

Brock UNESCO Chair on Community Sustainability: From local to global

Newsletter June 2019

A SABBATICAL... A LITTLE MORE THAN EXPECTED

Since July 2018, I have been on sabbatical and it will be finished at the end of June 2019. So many things have happened. I am glad that I became President of the Canadian Commission for UNESCO during such a year. It really helped getting used to the role and figuring out the various actions to be done. As a UNESCO Chair, it has been a year to not only reflect but also going further on a few topics. One of them, which is taking a larger place in my activities and research, is reconciliation with Indigenous Peoples in Canada. I have been discussing and reflecting on possible actions as well as how to contribute as much as I can. For example, early in April, with Elder Larry McDermott, we co-authored a commentary for Botany. This journal, where I am an associate editor, is now accepting articles that are related to traditional knowledge. We had received a

manuscript that really reflected the importance of research with Indigenous Peoples to preserve their oral heritage with plants. Considering that 2019 is the International Year of Indigenous Languages, I started thinking that it would be positive to have a science journal in Canada that accepts transitional knowledge as well. This reminded me of the “Two-Eyes Seeing” principle that Elder Albert Marshall has established where both science and traditional knowledge can be combined to better understand Mother Earth and find sustainable solutions. Considering the IPBES report that was recently released, I strongly believe that we absolutely need to respect and recognize that Indigenous Peoples have a wealth of knowledge that may help humans survive through these crises.

CELEBRATING INDIGENOUS VOICES: 2019 SUSTAINABILITY POETRY CONTEST

On March 21, World Day of Poetry, we celebrated the winners of the Sustainability Poetry Contest under the theme “Indigenous Voices” to underline the International Year of Indigenous Languages. Poetry is a great form of communication that can link people and culture. Poems were accepted in both French and English. This year I also encouraged Indigenous Languages and we received one of the poems in Mohawk, with an English translation. This was the fifth edition of the Sustainability Contest and it demonstrates the vibrant and creative community in the Niagara region. The winners and all the other poems will be published in an e-book like the previous years. They are available online: brocku.ca/unesco-chair. Next year’s theme

will celebrate the International Year of Plant Health. I encourage everyone in the community from elementary school to general public to participate.



RURAL COMMUNITIES AND SUSTAINABLE AGRICULTURE: IS INFORMATION ALWAYS AVAILABLE ?

Since the 1950s, pesticides - with their many negative effects on human health and the environment - have dominated agriculture worldwide, despite many safe and effective biological alternatives. Currently, more than 2 billion kilograms of pesticides -worth more than \$75 billion- are used globally each year. Though most pesticide use is entirely unnecessary and ample environmentally-sound alternatives are available, uptake of technologies (such as biological control) still proceeds at a frustratingly slow pace. With a group of colleagues all connected to the work in China, under the leadership of Kris Wyckhuys, we conducted a high-throughput analysis of large bodies of digitized text ('culturomics') to assess the extent to which specialized information on insect biological control is available in different countries across the globe. For >300 biological control agents, some countries such as France covered them on average in 1,050 webpages, while they featured only on 30 to

40 sites in nations such as Thailand, Indonesia and Kenya. Growers' access to this information is important, as it can facilitate farm-level uptake and diffusion of insect biological control. For me, it confirms that we really need to continue supporting farmers in developing countries, especially Indigenous communities, so that they can reduce exposure to agrochemicals that can be detrimental for their health and the health of the agroecosystem.

Reference:

Wyckhuys, K.A., Pozsgai, G., Lovei, G.L., Vasseur, L., Wratten, S.D., Gurr, G.M., Reynolds, O.L. and Goettel, M., 2019. Global disparity in public awareness of the biological control potential of invertebrates. *Science of The Total Environment* 660, 799-806.
<https://doi.org/10.1016/j.scitotenv.2019.01.077>

INTERNATIONAL DAY OF GIRLS AND WOMEN IN SCIENCE AT THE ROYAL ONTARIO MUSEUM (ROM) IN TORONTO

February 11 is the International Day of Girls and Women in Science. For me, this is an important day as I have been working on women equality (SDG #5), especially in science, for quite a while. This year was even more special as I was invited to moderate a panel discussion on the subject at the Royal Ontario Museum in Toronto. This initiative brought girls from a Toronto high school to the museum to hear about the work of scientists from the museum in various disciplines of science. The work of these women was

certainly inspiring for the students. It was a great occasion to continue spreading the word that science can be everywhere. This was a great collaboration between the Canadian Commission for UNESCO and the Museum and this further expands the reach that we can all have in promoting women equality and encouraging girls from different backgrounds that science can be for them, as well.

PROUD TO SHARE: EUROMAB 2019 IN DUBLIN, IRELAND



The EuroMAB took place in early April and more than 220 participants were invited to discuss various aspects related to their biosphere reserves. Canada is a member of EuroMAB and a few of us were able to attend. In my case, I had the chance to present on the field course Biodiversity in the Biosphere

Reserve that I offer every two years through my Chair. I also chaired a workshop with Gerry Clabby from Ireland National Parks and Wildlife Service on Ecosystem Services. I presented the document that we had prepared for the Canadian Commission for UNESCO on how to assess ecosystem services in biosphere reserves (see follow up article). This meeting was a good way to meet other biosphere reserves and discuss how people can work together. It was also a good way to understand natural ecosystems, history and culture of Ireland. I should say that I also had a small pre-conference meeting on biosphere reserves and ecosystem governance. While it was limited in number of participants, we discussed many aspects including some of the barriers regarding the social acceptance and support of biosphere reserves, which may limit people engagement and sustainability. There a a few action items to work on from this conference.

FOR WORLD BALANCE: AN OCCASION FOR A GOOD DISCUSSION IN CUBA AT The Jose Marti Project and the IV International Conference

Jose Marti was not only a writer and a thinker but also a believer in democracy, justice, and ethical values who became instrumental for the independence of Cuba from Spain. In January 2019, I attended the IV International conference entitled: "Por el equilibrio del mundo" (For world balance). Over 500 participants attended the opening ceremonies and participated in many sessions, working groups, and symposia. The topics were diverse and ranged from culture, education and science and demonstrated the importance of knowledge sharing form various points of view. I was part of the special session for the UNESCO Chairs, which again was impressive in terms of topics and experiences. What the conference demonstrated is

the importance of integration of the various disciplines for peace, social justice, environmental protection and therefore all aspects of sustainable development. In my case, I initially was supposed to present on women in science education and their challenges. The organizing committee wanted to take advantage of my presence as UNESCO Chair and as the President of the Canadian Commission for UNESCO, however, and present how my chair and the network of UNESCO Chairs in Canada are connecting and how we can also be connecting to the work happening in Cuba with the Jose Marti project and the Cuban UNESCO Chairs. We are hoping to open a dialogue to increase collaboration and continue the work on world balance.

How fragile our coastal zones can be ...



In March, I was in Mozambique for the steering committee of the Commission on Ecosystem Management of IUCN as a member from North America. The meeting was productive and brought many new ideas and discussions regarding the SDGs and the post-2020 Aichi targets. It is clear that priorities should continue focusing on issues such as ecosystem governance, climate change adaptation and landscape restoration. As my chair focuses on governance and sustainability, these discussions are very prolific and demonstrate the importance to all work together to enhance actions regarding sustainable development, biodiversity conservation

and climate change. One day was dedicated to a workshop on coastal resilience. There were presentations on how several actions and projects have been implemented not only in Africa but other regions of the world to try to improve the resilience of coastal communities. During the meeting we discussed some actions that were taken to try to reduce flooding and storm damage but recognizing that in many areas, low lands were often exposed to such storms. We also visited some of the mangroves and areas in Maputo where restoration and protection need to be maintained to ensure that communities can continue to sustain themselves. Unfortunately, a week later we all learned that on March 14, Cyclone Idai struck the coast Mozambique (and other countries such as Malawi and Zimbabwe) killing hundreds of people. My heart goes out to all of these people. It is important to remember that a large percentage of the world's population lives in coastal areas. These ecosystems are fragile and vulnerable to storms and now climate change. To ensure their sustainability, we need to find solutions. This is part of some of the work that I continue doing with coastal communities here in Canada and abroad.

Update on another coastal community: The Town of Lincoln

In the previous newsletter, the new MEOPAR project was presented. This is a project that demonstrates the importance of climate change adaptation based on ecosystem. This is a great way to contribute to SDG#13. We can now add a little update: interviews have been done and many more activities have been initiated with the community. Meredith DeCock, Master student in Sustainability Science, has started the analysis of the evolution of the coastline. Again, it demonstrates very well the importance to plan for the future along the coast.



KARLA GAVILANEZ GUAMAN: A VISIT TO CANADA UNDER THE QUEEN ELIZABETH II SCHOLARSHIP PROGRAM

Karla is currently a PhD student in the Fujian Agriculture and Forestry University, one of my UNESCO Chair partners. However, she is officially from Ecuador and working in ESPOCH, one of our other partners, which FAFU form a north-south-south partnership. Karla is working on an important part of cruciferous (mustard plants like broccoli, radish, cabbage) crops, the diamond back moth and trying to understand the role of wild mustards as a refuge for the species to continue to survive when crops are not present. Her study shows interesting results suggesting how this little pest can stay in Canada longer than expected (as it was

thought to migrate from the south like monarchs). As she mentioned in her report: "QES has given me the opportunity to be in another environment surrounded by people working in different areas of agroecology. Working in both Ecuador and China, and now Canada, has become a new intercontinental connection point." Her project, with many others in these three countries, are aiming to find more environmentally friendly ways to control pests to enhance agriculture sustainability. For countries like Ecuador, this is essential to ensure food security (related to SDG #2 and #15).

THE FIRST NORTH AMERICAN DIALOGUE ON BIOCULTURAL DIVERSITY

On May 5 to 8, Indigenous Peoples and non-Indigenous allies came together to initiate a dialogue for reconciling cultural diversity with biological diversity. This Dialogue, organized by many institutions such as the Secretariat of the CBD, CCUNESCO, Cicada, ICCA, AFM, and more, aimed to define potential actions that can be done to further the recognition of Indigenous rights and knowledge in conserving biodiversity. I was there as a UNESCO Chair and non-Indigenous ally as well as representing the CCUNESCO as President. As I argued during some of my presentations, we can no longer continue defining solutions from only one point of view, especially when it is mainly a utilitarian humanistic one that separates humans and nature. As we are intricately connected, we cannot separate biological diversity from cultural diversity. We must recognize and value the rights of Indigenous peoples and local communities. To effectively mainstream

biological diversity, we need to value and respect traditional knowledge, sustainable customary practices, innovations and values that are coming from Indigenous Peoples and local communities. Through my international work, I have seen many cases where international programs on behalf of conservation of biodiversity have unfortunately negatively impacted Indigenous Peoples and local communities. For example, the REDD+ is supposed to help climate change action and reforest regions in a way that should be positive. However, my work in Ecuador in an Indigenous community of the Chimborazo demonstrated to me how decisions made by others, with no consultation of the local people, have been destructive. Planting eucalyptus on the upper area of a slope where the lower area was serving for subsistence garden was a pretty bad idea. Eucalyptus now are threatening the garden and therefore the diversity of food they were growing and thus food security. We need to challenge this worldview. I am hoping that over the next years I can contribute to this challenge that we are facing of not understanding that without Mother Earth, no one can survive.

ASSESSING ECOSYSTEM SERVICES IN UNESCO BIOSPHERE RESERVES

Through the Canadian Commission for UNESCO, with my co-author Robert Siron from Ouranos, we produced a document that aimed to present a simple way to assess ecosystem services in biosphere reserves. Ecosystem services represent the various benefits that we receive from our natural environment and sustain life on the planet. In this document, we first introduce the concepts and categories of ecosystem services and then discuss how they can be viewed through it is now labelled as Nature contributions to people. The document explains how it is possible to use a simple method that is inclusive and interactive to assess with the community the ecosystem services that are the most pertinent for a particular biosphere reserve. The tool can be used to also monitor in the long term these services and help



define actions that may better contribute to sustainable development. I should underline the participation of a great working group, that contributed significantly to the discussion and the additional examples from Mont St-Hilaire and Clayoquot Sound UNESCO Biosphere Reserve on how this approach can be used. At EuroMAB, participants to the workshop wanted to already download the paper and it was suggested that each biosphere reserve should try a pilot to see how to implement it. So, more work is to come!

ADAPTATION IN ORGANIC VINEYARDS IN THE FACE OF CLIMATE CHANGE

The project, funded by the federal government's [Organic Science Cluster 3 \(OSC3\): Connecting Environmental Sustainability with the Science of Organic Production](#), has started. Our group will develop and test out new strategies for improving soil and vineyard sustainability in British Columbia and Ontario. The ultimate goal is to enhance the resilience of this agroecosystem in the face of climate change and promote greater use of horticulturally sustainable practices. To do so, we will examine the roles of different cover crops, irrigation systems, and rootstocks in enhancing the

resilience of vineyards and sustainable grape production. Optimizing the agroecosystem in a way that the soil remains healthy and fertile leading to grape productivity and quality, is critical, especially with concern coming from climate change and possibilities of increased extreme weather events such as droughts. Droughts are not a factor right now. The spring season is slowly starting, with the hope that rain can stop soon!

AN UPDATE FROM ECUADOR



The work and collaboration with the Escuela Superior Politecnica de Chimborazo (ESPOCH) are continuing, despite some challenges as funding is not very easy to come. The community of San Juan is working on various aspects to enhance its sustainability in the face of climate change and the reduction of annual precipitation. I am happy to say that Gabriela Andrea Rosero Obando has successfully submitted her paper for her degree in School of Chemical Sciences. The title of her work was “Evaluation of soil organic carbon in the paramo ecosystem of Chimborazo river micro-basin based on anthropogenic activities”. I was the external supervisor with Dr. Magdy M. Echeverría Guadalupe, as the internal supervisor. This represents one of the major steps to better understand the importance of paramo for carbon sequestration and contribute to its conservation.

GENDER FOCUS TO ACHIEVE MORE EQUITY

In April 2018, I was presenting at the XII International Conference on Foreign Languages, Communication and Culture, WEFLA 2018 and the XII International Seminar on Canadian Studies: Canada, managing social and cultural diversity in Holguin, Cuba. One of the outcomes of the conference and our special session has been the production of a book, which was launched in April 2019 in Cuba. This book entitled “Enfoque de género para lograr más equidad” is the results of the discussion and presentations that we had the conference. Under the editorship of Louise Lafortune (Canada), Vilma Páez Pérez (Cuba) and Anne Roy (Canada), the book brings a gender approach to achieve equity. The book examines the various gender perspectives that are found in social and scientific disciplines and how education can

influence perceptions and actions. The book contains two parts: women conditions in the fields of social sciences and science, technology, engineering and mathematics, and reflections from social, historical and pedagogical perspectives. Avenues of solutions are then proposed to deal with these issues in the various disciplines. Yes, the book is in Spanish, as few such documents are available in countries such as Cuba. The topic of gender equality and therefore SDG#5 remains an important part of my work and if I can contribute on this in another country and language, this is great. I was happy to contribute.