

MCGILL SCHOOL OF ENVIRONMENT



edition

McGill

Towards a World Water Ethic:

Sandra Postel at the MSE

by Bronwyn Chester

Sandra Postel's message to her audience at this year's MSE Annual Public Lecture was clear: If those who populate the regions close to the world's water basins don't come up with an ethic for sharing water resources for humans and all life forms, we will all be in trouble. Postel is director of the Global Water Policy Project, and senior scientist and advocate in the preservation and sustainable use of Earth's fresh water. She spoke to an overflowing Moyse Hall, and her presentation was convincing.

"Twenty years ago, there were water shortages only in the Middle East and parts of Africa. Today, this is a different picture," she said, pointing to a map indicating the orange and red areas of the world where water is

in short supply. Central and southeastern Asia, and the western United States and Mexico figured prominently. A number of river basins, such as the Yellow (China), the Indus (India and Pakistan) and the Rio Grande (Mexico and the U.S.), have become so depleted that they no longer even reach the sea in some years, she noted.

"When there's uncontrolled irrigation, rivers go dry, the groundwater is overpumped and the land oversalinized," she said, explaining that when a river no longer flows to the sea, the sea begins to flow in. "The Sumerian civilization died out due to the oversalting of their land [between the Tigris and Euphrates rivers] in

southern Iraq," she reminded the audience.

Postel made the point that most of what we do with water, we do for good reasons. Problems arise when the long-term sustainability of the river basin ecosystem isn't taken into consideration. "We're growing today's food on tomorrow's water," she said, explaining that the rate at which groundwater is pumped out of such river basins as the Rio Grande is simply too high to allow groundwater levels to "recharge."

Dams and diversions also take their toll on the life of a river. "Dams sever the river's connection to a particular channel, a flood plain, a delta and the sea," said Postel. "We lose one of the river's services: to bring sediment to the delta that enhances its fertility and controls salinity and pollutants."

We also lose the biodiversity of the river basin. Postel used the example of the Missouri River. In its long association with human civilization, the river has been straightened for barge transport, and dammed for electricity and flood control. It has also lost its high flows from the snow thaw, due to a drop in precipitation brought on by climate change. "From August to October, the river is low, warmer than it should be, and its banks exposed," said Postel, adding that this affects the breeding and feeding



Sandra Postel

habits of birds and fish.

In North America, the centre of freshwater biodiversity, freshwater species are becoming extinct at the same rate as those in the tropical rainforest, she noted. Of the many species of freshwater clams, for instance, that

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Great to be back!



Pete Barry

Marilyn Scott

It is wonderful to be back as Acting Director of the MSE, and to witness the exciting developments that have occurred over the past two years. Our 13 jointly appointed faculty are settled — although they all tell me they have far too many things to do in each day! We now have over 200 alumni. Not only are they keeping in touch with us, but they are pursuing extremely interesting

and diverse careers. We have established a page on our website that profiles some of their activities, and we highlight reports from six of them in this newsletter. This past fall, we admitted our first students into the BSc(AgEnvSc), offered through the Faculty of Agricultural and Environmental Sciences, and next fall we will be offering a combined BA/BSc degree as well. Three of our students will participate in an international summer school at Lund University in Sweden, an initiative of the Universitas 21 consortium of top universities around the world.

Thanks to the combined efforts of several MSE faculty members, two major interdisciplinary grants from the Social Sciences and Humanities Research Council have been awarded to McGill University to work in partnership with the Cree in northern Quebec. Under the leadership of Professor Colin Scott, the \$1.25-million will be used to formulate strategies to protect the environment of the Cree community of Wemindji, James Bay, Quebec. The Wemindji Cree value the cultural, historical and economic significance of their land, and this research will rely on their perspectives to define the relationship between humans and the subarctic environment. Together, a team involving Cree leaders, eight McGill professors, colleagues from Concordia University, the universities of British Columbia and Manitoba, and partners from provincial and federal government departments will work together to design an ecologically



...continued from front page...Sandra Postel...

were once abundant in 1998, the post-apartheid government passed a water policy whereby water is allocated according to the needs for human health and for the health of ecosystems. “They allow 20 litres per person per day,” she said, adding that the South African scientists are being watched from all over. “In the U.S. and Canada, there’s nothing comparable.”

Postel suggested that, in our part of the world, rethinking our use of dams might affect our approach to water management. “How might ecological dams be incorporated?” she asked, citing the innovative example of a collaboration between the U.S. Army Corps of Engineers and the Nature Conservancy to redo 13 dams on the Mississippi River, so human needs are met while doing good for the river’s numerous ecosystems.

“One of the reasons Postel was chosen as this year’s lecturer was to make us — Canadians, who, with our abundant water resources, tend to be ignorant of water problems — better informed of the global water crisis,” said director of the MSE Nigel Roulet, expressing his gratitude to the anonymous donor who makes this annual lecture possible.

“This lecture is a great opportunity to present the interdisciplinarity of environmental issues,” said Roulet. “Last year, it was the monarch butterfly; this year, water. It’s exciting to think about the possibilities for next year.”

by Marilyn Scott, Acting Director MSE

and culturally protected area that builds upon local institutions of land and sea tenure, authority in environmental stewardship, ecological knowledge and environmental ethics.

In January, the MSE hosted an extremely successful public lecture by Sandra Postel. True to MSE tradition, this was a joint disciplinary effort, combining the interests of the MSE, the Global Environmental and Climate Change Centre, and the Brace Centre for Water Resources Management. The lecture was made possible by the generosity of one of our donors. We are currently collaborating with the Secretariat of the Convention on Biological Diversity to host the Launch of the Millennium Ecosystem Assessment Biodiversity Synthesis. The Biodiversity Synthesis is the result of five years of research by a range of working groups from many countries. This event will be followed by panel discussions in which McGill professors and invited leaders of the Synthesis will discuss the implications of the recommendations.

There is always an energy and excitement around the MSE community! We are pleased to be able to share some of that with you through this newsletter.



Erica Crawford on Vancouver Island.

Interning for Scientific Integrity

Becky Tave Gluskin

B.Sc.'04 Ecological Determinants of Health

In my first-year chemistry lab at McGill, I learned that when running a test it is always important to control the variables. Just three months after graduation, however, I am discovering that science does not take place in a political vacuum. At the interface of science and U.S. federal policy, it is impossible to even account for all the variables, let alone control them.

I started my internship with the Union of Concerned Scientists (UCS) in August 2004, and I am now working in Washington, D.C., on a campaign called "Restoring Scientific Integrity." My work is diverse and engaging, and involves attending meetings with science foundations, senators and congressmen to help organize university "round table" discussions across the country. I also distribute information to offices on the "Hill," manage a list of over 6,200 scientist activists, and scan media for frequent Restoring Scientific Integrity references. The people who work at the Union of Concerned Scientists are an inspiring group of scientists and activists, something I consider to be one of the greatest benefits of the internship (along with the bike parking and a shower at the office!).

Living in the politically charged climate of Washington, D.C., has given me a greater perspective on this country. It was intense to be here for the 2004 elections and presidential inauguration, witnessing first-hand the political dichotomy that erupted in the capital. My only gripe is that people here complain when it gets below 10 degrees Celsius, and have never heard of poutine or a "bring your own wine" restaurant. I have much to teach them. UCS website: www.ucsusa.org/

Summer Internship with the Provincial Government

Erica Crawford

B.A.'04 Environment and Development

As a result of a meeting between Dr. Deborah Buszard, Dean of the Faculty of Agricultural and Environmental Science, Dr. Nigel Roulet, Director of the McGill School of Environment and Québec's Minister of Environment, The Honourable Thomas Mulcair, I was offered a summer internship at the Ministry of the Environment in Québec City, in 2004. The insights I gained into the political side of some of the decision-making and everyday operations of a government ministry taught me a great deal about the opportunities and barriers that regulate access for citizens to our elected representatives. In August 2004, I accompanied the Minister during a day of meetings with various groups in the Mount Sutton region, where the Québec government was announcing the establishment of a protected area. Riding behind a tractor in a wooden trailer, at dusk, I watched as local farmers discussed their situation with the Minister, pointing to fields still saturated from flooding a year ago, and ditches piled high with debris. They were concerned about how they would cover the cost of the required environmental assessment related to clearing and restoring the ditches and streams. Until this was done, they would be unable to re-establish their operations. After spending my first months in an office high in the sky above Québec City and marvelling at the view of the harbour, it was encouraging to see the Minister himself, standing in a windy field alongside farmers and their wives. I could see that these issues were being heard, the dilemmas considered and that the petitioning of government by engaged citizens can have a significant impact.

Protecting Habitat from the Wilds of Washington, D.C.

Raissa Marks

B.Sc.'04 Water Environments and Ecosystems

I have been working at the Wildlife Habitat Council (WHC) in Washington, D.C., since October. The WHC works to enhance, restore and preserve wildlife habitat on corporate, private and public lands. I am the Habitat Management Leaflet Coordinator and my job is to research, write, design and otherwise coordinate the development of habitat management leaflets on a variety of habitat management topics, ranging from native pollinators to farm ponds.

I graduated from the MSE in 2001 with a BSc (Water Environments and Ecosystems Domain), but soon realized that my passion was in the field of environmental education. So I enrolled in York University's Master of Environmental Studies program. This program allows students to design individual study plans; my program focused on environmental and sustainability education, community building and citizen engagement. My major project was an exciting challenge! Working with six junior high students in Orangeville (north of Toronto), I designed a series of education workshops for the students, which helped them to understand the concept of sustainability, and to be able to identify related problems in their community. The students chose water quality and quantity as an action project, perceiving it as a pressing issue both in their community and around the world. Together we organized a community conference, where students presented their ideas to the community and solicited feedback. The event received overwhelming support from the community, and the participants said how much they appreciated the students' work and how encouraged they were to see young people addressing some of the problems faced by the community.

A Dream That Began at the MSE

Stephan Becker, MSE 2003
 Diploma in Environment (Arts)



Stephan Becker—President

Last year saw the creation of Beautiful Oceans, an organization that increases environmental awareness through educational courses aimed at the scuba tourism industry. The company was formed by McGill graduates from an idea that took shape at the McGill School of Environment (MSE); this is the story behind that idea.

The wheels were set in motion in 2002, when I quit my career in marketing to enroll at the MSE. I had become interested in the field of marine conservation and decided that it was the only career for me. I wanted to learn more about marine ecology, conservation and environmental ethics. My part-time environmental volunteer work was insufficient — I wanted to dive in — so I returned to school. Looking back, I realize that bold move was definitely the right choice.

After obtaining my diploma at the MSE, I was offered a job as marine expedition leader for Coral Cay Conservation (www.coralcay.org). In the Philippines, I supervised volunteers from around the world who were eager to learn scuba diving and



Biodiversity Assessment—Coral Cay Conservation—Philippines

Stephan Becker

practical scientific skills, like marine biodiversity assessments. Six months later, back in Montreal, I developed a plan to combine my passion for scuba diving and marine ecology with my desire to increase awareness and protection of the environment.

My education at the MSE, coupled with my work experience in the Philippines and the information I read in inspiring books like David Suzuki's *The Sacred Balance*, made me realize that few recreational scuba divers have any concept of ecology. They see fish, corals, crustaceans and sponges, but are unaware of the incredible "interconnectedness." I planned to change this by teaching ecological concepts and environmental awareness

to scuba divers in specially designed, scientifically validated courses.

It was at this point that I met Ian Popple, my former TA on McGill's Applied Tropical Ecology course in Barbados; I discovered that we shared the same idea, so we joined forces. Ian's knowledge of marine

Integration Local Community—Coral Cay Conservation—Philippines



Ian Popple—VP Science

by Stephan Becker

biology, teaching and media communication of science was crucial to the development of our plan. Last year a new business model, under the name Beautiful Oceans (www.beautifuloceans.com), was born. The company was created on the solid foundations of corporate social and

Volunteer Biodiversity Assessment—Coral Cay Conservation—Philippines



Stephan Becker—Expedition Leader—Coral Cay Conservation—Philippines

environmental responsibility (CSR). Ten percent of the company's pre-tax profits are donated to non-profit organizations active in the field of marine conservation. The dream has finally become reality; Beautiful Oceans will begin teaching marine ecology courses at Caribbean dive centres this fall.

We have come a long way in a short time. Ian and I created a second organization, the Marine Conservancy (www.marineconservancy.org), a non-profit organization that promotes awareness of marine conservation issues through web-based information dissemination and public outreach. University students from McGill and Concordia currently volunteer for the Marine Conservancy by collecting and editing information on marine issues for the organization's free-access website database. Volunteering allows students to do interesting research at their own pace, while networking with professionals in their field of interest. With their help, the organization's website database is rapidly becoming a significant resource for those interested in marine science and dive tourism.



Applied Tropical Ecology—Barbados



Working on a Global Scale

Ciara Raudsepp-Hearne

B.Sc.'01 Biodiversity & Conservation

M.Sc.'03 Plant Science, Neotropical Environment Option

For the last two years, I have been working as a coordinator of the Sub-Global Working Group of the Millennium Ecosystem Assessment (MA). The MA is an international work program, established to assess the state of the world's ecosystems and how changes in ecosystem services are affecting the well-being of the world's population (www.maweb.org). Thousands of experts in natural sciences, economics, development and health have been writing and reviewing the assessment reports over the last four years.



I graduated with a Bachelor of Science in Environment (Biodiversity & Conservation) in 2001, and a Master of Science in the Neotropical Environment Option in 2003. Through the multidisciplinary focus of these two programs, I evolved from being a natural scientist mostly interested in plants and insects into an ecologist interested in the complexity of human interactions with ecosystems. I first became involved in the MA

as a volunteer note-taker and translator while in Panama, completing fieldwork for my master's degree. I was immediately impressed with the multidisciplinary team of researchers addressing questions of sustainable resource use in a wide variety of contexts around the world. My educational background made me a perfect fit for this group and I was subsequently accepted

as an "MA Young Fellow," which required me to attend several international meetings and write a chapter of the assessment report. During my last few months in Panama, a job opened in the MA Secretariat, so the day after I handed in my master's thesis I flew to Malaysia to take up my post, which is based at the World Fish Center in Penang.

The assessment is being carried out on a global scale (in a similar way to the climate change or ozone

assessments), but also at "sub-global" levels, with assessments being conducted by local institutions in 35 different locations. These assessments cover almost the whole world, and range from regional assessments (in African countries below the equator, for example) to national assessments in countries such as Portugal, as well as community assessments run by indigenous groups according to their own world views and priorities (e.g., Quechua villages in the Peruvian Andes). My job has been to support these assessments in the design of their work plans and in securing funding to encourage the development of methods for incorporating traditional knowledge into primarily "scientific" assessments. I also facilitate the exchange of knowledge, experience and methods across the assessments, and coordinate the writing of the 12-chapter report on the experiences and lessons learned in these endeavours.

The most rewarding part of this job has been the opportunity to interact with leading researchers and practitioners, from every continent. This has involved a great deal of travel, during which I observed first-hand the approaches of different groups to resource extraction and protection, and the relationships between various cultures and their land. It has been encouraging to see how many people are concerned about the environment and are working in innovative ways to improve the resilience of both natural systems and human populations in the face of rapid change. We are currently editing our final reports and working on strategies for communicating the outcomes to our main users and the wider public. When this project ends, I plan to return to school (after a long surfing vacation!) to study for another degree, focusing on questions similar to those posed by the MA.



Ciara Raudsepp-Hearne and Delegate



Ciara and Volunteers at Vilcanota

Aquatic Ecology in the North American Desert?

Alison Iles

B.Sc. '99 Biodiversity and Conservation

M.Sc. '03 Biology

I graduated in 1999 with the first class in the Biodiversity and Conservation option of the MSE. Eager to further my experience, I entered the master's program in the Department of Biology at McGill, under the supervision of one of the original MSE designers, Dr. Joseph Rasmussen. My thesis work investigated the effects of simplified lake food webs, resulting from heavy-metal contamination, on fish energetics in Sudbury, Ontario. I received my master's degree in fall 2003. The following spring I landed a job as a research specialist, studying native fish in the Sonoran desert in the southwestern region of the United States.

Now, you may be thinking that the desert is a strange place for an aquatic ecologist to work; I assure you, however, that there is plenty of aquatic life here. The Colorado River is the most famous body of water in the region, but there are many other smaller rivers and springs containing wonderfully unique and bizarre aquatic species. Unfortunately, these

systems are rather fragile and many have been lost due to groundwater pumping for irrigation, overgrazing of cattle and non-native fish introductions.

The conservation of these aquatic communities is the focus of several talented and dedicated biologists with whom I have been working for the past year at the Arizona Cooperative Fish and Wildlife Research Unit in Tucson. As a research specialist, my work involves grant writing, helping graduate students with fieldwork, and my own field project, investigating the environmental factors that influence infection rates with a non-native fish parasite.

The southwest is certainly very different, culturally and environmentally, from Montreal and, although studying desert aquatic ecology is important to solving the environmental problems of the southwest, the current political climate makes it clear that science does not provide all the solutions. The broad perspectives on environmental issues learned during my time at the MSE are increasingly valuable to me and relevant to my career. The MSE is a wonderful program that I feel lucky to have stumbled upon. Thanks, MSE!

Kudos

Congratulations to **Shiri Noy**, BA'05 (Environment and Development/International Development Studies), who won the Tania Zouikin Arts Internship Scholarship. "This summer," she says, "I had the privilege of interning for a small non-profit NGO that works toward women's empowerment and environmental sustainability in the Peruvian Amazon."

This summer will kick off with an exciting trip to Lund University in Sweden for three MSE students: **Heather Elliott**, BSc'06 (Environment – Renewable Resource Management Domain), **Veronique Bisailon**, BSc'06 (AgEnvSc) (Environment – Ecological Determinants of Health Domain), and **Anne Sabourin**, BSc'05 (Environment – Land Surface Processes). Thanks to funding from McGill, they will join a team of five McGill undergraduates attending an international summer school called "Sustainable Development of Global Society."

This year, the MSE is proud to support a student initiative, **Sustainable McGill**, with office and meeting space. The Sustainable McGill Project is a student group striving for an environmentally responsible and socially just McGill University community. It is working to complete a holistic, comprehensive assessment of McGill's sustainability. You can find out more about them at www.sustainable.mcgill.ca.

Professor **Nigel T. Roulet**, director of the McGill School of Environment (on sabbatical for the calendar year) and professor in the Department of Geography, has been named a James McGill Professor. Professor Roulet researches how biogeochemical transformations and ecosystem dynamics respond to changes in hydrological and climatological settings and forcings. The ecosystems of focus are wetlands, particularly peatlands, and forests.

This year, the MSE welcomes three new additions to the academic staff: **Elena Bennett** (MSE and Natural Resource Sciences), **Brian Leung** (MSE and Biology) and **Colin Chapman** (MSE and Anthropology).

Professor **Colin Chapman**, a jointly appointed faculty member (MSE and Anthropology), was named Canada Research Chair in Primate Ecology and Conservation.

This spring, 40 students participated in a town hall organized by **Katya Seckar**, BSc(AgEnvSc)'07 (Environment – Food Production and Environment Domain), and **Jodie Martinson**, BA'06 (Environment – Environment and Development Domain). The first in a bi-annual series, this forum is designed to encourage student dialogue concerning the structure of courses and programs at the MSE.

Development and Alumni Relations News

As you can see from this edition of the newsletter, MSE alumni numbers are growing and our graduates continue their work in exciting directions. The generosity and support of our alumni and friends continues to play an important role in the MSE, enriching the program in ways that benefit our students and, of course, the wider McGill community.

We are pleased to announce a new scholarship, established by Dr. Joy Harvie Maclaren, BSc'44 (Nutrition), LLD'00, in recognition of the 60th anniversary of her graduation from Macdonald. The Joy Harvie Maclaren New Sun Scholarship in Environment (\$3,000) will be awarded by the Faculty of Agricultural and Environmental Sciences Scholarships Committee to a distinguished student enrolled in the second or third year of the BSc(AgEnvSc), with a major in Environment.

Our annual "thank-a-thon" held in March gave many of this year's donors the opportunity to hear students talk about the importance of their gifts. In the event that our volunteers were unable to reach you personally, we take this opportunity to thank you all for your continued generosity and commitment to McGill and the environment.

For more information on making a gift to the MSE please contact Camilla Leigh at camilla.leigh@mcgill.ca or 514-398-8879.

UPCOMING EVENTS

May 2-3, 2005

The 2nd McGill Symposium on Environmental Research will bring together ideas and research findings from many different disciplines developing new approaches to environmental research at McGill.

May 19, 2005

The MSE is honoured to host the Launch of the Millenium Ecosystem Assessment Biodiversity Synthesis at the McGill Faculty Club.

Visit www.mcgill.ca/mse for more details about upcoming events

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