difference, now that the moratorium has been lifted. "The three Norwegian companies are very clear—they don't plan to get into tanks," says Morton. "The wild salmon in this province are in serious trouble."

Morton has lived in Echo Bay, located on Gilford Island in the Broughton Archipelago about 45 kilometres northwest of Port McNeill, for more than 40 years. She says the industry had devastating impacts on not just the wild salmon, but also on her community. "Today there's only eight people left in Echo Bay," she says. "The school is closed. There are 27 honking Norwegian fish feedlots. We have toxic algae blooms that paint the waters orange and red. The whales I was studying left. We have Atlantic salmon appearing in the rivers. We've got sea lice plagues every single spring, and I'm finding European viruses."

Open-net pens have proved deadly to salmon in the past. In 2008, samples of wild and farmed salmon showed signs of piscine reovirus, a deadly European virus now in the waters of B.C. This virus is thought to be the trigger of a deadly condition known as heart and skeletal muscle inflammation, a disease that weakens and softens the heart and skeletal muscles of the fish, ultimately causing premature death. Prior to 2008, B.C. salmon tested negative for the piscine reovirus, but now Morton has found that over 70 per cent of farmed salmon have tested positive.

Sea lice is also prevalent in open-net pens, and young juvenile wild salmon, not known to carry the lice naturally, have been found with lice only after migrating past open-net pens. Atlantic salmon are not native to B.C. waters; while they cannot reproduce with the native salmon, they are considered an invasive species and can out-compete wild populations.

Despite her skepticism, Morton suggests there is huge potential for small-scale, land-based aquaculture in B.C. to drive the aquaculture industry. "It's important for people to know that if salmon farming was removed from the oceans there would still be jobs in aquaculture, and they would be Canadian jobs and businesses."

Kuterra isn't alone on the island. Taste of BC Aquafarms in Nanaimo grows four-and-a-half pound Steelhead trout at 100 metric tons per year using RAS technology. That's about a quarter of the production scale of Kuterra. Taste of BC is a pilot project with a goal to reduce environmental and energy costs while creating a quality product to meet market demand.

Kuterra salmon will be marketed and distributed exclusively by Albion Fisheries, a Western Canadian seafood company focused on sustainability. Guy Dean, vice president at Albion Fisheries, says 80 to 90 per cent of the first Kuterra cohort harvested in April will go to retail locations, although a major retailer on Vancouver Island has yet to be confirmed.

"Not that there's anything wrong with that," he says. "It was just our belief that if we wanted to create impactful change [Safeway] was a good partner to be associated with because the consumer base is already used to this product." Labels list Kuterra salmon as land-raised and farmed, with a link to the company's website and a QR code to scan for more information. The first

wave of Kuterra salmon hit grocery store shelves on Earth Day.

Dean thinks people in B.C. are "fairly knowledgeable" about seafood, but public awareness and education about the differences between Kuterra and conventional salmon will be crucial. He stresses the importance of both the environmental benefits of Kuterra salmon, and the health benefits from the lack of antibiotics. The fish also taste different.

"The Kuterra product has a higher level of omega-3 fatty acids, and so it tends to have a milder, more buttery flavor." The salmon don't have a strong fishy flavour because they weren't raised in the ocean.

Albion Fisheries work closely with SeaChoice, the Canadian branch of the Seafood Watch program created by the Monterey Bay Aquarium. Its criteria system judges certain seafood as green for "best choice," yellow for "good alternative," or red for "avoid." Since 1999, SeaChoice has handed out upward of 40 million pocket guidebooks. It now offers a downloadable App for shopping convenience.

Producing Atlantic salmon in an environmentally conscious way while meeting market demand will always be a challenge. It's made even trickier by the overfishing of smaller forage fish like herring that carnivorous fish like salmon need to eat. "The conventional industry has had to move towards more plant based proteins for the deeply tragic fact that there are less forage fish in the ocean," says Jackie Hildering.

RAS facilities already use less protein feed than open-net pens because the fish, living in a secure tank without predators or environmental hazards, are less stressed and require less protein energy. Hildering hopes Kuterra's better feed conversion rate of using 30 per cent less feed to grow salmon will help the facility earn a green ranking in the Seafood Watch criteria.

Alexandra Morton believes consumers hold the power to make the foreign aquaculture companies look at moving their farms on land. "If people don't act right now and stop buying [conventionally] farmed salmon in the supermarkets, and as sushi and sashimi, we're going to lose our wild salmon," she warns. "These wild salmon are the blood stream of this whole place—everywhere they go, there's life." ◆

Following an election in May, Bill Cranmer has been replaced as 'Namgis Chief by Debra Hanuse.

*...**Bee City** from p. 21*

As far as she knows, no labelling requirements exist for ornamental plants.

Catherine Culley uses her position at the CRBA to engage the government on honeybee issues. "That's been my largest role as president for this year," says Culley, "writing letters to the government to point out why we wish to have certain policies in place about bee management in this country."

The CRBA was politically active before but suffered a defeat when they argued to maintain a quarantine that helped slow the varroa mite's spread. In 2009, the federal government ignored the warnings of the CRBA and other bee associations and dropped the quarantine.

"They felt nobody had listened to them," says Culley. "It was so terrible. All their arguments and all their knowledge didn't matter. So because I was new, I hadn't suffered through that, I hadn't burnt out yet. So now with some of the new problems and the proposal to import bee packages from he U.S. and a lot of the issues around neonicotinoids, pesticides, I have a little more energy to attack."

When Health Canada asked for input on neonicotinoids, the CRBA responded with four main conditions: a well-publicized ban on the use of neonicotinoids in residential and ornamental plants; availability restricted to legitimate pest control problems in agriculture; no prophylactic use of neonicotinoids; and a stop to the practice of charging more for non-treated seeds.

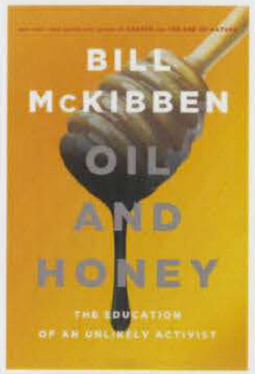
Culley says she thinks the government does listen to groups like the CRBA. The Canadian Food Inspection Agency recently granted the CRBA's request to be stakeholders in pesticide review and Culley was one of the first to see the agency's latest report. She vows to continue the fight. "If you don't say anything then they think you don't care," she says.

Barlee says if our government were listening to science and honouring the precautionary principle, neonicotinoids would be banned in Canada. "The only reason I think that they aren't banned is because of the lobby of neonicotinoid producers."

Even though the honeybee is an introduced species, Barlee says its poster-child status allows a lot of Canadians to realize that bumblebees, wild bees, and thousands of other vital pollinators are also in danger. "I think people get it, that, wow, it's not just the honeybee, it's also bumblebees," says Barlee. "Of all the campaigns that I've worked on over the last 13 years, this is the one that seems to have struck a chord with the public in a way that I just can't remember."

Barlee says the Wilderness Committee will continue to campaign for all pollinators. "This is..." She pauses to collect herself before continuing, "...this is so serious. We can't have a 'Silent Spring' for bees and pollinators." ◆

Oil and Honey
Author: Bill McKibben



In early March, nearly 500 students were arrested for chaining themselves to the White House fence to protest the proposed Keystone XL pipeline. They were part of XL Dissent, a student-led outgrowth of Bill McKibben's global activist network, 350.org.

McKibben's new book, *Oil and Honey: The Education of an Unlikely Activist* (Times Books), charts his organization's growth, intercut with passages about the apiary McKibben bought for Vermont beekeeper Kirk Webster. Although the book spends more time on oil than bees, McKibben follows the catch-more-flies-with-honey activism model and avoids alienating readers while laying out the gravity of the situation with scientific data.

The author of a dozen books, McKibben has warned of climate change for decades, but he realized writing was no longer enough. "It was time to stop changing light bulbs," he writes, "and start changing systems."

McKibben hopes American politicians will listen. In Canada, we don't have that luxury, and McKibben pulls no punches when discussing the our government's energy policy (though the book praises the October 2012 anti-Enbridge protest in Victoria). The Harper government has labeled environmentalists as radicals, but McKibben argues the real radicals are the petrochemical companies "willing to alter the chemical composition of the atmosphere to make money."

As an acidifying sea strips scallops of their shells in the Georgia Strait and the California drought heads into its second year, we're running out of time. McKibben's book shows how we must build a movement that includes all community members to protect the planet. Unlike the bees, we can't swarm to a new home. **◆ Quinn MacDonald**

Carbonation
Band: Dope Soda

Sounds like an intense weed-pulling dance party.

Simply put, Dope Soda is a ska band. Then again, upon further review, it's easy to see the Nanaimo, B.C. six-piece as much more.

Carbonation, the band's first full-length, starts with "Video Games," a six-and-a-half-minute track that goes from bouncing ska to frenzied punk to mellow reggae and back around. It's a tad exhausting, but shows off the impressive versatility that comes from a band with its roots in Vancouver Island University's prized jazz program.

The album reaches its stride with "Pirish," a "whoa-ho-ho" sea shanty that sounds like Reel Big Fish covering Dropkick Murphys. The album also features some great hooks, of both the vocal variety and courtesy of the group's three-piece horn section. The choruses in "She's Mine" and "Golden" are poppy without approaching corny, and the horn line in "Eye Patch" rivals the best brass displays seen from bands like Cat Empire.

Co-frontmen Matt Carter and Dave "Dirt" St. Jean can struggle vocally in certain spots on the album, but the strong song writing and impeccable musicianship render this a non-issue. In the end, *Carbonation* is a fuel-injected mix of rock-solid rhythms and blistering horns that should satiate the thirsts of both diehard ska and reggae fans, and those simply looking for something diverse and energetic. **◆ Michael Luis**

UVic's First Peoples House

Where: University of Victoria campus **Who:** Alfred Waugh Architect of Vancouver

Situated in the heart of the University of Victoria campus, the low-rise, single floor First Peoples House blends naturally into the landscape—the antithesis of the higher-rise, concrete buildings that comprise the bulk of the university's architecture.

Opened in January 2010, the 12,500 square-foot building is home to the Office of Indigenous Affairs, student counselling services, a ceremonial hall, and student and elders' lounges. Academic spaces include a 25-seat classroom, a seminar room, a computer lab, and a reading room.

The structure is meant to support the physical, spiritual, and academic needs of all Indigenous members in the UVic community. From 1999 to 2010, the population of Indigenous students at UVic grew more than 700 per cent, emphasizing the need for a space of their own. Cara Barter, a former UVic student and now Assistant to the Director of the First Peoples House, calls the house her "home away from home."

"I don't think I would have made it through my university experience without the house," says Barter. "In terms of the community support it provided me—even so far as the structure of the house itself—the feeling you get when you walk inside, it's just amazing."

The First Peoples House was primarily designed by architect Alfred Waugh of the Fond du Lac Denesuliné Nation. Born in the Northwest Territories, Waugh is of Chipewyan descent. His firm focuses on projects that reflect sustainable design and cultural sensitivity.

For Waugh, the structure symbolizes how UVic is now honouring its relationship with Indigenous people, a keystone of the university's recent strategic plans. "It brings a sense of sharing culture, for one thing," says Waugh, "and a sense of respecting what was there before the campus."

The house was originally to be situated on the edge of campus, but elders recommended a location near the central quad to discourage students' feelings of isolation.

Waugh's firm worked closely with First Nations leaders, Indigenous staff, faculty, and students. Mimicking the style of the Coast Salish Peoples, the structure represents a pre-Contact long house. Traditional architectural elements include cedar plank exterior cladding and rammed-earth walls. Carved cedar posts guard the main entrance, while the entry corridor provides a gallery to showcase artifacts and art from other Indigenous cultures.

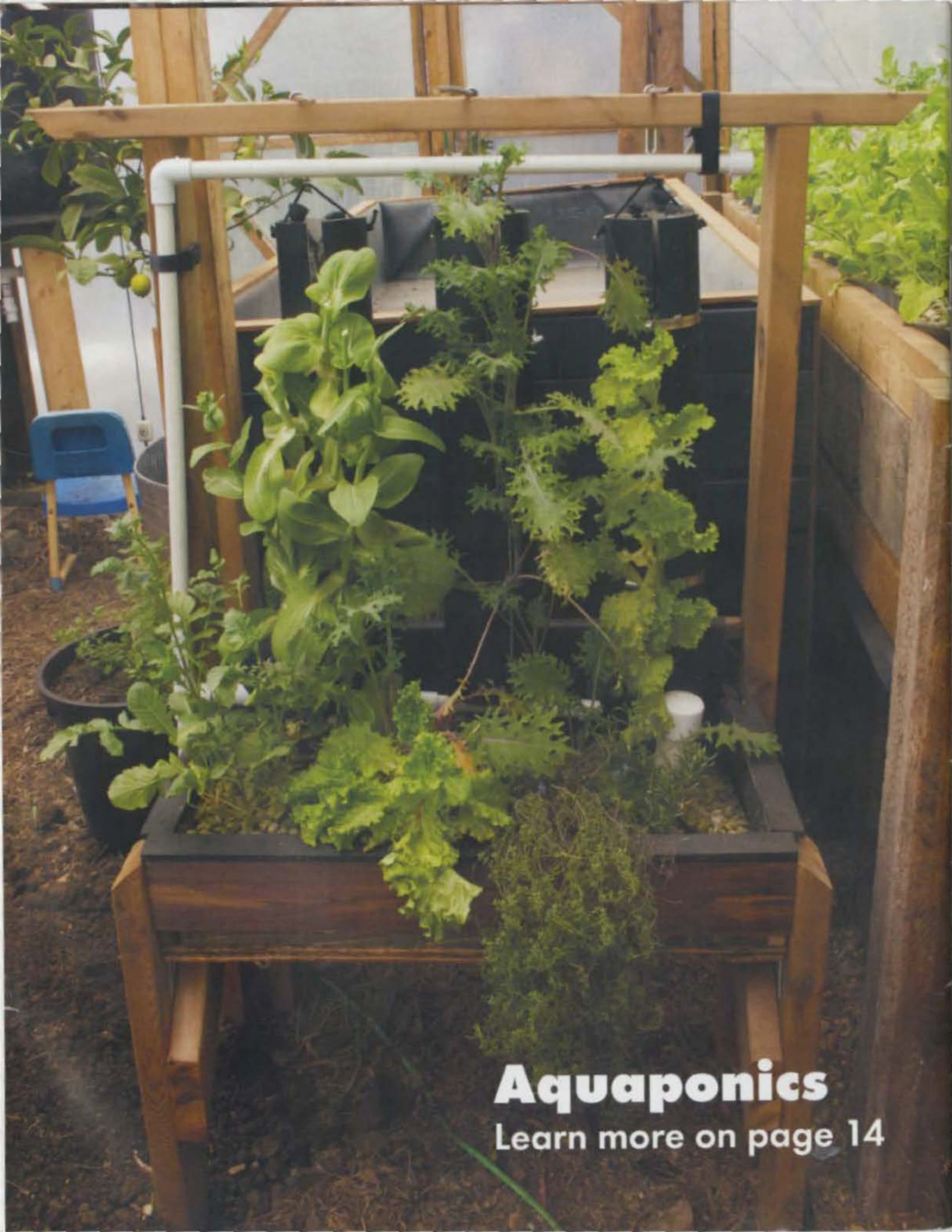
The ceremonial hall, which accommodates 200 people, is reserved for special events in the Indigenous community—graduation ceremonies, mix-and-mingles for new and returning students, and cultural gatherings. Ample seating comes in the form of wooden bleachers, which look down on a central fire pit. Across the hall, the elders' room provides a meeting place for senior persons who frequent the house.

The First Peoples House uses the distinctive Pacific red cedar as the primary building material, in support of the provincial Wood First Act, a policy that requires new structures in B.C. to use native wood whenever possible. Additional materials include recycled steel reinforcing bars and reclaimed wood.

The building exceeds UVic's own standards for energy efficiency and received gold certification in the Canada Green Building Council's Leadership in Energy and Environmental Design (LEED) program. Rather than harsh fluorescence, 90 per cent of the house relies on exterior glazing to provide natural lighting, while window vents with built-in sensors assist in the building's natural "breathing."

Outside, along a side wall, a covered area offers space for community members interested in carving. Garry Oaks, Douglas firs, and other vegetation native to the area make up the surrounding landscaping, while runoff from the green roof feeds the seasonal storm retention pond at the back of the building. "The Coast Salish People are people of water," says Waugh. "We wanted to celebrate that."

◆ **Rachel Lallouz**



Aquaponics

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