



UNESCO Chair in Community Sustainability

From Local to Global

Issue 2

On an accelerating path

The past year has been amazing. Many things happened and the work of the Chair has significantly increased as projects are being accepted and initiated and new education and community outreach activities are organized and offered.

The year included organizing the CCWESTT (Canadian Coalition of Women in Engineering, Science, Trades and Technology) 2016 conference in May in Ottawa. During the event, I was asked to stay as President for another two years. Continuity is important for an organization that is developing a new strategic plan. I had a chance to speak in a Panel on Women in Science at the Canadian Science Policy Forum in Ottawa in November 2016. These two events were a good way for me to

underline the importance of women's inclusion in sciences for more sustainable communities.

Projects in Canada, China and Ecuador have been approved and have started during the past twelve months. Many of these projects are featured in this issue. The main focus remains on finding ways to enhance community sustainability through research, education and action in the field of rural communities and sustainable agriculture. Working at the intersection of food production, sustainable land use, biodiversity, ecosystem management, and climate change, my work encompasses several of the Sustainable Development Goals 2030 such as Goal 2 (zero hunger), Goal 4 (high quality education), Goal 5 (gender equality), Goal 8 (decent

work and economic growth, especially for rural communities of Ecuador), Goal 13 (climate action), and Goal 15 (life on land).

This newsletter briefly describes some of the activities of the chair and how the work contributes to these goals. The Chair is a collaborative and you will realise rapidly that many people are involved in this venture. I personally want to thank to all of the great people involved!



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Supporting graduate students of Ecuador

In February, a team headed by Brian McLaren, associate professor in the Department of Natural Resources Management at Lakehead University and including the UNESCO Chair as a co-applicant was awarded \$660,000 from the Canadian Queen Elizabeth II Diamond Jubilee Advanced Scholars Program. The project enti-

tled "Agro-biodiversity, Nutrition and Sustainable Marketing of Heritage Crops in Ecuador and Canada" involved researchers, graduate students and post-doctoral fellows from Lakehead, Brock, and a university in Ecuador called Escuela Superior Politecnica de Chimborazo (ESPOCH). Over the next three years, the team will examine how communi-

ties in Ecuador and Ontario, Canada, can expand their food production by preserving their heritage crops and growing a diversity of crop species together.

Discussion in the lab at ESPOCH



"111" Program: Innovation Center for Ecologically Based Pest Management of Subtropical Crops

Since January 2017, an international group of researchers has initiated a new large program funded by University Disciplines Innovation and Talent Introduction Plan (also called "111 Program") of the Ministry of Education and State Administration of Foreign Experts Affairs, China. Headed by Minsheng You at the Fujian Agriculture and Forestry University, Fuzhou, the project aims to enable international scientists to work in collaboration with Chinese scientists on well-planned projects to generate theoretically sound and practically applicable strategies to enhance sustainable food production. Crops are constantly subject to damage from a wide range of insect pests under favourable weather condi-

tions. Habitat management, biological control and genetic manipulation of insect pests are three novel categories of strategies for ecologically-based pest management in support of food security/safety and environmental sustaina-



bility. The Chair is coordinating the habitat management group along with her Chinese partner, Wenwu Zhou. This component aims to enhance and optimize ecosystem services (ES) in support of ecological pest control based on studies of the configuration of functional plants, scale effects on target pests and natural enemies, and optimization of spatial/temporal patterns in agricultural landscapes. Work has already started with a critical analysis of ES assessment methodologies for agricultural landscapes. More to come over the next five years.

Group in a tea plantation in Zhangzhou

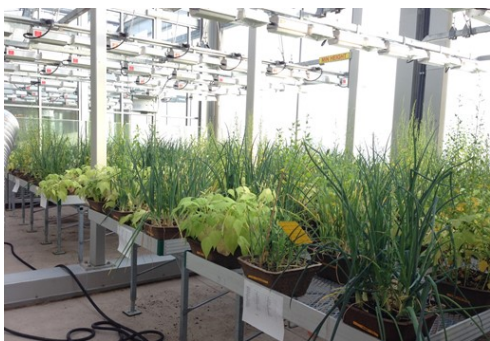
UNESCO Chair, partner in a new project called "Rés Alliance"

The Rés-Alliance is a project led by the Regroupement des organismes de bassins versants du Québec (ROBVQ, Coalition of Watershed Organizations of Québec) and represents a community of practice in climate change adaptation. Water is more than just a resource it is essential for life. As underlined in Goal #6 of the Sustainable Development Goals (SDGs) 2030, access to clean water and protecting its related ecosystems are needed to achieve sustainable development. Climate change affects how communities can continue to develop sustainably. Combined with Goal #13, the objective of this project is to ensure knowledge transfer and experi-

ence sharing among different communities that must adapt to new climatic realities affecting water management. Over the next three years, the ROBVQ and its partners will help eight "leader" communities assess vulnerabilities and develop adaptation plans to better adapt to changes and protect their water related ecosystems. Rés-Alliance is supported by the Green Funds of the Québec Ministry of Sustainable Development, Environment and the Fight against Climate Change.



Yi An Lin: a former student with bright future



Experiment in Cairns greenhouse

Yi An's research investigated plant interactions in the onion (*Allium cepa*) and yellow wax bean (*Phaseolus vulgaris*) intercropping system with two major weed species, either *Chenopodium album* or *Amaranthus hybridus*. The research found that intercropping onion with yellow wax bean affected the growth of both when compared to their monocultures. Weed growth was significantly reduced under the diversified intercropping system. Better understanding of the fundamental basis of

plant-plant interactions may provide insights for management in sustainable agriculture. Yi An is now working in a greenhouse that cultivates medical Cannabis. The restricted use of agrochemicals requires the greenhouse to develop eco-friendly and clinically-safe ways to control plant diseases and ensure plant quality. His Master degree helped him better understand and use biological solutions for Cannabis cultivation and pest management.

More sustainable agriculture in Canada and China: focus on soil, grapes and tea

In the past summer, the Chair received an Ontario government grant of \$250,000 from the province's Ontario-China Research and Innovation Fund (OCRIF) to examine the potential of sustainable alternative agricultural strategies to improve soil health and fertility in Ontario grape vineyards and tea plantations in Fujian province of Southern China. This fund is matched with another grant in China as well as industry partners. The team of researchers in Canada, including Frédérique Guinel at Wilfrid Laurier University, and researchers from FAFU in China will use three strategies,

agromineral amendments, cover crops and beneficial microbes, to enhance soil health in these ecosystems. The partners in Canada include Boreal Agrominerals, Mikro-Tek, and Hughes Vineyards.



Walking in Hughes Vineyard, Frédérique, Ed and Liette

UNESCO Week for Peace and Sustainable Development

I had the honour to be invited to participate to the WPSD which was held in Ottawa at the Shaw Centre, March 6-10, 2017. This meeting brought together over 600 participants from 93 countries. The meeting included plenary sessions, concurrent sessions and exhibitors. Many of the sessions were highly interactive allowing active participation and discussion. First the mid-term report of the Global Action Program for Education for Sustainable Development was presented and the results suggested that the program was well under way to achieve its goals. Much remains to be done as the number of schools and children reached is far from global. However, it is a major step to contrib-

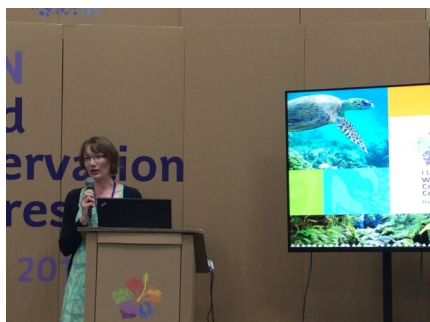
ute to Goal 4 of the SDGs, especially target 4.7.

It is clear that each of us can contribute to this goal. My chair, for example, contributes in formal and informal ways. It is important to integrate the concepts of sustainable development in our courses at universities to increase students' awareness of the world and prepare them to become global citizens. For example, my "Biodiversity in the Biosphere Reserve" field course keeps a tight link to these themes. Informally, the science cafes that we organize are also great places where sustainable issues can be discussed as we did with sustainable agriculture and electric cars. Many more activities to come!



Liette and Aniqah Zowmi (Youth @ CCUNESCO and Brock student)

Commission for Ecosystem Management of IUCN



Christine Janzen, former Master student presenting on Nature-based solutions

Last September, at the World Conservation Congress of the International Union for Conservation of Nature (IUCN), I was nominated as a member of the Steering Committee of the Commission for Ecosystem Management (CEM). Chaired by Angela Andrade, the steering committee is responsible for advising and assisting the Chair on the overall prioritization and program oversight within the CEM to deliver on its long-term vision, goal and objectives. I

oversee the region of North America and Caribbean, and a portfolio composed of different groups, Arctic, Restoration, Young Professional, Biosphere Reserves, and Ecosystem Governance (which I lead). I was previously the lead of the thematic group on ecosystem-based adaptation to climate change. CEM promotes the ecosystem approach within the IUCN through the work of over 800 volunteer experts.

Developing a new exciting minor in Environmental Sustainability at Brock

The ESRC received the approval in late 2016 to launch a new minor in Environmental Sustainability. This was even more exciting that it also received news a little later of funding from the e-Campus Ontario program of the Ontario Online Learning Consortium to develop a full course on-line. This course will include 10 modules such as sustainable agriculture, climate change mitigation and adaptation, education, and conservation. These high quality free and accessible digital modules will be available for the courses being taught in the minor and

also to any professor in need of extra material. The Chair is involved in the development of a couple of the modules with others and on the steering committee.

Learning by doing!



A new step in San Juan, Ecuador

In December 2016, I revisited ESPOCH, which now has an official collaboration agreement with Brock, to continue to develop a research program on community sustainability. The main focus is on sustainable agriculture and ecosystem-based adaptation to climate change in rural communities of the Andean paramos. The paramos are very fragile ecosystems in high elevations where rural communities try to maintain a way of life through crop production and ranch-

ing. Unfortunately over the years, cattle and sheep ranching has degraded several components of this fragile ecosystem such as the peatlands/wetlands. Intensification of agriculture has also increased the use of water and land degradation. The vision of this new program is to enhance the resilience and sustainability of the community of San Juan, Chimborazo, through research that will help understand how climate change impacts the ecosystem and community pro-

jects to enhance resilience through sustainable agriculture and ecosystem-based adaptation. My co-lead, Magdy Echeverría from ESPOCH is quite excited to be able to contribute to the sustainability of this fragile ecosystem and the communities that depend on it. This is a very collaborative project and as the leader of San Juan stated: "it is to the community, with the community, and for the community".

Wetlands of Sunset: Connecting Memories with Nature

Woodlands of Sunset Long-term Care Facility is a nursing home managed by the Niagara Region. It is an interesting place as it is coupled with the conservation of the adjacent wetlands and forests. In the summer of 2015, Roman Kruczynski, then the President of the Family Council, came to meet with me to explore the possibility of a joint initiative with the university and especially the ESRC. This first meeting has led to what we now call the Wetlands of Sunset initiative. This is a perfect example of the collaborative character of the UNESCO Chair where members and non-members of the ESRC, as well as community partners, are coming together to put a vision of what can be a community sustainability view from

a focal point that is a nursing home. With aging populations, these facilities are more and more common and the importance of their location can be crucial for the wellbeing of the elderly residents and the surrounding community. This community of Welland comprises schools, homes, and economic activities, which can be influenced by the environmental sustainability of these wetlands; they contribute to a healthy ecosystem that can have positive impacts on people. During the first year, a few projects were initiated including a nursing student exploring the issues for residents at the nursing home regarding access to nature, two classes in earth science and geography studying the hydrology of the wetlands

and Draper Creek, a new bird watching activity involving residents and their families, and even a logo contest targeting primary school students of the area. It is expected that this initiative will last for a long time and can help us understand the intricate connections that communities have with nature throughout the aging process.



Sustainability Poetry: creativity of the local community

March 21 was designated as the World Poetry Day by UNESCO (United Nations Educational, Scientific and Cultural Organization) to celebrate the importance of creative minds in the world. I strongly believe that community sustainability is not only a question of balancing the usual three pillars of sustainable development. It goes deeper... cultures, traditions, languages and arts are central to the social wellbeing of communities. In the winter of 2015, my Chair with ESRC initiated the Sustainability Poetry Contest. In 2015, we connected with the World Wildlife Day (March 3rd), International Day of Forests (March 21), and World Water

Day (March 22).

In 2016, the theme was Food Sustainability to celebrate the International Year of the Pulses. Food sustainability is a central component of my Chair and therefore it was important to underline this year's International Year



of the Pulses. In 2017, we celebrated with the theme of this year "Sustainable Tourism for Development". Catherine Papyre and Adam Dickinson, both faculty at Brock, composed a collaborative, bilingual poem for the event for the second year in a row.

This contest, which is an annual event, invites students from K to 12, college and university students and all members of the community to write poems on themes related to sustainability. In the summer of 2017, an e-book will be produced with the poems of 2015, 2016, and 2017 to celebrate the accomplishments of community members and their creativity.

Ode to the dandelion by Shelly Anne Locke

Ecosystem-based adaptation in Biosphere Reserves

UNESCO Biosphere Reserves can be used as places to model and monitor climate change adaptation and mitigation efforts, primarily by supporting ecosystem services and enhancing resilience through natural solutions. They also act as pilot sites for countries to implement the Convention on Biological Diversity (CBD) and SDGs.

As part of the work of the thematic group on ecosystem-based adaptation (EBA) at CEM, a scoping exercise was undertaken to understand the current state of climate change adaptation in BRs. Analysis of five BRs showed that

there was relatively little implementation of EBA and awareness was generally low. All BRs expressed interest in further information and help in developing adaptation strategies and initiatives. BRs vary considerably as they have different capacities, populations, and ecosystems but in general they felt the need for more information, tools and/or financial support. There was certainly a strong interest in capacity building. This is an action to revisit in the near future as we increasingly interact with BRs on this issue in Canada.



Protecting expecting women in dangerous working conditions

At the Policy Forum in Ottawa at CCWESTT 2016, we had Mark Gerretsen, MP Kingston and the Islands and Melodie Bellard, welder, who discussed the importance of the Private Member's Bill C-243, "National Maternity Assistance Program Strategy Act".

Melodie's story is difficult to take in our modern society - an expecting

mother unable to continue her work as a welder in dangerous conditions facing poverty.

Melodie's resilience and determination during what may be considered one of the most trying times of her life thus far is most admirable. The Bill was approved by the House of Commons in November 2016.

In April I was asked to appear before the House of Commons' Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities to present a brief and respond to questions regarding the importance of this Bill and the need of a national strategy. I hope this will be coming soon for other women dealing with similar issues.

From Local to Global

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UNESCO Chair on
Community sustainability: from local to global,
St Catharines, ON, Canada

Chaire UNESCO
en viabilité des communautés:
du local au global,
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Some small news...

The Chair was featured in 2016 in the the book *Citoyennes de la Terre* (Women Citizens of the Earth), (<http://scienceetbiencommun.pressbooks.pub/citoyennesdelaterre/>) a collection of profiles compiled by Florence Piron, a professor in the Department of Information and Communication at Laval University in Quebec. This e-book profiles women environmentalists and conservationists around the globe.



Sunrise at White Oak Resort during the CEM Steering Committee meeting in February 2017

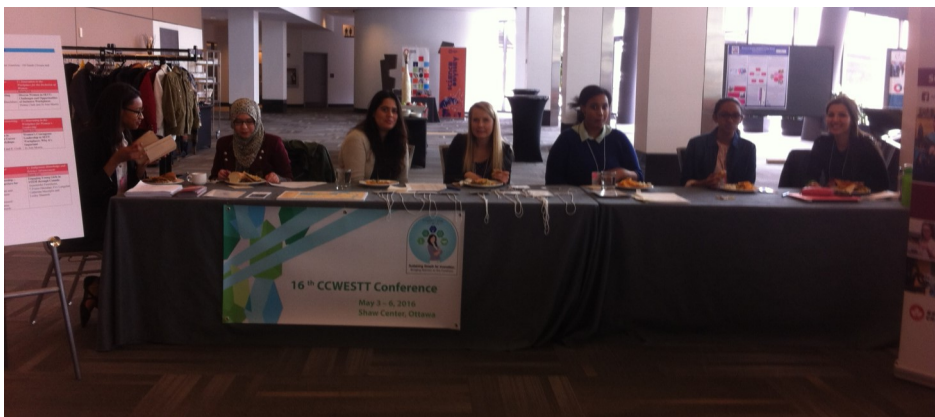
Heather VanVolkenburg experience of CCWESTT 2016

Women and inequality. I must admit, prior to attending the CCWESTT 2016 conference this concept could not have been further from my radar. Is there really a problem for women pursuing professional careers? The short of it is yes, however, why women are still fighting to realize and be recognized for their full potential is somewhat more elusive. When asked by Dr. Vasseur to come on board and help to put together

CCWESTT 2016 I did not hesitate to accept, despite being unsure of what to expect. What I gained was an invaluable insight to the many challenges that still plague us women in our professional lives as well as the seemingly insurmountable barriers that are even now encountered along the way. From day one I was impressed with the diversity of both men and women participating in the many workshops and seminars of-

ferred over the course of the week. At many levels, there exists an acute awareness of the barriers still faced by women and a valiant effort is being made to change the status quo. From mentoring opportunities to the implementation of company accountability measures and working with young school girls, CCWESTT 2016 has presented a plethora of strategies being taken across Canada in order to advance the cause.

It has forced me to evaluate my own upbringing and understand a little better what makes me the woman I am today. I look forward to seeing more of what CCWESTT can do for women in the future .



A diverse group of volunteers at the registration desk of CCWESTT2016!