

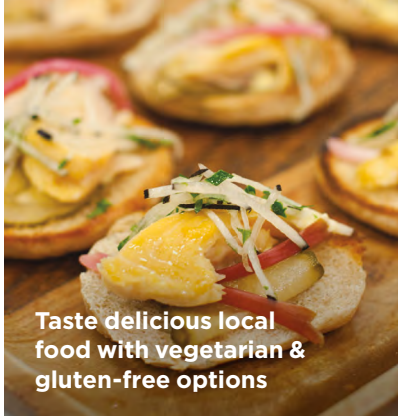
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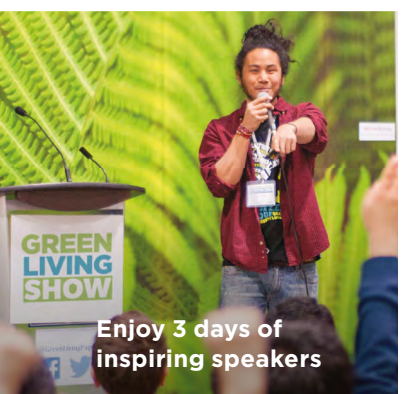
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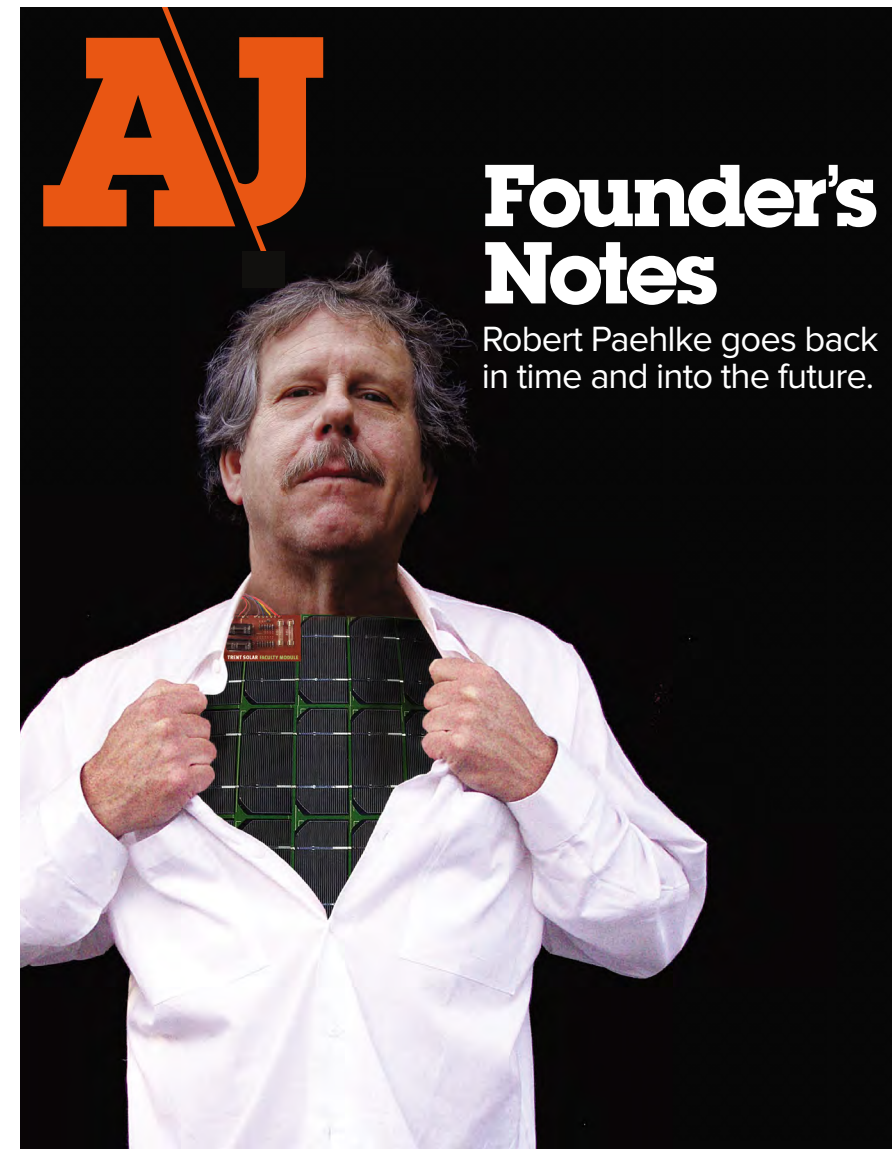
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Founder's Notes

Robert Paehlke goes back
in time and into the future.

ROBERT PAEHLKE was a leading mind behind the inception of *Alternatives Journal*, and like a proud father, has continuously driven **AJ** to grow and mature into the media organization it is today. In November 1971, when the environmental movement was gaining momentum, he helped launch the first issue of **AJ**. He couldn't have known that 45 years later it would still be going strong as Canada's only independent environmental media organization. In honour of our 45th anniversary, Robert shared with us the story of **AJ**'s beginnings, memories from the past and his hopes for the future.

AJ: How did the idea of *Alternatives Journal* come up and how was it transformed from idea to reality?

Robert Paehlke: Shortly after arriving in Peterborough to start my first permanent teaching position at Trent, I got into a conversation with Jim White at the Peterborough Farmers' Market, at the Pollution Probe information booth. He suggested that the local Probe wanted to start a publication about environmental issues, maybe a newsletter, maybe something more.

As I got to know many students and faculty at Trent that idea evolved and, with some funding from Trent, student governments and others, by the following spring we produced a first issue featuring articles by people we knew. We mailed subscription appeals to libraries and any list we could find. We got magazines into any bookstore or magazine rack we could find (even letting retailers keep 100% of the cover price). Amazingly, we soon had tons of subscribers and were able to pay the

printer and the post office (though no one was paid for writing or editing or anything else like that for years more, other than via summer make-a-job grants).

*What was your goal when you started **AJ**? What did you expect would come of it?*

The goal was to communicate across the academic disciplines and between academics and the wider public regarding environmental issues. We wanted to be different from academic journals written by specialists for other specialists. I thought that there was a real need for such publications that would alter the ivory tower mindset and that we could help to do that. We were cautious to avoid being too politically partisan, but did hope to get environmental concerns onto the policy agenda in Canada. I did not imagine a publication that would endure for 45 years. At the time, we were mostly hoping to have enough money to get the next issue out.

You've documented the environmental movement since the early 70s. What has been the most memorable and important turning point? What has been the biggest surprise?

An early important turning point was what might be called the shift from protest to professionalization. When *Alternatives* was founded, the environmental movement was mostly about protest and public demonstrations. Many environmentalists of the day had doubts about industrial society and consumer culture. In 1970, there were few environmental studies programs.

By the 1980s, there were many – and many environmental activists were thoroughly versed in environmental science and/or policy. Many former activists soon worked in relevant government agencies or for municipalities. Activists themselves spent more time writing briefs, attending hearings, and writing articles and less time picketing. They did not become “establishment”, but they did become more informed and professional.

The biggest surprise, I think, came in 2008 when after the global economy

fell into deep recession, many global leaders opted to push, of all things, a green economy for the economic future – an idea dreamed up by those who once rejected industrial society to grow rutabagas in the wilderness somewhere.

What were the top five issues/pieces in AJ through the years?

Let's start with the early years. Most notable to me were issues on *Agriculture and Shelter* [volumes 5:3/4 and 6:1] and the 1979-80 issues featuring a province-by-province *Soft Energy Path for Canada* [8:3/4, 9:1 and 9:2]. I was especially proud of these two because they addressed today's issues decades ago.

More recently, I loved our many issues and articles linking the environment to social justice. For example *Who Pays?: Distributive Justice, Sustainability and the Market* [21:1, 1995] and *Reflections on*

Ecofeminism [21:2]. Finally, a recent article I really enjoyed was the 2014 interview with Jane Goodall [40:4].

What are the most important issues today?

Without question, the most important issue is climate change and the need to transition rapidly to a post-carbon economy. Many important issues are linked to that, including local and organic food, renewable energy, urban re-design and resistance to pipelines and to the expansion of tar sands development. Taken together, these things require creating a quite different economy through both public policy and through market-based, ecologically mindful work, investment, entrepreneurship and technologies. Beyond that, as if we needed more to do, another crucial issue we face is habitat preservation.

What are you working on now?

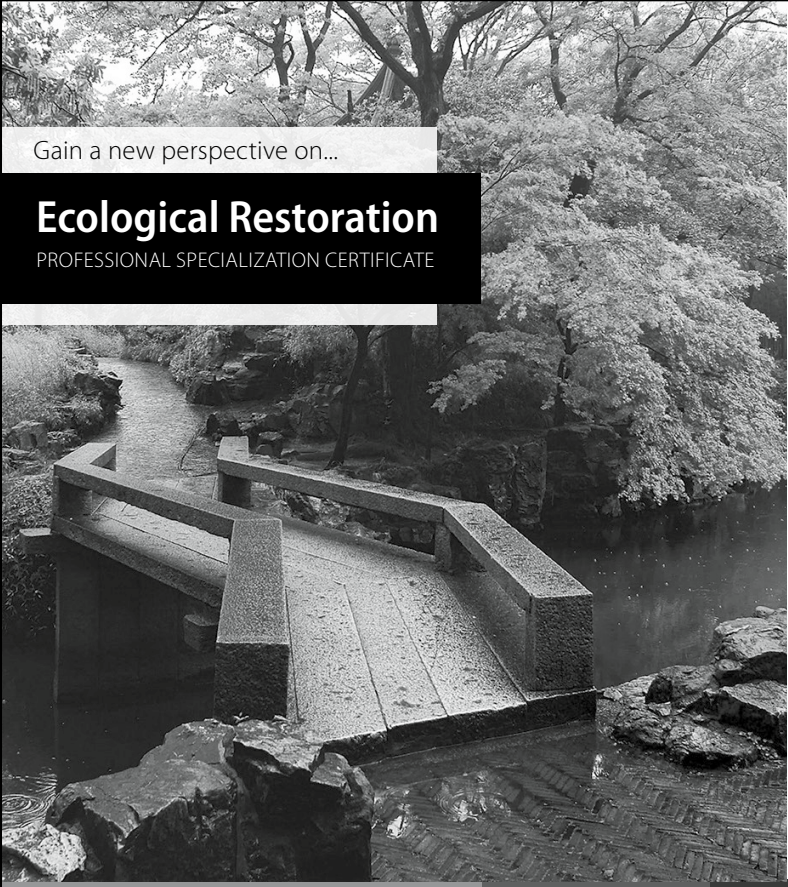
I have just finished a draft of a book, tentatively called *The Citizen Economy*,

about some of the things noted in the previous two answers. The book documents a pattern of change in five economic sectors: food, energy, media, shelter and stuff (manufacturing). In all five sectors the shift is toward greener, more local-oriented, citizen-owned enterprises and citizen-driven change in municipal governance and institutional economic behaviour.

Any final words?

It is easy to get discouraged in the pursuit of environmental action, but we have come a very long way from when this all started. I find enormous inspiration in what we have accomplished over the past 45 years and in the willingness of so many young (and not-so-young) people to imagine their life work as contributing to improved environmental protection and a better society. 

Associate editor Leah Gerber interviewed Robert Paehlke in November 2016.



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**SCHOOL OF THE
ENVIRONMENT**

Dear Prime Minister Trudeau,

The streets are busy this afternoon. Romain and I weave our bikes through the downtown Montreal traffic, balancing on our seats and maneuvering the narrow bike lanes with our bright red backpacks. We are en route to visit one of our dozen Meals On Wheels clients.

When we arrive at our destination, we lock our bikes and walk up the three stories of steps together to her apartment. We knock, wait for the sounds behind the door that announce her arrival, and are greeted by our client's bright smile and a warm hello. Romain speaks with her as I pull her meal from our insulated bags – a hot serving of lasagna made with locally-grown vegetables, an organic fruit salad, and a slice of cake baked fresh this morning in the kitchen of Santropol Roulant. When I straighten and the meal changes hands, she beams and asks us in for a quick snack of tea and cookies. We happily accept and I practice my French speaking skills with a new friend I have only just met.

When we leave, Romain tells me that taking the time to visit with our clients is important, even if it slows down deliveries, because we might be the only people she sees today. We ride on to our next client's apartment, my mind whirring with thoughts about an individual's role in the world – and how being here, now, with these people and in this place feels so incredibly right.

On paper, Katimavik sounds like a well-rounded program. Founded by Liberal Senator Jacques Hébert and brought into being by Prime Minister Pierre Elliot Trudeau in 1977, the Katimavik program garners its name from the Inuktitut word for “meeting place.” In the core program, youth spend six or nine months in two or three distinct Canadian communities, volunteering full-time with non-profit organizations and spending evenings and weekends engaging in activities they organize as a group via consensus.

In its first year, 1000 volunteers signed up to take part in projects in 40 communities across Canada, funded by the Canadian government. In 1984, the program was internationally recognized and honoured by the United Nations for its

environmental work done in host communities. In 1986, Brian Mulroney's Conservative government cut the program's funding; Katimavik continued as an outdoor recreation program until 1994 when it was revived under Jean Chrétien's Liberal government. It continued to morph and change in the years following, always maintaining its core value to develop youth into engaged, caring citizens and Canadian leaders. Since it began in 1977, it has impacted the lives of 35,000 youth volunteers and more than 500 Canadian communities. For every dollar invested in the program, Katimavik volunteers produced \$2.20 of return through volunteer work, \$1.20 of which was directly reinvested in their host communities.

Before I flew to my first placement in Quesnel, BC, in January of 2012, doubts ran rampant in my head about finances, fitting in, working in volunteer placements that might not be right for me, and my ability to learn enough of my second language to speak with my Francophone housemates from Quebec. The \$14 weekly spending money allowance was quite small, and with only 16 hours per week allocated for unstructured free time, I worried about student loan payments and personal burnout.

After arriving and settling into my new life with my Katimavik family, my doubts disappeared. I was in an intensive household environment where conflicts weren't uncommon between twelve youth participants, and solving everything from grocery preferences to activity planning was discussed and resolved through weekly consensus meetings that sometimes took hours. But these experiences taught me so much about myself and forced me outside my comfort zone and into new opportunities for learning about my strengths, voice, and gifts.

Our host communities gave us a respect I hadn't experienced often as a youth contributor. People were always so excited and thankful to see us volunteering at community events, and we were often recognized for our efforts at volunteer opportunities our Project Leader organized for us during evenings and weekends. My green Katimavik volunteer shirt started to feel like a superhero's costume that made me feel confident and able to enact real change in my community. It's hard for me to voice how important it is to feel appreciated and recognized for the work I do as a

young Canadian. Millennials get a bad rap in blog posts and magazine articles, but there's nothing better than proving with my actions that we are valuable, contributing and creative members of Canadian society – and being validated in this by the people we work alongside to make our country inclusive, strong, and tight-knit.

Katimavik entirely changed my career. I had entered university planning to become a wildlife biologist, working in remote parts of Canada studying human impacts on predator and prey populations. However, when 40 hours of my week were dedicated to helping kindergarten students learn how to write their names, biking books to a low-income neighbourhood to facilitate a mobile library program, and cooking in a kitchen with a continuously different group of strangers who soon became friends, my perspective shifted. Katimavik gave me a passion for service to others and a strong desire to be part of non-profit organizations that make tangible differences for people in my community.

This program taught me how to be present and active in solving interpersonal conflict, where my past self would have run and hid from addressing problems that affected me. I learned direct and kind communication to make sure my needs were met. More than anything, Katimavik gave me back my bravery I'd long since buried.

In March of 2012 in the middle of my Katimavik experience, Stephen Harper's Conservative government tabled its budget, announcing a swift end to Katimavik at the conclusion of June, despite recognitions and accolades given by the PM's office and the Minister of Canadian Heritage, the honourable James Moore, weeks before the budget was released. Members of my group paid for our bus tickets to join 150 current and alumni volunteers for a protest on Parliament Hill, asking the Conservatives to grant the 600 youth already registered for the July-December program the same transformative experience.

While my group was living in the Papineau riding of Montreal, you were our Member of Parliament. At that time you were not the leader of the Liberal Party – let alone Prime Minister – but after a string of emails with your assistant, you became our dinner guest at our Katimavik house for an evening. We spoke at length about your time as chair of

Katimavik's board and your deep respect for the program and what it brought Canadian youth. I was truly impressed by your humility, desire to know about us individually and as a group, and your passion for young people and the Katimavik program.

As the 2017 budget will soon reveal, the priorities of the Liberal majority government for the upcoming year, I hope that your passion for youth engagement in Canadian society is still as white-hot as it was around our oversized kitchen table. Canadian youth are still facing unemployment levels near double the national average, despite being part of the most highly educated generation in history. In many countries, it is customary for youth to take a gap year between high school and university, but this idea still hasn't resonated in Canada where sometimes beginning a career can feel like a years-long bottleneck battle.

Katimavik was not just another youth adventure program. It created space for multiple platforms of change – starting in the hearts and minds of its young participants. For example, you have committed your government to uphold the findings of the Truth and Reconciliation Commission and work “to design a national engagement strategy for developing and implementing a national reconciliation framework” with Indigenous peoples.

Katimavik is working on its side of this promise as well – promising to “enable volunteers to become informed, thoughtful, capable women and men who can facilitate and lead reconciliation activities within their own communities.” If you are serious about igniting youth to be active citizens who bring Canadian values to our communities at home and abroad, I ask that you support the renewal and expansion of the Katimavik program so many more youth from Indigenous and non-Indigenous communities can have the same opportunities, growth, community, and renewed hope that I experienced in 2012.

Mr. Prime Minister, we are counting on you to bring this opportunity back to Canadian youth – and with it, the feeling of empowerment that means so much to Katimavik alumni and continues to impact our lives today. 

Ainsley Munro is a Katimavik alumna who lived in Quesnel, British Columbia, and Montreal, Quebec, during her six months in the program in 2012.

My Katimavik

The personal and the national importance of Canada's 40-year-old "meeting place."

"I'm grateful to have been a part of the final rotation of the program during the funding cuts of 2012. Our group spent six months in Burnaby, British Columbia, with the focus of our program being ecocitizenship and active living.

One volunteer excursion that stood out for me was a beautiful day with the Eagle Creek Streamkeepers at Charles Rummel Park. We assisted with the annual release of some 50,000 chum salmon fry into the creek, playing an important role in helping to restore the fish stocks lost due to urban development.

Our group lent a helping hand in preparing the fish for children and their families to release. We also participated in creek cleanup, marked storm drains around the neighbourhood and led fun educational activities. We got to let some fish loose ourselves: what a magical experience! We wondered how many would make the return trip upstream to spawn in the following years."

— Jason Wang,
Katimavik Alumnus (2012)



"During my first placement with Katimavik, I was assigned to volunteer at the Regina YMCA Child Care Centre, and I was anxious. I had never worked with young kids before, and I didn't trust that I was mature or knowledgeable enough. The first few weeks were nothing but stress, fear of diapers and waiting to mess up.

After a couple weeks into the placement, I was with our group of kids swimming at the local pool when one of the children had a seizure in the water. The staff and lifeguards responded quickly and with professionalism, but it meant another child who was blind was left on the pool deck without knowledge of the commotion. Without thinking or hesitating, as if on auto-pilot, I went to his side, held his hand and explained why everything was ok and not worth stressing about.

After everything was said and done, the childcare staff gave me a lot of gratitude and praise for my actions — actions that I didn't consciously choose to take. Since that moment, I no longer fear my limitations or question what I am capable of doing. I know that my subconscious can make the right decisions and I just need to do my thing. This has proved beneficial not just internally, but with the projects and volunteer work I did in the remainder of the program and in my non-profit, youth-development-based career since then."

— Adim Hébert,
Katimavik Alumnus (2006)

"Katimavik changed my life in profound ways, to the point where I can barely imagine what my life would have been like without it. The 7 months of the program volunteering in three different parts of Canada left me with experiences and knowledge and the beginnings of a language that would pull me to explore another three provinces and the world of language education professionally. Until then, I was on trajectory to be a barhopping wannabe author who would have taken the path of least resistance to a day-job in insurance to support his habit (i.e. the delusion of being an author), and instead I learned to make a living off of a language I deeply loved: French. French! Zut alors! Because of this program!

Before Katimavik, I didn't have the same ability to navigate and interact with the world - I was too inactive, or at least too inwardly focused and without reason to speak up or look around and take a chance. Yet, after the program I was completely transformed: chatty, outgoing, and able to change the world and wanting to be around the people doing the changing. In the program I learned to organize myself and work with others to organize around a goal. We learned to be the architects of our own learning and not passive receptors of information — a lesson that needs to be constantly re-learned, especially in the age of echo chambers and truthiness.

I hope that I would have experienced such dramatic changes without the program, but reflection repeatedly shows that, amazingly, it boils back to that one extraordinary experience shared in 2005: the Katimavik program. I think now more than ever Katimavik will make a difference for this generation of youth and could be their turning point, too. Every young Canadian should have a chance to do this program, and I strongly support its return!"

— Graham Engel,
Katimavik Alumnus (2005)

"Before setting off on Katimavik, I had spent most of my life in Canada in Vancouver. Even though I had travelled to the interior of BC and a few other parts of the world, I had little idea what the rest of Canada looked like. I'll never forget first landing in Rigolet, Newfoundland and Labrador, and being in awe of how raw Canada's wilderness can be. And I began to realize that this is what most of our country looks like. While I had set off to learn French through the Katimavik program, my eyes were opened to the sheer beauty and diversity in this country. We live in a truly magnificent country. While we come from different cultures, regions or socioeconomic backgrounds, it's amazing how similar the difficulties that confront us as young Canadians are. Katimavik was a truly eye-opening experience — both for showing me the vastness of Canada and to value the diversity of people living here."

— Ehsan T. Monfared,
Katimavik Alumnus (2010)



A Nation of Noahs

26 years, 26 Noahs. Who's next?

AVOID THE OFFICE. And help save the planet. These were Laura King's guiding principles when she began her studies in wildlife biology. She couldn't have known they would lead her on a mission to the Indian Ocean to serve as Canada's New Noah. King is the latest Noah in a tradition which, for almost 30 years, has been protecting Canada's diversity.

Imagine the worst case scenario 70 years from now. The unending expanse of trees and lakes in Northern Ontario contain no wildlife at all. The ocean is an empty promise with nothing but seaweed and garbage, and the same for the mountains, prairies and rainforests of the West.

Seems far-fetched? Consider:

- In 2014, the World Wildlife Fund stunned the globe when they published their findings that the planet's biodiversity had dropped by 52 percent since 1970. The International Union for Conservation of Nature's (IUCN) Red List Index (an indicator that keeps track of global ecological diversity), reports downward population trends for all of its fully assessed animal groups.
- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recommends 739 species for legal protection, while Environment and Climate Change Canada considers 77 percent of species within our borders not at risk, meaning 23 percent are at risk.
- One recent study from the University of Victoria found that the federal government's measures to protect and replenish endangered species are ineffective. Since COSEWIC

first began assessing species and recommending them for protection in 1977, the researchers found that only 20 species have recovered enough to be taken off the list completely, and five of these were due to increased sampling efforts.

This makes it plenty clear that our planet's species – including us humans – are facing severe challenges. And this is where Canada's New Noah comes in. Since 1990, Wildlife Preservation Canada (WPC), an organization dedicated to replenishing the country's most threatened species, has sent one young wildlife biologist a year to Mauritius, the home of the iconic dodo bird and global hub of species conservation.

WPC grants the biologist, named the New Noah, a six-month scholarship to attend the internationally recognized Durrell Conservation Academy on the island.

When the scholarship was first offered, students split their time between Mauritius and the original training centre in Jersey, an island in the English Channel in the UK. Now, the Noah earns a formalized postgraduate diploma, a program for the world's aspiring and established conservationists, in the recently established Mauritian campus.

The New Noah scholarship is inspired by the work of the late Gerald Durrell, an international conservation leader who founded what is now known as the Durrell Wildlife Trust, and later Wildlife Preservation Canada in Guelph, Ontario, as the Canadian arm of the organization.

Canada's New Noah position is named for two of Durrell's most influential books, *The Stationary Ark* and *The New Noah*. In them he gives a modern interpretation of the religious character, Noah, who saved all the Earth's animals from a flood by putting two of every kind in a large boat.

In Mauritius, the Noahs learn the skills necessary to preserve species, and are charged with practising them upon their return to Canada.

But why must biologists travel to Mauritius to learn how to preserve Canada's species?

When habitat conservation is ineffective, Canada relies on the specialized skills of species conservation scientists. These people must directly intervene and somehow regenerate disappearing populations. But it's not as easy as it sounds. And it's not easy finding a way to learn.

Gerald Durrell was an early authority on species conservation training. He believed saving species from extinction was as much art as science.

The world's conservation authority, the International Union for Conservation of Nature, also emphasizes a collaboration of biology and social skills in order to preserve biodiversity.

The IUCN's format for species conservation strategies highlights three key elements: an understanding of the ecology of the species in question to

Avoid the office.
And help save the planet.



MATT BOYD

Laura King feeds pieces of squid to a juvenile red-tailed tropicbird (*Phaethon rubricauda*) on Ile aux Aigrettes, Mauritius. These seabirds are being raised on the island to support ecosystem restoration as a whole, as healthy seabird populations support other species on the island too.

Previous page: Laura climbs a tree in Black River Gorges National Park, Mauritius, to check a nesting box used by echo parakeets (*Psittacula eques*). The population of these rare birds is recovering thanks to these specially designed boxes, which provide safe spots for pairs to nest and raise chicks as enough large mature trees aren't available anymore.

recognize when the species is stable, development of a plan to achieve population stability, and an emphasis on multistakeholder participation.

Arguably, those aiming to be an expert in species conservation will need to be trained in all three elements. They must have solid biological knowledge, practice in preservation techniques and a host of soft skills needed to coordinate projects across the societal stratum.

While Canada's formal education system excels at establishing scientific foundations, students are often left tracking down opportunities for the other pieces of their conservation education. Often, these opportunities are costly, underpaid or unpaid.

Patrick Moldowan, last year's Noah, is frustrated by the lack of practical training in formal conservation education. "Students are coming out of a lot of programs with a really well grounded basis in theory ... but a lot of students maybe aren't so familiar with what that actually looks like on the ground. If you have a theory, how do you use it?"

Species-led wildlife preservation involves a range of highly specific techniques and methods, like the ability to recognize species in the wild, track and find them, move them from one place to another, "head-start" or raise them in captivity to a certain age before release, use geolocators to trace movements, create artificial breeding grounds ... to name a few. Species conservation scientists must know a variety of methods in order to select and adapt the best practice for their projects.

This type of work is rarely taught hands-on in formal graduate programs. Most courses include some field-work, but this is not usually tailored to species-led preservation. Instead, this is usually acquired once students find themselves on the job. Moldowan feels this can be a disservice. "When a lot of students are getting out into the forest, or the lake, or the desert or wherever they may be working, they're confounded by a whole new series of challenges that maybe they've never encountered earlier in their studies."

While theory and practice are two



JULIA L. RILEY

American bullfrog weighs in on Patrick Moldowan's amphibian research in Ontario's Algonquin Park.

essential aspects of conservation education, they aren't the only skills needed.

One recent study published in *Conservation Biology* analyzed conservation job advertisements in government, non-profit and private sectors. The researchers found that besides practical scientific knowledge, 74 percent of the advertisements were also devoted to nondisciplinary skills including project management, interpersonal skills, written communication, program leadership and networking. Targeted interviews with industry professionals in charge of hiring yielded similar results. The authors write, "This discrepancy between academic training and professional needs can make it difficult for graduate students to identify the skills and experiences

that will best prepare them for the conservation job market."

For almost 30 years, WPC has quietly bridged this discrepancy by sending students to study at the Durrell Conservation Academy through its New Noah program.

The postgraduate diploma in endangered species recovery is accredited through the UK's University of Kent, and taught by world leaders in conservation science. The course is divided into several modules covering biology and ecology of small populations, recovery techniques, leading conservation projects, education and stakeholder management, and a research project in species recovery.

Students are exposed to a passionate, international community of

people dedicated to saving the world's wildlife. They learn a host of skills, both technical and soft, often neglected in traditional science-based programs.

While the New Noah program does help one lucky grad build an outstanding resume, it's also doing something more important: breaking down, a little more with each additional Noah, the disassociation between studying conservation issues and creating their solutions.

Among the sunbeams coming through Kelly green palms, Laura King pushes her boundaries as a scientific professional. Whether she's climbing trees in full hazmat gear to find parakeets, or learning about volunteer management in the classroom, each week strengthens her confidence.

“You know, before [the New Noah program] I knew how to take samples and do T-tests and run a scientific research project, but I did not know how to achieve conservation.”

She admits, “It sounds cheesy, but especially going to big Canadian research-intense universities, you kind of float around in the middle. You never feel like a leader. You never really stand out. To come on something like this [New Noah program] that develops you in so many ways – week after week you’re getting new skills – it sort of changes how you see yourself and so you start to think you could lead conservation projects too.”

This is the true legacy of the New Noah program. Year after year, Canada’s New Noahs have had their eyes opened not only to the skills, but to the necessary integrative points of view to be leaders.

Dave Stepnisky is the director for Alberta’s fish and wildlife habitat policy. He was the New Noah in 1998. “The program changed my life. I truly mean that,” he writes. “I used to look at species conservation issues through only a scientific lens: fix the problem that is causing the decline and recover a species. Simple, right? ... I learned very quickly that conservation problems need to look at the social and economic

drivers that are forcing human behaviours, to look at the governments and industries operating in a country and figure out collaborative ways to reach your goals. Most importantly, I learned that local people are the key to success. This has spilled over into my present career.”

Every Noah reports returning from Mauritius with the same perspective and capability to lead conservation projects. Now, more than ever, Canada needs inspired leaders in species-led preservation.

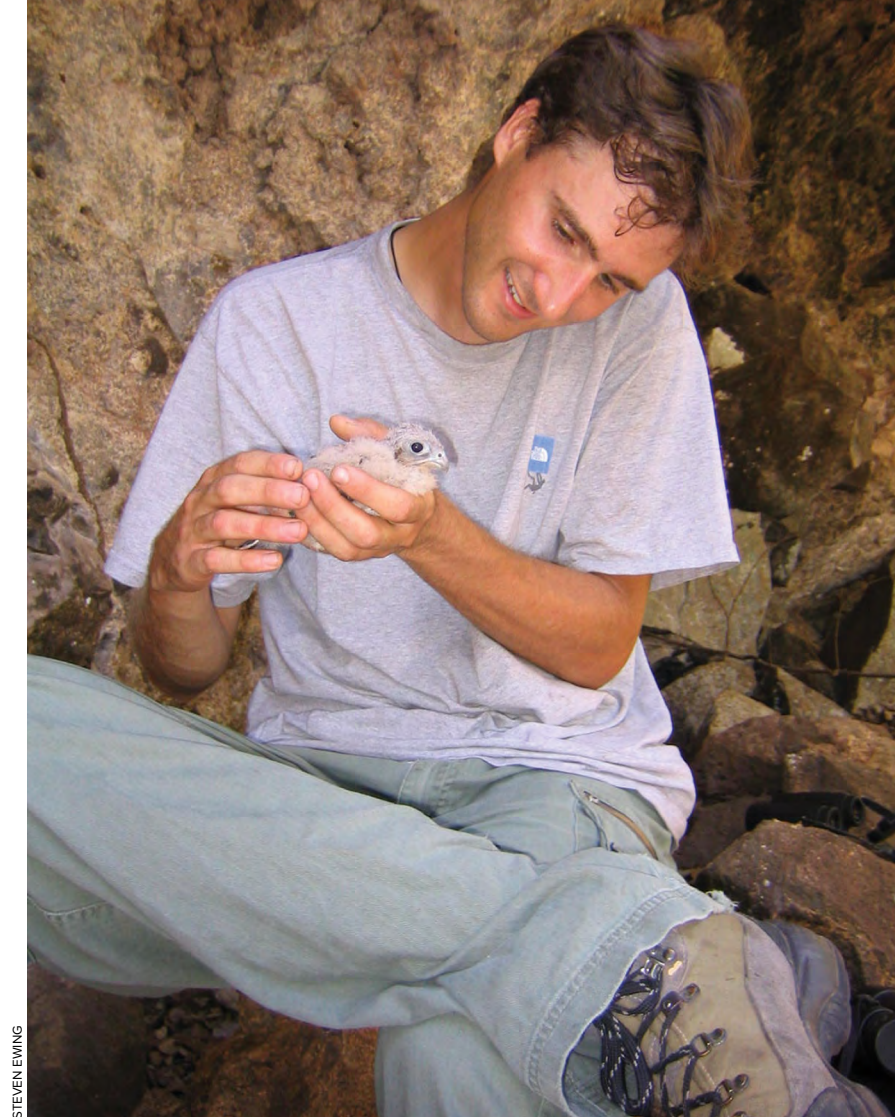
Wildlife Preservation Canada estimates between 30 and 40 percent of Canada’s species at risk require direct population intervention in order to survive. Habitat protection will not be enough to save them, although it is critical. They predict this number will only rise with the increasing impacts of climate change and environmental degradation.

Most conservation activities focus on maintaining larger sections of habitat to keep whole ecosystems intact. These are called *in situ*, or “onsite” species preservation efforts because the species are conserved in their natural environment. *In situ* methods are considered the most effective conservation strategies and are largely given priority.

Traditionally, *ex situ* or “offsite” preservation techniques involving captive breeding have been seen as secondary in the larger conservation movement because of the invasive nature, cost, decades-long time commitments and relatively inconsistent or even complete lack of results.

Ex situ conservation is a last-resort method, but unfortunately its role in today’s conservation efforts is recognized to be growing.

The UN’s updated strategy for plant conservation includes a target of maintaining a hefty 75 percent of global threatened species in captive collections, while The IUCN recognizes the increasingly valuable role of *ex situ* techniques, reflected in the 2014 updated *Guidelines for the Use of Ex Situ Management for Species Conservation*.



STEVEN EWING

Dave Stepnisky holds a Mauritius kestrel during his time as a New Noah. The Mauritius kestrel was once considered the most endangered bird in the world with less than 10 known individuals. Thanks to work by the Mauritian Wildlife Foundation and efforts including those of the New Noahs, there are now hundreds of kestrels in the wild. This picture shows Dave Stepnisky holding a young Mauritius kestrel after banding, and before returning it to the nest.

“[Species intervention] may seem very invasive,” says WPC’s conservation program director, and 2005 New Noah, Jessica Steiner, “but it’s a choice between doing something, or seeing that species disappear.”

Ex situ preservation has been used many times in dire situations to bring species back from the edge of extinction in Canada and around the world. Perhaps most famously in Canada is the work of Richard Fyfe, a pioneer conservation scientist who also helped found the New Noah program.

Fyfe conducted his ground-breaking work to breed and release anatum subspecies of peregrine falcons in the 1970s when the techniques were still ridiculed. This resulted in a stock

of birds able to thrive long enough in captivity to outlast the remnants of DDT and eventually repopulate.

Current examples include the ongoing work with the northern leopard frog in British Columbia and Alberta or the Antillean manatee in Brazil.

Steiner argues that these techniques can work hand-in-hand with habitat conservation as another tool in the preservation toolbox. She says scientists need to know how to conduct species intervention techniques well so they can be applied effectively when needed.

This has been WPC’s mission since its inception: to develop capacity for species-led conservation. Working towards this goal, one main priority is

training and leadership development, bringing us back to the New Noah program.

“This training in Mauritius is leading Canadian conservation projects,” says King. “Almost thirty Canadian biologists have been through this. We’re everywhere; we’re in pretty much every province. We’re leading NGOs and leading government. And we’ve all come from this tiny little island.”

“**What** we need across Canada,” writes Randal Heide, WPC’s educational director, “is a national commitment to species recovery that’s as firm and comprehensive as our existing commitment to habitat preservation.”

This commitment must start at the educational level. The New Noahs consider themselves lucky for the opportunity they’ve been given, but as the “extinction clock” counts down, there is no more time to leave comprehensive and motivational training in species preservation to luck.

As the pressure mounts to save the country’s species, Canada must provide students with the tools they need to perform species conservation, and infuse them with a sense of leadership and inspiration.

This will result in a culture of responsibility in conservation education. But why stop there? A culture of leadership and responsibility for biodiversity in our country must exist in every sector. What we need, in fact, is to become a nation of Noahs. **AI**

Leah Gerber holds degrees in English, International Development Studies and Journalism, and still believes stories change the world.

For more information on the New Noah program, how to apply and the conservation work Wildlife Preservation Canada is doing across the country, visit wildlifepreservation.ca.

To learn about the Durrell Wildlife Foundation and how to apply directly to the postgraduate diploma in endangered species recovery, visit ajlinks.ca/DurrellTraining.

More Conservation Programs

Young Conservation Professionals Leadership Program

Since 2005 the YCP Leadership Program has graduated over 200 participants, each who came out of the program with fundamental knowledge in leadership and management in conservation. This one-year program provides three intensive retreats intended to build practical leadership skills, self reflection and goal setting, as well as holds six workshops throughout Ontario, each focusing on a different key leadership skill. Negotiation, budgeting, fundraising, public speaking, and confidence in pursuing new challenges are only some of the skills gained from the program. Participants need to have at least two years of experience in land and water conservation or the environment and must hold a staff position in a government, non-profit, or private sector organization in Ontario.

ycpleadership.ca

Liber Ero Fellowship Program

The Liber Ero Fellowship strives to foster independence and creativity in postgraduates wanting to expand their research in conservation and management issues. Accepted applicants will receive two years of support for their study, which can range from natural, social, and trans-disciplinary topics intended to solve the conservation problem of interest. Some current projects underway are building a climate change dispersal network for Canada’s protected areas and conserving species at risk on Canada’s last remaining native grasslands.

liberero.ca

ReNewZoo Program

The ReNewZoo program is a new graduate (MSc/PhD) training program that will help train conservation professionals in zoos and aquariums across Canada and globally. The training focuses on conservation research in wild and captive animal populations and will have locations in five major research-intensive zoos and aquariums in Canada, as well as the Canadian (CAZA) and American (AZA) zoo and aquarium organizations. The program has recently been awarded 1.6 million dollars from the CREATE program of the Natural Sciences and Engineering Research Council of Canada (NSERC) to kick start its journey.

renewzoo.ca

– Veronika Szostak



Learn to Change Lives by Achieving a Sustainable Career in Holistic Nutrition

"If food isn't worth making noise about, what is?"

CSNN Graduate Rhona McAdam, R.H.N., MFC, CACE, has been active in Victoria's urban agriculture and food security network since 2008, particularly with LifeCycles' Fruit Tree Project, the Gorge Tillicum Urban Farmers, and Haliburton Community Organic Farm.

She started her nutrition consulting business, Go Local Nutrition, at Haliburton Farm where she works with farmers and eaters to promote local and organic food as part of a healing, healthy and affordable diet and lifestyle. She manages the farm's Community Supported Agriculture program, in which she shares recipes and nutrition tips

with subscribers. This year the farm is launching an EcoFarm School, and Rhona is one of the core educational leads. She will be providing nutritional content and food preparation workshops to new organic farmers.

Aside from publishing 9 books of poetry, Rhona has researched and written about food security and urban agriculture, and has knowledge to share about growing and sourcing good quality local food. Learn more about Rhona and her book, "Digging the City: An Urban Agriculture Manifesto", at golocalnutrition.com.



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Fresh Lens

With the Young Reporters for the Environment contest, learning is just part of the story.

MYMOON BHUIYAN is an award-winning journalist and environmental activist, and has not yet finished high school. Last year, he took first place in his age category in the Young Reporters for the Environment contest.

The Young Reporters for the Environment (YRE) program, hosted by Environmental Defence, inspires future journalists and change makers like Bhuiyan to try to solve today's pressing environmental issues. Students from 11 to 18 years old respond to each year's theme by entering an article, video or photo. Winners have their pieces published (this year's winners will be found here in Alternatives Journal) and then move onto the international YRE competition, which includes participants from over 30 countries around the world.

"Our blatant disregard for our planet's well-being will make us look suicidal," says Bhuiyan in his entry, which was an animated video exploring the negative effects of plastic pollution. Not only did Bhuiyan win first place in the 15 to 18 age group in Canada, but his hard work and passion also lead him to win third place at the international level.

Sarah Goodstadt won first place in the Canadian 11 to 14 age group, and second internationally for her article, "Now You See It, Now You Don't: Plastic Pollution Near and Far." She writes in her article: "I sit at the kitchen table on a quiet Sunday afternoon watching my sister fiddle with a Kinder Egg Surprise. A few months ago, I would have wondered what surprise was waiting to be discovered. Today, I wonder less about that surprise and more about the part that little egg here in my house plays in the worldwide plastic pollution problem."

Goodstadt took the initiative to investigate this issue and surveyed a number of staff in her school. She found



COURTESY OF ENVIRONMENTAL DEFENCE

The winning photo in the age 15 to 18 category of the 2016 Young Reporters for the Environment contest was submitted by Pranav Agnihotri, Sarvan Gill and Dryden Wiebe from Seaquam Secondary School in Delta, British Columbia.

that everyone was able to identify plastic pollution in his or her community. She also explored the implications of The Great Pacific Garbage Patch and how it is connected to each and every one of us.

"Whether it's properly disposing of plastic waste, using less or using none at all, we can all play a part in reducing plastic pollution in our communities and in our oceans," she writes. "We all share

this world and responsibility for its future. I now know: Every Kinder Egg counts."

Teachers collectively responded that the project taught invaluable skills in storytelling, inspired action and allowed the students to learn various journalistic skills, such as being able to organize and analyze data they had collected themselves.

What may be most important, however, is the fact that it "blend[s]

theory and action" as Michael Iachetta, a teacher from Seaquam Secondary School in Delta, BC, put it. By participating in a contest such as YRE, students are able to take what they learned in the classroom and apply it creatively to a real world issue, while at the same time getting to speak their minds and have their voices heard.

Even if students don't follow the journalistic path, they will have learned something new, practiced a skill, and finish, knowing they made a small difference.

YRE Canada runs this contest to help create the next generation of environmental leaders. Jen Mayville, communications manager at Environmental Defence, says that by investigating environmental issues, participants can share what they've learned.

Bhuiyan's experience shows their approach is working: "Before [making] the video, though I was concerned about the state of the environment, I wasn't as aware of the vast complexity and quickly worsening state," he says.

After finishing his video, Bhuiyan took it upon himself to become more involved in environmental advocacy.

"[My school's] Eco Club is also one of the biggest changes in my life," he says. "I met students from the Scarborough Academy of Technological, Environmental and Computer Education who cared about the environment as much as I did. It inspired me to do my best to change the environment situation."

"When I am asked what I took away from YRE," says Bhuiyan, "I say I took away hope, initiative and a new sense of purpose." **EN**

Veronika Szostak is a student in the School of Environment and Resource Studies at uWaterloo and an intern at AJ.

Your work could be featured in AJ's pages! You still have time to enter this year's YRE Canada contest, and winners will be featured in our magazine or our website. The deadline is March 17, 2017. Learn more about the contest at environmentaldefence.ca/yre-student.



ONTARIO ECOSCHOOLS

Young Sprouts

K to 12 students are leading the way to EcoSchool Certification.

IN THE HEART of Toronto, the Ontario EcoSchool's staff of 10 is busy working behind the scenes to shift the K-12 education sector towards a sustainable future. Executive Director, Elanor Waslander is working long hours these days.

Ontario EcoSchools is an environmental education and certification program working with schools and school boards across the province. Through their mission of "nurturing environmental leaders, reducing the ecological impact of schools and building environmentally responsible school communities," Ontario EcoSchools has created and supported the growth of ecological

literacy (understanding the value of ecosystems for the well-being of the planet) across Ontario for the last 14 years.

The main mechanism in achieving their mission is the EcoSchool certification program. By applying for certification, schools embark on a journey in which they develop a robust environmental program and are supported and recognized for their learning and actions throughout the year.

Since Waslander first started with the organization in 2008, she has seen it grow from 541 schools certified to 1,720 schools last year, representing 55 school boards and 35 percent of all the

schools in the province. The program continues to be the only free voluntary certification program in Ontario.

How it works

Every year, schools can apply for certification through Ontario EcoSchools based on a framework that emphasizes student leadership. The program encourages and assesses achievement in six key areas: teamwork and leadership, energy conservation, waste minimization, school ground greening, curriculum, and environmental stewardship. Through achievements in the six sections of the program, schools can be certified as bronze, silver, gold or platinum.

These program sections serve as a framework for participating schools and their EcoTeams to identify areas of action they want to implement over the course of the year. EcoTeams are groups of students who, with support from teachers, principals and parents, lead their school in the certification process. Ontario EcoSchools offers workshops, webinars and conferences to support EcoTeams with resources and training. This equips team members with the tools to guide them through certification, and it develops their leadership skills.

Sarah Flisikowski was an active member of her elementary and high school EcoTeams. Now in her third year at Queen's University, she serves as her school's co-chair for the Committee for the Environment. "The program has so many rewards and I am so thankful to have had the opportunity to participate for as long as I did," she says. "The relationships I built and experiences I had made for strong ties to my schools."

Between 2014 and 2015, Ontario EcoSchools engaged 882,000 students, certified 1765 schools and trained 886 educators.

Elizabeth Bernacki, a teacher from Pierre Elliot Trudeau Public School, found that the workshop connected her with others who share her views on climate change and love for the environment. "I also became more aware of the fact that my school was already doing so many wonderful things to help the Earth." She says, "Now I am excited to build on our



HWCDSB students enjoy time in nature as part of their EcoSchools program.

Previous page: Platinum EcoSchool St Marguerite Bourgeys in Kingston, Ontario, has an active EcoTeam. It's where Queen's University student Sarah Flisikowski began developing her environmental leadership skills. [Tree and paper facts are not verified.]

The program has already reached over 865,000 Ontario students from kindergarten to grade 12 by linking curriculum with ecological practices.

efforts as a school and get recognized with certification in April."

The Ontario EcoSchools program empowers individual youth and provides opportunities to develop each one's leadership skills. On a larger scale, the program has already reached over 865,000 Ontario students from kindergarten to grade 12 by linking curriculum with ecological practices and effectively enhancing ecological literacy.

"Ontario's curriculum doesn't include too much about sustainability, and I know that through EcoSchools I received a very comprehensive lesson on what it means to be sustainable," says Flisikowski. For example, EcoSchools links their program to the data management and probability strands of mathematics through data collection and assessing daily sustainability practices. By collecting data, analyzing results and implementing action plans, students witness firsthand how change can happen over the school year.

In 2014-15, ecoteams provided 7,631 environmental lessons to accompany the regular curriculum – from arts to maths. They have also ignited 4452 school-wide environmental awareness campaigns.

The impacts of the EcoSchool program go beyond school grounds. Flisikowski says her knowledge and development of ecological literacy transferred to her home, where family was not as well-versed on methods of environmental sustainability. Inspired students in participating schools share their learnings with family and friends, enhancing the awareness of the community around local and global environmental issues.

"I hope that my involvement has made a difference in the community at various points," says Flisikowski. "Food

harvested from our high school garden during the summer was donated to a local soup kitchen, and our school yard and neighbourhood clean-ups directly impacted the community as our efforts improved the cleanliness and appearance of our shared living space."

Another success was the first annual Ontario EcoSchools Youth EcoSummit held in April 2016. The event was attended by over 100 eager EcoTeam students at the Kortright Centre for Conservation in Woodbridge, in the GTA. Students were inspired by a keynote from the Ontario Minister of Environment and Climate Change, Glen Murray.

World Wildlife Fund and Environmental Defence, among other organizations, led interactive workshops. From investigating the ecological impacts of plastic to learning how to use social media to promote environmental initiatives, the workshops at the summit provided a holistic experience for students.

EcoTeams came out equipped with new resources and knowledge to amplify their environmental efforts within their schools and communities – not to mention motivation from their peers to continue their work.

What's next?

The Ontario EcoSchools theme for the 2016-2017 school year is Climate Leadership, with an overarching goal of building awareness about the many climate leadership opportunities available to students.

In January, February and March, the program will partner with various NGOs to present four Get Inspired webinars that will provide different angles on climate change. Open to all schools and the general public, the webinars are a chance for youth to hear from leaders in the field on topics from food issues to

finding a green career.

Ontario EcoSchools also aims to expand its online Energy Dashboard program, which allows schools to measure energy use in real-time. "Part of being able to take action for the environment is really figuring out what the impact is," says Waslander.

With the dashboard displays, students will be able to view data on their school's energy usage in order to help students, especially at the high school level, see if their campaigns have made an impact and identify the areas where they can make improvements.

The organization is also working towards building a network for participating schools to connect with local environmental organizations. These organizations will provide schools with the services and expertise they need to gain certification.

With a strategic goal of certifying 50 percent of all the province's schools by 2018, Ontario EcoSchools is keen to expand their reach to more schools, school boards and community partners. Until then, Elanor Waslander will continue to work tirelessly connecting and communicating with future environmental leaders.

Through the continued guidance of Ontario EcoSchools, the province can rest, knowing the future of the environment lies in the capable hands. 

Eunize Lao is a fourth year Environment and Business student at the University of Waterloo. She was a former AJ Editorial Intern and continues to share her love for environmental journalism as a volunteer.

Interested in creating an EcoTeam in your school? Learn more about their certification process at ontarioecoschools.org

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About the Instructor

Eric Miller is a consulting economist and contract faculty at York University. He has experience serving the Ontario and Federal governments and is an active member of the Canadian Society for Ecological Economics.

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LINDA SKILTON



A Natural Evolution

The Fleming College experience is a case study in starting small and thinking big.

CANADA'S ENVIRONMENTAL MOVEMENT BEGAN to take shape in the early '70s. Environment Canada, World Wildlife Fund Canada, Greenpeace, the first Faculty of Environmental Studies (York U) and **Alternatives Journal** were all founded between 1967 and 1971. Roughly 30 years later, **AJ** produced its first Directory of Canadian Environmental Studies Programs.

What makes the study of environment unique is its multidisciplinary nature. For our first directory, we sought only those programs that integrated both scientific and social perspectives into environmental issues.

Today, this is a definitive standard in every environmental college and university program. And the result is a world that is more environmentally literate. Well over 100 educational institutions in Canada offer environmental study and training.

We asked Linda Skilton, Dean of Fleming College's School of Environmental and Natural Resource Sciences (SENRS) and past chair of the Canadian College and University Environmental Network, to take us through the evolution of environmental education as it happened in one of Canada's leading environmental colleges.

Fleming College's School of Environmental and Natural Resource Sciences started out in 1967 in humble surroundings with just one program – Forestry.

Known then as the Forestry School, classes were held in St. Joseph's Convent in Lindsay, Ontario. Programs eventually expanded further into the natural resources field to include Fish and Wildlife, Geology, and Resources Drilling. Along with that expansion came a 1973 move to a dedicated campus located on 60 hectares at the south end of Lindsay – the Frost Campus.

While early days focused on programs that involved resource

Environmental education will be at the forefront of mitigation, resiliency and adaptation.

extraction, over the years that view evolved to one of resource management and environmental protection. Some of the drivers included concerns related to climate change, water and food security and environmental health and safety. The new millennium brought a new identity for the academic school, from natural resources to environmental and natural resource sciences. This shift in thinking was reflected in revised curriculum and learning outcomes of existing programs as well as the addition of new programs. These new programs featured interdisciplinary learning with a focus on the interaction between people, their communities and the natural world.

Today, Fleming’s School of Environmental and Natural Resource Sciences has grown to include 31 full-time programs, with two more to be offered in 2017. The programs at SENRS are unique – more than half are not offered at any other college in Ontario, and many can’t be found at any other post-secondary institution in Canada.

Thanks to 50 years of educational experience in the sector, and a well-respected reputation, Fleming has found that SENRS boasts more graduates working in the environmental and natural resources fields than any other college in Canada. We attribute the success of our programs, students and alumni to the excellent faculty as well as our emphasis on active, hands-on learning. This encompasses co-op opportunities, on-campus outdoor learning, and overnight field camps and courses, the latter of which, our graduates identify as one of the highlights of their experience at Fleming College.

I have been with Fleming College for 30 years, including the last 10

Previous page: Field camp is part of Ecological Restoration, a joint diploma/degree program in partnership with Trent University.

years as the Dean of the School of Environmental and Natural Resource Sciences. My educational background and experience are within the field of education, and therefore, my observations are not from the point of view of how scientific study has changed over the last decade, but on how environmental education has changed in response to a multitude of factors. These factors include employer/sectoral needs, environmental priorities, and the shift in the way that student learning takes place.

Since 2006, I have observed a number of educational trends. Here are my top six.

An increase in work-integrated-learning via field placements, applied projects, and co-op education. Most programs at SENRS have a work-integrated learning component. Co-op was introduced at SENRS in 2008 and we now offer 12 co-op programs at the Frost Campus. Credit for Product (C4P) is a unique course in the Ecosystem Management Technology program where students partner with a client on a specific project. The students take two C4P courses in their third and final year of study. Over 600 students have completed more than 11,000 hours in 325 environmental projects with more than 50 community partners. Some of our partners include organizations such as the Ontario Heritage Trust, Kawartha Conservation, the City of Kawartha Lakes, the City of Toronto, and the Lone Pine Marsh Sanctuary.

A shift toward internationalization, with more faculty and student experiences and exchanges abroad. SENRS has partnered with the Yellow River Conservancy and Technical Institute (YRCTI) with a goal of delivering a joint program. In November 2016, a professor accompanied 10 Geographic Information Systems (GIS) students to YRCTI in Kaifeng, China,

to complete a surveying field camp course. As well, for the last five years, students and faculty members in the Ecosystem Management program have participated in a two-week field placement at Pidwa Wilderness Reserve in South Africa, which will expand to a semester abroad in 2018. Costa Rica and Iceland are two other locations where students can participate in field placement courses. There are also student exchange opportunities at the University of Padua in Italy through our Forestry Technician program.

Applied research that ties into program curriculum. Frost Campus is home to the Centre for Alternative Wastewater Treatment, which researches sustainable ways to treat wastewater and helps bring innovative water and wastewater technology closer to market/commercialization. Having this resource allows students in a variety of programs access to advanced research facilities right on campus. In fact, it was through the Environmental Technology program and faculty research into constructed wetlands technology that led to funding for a research facility on campus. The research and curricular expertise has, in turn, spurred the creation of the new graduate certificate program, Advanced Water Systems Operation and Management Co-op.

A variety of credentials in the mix. Currently, students interested in environmental and natural resources careers have a number of options when it comes to credentials. From certificates to diplomas to post-graduate certificates, students can emerge with the credential that best fits their ability and ambition. In our experience, we have found that university graduates are attracted to shorter graduate certificates, such as Environmental Visual Communication (delivered at the Royal Ontario Museum) or the new Sustainable Waste Management program. Over the last six years, SENRS has increased its post-graduate certificate offerings from two programs to nine programs. The ECO Canada (Environmental Careers

Organization) subsector model for environmental employment was used to inform new program development during this period. In its 2013 Labour Market Research Study, ECO found that employment related to Environmental Health and Safety, Waste Management and Communication and Public Awareness were the top three.

More partnerships between colleges and universities. SENRS has actively pursued partnerships with a number of post-secondary institutions to ensure students have a variety of options available to them to continue their studies – whether they are graduating from Fleming or coming to Fleming from another institution. These pathways allow our students to complete a diploma and degree in four or five years. This combination of theoretical and applied education has been identified by employers as a preference when hiring environmental graduates.

Examples of these partnerships include Urban Forestry with the University of New Brunswick, and Ecological Restoration with Trent University. In fact, SENRS has signed a formal memorandum of understanding with Trent’s School of the Environment to further collaborate on academic programming in areas related to environmental and natural resource studies.

University and college collaboration is a national trend. One example is the 2013 merger of the Community College Environmental Network (CCEN) and the Canadian University Environmental Science Network (CUESN) to create one national network for post-secondary environmental education: the CCUEN (Canadian College and University Environmental Network). Subsequently, the CCUEN has increased its membership and is partnering with organizations such as *Alternatives Journal* to advance its position as the national voice for environmental education.

Sustainable campuses. We have actively adopted the concept of sustainability not only at Frost Campus but also throughout Fleming College.

Continued on page 66 ...

Future of Eco-Education

ENVIRONMENT IS THE ISSUE of the 21st century. The complex relationship between economic, cultural and biological wealth, and the current state of all three, has created an unprecedented need to come to terms with human impact on the environment. Educational institutions must facilitate the delivery of programs that enable students to address this complex relationship across multiple disciplines. Today’s graduates need to be prepared to meaningfully apply ecological principles in business, economics, policy, and culture.

In the coming years, we expect to see an increasing focus on interdisciplinary education addressing authentic environmental sustainability across curricula and campuses. In a diverse variety of future life and work endeavours, graduates need to be equipped to make choices that foster sustainable action and reflect a clear understanding of the importance of respecting ecological limits and social justice. Natural and social sciences graduates will be able to explain and navigate the social, political and ecological complexities of global environmental problems as well as their potential solutions.

Environmental employment opportunities are diverse and new career prospects are emerging in both the public and private sector as corporations and governments discover that green initiatives positively impact long-term sustainability, human health and wellbeing, and market share.

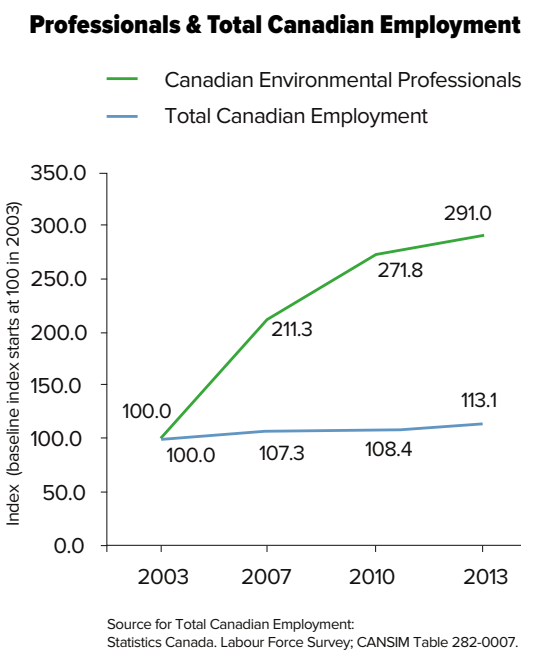
According to ECO Canada, Canada’s professional environmental workforce has consistently outpaced the growth of Canada’s total workforce since 2003.

Canadian university and college programs in environmental studies and science are incorporating Indigenous knowledge, culture and perspectives within curriculum and practice. As well, these institutions are addressing the recommendations of the Truth and Reconciliation Commission – particularly the calls to action on

education, such as integrating Indigenous knowledge and teaching methods into courses, and building student capacity for intercultural understanding, empathy, and mutual respect. Indigenous knowledge is generally parallel to Western knowledge systems, and sometimes complementary, but not always. It is important first and foremost to recognize that it is valid knowledge in its own right that has served people for many thousands of years. No environmental education pathway will be considered complete without this vital component of learning. 

Kathryn Aitken is an instructor in the School of Science at Yukon College in Whitehorse, Yukon, and is an adjunct professor in the Department of Renewable Resources at the University of Alberta.

Marja de Jong Westman is an instructor and the coordinator of the Department of Biology at Capilano University in Vancouver.



The potential number of employment opportunities for environmental professionals continues to significantly outstrip the national average.

What would **AJ** do with more resources?

"I would love to see
AJ create a lot more
digital, online content."

— Selina Vesely, Graphic Designer



"What I would love to
see is more stories on
student innovations with the
environment or technology."

— Veronika Szostak, Editorial Intern



"We are Canada's leading
environmental media
organization, and I think
that we need to show it."

— Leah Gerber, Associate Editor



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Continued from page 59...

In recognition of these efforts, Fleming was recently awarded a STARS Silver Rating from AASHE (The Association for the Advancement of Sustainability in Higher Education). Our sustainability efforts openly engage all members of the college community, with students taking active and leading roles in many of our initiatives such as the bike share program and the on-campus community garden. As well, most diploma programs throughout the College have a sustainability component woven into the curriculum (greening of the curriculum), and learning activities have an emphasis on community-based learning. From being the first Canadian institution to ban all bottled water sales on campus (on Earth Day, April 11, 2011) to embedding sustainability into key strategic documents, Fleming has been a pioneer in implementing a whole-institution approach to sustainability.

With the recent international priorities related to climate change, environmental education will continue to be at the forefront of importance in mitigation, resiliency and adaptation. SENRS students will not only graduate with the critical skills for the "green" jobs in the low carbon economy, through their applied and experiential learning, but also graduate with the ability to be change agents in their work, their communities and their world. These graduates are the environmental leaders of tomorrow who will help to find the solutions to meet the current and future global challenges. **AJ**

As Principal of Fleming's Frost Campus and Dean of SENRS, Linda Skilton plays a lead role in how the school's programs are shaped and delivered. Dr. Skilton completed her Master of Arts in Education from Central Michigan University and completed her PhD in higher education from OISE at University of Toronto.

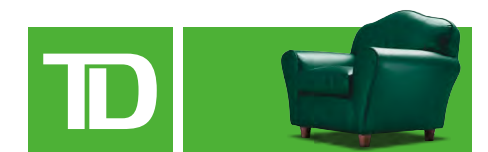
AJ's own story in environmental education saw our directories take many forms within regular issues. In 1999 we produced our first fully dedicated environmental education issue, which began our tradition of presenting great stories and ideas to steal.

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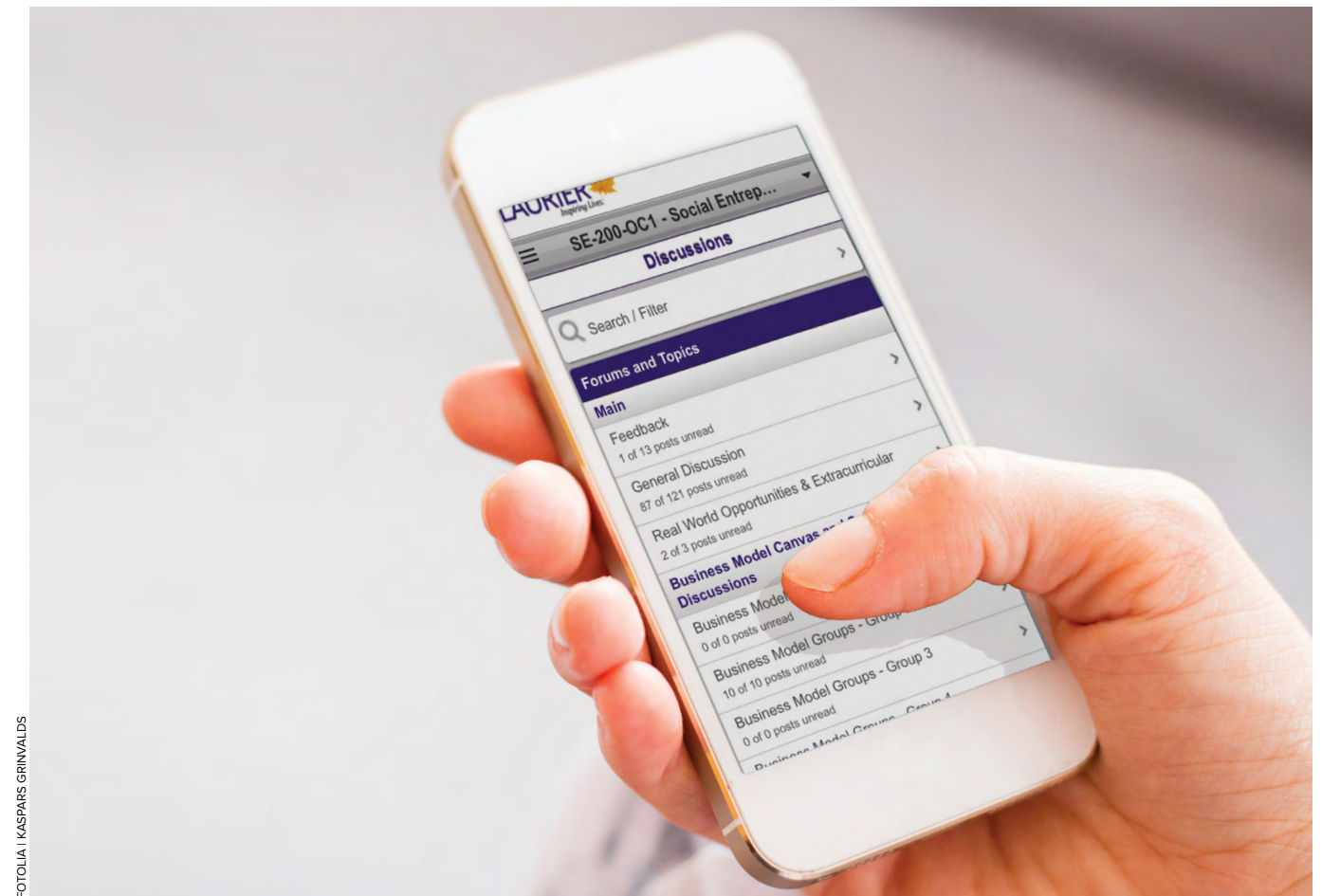
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Nicole McCallum's online course, Social Entrepreneurship, is taught through Wilfrid Laurier University, but it is accessible on computers and hand-held devices alike.

MOOCs are courses offered on the Internet with unlimited enrolment and are accessible by anyone with an Internet connection. They generally feature content, instruction and assessments that are open and available to all.

Millions of people are taking advantage of the opportunity. According to Class Central, an online MOOC portal that monitors and reports on the global MOOC movement, more people signed up for MOOCs in 2015 than in the previous three years. This brings their calculated total number of MOOC students to 35 million, increased from 16-18 million in 2014. MOOCs are taking over.

Currently, MOOCs have three basic ways of engaging students. First, they provide information via videos of

lectures or readings, often from experts in the field. Second, they include additional interactive elements, such as peer grading, study groups (both in-person and online), discussions among students as well as between students and instructors.

Finally, the coded infrastructure allows students to share insights from their projects in a “knowledge base” that grows within the course and after completion. This is the community-building element of MOOCs, and has helped drive MOOC's popularity. Today, there are many exciting varieties of MOOCs developed, such as student-driven and cross-university collaborations.

In 2008, the term “MOOC” was coined by University of Prince Edward

The ability to share and mobilize knowledge is critical for everyone, including the environmental movement.

Island's Dave Cormier in response to a course called Connectivism and Connective Knowledge, and refers to online courses. Today, most top universities including the likes of Stanford University, Massachusetts Institute of Technology (MIT) and Harvard University, have created some form of MOOC and have attracted enrolment numbers in the hundreds of thousands.

EdX, for example, is a non-profit, open-sourced MOOC provider developed by MIT and Harvard in 2012. The website boasts education partners from 90 countries and students from every country in the world taking courses on subjects ranging from engineering, computer science, philosophy, architecture and everything in between.

By providing expanded online content that covers the required foundational knowledge, instructors have new opportunities to revolutionize the classroom into more experiential, interactive environments. The New York Times' 2012 "Year of the MOOC" piece gives an example. In fall 2011, the University of Stanford offered a MOOC on Artificial Intelligence. 160,000 students in 190 countries registered.

MOOCs for All

Check out some of the major MOOC platforms and see if there is any free learning that interests you!

- Coursera coursera.org
- edX edx.org
- France Université Numérique france-universitenumérique.fr
- FutureLearn futurelearn.com
- iversity iversity.org
- Open2Study open2study.com
- Udacity udacity.com
- The Open University open.ac.uk

200 Stanford students attended the course in-person, but by the end of the year only 30 students were going to class. This was because most students actually preferred the online version. Online, students took ownership of the course by setting up a Facebook group, discussions and voluntarily translating the course material into 44 languages.

In today's digital world, the growing pressure to provide information in a free and open way will encourage the development of education structures, like edX, with fewer inequities. Knowledge can no longer be contained in a silo.

We are all participating in profound changes to the way information is created and consumed. This includes deep disruption to structures of how information is acquired, created, shared, manipulated and managed as we know it.

Because of this, the ability to share and mobilize knowledge is critical for everyone, including the environmental movement. The MOOC format can:

- provide information globally
- address inequalities in information access
- revolutionize institutional learning
- diversify perspectives and connect disparate viewpoints
- drive social change.

Perhaps most exciting of all, MOOCs could help the sustainability movement.

What are GhGs? What is climate change? What are the top three actions an individual can take to contribute to collective environmental change?

New people are joining the sustainability movement every day and want to know the answers to these questions. Besides unprecedented diffusion of information, MOOCs have an untapped potential for creating social change. Environmental organizations could design MOOCs that offer an introduction to the basics of sustainability for newcomers, as well as access to a community of like-minded, active people. When information is

personally relatable, people are more motivated to act on it.

Sustainability experts and community activators could work together to improve the collective movement's network of knowledge, using MOOCs as the vehicle. This would make the process of learning about sustainability as straightforward as possible, improving the efficiency of the movement as a whole.

The Waterloo Region Environmental Network (WREN) is dedicated to collecting and disseminating the cumulative knowledge of the area's environmentally oriented groups. Through the Network's efforts, Waterloo Region has experienced the effects of organizing and sharing the knowledge and resources in the local environmental scene. Since WREN was first proposed in 2014, their collective effort has connected 112 organizations, recruited 680 volunteers and raised 30,000 dollars. MOOCs could help create outcomes like these on a global scale.

The MOOC movement is hitting critical mass, and is already provoking disruption to the status quo. With our collective effort, MOOCs could be fundamental to achieving significant, rapid environmental change. If we do, the environmental community stands to gain well-informed and active participants as we target and develop MOOCs on sustainable life. 

Nicole McCallum (@NikkiJade) is a lover of community and collaboration, as well as a social entrepreneur, author, and educator at the University of Guelph and Wilfrid Laurier University. McCallum works with non-profit organizations and social enterprises to help them establish initiatives in a way that is financially, socially and environmentally sustainable.

Stacey Danckert is a former candidate and Policy Coordinator for the provincial Green Party, co-director of the Waterloo Region Environment Network, and chair of the Kitchener Environmental Advisory Committee. She holds her PhD in Cognitive Neuroscience.

What topics would you hope for WREN and AJ to cover in a MOOC? Let us know at hello@wrenenvironment.ca.

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We used to be storytellers; now we rely on numbers.

I AM MAKING a set of wooden blocks for my new grandson. Tradition dictates I should paint the alphabet on them, and the numbers from one to ten.

Perhaps I will comply. Society will expect my grandson to be literate and numerate, to read and write and to count and calculate. Indeed, society will expect him to combine those skills – to read and write about counts and calculations.

That is already how it is. The predominant stories today are in algorithms and spreadsheets, accounts, rankings and projections.

Individual lives are bound up in prices, appointments and deadlines, wage increments and credit card debt, blood pressure readings and the likelihood of precipitation expressed as a percent. Nations are ranked by GDP, life expectancy at birth, average educational attainment, Gini coefficients and indices of business friendliness, and administrative corruption. Reporting on sports and stock markets has become so focused on statistics that one is tempted to assume both are largely in service to gambling.

Even environmentalists who were once labelled treehuggers now rattle on about fuel efficiency ratings and ecological footprints, contaminants in parts per billion, food trade journeys in thousands of kilometres and greenhouse gases in kilotonnes of carbon equivalent.

If the world is already chock-a-block with numbers, what will it be like by the time mister chubby hands is grown?

Should the blocks begin an education that will prepare him to participate in an even more fully numerical world? Or should they help him get his hands and mind around the innumerable opportunities that the numbers miss? Will he need more

counting skills or more countervailing options or some creative combination?

Probably the combination makes most sense. Almost certainly counting and calculating will be no less crucial in the future than they are now. And no less deficient.

The big challenges we now face – continuing degradation of ecosystems, expanding inequities, entrenched xenophobia and looming climate change, etc. – demand significant changes that must be informed

Counting and calculating have favoured parts over wholes, and adjustable bits over intrinsic qualities.

by credible and comprehensible information, much of which must be quantitative. But these challenges also represent the failures of past agendas for conquering nature and pursuing affluence that were also buttressed by numerical calculations.

Both the astounding accomplishments and deepening perils of the modern era rest on a pair of revolutionary underlying ideas: that the world is knowable and manipulable and that it is right and proper that we should use our powers to make nature serve our material ambitions. Together they justified playing God. We could and did set out to uncover the rational rules governing nature and use the findings to manipulate natural and human resources in a never-ending pursuit of more wealth and power.

Counting and calculating fit this agenda well. Neither the scientific nor economic aspects of modern advance would have been possible without counting and calculation. Without the numbers there could have been no

laws of motion, no invisible hand of the market, no internet.

But modern counting and calculating have been selective. They have favoured parts over wholes, adjustable bits over intrinsic qualities, and confidence in reason over traditional reticence. They have facilitated fragmentation, manipulation and hubris. In so doing they have made us more dangerous as well as more powerful.

For the next generation, or perhaps the next seven, counting and calculating will

somehow have to embrace complexity, and illuminate the interactions as much as the components. They will also need to respect uncertainty and earn credibility in a world that is at once increasingly suspicious of authority and understandably desperate for firm answers.

What, if anything, that entails for wooden blocks is not clear. The surface of the workbench is a long way from the stratosphere of big ideas. And the likelihood that these blocks will have any noticeable formative influence approaches zero.

Nonetheless, there are decisions to be made and even a trivial creative challenge is more fun than copying the standard form. Maybe the trick is not so much in what to paint on each block as in how they fit together. I have to give that some thought. It will require a small idea about the big one. 

Robert Gibson is the chair of **AJ's** editorial board and a professor in the School of Environment and Resource Studies at uWaterloo.

sustainability.dal.ca

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At Dalhousie, sustainability is woven into all we do: teaching, learning, researching, working, and living.

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