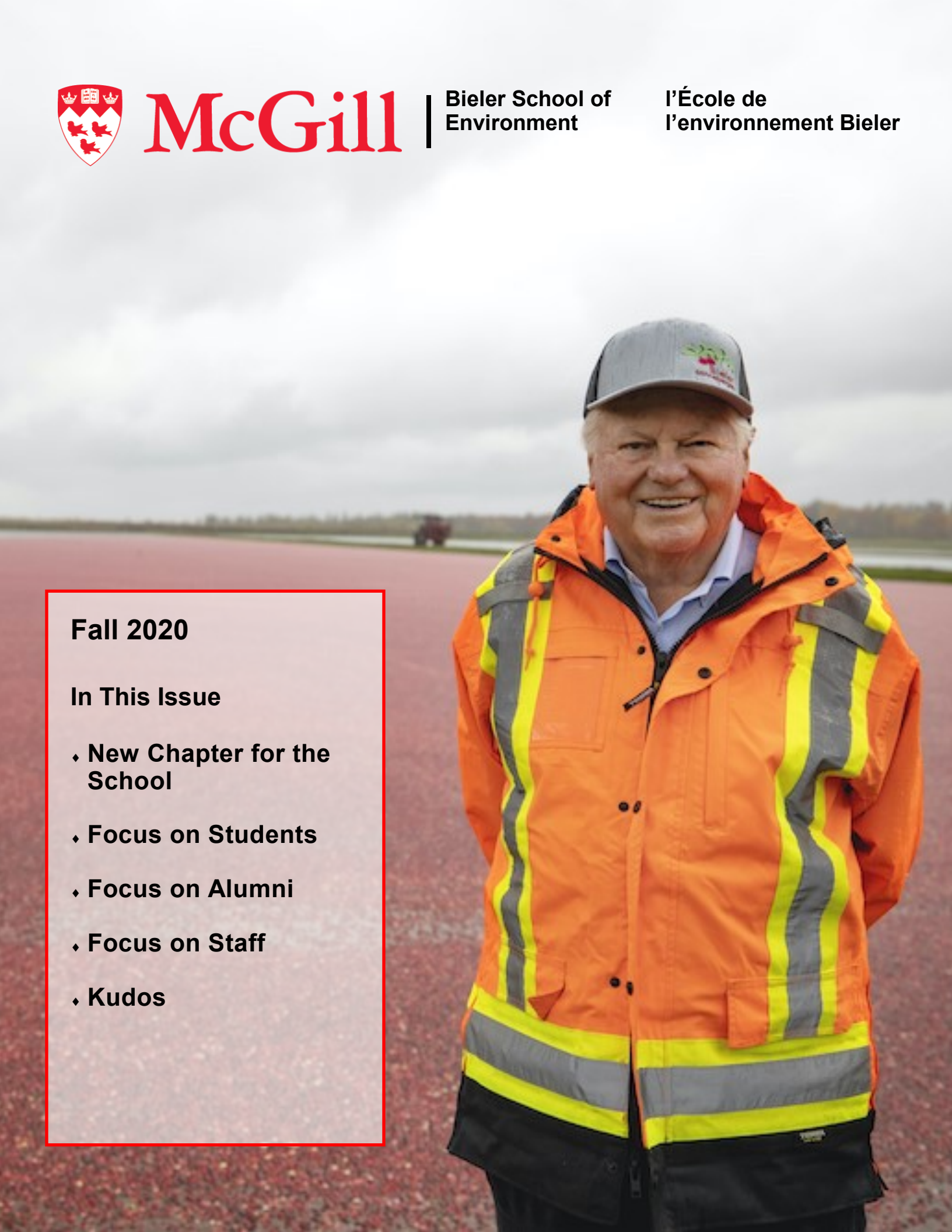
McGill | Bieler School of Environment

l'École de l'environnement Bieler



Fall 2020

In This Issue

Director's Message

Frédéric Fabry
Director
Bieler School of Environment

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way": Rarely has this famous opening by Charles Dickens been more fitting to describe the world around us than during this tumultuous year. It was a roller-coaster, it was eerily quiet, we were all together, we were all alone, we longed for change, we longed for normalcy.

You may have noticed the new face, or maybe the new pen. At the risk of breaking the lyrical rhythm of this message, let me introduce myself. My name is Frédéric Fabry, and I am the new Director of the School since January. I am jointly-appointed with the Department of Atmospheric and Oceanic Science downtown, but am also associated with the Macdonald Campus via the Radar Observatory. A year ago, I was marching with 500,000 others in Montreal to demand action on the climate front; today, I am heading a team of faculty, lecturers, and staff dedicated to solving environment problems. Kudos and sincere thanks to my predecessor, Sylvie de Blois, for her hard work and dedication to the School; she did manage to fill the large shoes that she was left with. Best of luck for her future endeavours in the School and elsewhere!

The university is usually a predictable environment rhythmed by a regular schedule that imposes a dependable routine following a well-charted course, all anchored by a nearly bicentennial tradition. Without much warning, to our disbelief, world events upheaved what we thought was an immutable reality. We could not travel out of town, nor commute to campus. Working from home became the new norm. We had to rethink how we teach, how we evaluate, how we supervise, how we research, how we network, how we commemorate. Exchanges and events, from teaching to meetings and from academic seminars to graduation, all occur through the window of a computer monitor. The most one can see of another human being is a postage-stamp size image, and only if that person's video feed is turned on. Staff and students had to adapt. The confinement, imposed to save our physical health and that of the health system, has been taxing on our mental wellbeing. But the School undertook the challenge, as we remained committed to deliver the exciting, high quality, and equitable education we are known for: we learned about the specific challenges associated with distance teaching; we tried and mastered many remote delivering technologies; we rethought courses. And we are pulling it off.

Amidst this chaos, a fantastic event occurred: We have been the beneficiary of an extraordinary gift. Marc and Marie Bieler, both McGill alumni, have pledged a $15-million gift over the next 25 years to build interdisciplinary teaching, research and experiential learning capacity at the School. As a token of recognition, the School will now be known as the Bieler School of Environment. New name, new means, yet same drive, same goal: Save the planet.

New Chapter for the McGill School of Environment; now the Bieler School of Environment

McGill receives $15-million gift commitment from agri-food entrepreneur, Marc Bieler

Landmark philanthropic investment will build resources for McGill's School of Environment to tackle critical environmental and social issues

As a man whose career as a successful agri-food entrepreneur has spanned sectors as diverse as cattle breeding, apple growing, maple syrup production and French vineyards, and who almost single-handedly built Quebec's cranberry industry into one of the largest and most highly regarded in the world, Marc Bieler, DipAgr'58, BA'64, has always had a profound attachment to the land and a deep respect for the natural environment.

Now, he aims to help advance environmental research and scholarship for the entire planet through a landmark $15-million gift to McGill University to build interdisciplinary teaching, research and experiential learning capacity at the McGill School of Environment. The gift is comprised of an initial cash investment, as well as future commitments from him and his estate for the next 25 years, to ensure a steady stream of resources for the School into the future.

In recognition of this transformative gift, McGill has also announced that the school has been renamed the Bieler School of Environment.

The gift is the largest ever from a graduate of McGill's Macdonald Campus and will provide immediate and long-term impact by supporting initiatives and projects built around the following three pillars:

- Students and academic programming
- Interdisciplinary research
- Engagement and experiential learning through the creation of internships and mobility awards

"Four generations of my family have attended McGill, and it has played a very important role in my life", said Bieler. "It gave me my start, and it's where I developed my passion for agriculture, the environment and food. I have a strong belief in McGill and I am confident that this investment will propel the School of Environment's important work to new levels of excellence and ultimately motivate others to support its vital work."

-- Excerpts taken from full article at McGill Newsroom --

Get to know Marc Bieler, "A Guardian for the Environment", by McGill Giving.

Focus on Bieler School of Environment Students

Alexandra Zvezdin

B.Sc. Agriculture and Environmental Sciences
Year 3
Major - Environment - Water Environments And Ecosystems
Domain - Biological

There is hope in science, at least for me.

One of my good friends has a saying: “If everyone and everything annoys you, perhaps you are the one who is annoyed with your own situation’’. With these words in mind, in the second year of my degree (2018-19) I decided that I wanted to pursue science and changed my Environment major from a B.A. to a B.Sc. Agriculture and Environmental Sciences.

This was particularly hard to do as my my terrible math grades from CEGEP followed me in this process threatening, once again, my possibility of becoming a scientist. Once the change had been accepted, I actively decided to do my best in pursuing science. Besides bringing my grades up, I actively sought a summer internship to be credited and visible on my transcript. This could maybe make up for not having an Honours. After sending too many CVs, a LinkedIn profile, and multiple conversations I found one.

Soon after, I started in Dr.Santato’s lab (Polytechnique Montréal) and Dr. Rho’s lab (National Research Council). For the entire summer I was in charge of monitoring the composting part of our experiments. I learned about O_2 respirometry techniques, compost, ecotoxicity, eco-design, organic electronics and e-waste.

I also learned something else: I enjoy science and I have my place here. I enjoy being in the position to say that we should do better with our electronics, here is why, and here is how. I enjoy being a bridge between experts of different fields, problem-solving, and thinking about how pollutants have an impact on ecosystems. And so, I stayed and kept working with the Polytechnique & CNRC team.

This past spring, we published a perspective article titled ‘’En route toward biodegradable organic electronics’’. If you click on the link, you might notice that the last name of the first author is that of an undergraduate student who, just one year ago, thought science was not for her. I might not have an honours degree, but I certainly don’t think I am missing out.

I am still involved in organic electronics research today, but I also like to think about ecology through ecotoxicology research (Jessica Head) and briefly through Google Earth Engine (Jeffrey Cardille).

Many thanks:
I would like to thank Caroline Begg (FAES) who supervised me during the entire internship (AGRI 310) and had great advice when I hesitated about staying in Dr.Santato’s lab.

Sieving compost for O_2 Respirometry experiments at the Canadian National Research Council (CNRC) in ville Mont-Royal, photo taken in summer 2019 by Denis Rho. Appearing on the photo: Michel Bilodeau-Calame and Alexandra Zvezdin

Women's Plan Feeds 10,000 via Food Bank


Chen Jiahua and Zhang Ying

Chen Jiahua and Zhang Ying, both in their early 20s, started a food bank in 2017 to salvage food that was still good but was not used or close to expiring. The food bank, PDT Food Depot - named for the French word for potato, pomme de terre - started distribution in communities in Guangzhou, Guangdong, China. It then expanded to a much greater part of the city with the help of the Shanghai Oasis Ecological Conservation and Communication Center, which had created the country's first food bank in 2014.

The program also joined Oasis' food bank network. Partners within the network share information about obtaining donated products - usually food items close to their "best before" dates from supermarkets and producers or excess from restaurants - so that the food can be redistributed to the nearest recipients.

"We also learned from Shanghai Oasis the practices and legal framework for operating a food bank in the country," said Chen, who has signed up 12 food businesses, including major companies like Kellogg's and Kraft Heinz Co, as donors. PDT also has opened 19 social work facilities that offer such services as centers to care for the homeless and welfare facilities for mentally challenged children who are hungry.

"Our goal is to develop a food redistribution network covering South China while exploring a future of zero food waste with joint efforts from food enterprises and consumers, especially as the country recently started a nationwide drive to avoid unnecessary food waste," Chen said.


Workers for free vegetables at a food bank outlet in Shanghai on Thursday. [Photo/CHINA NEWS SERVICE]

She learned about food banks while studying environmental science at McGill University in Montreal, Canada. There, Chen and others who helped create the Guangzhou food bank were honored when PDT Food Depot won second place in the university's 2019 competition for the McGill Dobson Cup for the best startup idea, according to the July issue of a McGill newsletter. For 2020, the program aims to reduce by 100 tons the amount of food wasted in Guangzhou through sharing and donation.

"We hope to help impoverished families cut down on food expenses and to be able to use the money for health and education purposes instead, while helping enterprises minimize their food waste," said Li Bing, founder of Shanghai Oasis, a non-governmental organization.

Chen Jiahua

B.Sc. Agricultural and Environmental Sciences
Granted: May/June 2020
Honours Environment -
Water Environments and Ecosystems Domain - Biological
Minor Concentration Geographic Information Systems
First Class Honours in Environment, Dean's Honour List

Zhang Ying

B.Sc. (Nutritional Science)
Year 3
Major Nutrition - Food Function & Safety

Force of Nature

By Sacha Wright
Bachelor of Science, Year 3
Major Environment - Ecological Determinants of Health Domain - Population

Mobilizing the Next Generation of Change-Makers

Our mission is to help young people from all corners realize their change-making potential; take action on the climate crisis; and become custodians of a future by their own design.

Check out Force of Nature's website and podcast. In addition to workshops, we have a podcast where Clover Hogan, Founder of Force of Nature, interviews a variety of amazing change-makers about their "catalyst moments", a burgeoning forum on a platform called Discord where FoN workshop participants can connect, and youth advocacy opportunities like speaking engagements and business consultancy.

Most recently Clover attended the New York Times Athens Democracy Forum where she advocated for bringing young voices to the forefront of problem-solving in climate change.

I am so grateful and proud to be part of this organization.

In the winter of 2020, I was studying abroad at the University of Edinburgh. I was on an exchange semester in my third year in MSE at McGill, studying Ecological Determinants of Human Health, which falls broadly under the umbrella of Environmental Science and Global Health Programs. My degree is the study of the unique interaction between human health and planetary health - an antagonistic relationship, concisely summed up by my father once as being "where the two biggest problems facing humankind meet".

A friend recommended that I read an article in the Guardian about a young activist named Clover Hogan who was on the front lines of youth environmental activism. She was speaking about a phenomenon that she called "eco-anxiety", or the feeling of overwhelming dread, nihilism and paralysis that communities and individuals affected by climate change experience. This feeling, the article read, is particularly on the rise amongst young people who are faced by the imminence of the problem, but feel powerless to do anything to change it. I had always thought that: in order to make a meaningful impact in a tough world, in order to even scratch the surface of time-sensitive crises like environmentalism, medicine, health, development, you had to backburner your feelings and vaccinate yourself against emotional attachment. Instead, Clover argued that in order to find any sort of authentic agency, you had to tune into your own discomfort and "anxiety", and cultivate resilience within your internal mental space before being capable of formulating sustainable external impact.

I sent Clover a message on social media, explaining who I was, where I was from, and thanking her for elucidating something that I had been trying to put my finger on for a long time. Two months later, after a hasty exodus from Scotland and about two weeks of quarantine back in Canada, she e-mailed me back. We immediately clicked in our ideologies, and kept up a consistent correspondence all through the spring, until she called me on Skype at the end of April. She told me she was starting a not-for-profit geared towards helping young people transition from a place of anxiety to agency, and said she felt that I would make an excellent addition to the core team as Curriculum Director. This is how Force of Nature started.

I told her I was massively underqualified; she told me that, as a young, critical-thinking person, anxious about the state of the planet, I basically had a PhD in eco-anxiety (and that she was trying to build a young scrappy team anyways). Six months later, I lead weekly free Force of Nature workshops with young people from around the world, where we mediate discussions about how to metabolize fear and anxiety, how to break down self-limiting narratives, and how to overcome internal obstacles in order to face up to external ones. We hope to create an open and accessible space for young people to step into their own unique forms of resilience and involvement in environmentalism. We do not purport to know the answers; we purport to be a conduit for people to find their own answers.

I love what I study - I find it stimulating, invigorating, and inspiring. But that spring in Edinburgh, I was exhausted. I was inundated with complex and, quite honestly, terrifying information about the state of the world, and I had conflated my ability to succeed in school with my self-worth and my ability to problem-solve. In retrospect, I would call this "burn-out". If I could give myself any advice, or advice to anyone feeling burnt out, or hopeless, or working and studying in a field that is daunting, I would say "you can't pour from an empty cup". Force of Nature helped me realize that in order to show up to solve problems, I had to show up for myself first.

Ecological Farm Internship at Le Paysan Gourmand: My Experience as an Intern

Kristin Lehar
B.Sc. Agricultural and Environmental Sciences, Year 2
Major Environment - Food Production & Environment

My Internship was at Le Paysan Gourmand in Saint-Félix-de-Kinsey - about an hour and a half drive east of Montreal. I prepared, cared for and maintained gardens, planted and transplanted garden beds, weeded, harvested and washed vegetables, prepared weekly CSA baskets, and collected fresh eggs, fed pigs, chickens, and a calf every morning.
Learning how to produce food using ecological principles as opposed to industrial agriculture-is becoming more and more crucial for human and environmental health, communities, the economy, and climate.

The Science Involved
Ecological food production can significantly build soil, a crucial resource we are globally depleting more and more every season. As opposed to its industrial counterpart, it is far more resilient to climate disasters and climate change and yields foods of higher quality and arguably, quantity. It is a sustainable way to produce food indefinitely and when combined with regenerative agriculture and holistic management, has the potential to sequester significant amounts of carbon, effectively reversing carbon emissions from the agricultural sector.

What I Learned
I learned how a season on an ecological farm is manage-planning the season's crops and CSA baskets, growing and maintaining gardens using organic methods promoting biodiversity and soil health. I learned that applying harmful chemicals are not needed to obtain high yields of quality produce and growing soil is as important if not more important than simply growing a crop. I learned how to use several tools, how to increase efficiency at nearly every stage of the production line.

This job was very physically demanding, and days were always very long but I learned just how quickly the body adapts and how resilient and strong it is. The rewards of all the physical labor are also great!

The average farmer today is in their mid-fifties and ecological farmers are needed today more than ever. Awareness and interest in food sovereignty, self-sufficiency, and environmental and climate health are on the rise.

I have learned an incredible amount of skills and feel confident to start my own ecological farm when resources permit.

I am not yet an alumni but I have launched a start-up linked to environmental and social impact. It's name is PanArt Productions and we aim at becoming Quebec's first socially-committed film production house.

For now we have mainly been producing ads for socially and environnmentally friendly organizations such as TrashTalk Montreal and Moisson Montréal, but we are at the moment developing a pilot episode for a web TV show centered around a sustainable culinary contest. We are already partnering with 3 zero-waste grocery stores to make this project possible: Vracs sur Roues, LOCO and Boco Boco.

We are four partners and I'm the only McGill affiliated. We participated in the 2020 edition of the Dobson Cup competition, managing to get into the semi-finals for the innovation-driven enterprise track. We were not selected for the finals but learned a great deal from the constructive criticism of the judges.

We also were in charge of filming the last edition of the Montreal Youth Summit for Sustainable Businesses organized by the Desautels Sustainability Network, the John Molson Sustainable Enterprise Comittee and Humaniterre.

Here is the video that was made with our footage .

Vincent Copti
Bachelor of Commerce,
Year 3
Major Managing for Sustainability
Major General Management
Concentration in Entrepreneurship

The sustainability programs are the result of a cross-disciplinary partnership between the Desautels Faculty of Management, the Bieler School of Environment, and McGill Department of Geography.

Interius Farms was selected for McGill Dobson Centre for Entrepreneurship X-1 Accelerator, as part of the 2020 X-1 Cohort. The McGill X-1 Accelerator is an intensive 10-week online summer program designed to accelerate early traction McGill startups towards investment readiness and launch.

Our mission is to make nutritious, sustainably grown produce accessible to Canadians by growing locally. Interius Farms was founded out of a desire to make fresh, sustainable produce available to Canadians year-round. After noticing that the produce in local stores was faded, brown and expensive during the winter months, Interius Farms' founders realized the obvious: Canada's climate constrained growing season leaves the country dependent on imports. Each year Canada imports up to 500,000 tons of leafy greens from distant and water-strained regions such as California, Arizona and Mexico. By eliminating this 5,000 km journey from farm to table, Interius Farms aims to provide Canadians with produce that is better for people and our planet.

In June 2020, Interius Farms donated our first full crop to Meet The Need MTL, a medical student initiative established during the COVID19 pandemic aiming to address the rising gap within food shelters and food banks. Their initiative attempts to raise both money and food supplies that will then be donated to partner organizations.

Interius Farms Founders:
Tristan Zeman and Jonnie Lawson

Tristan Zeman
Bachelor of Commerce
Granted: May 2017
Major in Finance
Major in General Management Finance
Managing for Sustainability

Jonnie Lawson
Bachelor of Commerce
Granted: February 2020
Major in Strategic Management
Major in General Management
Dean's Honour List

Focus on Bieler School of Environment Alumni

McGill Plant Science masters student and School of Environment alumni Marian MacNair is studying monarch butterfly preferences in eastern Canada. She workshopped this story about the emotional cost of the decline of the natural world to the 2020 Canadian Science Communication Conference. You can read more about her adventures chasing butterflies for her thesis on her blog.

Insectarium director Dr. Maxim Larrivée needed someone to analyze the butterfly sightings uploaded to the online butterfly websites eButterfly and Mission Monarch. She undertook this work as a master's student for McGill University plant scientist and former School of Environment director, Dr. Sylvie de Blois. The title of her thesis is, "Monarch butterfly distribution and reproduction in eastern Ontario".

Marian MacNair is a journalist & scientist working to interest the public in conserving nature. She completed her Diploma in Environment in the Fall of 2001.

Jennifer Gobby

Bachelor of Arts Granted:
October 2014
Honours Environment - Environment & Development
Minor Concentration Anthropology

Doctor of Philosophy Granted
February 2020
Renewable Resources - Thesis - Environment

More Powerful Together
Conversations With Climate Activists and Indigenous Land Defenders

New book publication by Jen Gobby, Bieler School of Environment Alumni

How can social movements help bring about large-scale systems change? This is the question Jen Gobby sets out to answer in *More Powerful Together*.

As an activist, Gobby has been actively involved with climate justice, anti-pipeline, and Indigenous land defense movements in Canada for many years. As a researcher, she has sat down with folks from these movements and asked them to reflect on their experiences with movement building. Bringing their incredibly poignant insights into dialogue with scholarly and activist literature on transformation, Gobby weaves together a powerful story about how change happens.

In reflecting on what's working and what's not working in these movements, taking inventory of the obstacles hindering efforts, and imagining the strategies for building a powerful movement of movements, a common theme emerges: relationships are crucial to building movements strong enough to transform systems. Indigenous scholarship, ecological principles, and activist reflections all converge on the insight that the means and ends of radical transformation is in forging relationships of equality and reciprocity with each other and with the land. It is through this, Gobby argues, that we become more powerful together.

100% of the royalties made from the sales of this book are being donated to Indigenous Climate Action.

Future Ready: The Advocate for a Better Anthropocene

McGill's Elena Bennett wants you to imagine a radical, inspiring, and realistic future for our planet.

Full article by Allyson Rowley, Writer, Editor, Communications Strategist

When you think of the Earth 50 years from now, what do you see? Do you imagine desolate cities, scorched forests, dead oceans, lost biodiversity? Elena Bennett wants you to know the future doesn't have to be bleak.

"We can achieve a good Anthropocene — a future that is more just, prosperous, and sustainable than our current world," says Bennett, an ecosystem ecologist jointly appointed to the Bieler School of Environment and the Department of Natural Resource Sciences in McGill's Faculty of Agricultural and Environmental Sciences.

Bennett believes it's crucial to rewrite the usual dystopian narratives. As a society, we're bombarded in the media and popular culture with visions of a catastrophic future. "Stories and images create our reality," she says. "So, it's important to tell positive stories. Otherwise, we risk creating the very future we're projecting."

Webcast Series

A four-part series of webcasts in partnership with the McGill Sustainability Systems Initiative.

What is sustainability and what does it mean for the future of our planet? What are the grand challenges we must address to ensure that we move to a more sustainable world?

Can we maintain our current levels of human activity without destroying the biological systems that sustain life?

Two Bieler School of Environment professors discuss the important work being undertaken to better understand – and reverse – the widespread impact of human activity on the planet through more sustainable environmental, social and economic practices, in the first part of the series:

What is sustainability anyway?

Elena Bennett, Professor, Bieler School of Environment and Department of Natural Resource Sciences

Kevin Manaugh, Associate Professor, Bieler School of Environment and Department of Geography

Focus on Bieler School of Environment Professors

Elena Bennett
Professor
Bieler School of Environment and the Department of Natural Resource Sciences; Canada Research Chair (Tier I) in Sustainability Science

Kevin Manaugh
Associate Professor
Bieler School of Environment and the Department of Geography

Connected City Streets Mean Healthier Residents and Communities

By Christopher Barrington-Leigh
Associate Professor
Bieler School of Environment and the Institute for Health and Social Policy

In the midst of the COVID-19 pandemic, cities around the world are rediscovering the value of walkable and bike-able streets. From Oakland, California, to Amman, Jordan, cities have restricted driving on certain streets in order to create space for socially distanced physical activity. Other cities, like Bogotá and Berlin, have scrambled to convert car and parking lanes into bike lanes in response to the precipitous drop in public transit ridership.

Street-network connectivity matters because it puts destinations within easy reach. In a disconnected, sprawling network typified by dendritic branches, cul-de-sacs and gated communities, a grocery store that lies a hundred metres away can be more than a kilometre on foot.

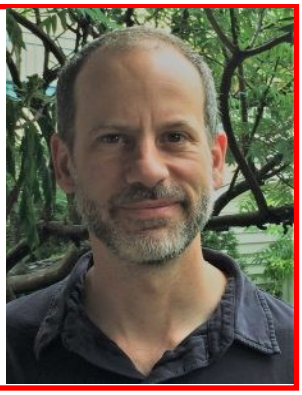
Connected streets facilitate integrated communities, mixed housing types and easier access to services for those without cars, including our essential workers in times of unforeseen contingencies.

With new standards and proactive regulations on the connectivity of new street development, they can put an end to street-network sprawl of cul-de-sacs, suburban mazes and gated communities, forging a path to resilient, equitable, healthy and clean urban existence.

The full article can be found in, The Conversation, an independent source of news and views, from the academic and research community, delivered direct to the public.

SSHRC invests in McGill COVID-19 research

Full article in the McGill Reporter, by Amanda Testani, Communications Associate, Office of the Vice-Principal - Research and Innovation.



Kevin Manaugh
Associate Professor
Bieler School of Environment and the Department of Geography

On September 21, 2020, the Honourable Navdeep Bains, Minister of Innovation, Science and Industry, announced the investment of over $4 million in funding through the Social Sciences and Humanities Research Council's (SSHRC) Partnership Engage Grants to provide short-term and timely support for partnered research activities that will inform decision-making in the public, private or not-for-profit sector.

Congratulations to Associate Professor, Kevin Manaugh, principal investigator, for receiving funding for this special initiative project:

COVID-19: The well-being and equity implications of local accessibility under COVID-19

Fiona Soper

Assistant Professor
Bieler School of
Environment and the
Department of Biology

The challenge of predicting climate change impacts in the tropics.

Fiona Soper (the newest faculty member in the Bieler School of Environment, jointly appointed with Biology) and her collaborators have a creative new project tackling the challenge of predicting climate change impacts in the tropics, recently highlighted with feature articles in the Washington Post and in New Scientist magazine.

Because of their incredible productivity, how tropical forests respond to rising atmospheric CO^2 is an important determinant of overall global climate trajectory. Can these forests increase their growth rate, acting as an ongoing carbon sponge? Are there enough nutrients in the ecosystem to make this possible? Experiments such as large-scale, multi-year CO^2fumigations are the gold standard for understanding vegetation responses, but are extremely expensive and unfortunately none currently exist anywhere in the tropical zone.

Enter: a convenient coincidence.

In central Costa Rica, tropical forests grow on the flanks of active volcanoes; these volcanoes naturally produce CO^2 which can seep from the soil even in areas of healthy vegetation that aren't obviously affected by volcanic activity.

With volcanologists and ecologists at NASA, McGill (Biology and Earth and Planetary Sciences) and several US universities, Fiona is asking whether these forests can be used as a natural CO^2 experiment and window into what the atmosphere might look like in the next 50 to 100 years. The team has begun surveying field sites and mapping CO^2 concentrations, and plans to combine remote sensing, growth and biomass monitoring, and measurements of plant physiology and soil nutrient cycling to determine whether– and how – this sponge effect might be possible. The team will also collaborate to improve the accuracy of the earth system computer models, such as those used by the Intergovernmental Panel on Climate Change, that predict future climate and temperature rise.

Prof. Fiona Soper on a volcanic tropical forest field campaign in Guanacaste, Costa Rica.
Photo credit: Adriance Colburn

Clustered vs Catastrophic Global Vertebrate Declines*

Brian Leung, Associate Professor, Bieler School of Environment and the Department of Biology

Recent analyses have reported catastrophic global declines of vertebrate populations. Yet distilling many trends into a global mean index obscures variation that can inform conservation, and can be sensitive to analytical decisions. For example, whereas earlier analyses estimated a mean vertebrate decline of >50% since 1970 (Living Planet Index: LPI2), we find that this estimate is driven by <3% of populations; excluding these extremely declining populations switches the global trend to an increase. The sensitivity of global mean trends to outliers suggests that more informative indices are needed. We propose an alternative approach, identifying clusters of extreme decline (or increase) that differ statistically from the majority of population trends. We show that, of LPI's 57 taxonomic-geographic systems, 16 systems contain clusters of extreme decline (comprising ~1% of populations, occurring disproportionately in larger animals) and 7 contain extreme increases (~0.4% of populations). The remaining 98.6% of populations across all systems showed no mean global trend.

However, when analyzed separately, three systems were declining strongly with high certainty (allIndo-Pacific), and seven were declining strongly but with less certainty (mostly reptile-amphibian groups). Accounting for extreme clusters fundamentally alters interpretation of global vertebrate trends and should be used to help prioritize conservation effort.

Leung, B., Hargreaves AL, Greenberg, DA, McGill, B, Dornelas, M, Freeman, R. 2020. Clustered versus catastrophic global vertebrate declines. *Nature*

Brian Leung

Associate Professor
Bieler School of Environment and the Department of Biology

UNESCO Chair for Dialogues on Sustainability

Director of the McGill-Smithsonian Tropical Research Institute (STRI), Neotropical Environment Option (NEO)

Kudos to:

Congratulations to our professors, Elena Bennett and Iwao Hirose, for being awarded the Tier 1 Canada Research Chair.

The Canada Research Chairs Program (CRC) stands at the centre of a national strategy to make Canada one of the world's top countries in research and development. The CRCs aim to achieve research excellence in engineering and the natural sciences, health sciences, humanities, and social sciences.

Tier 1 Chairs, valued at $200,000 annually for seven years with one opportunity for renewal, are for outstanding researchers, acknowledged by their peers as world leaders in their field.

Full article by Amanda Testani, Communications Associate, McGill Research and Innovation.

Elena Bennett
Professor,
Bieler School of Environment and the Department of Natural Resource Sciences
Canada Research Chair (Tier I) in Sustainability Science

Iwao Hirose
Professor,
Bieler School of Environment and the Department of Philosophy
Canada Research Chair (Tier 1) in Value Theory and the Philosophy of Public Policy

THANK YOU for all your contributions as we look to the future, we are excited about our strong interdisciplinary education and our innovative approaches to teaching and research.

We invite you to make a philanthropic investment for future generations.

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By telephone toll-free at 1-800-567-5175;
Or, at 514 398-5000

By mail:

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The Bieler School of Environment is:

Director - Frédéric Fabry (Atmospheric and Oceanic Sciences)

Faculty Members

Madhav Badami (School of Urban Planning)

Chris Barrington-Leigh (Institute for Health & Social Policy)

Elena Bennett (Natural Resource Sciences)

Peter G. Brown (Bieler School of Environment)

Jeffrey Cardille (Natural Resource Sciences)

Sylvie de Blois (Plant Science)

Jaye Ellis (Law)

Iwao Hirose (Philosophy)

Nicolas Kosoy (Natural Resource Sciences)

Brian Leung (Biology)

Kevin Manaugh (Geography)

Anthony Ricciardi (Redpath Museum/ Biology)

Raja Sengupta (Geography)

Renée Sieber (Geography)

Fiona Soper (Biology)

Ismael Vaccaro (Anthropology)

Faculty Lecturers
Julia Freeman
George McCourt
Kathy Roulet

Staff
Danielle Lefebvre
Shannon Scott
Christina Zhu

Catalina Alexandra Zvezdin, student majoring in environment, Bieler School of Environment

Zvezdin, Catalina & Cabana, Gilbert & Boulanger, Emily & Prasher, Shiv & Roy, Denis & Head, Jessica. (2020). *Impacts of Agricultural Practices on Yellow Perch Spawning Sites in Lac-Saint Pierre Québec.*

Photo taken in June 2020, by Thomas Leathead.