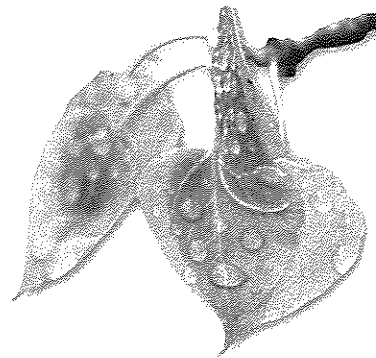




## The RED ZONE

### Symposium on Lake Winnipeg Explores Range of Conservation Issues

By Joy MacLean, Lake Winnipeg Foundation

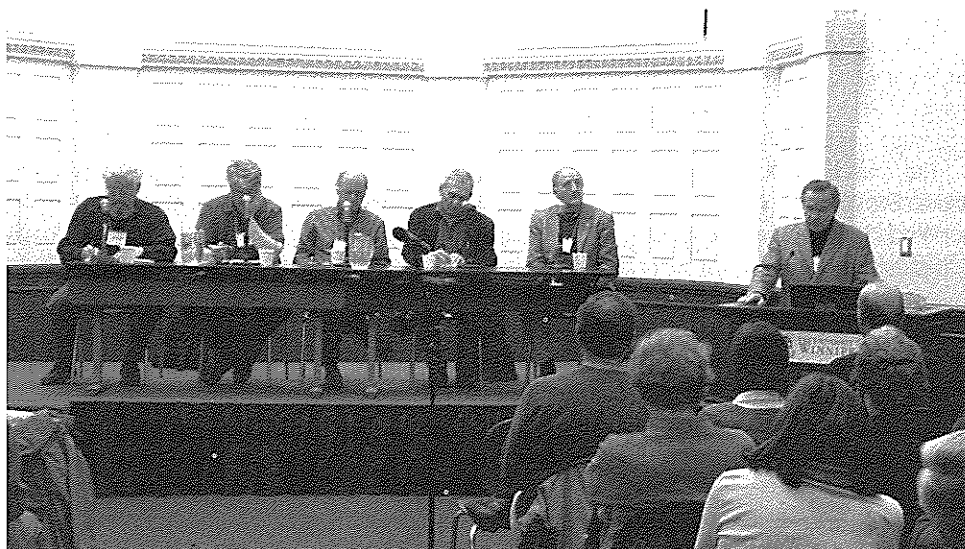
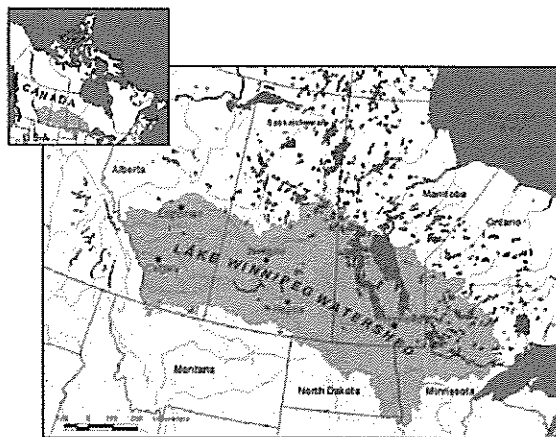


Photo courtesy of Lyle Lockhart

Gary Filmon, RED ZONE Public Forum moderator, with the panel of scientists (left to right): Norman Yan, Peter Leavitt, Hans Peterson, David Schindler and Robert Hecky.

**THERE CAN BE LITTLE DOUBT** that the restoration of Lake Winnipeg is a complicated task. It is precisely this complexity that made it essential to bring together scientists, policy-makers and the public from across its watershed for an exchange of ideas that can lead to viable solutions. The RED ZONE: Currents, Chemicals and Change captured the attention of people concerned about the health of Lake Winnipeg. Hosted by the Lake Winnipeg Foundation and the University of Winnipeg Richardson College for the Environment, the two days of sessions on October 27th and 28th featured experts speaking on topics as wide-ranging as nutrient loading, invasive species, climate change, contaminants, the Hecla Causeway and drinking water safety. With standing room only at the October 27th Public Forum in the university's Convocation Hall, and the lively debate that ensued, the symposium achieved such an exchange with a large measure of success.



Lake Winnipeg watershed map

Eutrophication is defined as water pollution due to an excessive concentration of plant nutrients. The overload of nutrients such as phosphorus (P) and nitrogen (N) is widely viewed as Lake Winnipeg's overriding problem. University of Alberta Professor

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of Ecology Dr. David Schindler, who first studied Lake Winnipeg in 1969, was the first of several panellists to point out the integral link between land use in the watershed and the related impacts on the lake. For instance, while simply clearing land causes the transport of P to waterways, converting the cleared land to agriculture doubles the amount. In related terms, Dr. Don Flaten, a soil scientist at the University of Manitoba, explained how current researchers are working to better understand how P is transported from the land, where it is needed, to the water, where it is not. This knowledge can then be translated into beneficial management practises that keep nutrients in the soil where they belong. Quite apart from agriculture, high-density urban land use was also identified as one of the culprits in P contribution.

It is also important to realize that, far from being the only lake to face the issue of nutrient overload, Lake Winnipeg's situation is unfortunately an all too familiar one: eutrophication is a global problem. With so many lakes affected worldwide, it makes good sense to study similar cases to distil what we can from their experience. This is exactly what has been done. Symposium speakers offered examples from all corners of the Earth, including Lake Erie, Lake Norvikken in Sweden, Lake Balaton in Hungary, Lake Victoria in

*continued on page 4 >>*

# eco-journal

is published five times per year by the  
Manitoba Eco-Network/Reseau Ecologique du  
Manitoba Inc. at  
3rd Floor, 303 Portage Avenue  
Winnipeg, Manitoba, R3B 2B4  
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**The Manitoba Eco-Network** is affiliated  
with the Canadian Environmental Network.

*EcoCentre groups gratefully acknowledge the  
contributions of Mountain Equipment Co-op.*

Individual subscriptions to *Eco-Journal*  
are available as part of a supporting  
membership to the **Manitoba  
Eco-Network** at a cost of \$30. Group  
membership dues are \$50. Associate  
membership dues are \$60. Advertising  
rates are available upon request.

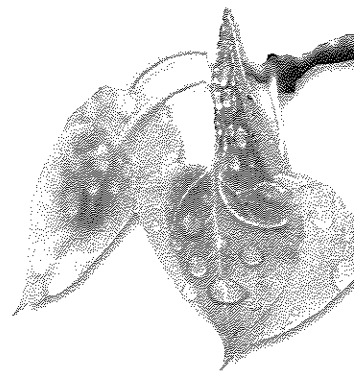
Canada Publication Mail Sales Agreement  
#40010075, Postage paid at Winnipeg, MB.  
Return undeliverable Canadian addresses to:

**Manitoba Eco-Network**  
3rd Floor-303 Portage Ave.  
Winnipeg, MB R3B 2B4

The opinions expressed by contributors  
are their own and do not represent  
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or its member groups.



Printed by Kendrick Quality Printing on 100%  
chlorine-free, post-consumer recycled paper with  
vegetable based ink.



## Executive Director's Letter

**FALL IS ALWAYS A REALLY BUSY TIME AT THE ECO-NETWORK**, and this year has been no exception, with events taking place for every one of our regular projects!

The online Manigotagan River map was launched at Mountain Equipment Co-op on November 20th. Check out this amazing new trip planning and environmental stewardship tool created by our GIS Centre (with special thanks to Anke Kirch, Brian Miller, Andrew Lindsay, Liz Dykman, and the wonderful volunteers and funders who made it all possible) at <http://www.mbeconetwork.org/canoemap/index.htm>.

The Youth Network, under Erica Young's capable guidance, held a successful GreenSpace forum: see Andrea Swain's article in this issue. Children's Health and Environment Partnership had a formal launch at the Manitoba Children's Museum, featuring the Winnipeg Slam Poetry Team and Winnipeg pediatrician Dr. Leigh Fraser-Roberts. Our Water Caucus held a capacity building workshop in Brandon, as well as hosted the Sierra Club's Lindsay Telfer presenting the Prairie Water Directive. Add these to the many environmental events held by member groups. In all, a dynamic and interesting couple of months!

What made it even more intense late this year was the departure of our coordinator, Liz Dykman, for a job as Coordinator of Programs at the Canadian Council of Ministers of the Environment. Liz worked with us for more than seven years, keeping us well organized and regularly connected to our member groups and individual members. She did many other jobs: coordinated events, wrote articles for the *Eco-Journal*, guided volunteers, provided advice to our projects, tracked down answers to environmental questions, designed a website (with no formal training), and much more besides. All with good humour and a creative touch. We miss her friendly and patient presence here in the office, but wish her well in her new position!

So we've been without a coordinator for almost a month, and some jobs have been falling through the cracks, in spite of the cooperative efforts of other staff and volunteers — all of whom I thank!

On December 1, Lise Smith will move over from her desk at the Water Caucus to take over the Coordinator position for a year. Lise is very familiar with the Network, having served on our Board for a number of years, and was active with numerous local groups and projects before starting her part-time Water Caucus job.

Other new folks starting out with us include Joel Trenaman, brand-new editor of the *Eco-Journal*. Joel formerly edited *The Manitoban*, has worked on the *Encyclopedia of Manitoba*, and recently did a stint at *The Walrus* magazine. He looks forward to hearing from readers with story ideas or an interest in volunteer writing assignments.

Mikhail Kolybaba, active member of the Youth Network and designer of MBEcoyouth.org, will be assisting us with our website and other technology needs as the IT Systems Manager. John Coombs is joining us in two capacities: as a Board member representing the Manitoba Naturalists Society, and as a volunteer with our GIS and Mapping Centre. John is keen to put his extensive project management experience to work in order to build the profile of the Centre, and to help develop new projects and funding opportunities. Look for a new face with Climate Change Connection in the New Year, as Susan Lindsay departs for her maternity leave.

Change is in the air, not just in the form of snow, or a new direction for the U.S. government, but right here at the Manitoba Eco-Network. As we move into our second quarter century, it's exciting to see the enthusiasm and ideas that all these new people (and the more seasoned ones too) bring to our efforts. We look forward to productive years ahead in our continued work to help build sustainability for this world of ours. I'd like to take this opportunity to wish all our readers a happy and safe holiday season!

**Anne Lindsey**

*Executive Director, Manitoba Eco-Network*

# eco-events in Manitoba

For more environmental event listings see our website calendar at [www.mbeconetwork.org](http://www.mbeconetwork.org).

## DECEMBER

**7 FortWhyte Alive presents Father Christmas in the Forest.** 12 - 3 p.m. Nature is the best backdrop for your family Christmas photo. Old St. Nick will find his way to the FortWhyte forest, and members — especially wee ones — are invited to join him to share their Christmas wishes. After getting your picture taken, warm up around a cozy fire and enjoy the festive sounds of our Christmas carolers! Photos \$5.

**7 Winnipeg Humane Society Paws for the Season.** 2 - 4 p.m. Come and enjoy carolers, refreshments and activities for the children — bring some holiday cheer to your furry friends at the WHS. Load up on seasonal goodies at our WHS bake sale. We're lighting up the room with our beautiful tree, so join us by hanging an ornament to honour the people and pets in your life.

**8 Rockwood Environmental Action Community Taskforce.** The next meeting will take place at 7:30 p.m. in Teulon, location TBD. All current and prospective REACT members are welcome to attend.

**8 Journey to the Land of Enchantment and MNS Members' Market.** *Manitoba Naturalists Society Indoor Program.* Join Julia Schoen as she describes New Mexico, one of her favourite travel destinations. Share Julia's excitement as she retraces her path through "The Land of Enchantment." 7:30 p.m. Pauline Boutal Theatre, Franco-Manitoban Cultural Centre, 340 Provencher Blvd. [www.manitobanature.ca/indoors.html](http://www.manitobanature.ca/indoors.html).

**9 Bike to the Future monthly meeting.** Every second Tuesday of the month, 5:30 p.m. at the Eco-Centre (303 Portage Avenue, 3rd floor Mountain Equipment Co-op building).

**15 Manitoba Federation of Labour Environment Committee Meeting.** MFL Boardroom, 3rd Floor, Union Centre, 5:30 p.m.

**18 Oak Hammock Marsh Winter Constellations.** Presentation in Theatre at 7 p.m. Meet Orion and other famous winter constellations as we prepare for the winter solstice. Rooftop observation: join us on the rooftop for a great observing session using telescopes and binoculars to view the night sky.

## JANUARY

**12 Conservation of Prairie Birds in Canada.** *Manitoba Naturalists Society Indoor Program* with Dr. Nicola Koper (Asst. Professor, Natural Resources Inst., U of M). Prairies are the most exploited — and yet the least protected — ecosystems worldwide. This may explain why prairie birds have declined more rapidly over the last four decades than any other group of birds in North America. This presentation will discuss the results of several research projects that have explored the conservation and management of songbirds, and to a lesser extent ducks and shorebirds, in mixed-grass and tall-grass prairies in Alberta, Saskatchewan and Manitoba, over the last decade. 7:30 p.m. Pauline Boutal Theatre, Franco-Manitoban Cultural Centre, 340 Provencher Blvd. [www.manitobanature.ca/indoors.html](http://www.manitobanature.ca/indoors.html).

**13 Bike to the Future monthly meeting.** Every second Tuesday of the month, 5:30 p.m. at the Eco-Centre (303 Portage Avenue, 3rd floor Mountain Equipment Co-op building).

**13 SPARC's Simplicity Study Circle.** Tues. Evenings, 7:00-9:00 pm for 10 weeks, Jan. 13th - Mar. 17th, 2009, R. A. Steen Community Centre, 980 Palmerston Avenue. Simplicity Circles are an excellent way to rediscover and celebrate the simple things in life. Weekly discussions

allow you to explore issues such as community, the environment, and personal growth. Meet like-minded people and learn more about simplicity and yourself! Workbook and refreshments included. To register please contact us at 475-4233 or [info@simplicitycentre.org](mailto:info@simplicitycentre.org).

**17 Canoe Atlas of the Little North:** An Evening with Author Thomas Terry and the *Paddle Manitoba* Annual General Meeting. Co-authored by Tom Terry and Jonathan Berger, the Atlas was some forty-five years in the making. Detailing the ancient and modern canoe routes of Northern Ontario and Eastern Manitoba, the Atlas presents not only the geographical but also the cultural and natural histories of its subject, all the while evoking memories of the original native and fur-trade users. Tom Terry, a canoe guide from Sioux Lookout, will share the story of this book, which stands as a work of art as well as a reference. **FortWhyte Alive Interpretive Centre, 6 - 7 p.m. and AGM 7 - 9 p.m.**

**20-22 26th Annual Red River Basin Land & Water International Summit.** Presenters and attendees from throughout the Red River basin will come together to inform, identify and discuss land and water management issues in the Basin. This year's conference topics include Water Quality in the Red River; Fish, Wildlife and Outdoor Recreation; Soil Conservation; Water Supply; and Flood Damage Reduction. [www.redriverbasincommission.org](http://www.redriverbasincommission.org).

**26 Power lines as Habitats for Tall-grass Prairie Species.** *Manitoba Naturalists Society Indoor Program* with Lionel Leston (PhD student, Natural Resources Inst., U of M). Power lines are managed as open spaces with few trees and usually as mowed grassy lawns within urban areas. Instead, they might be managed to support species of native prairie organisms (plants, butterflies, grassland birds, etc.), whose original habitat has been severely reduced. Both local management of power lines and the location of power lines within a landscape of urban, agricultural, grassy, and wooded lands may influence whether or not grassland organisms settle, or remain within prairie habitats under power lines. 7:30 p.m. Pauline Boutal Theatre, Franco-Manitoban Cultural Centre, 340 Provencher Blvd. [www.manitobanature.ca/indoors.html](http://www.manitobanature.ca/indoors.html).

## FEBRUARY

**20-21 The Manitoba Food Charter 2009 Growing Local Food Security Conference** will take place at the University of Winnipeg. Over two days of more than 30 hands-on workshops will cover such topics as achieving food security on a low income, growing good food indoors and out, grower cooperatives and urban agriculture, nutrition and food policies in schools, food preservation, youth farm mentorships, climate change and the food/fuel crisis, and indigenous food traditions, knowledge and skills. Registration will begin in mid-December, and can be done online at <http://manitobafoodsecurity.ca>.

### Manigotagan River Canoe Map

*Beautiful, new, artistic and informative!*

Developed by MEN's GIS and Mapping Centre. Available directly through MEN (call 947-6511) or at Mountain Equipment Co-op. An excellent holiday gift for paddlers!



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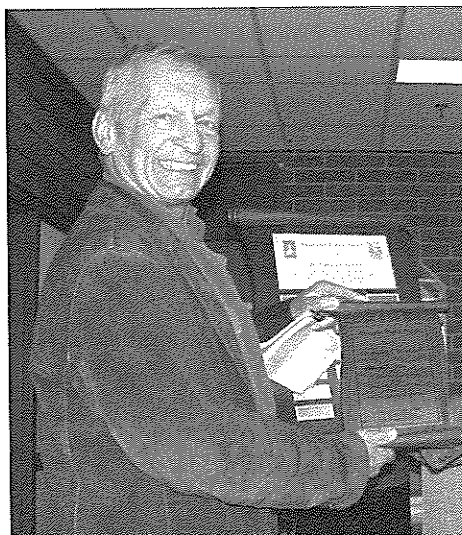
## The RED ZONE cont'd...

central Africa, and Lough Neagh in Ireland. But in spite of a wealth of data and analogous experience, a clear management direction has not presented itself. In fact, two distinct opinions have emerged, with one side recommending that levels of both P and N be controlled, and the other recommending the control of P alone. This troubling lack of consensus on nutrient management hinges on divergent interpretations of the published scientific literature. A choice one way or the other has significant implications for the development of wastewater treatment infrastructure.

You may recall that in 2003 the Clean Environment Commission (CEC) recommended to the Province that upgrades to Winnipeg's wastewater treatment be designed to remove both nutrients. The Province followed this advice, with licensing and construction of those facilities proceeding on that basis, representing a provincial commitment of \$235 million. In September 2008, in response to scientific dissent regarding this plan, the Province asked the CEC to review the science, hoping to reaffirm its direction on N removal for Winnipeg wastewater treatment.

In turn, the debate on which nutrients to remove inevitably leads to questions of economics. Given the reality of finite resources, is the expense of removing N justified when, arguably, we could be putting that money into removing more P? Variations on this question came up at the symposium. In this context, pending City of Winnipeg wastewater treatment upgrades will aim for a 10-15 percent reduction of P. Dr. Schindler recommended a much higher reduction of P such as 25 percent, or even as high as 50 percent. He issued an unequivocal warning that if we go ahead and remove N too, we will certainly see more blue-green algae washing up on our shores. In contrast, University of Regina aquatic biologist Dr. Peter Leavitt argued in favour of removing both N and P. While agreeing that P might have previously been the key nutrient to control, he stressed that Lake Winnipeg may now be reaching a tipping point beyond which N will have detrimental effects: namely, in the production of algal toxins. Further, Assistant Deputy Minister of Water Stewardship Dwight Williamson advocated the removal of both nutrients through a biological treatment method. In contrast to a chemical process that removes P alone, this sustainable process would create a sludge made from recycled P (an increasingly scarce resource) for reuse. With this method, it was indicated that the additional cost of N removal is only incremental.

What is clear is that this nutrient question is an important one to resolve. And as a point source of nutrients, municipal wastewater is a relatively easy target to control when compared to the diffuse, non-



David Schindler accepting the Lake Winnipeg Foundation's first annual Alexander Bajkov Award on behalf of Gregg J. Brunskill.

Photo courtesy of: Lyle Lockhart



Audience in Convocation Hall.

point sources represented by agriculture and natural, background sources. In addition, the effort to curb the City's contribution of nutrients to the lake sets a good example and plays a valuable leadership role. At the same time, attention must also be given to addressing other major sources of nutrients. University of Winnipeg President Dr. Lloyd Axworthy stated that improving international cooperation vis-à-vis Lake Winnipeg through the reinvigoration of the International Joint Commission must be a priority.

We must keep in mind that not only are there many sources of nutrients to address but, beyond nutrients, there are other issues affecting the lake's health. For instance, biologist and exotic species expert Dr. Norman Yan stressed that he saw invasive species as more important than eutrophication. He described

several creatures as "knocking on the door." Among those were the zebra mussel and the spiny water flea. He maintains that their introduction into the lake could have severe impacts on biodiversity. Further, Dr. Andrei Kirilenko, an environmental modelling specialist, and Dr. Greg McCullough, hydrologist and long-time Lake Winnipeg monitor, both highlighted that climate change and the role of precipitation could have profound impacts on the lake. They pointed to the need to develop models that integrate these critical factors. As Minnesota professor Dr. Robert Hecky pointed out, the days of lakes as natural systems are gone. He said that from here on in, lakes will be managed systems. This sobering statement put to rest any illusions that Mother Nature might be able to fix things without our collective and deliberate help.

While many difficult questions remain, there was a great deal of agreement on at least one issue – the need to protect and remediate our wetlands. There was a sense of urgency to stem current drainage trends. They are seen to be having devastating effects as they remove the myriad benefits that wetlands provide, including: recharging underground aquifers; improving surface water quality through nutrient removal; providing habitat for wildlife; and acting to mitigate both floods and droughts. Suggestions on how to safeguard these valuable natural systems ranged from subsidizing landowners that leave them intact, to their outright purchase.

In his closing remarks, Dr. Michael Mehta, U of W Richardson College Principal, spoke about the environmental decision-making process. In essence, he suggested that when we as a society find ourselves in the position where there is little agreement on where to go next, the public needs to be engaged on a wholesale level in consultations that are inclusive and meaningful. Such democratization is widely embraced in water resources management. It recognizes that there are limits to scientific and technical remedies. In other words, the future of Lake Winnipeg must involve not only science but also public participation that elucidates our knowledge, interests and values. On our path to securing a sustainable future there will be many critical issues on which society will need to make decisive choices. The answers, although at times elusive, must nevertheless be found.

*Joy MacLean is a director of the Lake Winnipeg Foundation and the editor of its newsletter, The Watershed Observer. She is also a masters student at the Natural Resources Institute, Faculty of Environment, Earth and Resources, University of Manitoba. A version of this article was also printed in the Watershed Observer.*

# First Public Orchard Planted in St. Vital

By Jennifer Heinrichs, Manitoba Food Charter

**THE CITY'S FIRST PUBLIC ORCHARD**, along the Bishop Grandin Greenway in St. Vital, has come about as a result of a unique and innovative partnership between the City of Winnipeg, Manitoba Hydro, members of the Bishop Grandin Greenway Initiative (BGGI), and the Province of Manitoba. The Bishop Grandin Greenway is a 5 km stretch of green space more than 100 metres wide that extends from the Seine River at its easternmost end to the Red River at its westernmost end. The orchard is beneath a Manitoba Hydro right of way, and the money for fruit trees came from their Forest Enhancement Fund.

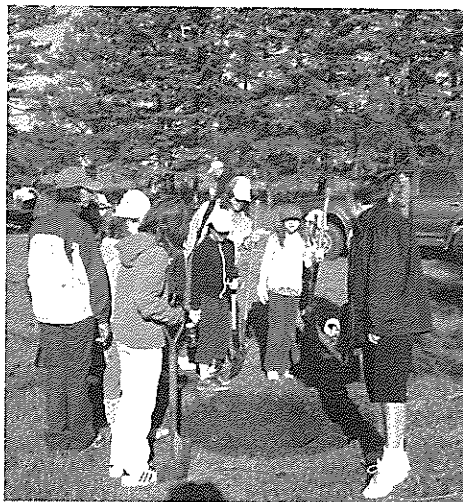
Students at nearby Victor Mager School had the idea to plant apple trees along the greenway to help beautify the space. The idea was enhanced when BGGI members explored the history of the area and found that a family who had a home there in 1931 planted apple, plum and cherry trees, which still grow on the site. Students from the school got to come up with the plan for the tree planting that took into consideration the shelter and sun the trees would need, and involved triangulation exercises with grade 9 math students. On October 4th, more than fifty volunteers — including students from Victor Mager School, BGGI and City representatives, and community members young and old — helped plant Norland Apples, Nanking Cherry, Cranberry and Buffalo Berry trees.

As part of the revegetation plan, Kurtis Wittmier of the City of Winnipeg Naturalist Services Branch worked with volunteers in a separate area to re-establish native fruit trees. Last year the City planted pincherry and nannyberry, and this year they are planting basswood, green ash, highbush cranberry, buffalo berry and other native species. Wittmier noted that native species adapt best to the soil and weather conditions and provide food and shelter for wildlife, which improves habitat and will bring back smaller raptor species. The City's ongoing maintenance will include surveys of the area to determine survival rates, as well as regular watering and weed control by BGGI Green Team staff.

BGGI President Murray Gibson and City Councillor Gord Steeves planted the first tree of the day, after dozens of volunteers dug holes. Gibson said that the hope was to preserve green space while bringing people and nature closer together through varied opportunities for public use and enjoyment. BGGI volunteers are spearheading the greenway development, which includes extended trails, com-



One of the goals is to bring back native tree species.

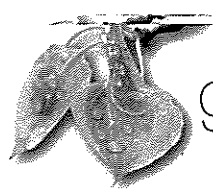


The more than 50 volunteers included students from Victor Mager School, BGGI and City representatives, and other community members.

munity gardens, public art space, an environmental education centre and a butterfly sanctuary. Gibson added that not only do the orchard and other BGGI initiatives beautify the space, they also encourage greater interaction between humans and nature.

Councillor Gord Steeves, who grew up just a few blocks from the greenway, remembers when there was no mall, roadway, or houses beyond the corner the orchard sits on. He said that while the City has focused on growth and building, he felt that perhaps "they had forgotten what it takes to have liveable communities," and was pleased to see community members "live" in their communities. He also said he was "proud of what the leadership team and community volunteers have done with the area."

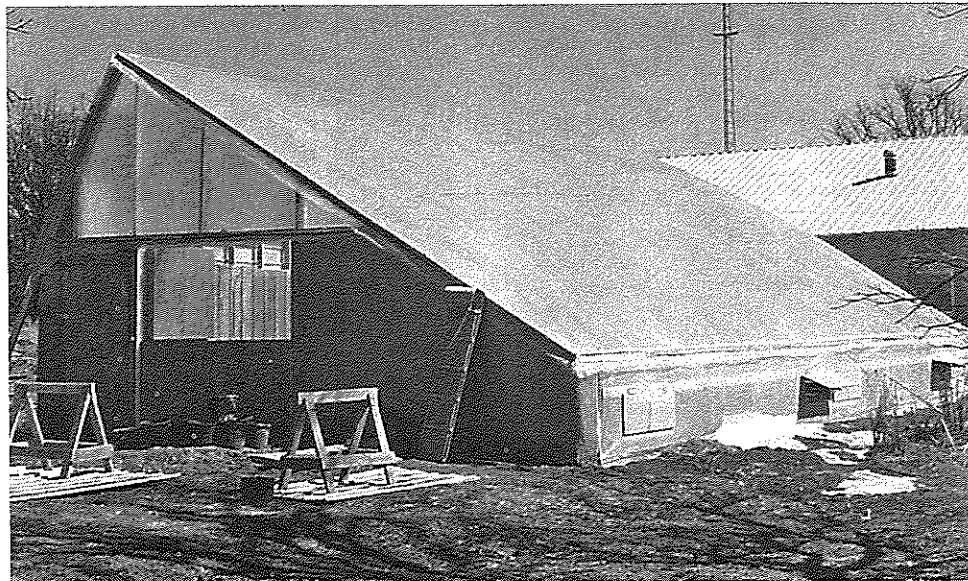
The BGGI Public Orchard brings together everything that is necessary for healthy and vital communities by incorporating an ecologically sound plan that educates residents about native plant species and wildlife habitats, engages and empowers community members, and preserves our natural heritage. The collaboration between regular citizens, private and public corporations, and municipal government is itself something to celebrate! As more people become engaged in the development of these types of public spaces there is a greater sense of care for where we live and how we take care of our surroundings and ourselves. Indeed, everyone is looking forward to picking fruit at annual community harvests, and seeing more wildlife in the area.



# Greenhouse Technology Blooms

## Researchers and Greenhouse Owners Find New Ways to Extend Manitoba Growing Season

By Tessa Vanderhart



In Boissevain, David Neufeld designed a greenhouse out of concrete-covered hay bales and local timber.

insects thrive in the greenhouse in the summer because it's a protected environment.

"Since we are an organic greenhouse, we have a bug problem and we can't spray. So right now we are trying to freeze everything so we can start again," Regnier said.

In the winter, Regnier said Blue Lagoon has to spend significantly more on tomato seeds, because it can only grow heirloom self-pollinating tomatoes without bees to pollinate the crop.

"We're constantly learning, we're improving all the time," Regnier said. The group has another greenhouse frame up that it hopes to put into operation "once we get all of the kinks out of the first one."

Photos courtesy of Manitoba Hydro.

**MANITOBA'S 240 GREENHOUSES** produce more than \$25 million in sales each year, but until recently had to close down for most of the winter months. New technologies — in heating, lighting, insulation and design — have helped to push many of them to year-round or nearly year-round production, but doing so cheaply and sustainably remains a challenge.

Natural gas prices cut in to their profits, according to Ray Boris, an agricultural engineer for Manitoba Hydro — a much as 50 percent of the cost of operating a greenhouse comes from heating it, Boris says.

Between 2001 and 2003, natural gas prices in Manitoba spiked. For a 20m<sup>2</sup> greenhouse, heating costs went up from \$11,000 to almost \$20,000 a year. Manitoba Hydro began investing in greenhouse research at the same time, Boris said, both to encourage energy saving and agriculture in Northern Manitoba.

Hydro has partnered with researchers at the University of Manitoba's Department of Biosystems Engineering to build greenhouses at the U of M's Glenlea research station and on private farms. The different technologies all have specific applications and proponents, but they're all aimed at extending the growing season and delivering local produce to consumers.

### Heat Mats and Heat Irrigation

Lori Ann Regnier, owner of Blue Lagoon Florascape in St. Francois-Xavier, worked with researchers from the U of M, including Chong Zhang, on testing new technologies in their operational greenhouse.

But as this winter begins, the trial has ended, and Blue Lagoon is back to where they started: heat mats, heat banks, and heat irrigation, all among the first technologies Manitoba Hydro suggested, and tried-and-true greenhouse heating solutions for decades.

Heat mats have become a mainstay of greenhouses in Manitoba, because they are easy to purchase and operate. Root-level warmth is also integral to plant development, as successful testing and greenhouse owners have found. At Wenkai Oriental Vegetables in Elie, two five-kWh heat mats (supplied by Alternative Heating Systems Inc.) kept the greenhouse warm in the coldest months of 2007 for only \$10 a month, only 20 percent of the cost of conventional heating.

### Organic Challenges

Blue Lagoon grows plants all winter, and with heat mats, temperature isn't a problem. But Regnier said that the short daylight is a bigger problem, as one of their main crops — tomatoes — requires sixteen hours of light per day.

"Actually our summers are more expensive than our winters, really, because we've got to cool it." But Blue Lagoon's air irrigation does an effective job of cooling the greenhouse in the summer, and keeping it above freezing all winter, for a Hydro bill of about \$200 per month.

Regnier said that challenges such as keeping water unfrozen, and protecting the plants from insect invasion are much more difficult to get around — the

### Argon, Bubbles and Heat Blankets

Meanwhile, Hydro tested several new technologies at Blue Lagoon that didn't fare well in testing last winter.

The U of M research team led by professor Chong Zhang was very excited about the possibility of further increasing heat savings with thermal blankets covering the structures at night, but most varieties tested since 2005 have failed for a number of reasons.

A very efficient cotton blanket used at Wenkai tore, and absorbed rainwater late in the year. As a result it couldn't be rolled up one morning — it froze in place, and the crops failed.

A second blanket was tested at Blue Lagoon the next year, this time on the inside of the greenhouse. However, it was difficult to operate and ineffective at keeping heat in overnight.

The next step, in 2006-07, was to insulate the greenhouses with a covering that would stay in place. Four specific systems were developed and tested at Blue Lagoon.

One section was unheated, and covered with an air-inflated, double poly covering. The second was also unheated and used the air-inflated double poly covering, but in addition filled a space between the poly with bubbles — they let light in but provided an insulating layer. A third section filled the interspace with argon gas instead, and a fourth just insulated with air.

On the coldest night of the year, Feb. 5, temperatures reached -41.4 degrees C. The argon-filled

plastic lining maintained the highest temperature, -6.1 degrees, compared to -9.7 degrees for the bubble section and -13.3 degrees for the air-insulated section. A subsequent test showed that in a greenhouse where argon was used throughout the entire roof could keep temperatures above 10 degrees C. According to Hydro, the argon that filled the test section cost \$80.

### Local Design Models

U of M biosystems professor Kris Dick has formed Building Alternatives, a company dedicated to using local materials and sustainable design. Currently Manitoba Hydro is partnering with Building Alternatives, according to Boris, to build greenhouses for Manitobans that want them.

David Neufeld from Room to Grow greenhouse in Boissevain took a more hands-on approach. After building his home and buildings on his property himself, he turned to his greenhouse.

Neufeld layered hay bales (made of wheat straw from his farm) with concrete to form the north, west, and east walls of the greenhouse. The south wall and the roof were made with poplar and birch trees, from the same woodlot that Neufeld uses to heat the greenhouse.

"We have nice long winters, when I can scribble in my graph book, make lots of drawings [and] figure out the angle of the light," Neufeld said. "And try to figure out how to build it."

Neufeld had helped build other greenhouses before, but mostly from metal — which flexes in the winter wind.

"I made big posts, built a triangle brace at a forward angle from the back, so that the wooden skeleton of the greenhouse would be pretty much solid, but could move a little bit on the top of where the bale wall would touch it. But the bale wall itself wouldn't move: can't let the straw flex, mortar will just keep cracking."

"It was a bit of an engineering challenge," Neufeld said.

But for between \$5,000-\$7,000 that he spent on the greenhouse, Neufeld said he's very satisfied. He says he's intrigued by the argon bubble greenhouses but doesn't have the \$30,000 to spend on a high-tech greenhouse.

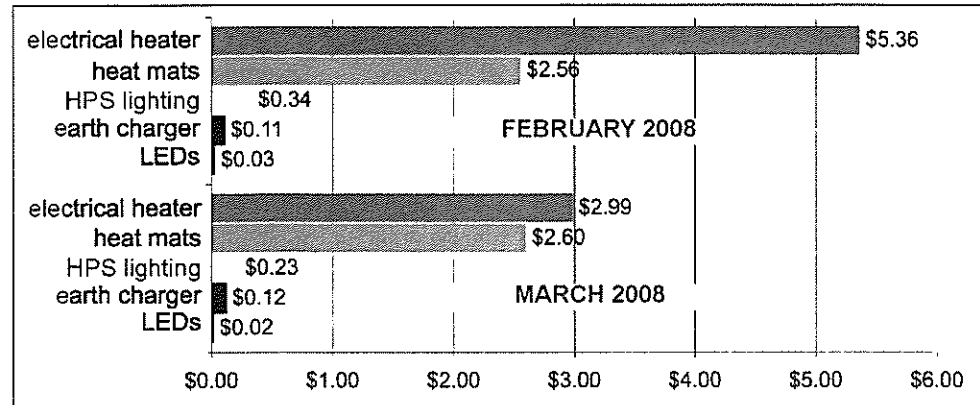
"I'm intrigued with new technologies, but in terms of how much money I can make off the greenhouse in a remote rural area that I'm in, the investment isn't worthwhile," he said. He added that as the "local foods" market gains value, there might be more customers available within driving distance.

### Warm Air from Livestock

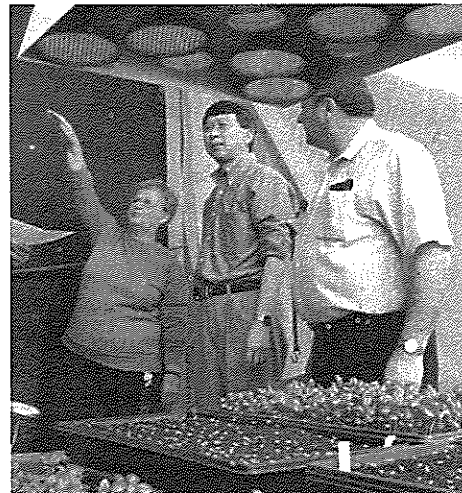
For his master's in engineering research thesis, Khizar Mahmood studied one of the emerging ideas in greenhouse technology: using livestock to provide heat.

"We built a solar energy greenhouse and we connected it to a duct, connected to bio-filter, removing odour and retaining the heat content," Mahmood said.

## Daily Costs of Operating the Systems



Photos courtesy of Manitoba Hydro.



Photos courtesy of Manitoba Hydro.

U of M biosystems engineering professor Chong Zhang (middle) demonstrates the 8 red and 5 blue LEDs that provide optimal light to tomato plants.

With no additional heat and only twenty-five pigs, Mahmood's greenhouse sustained temperatures of 10 degrees Celsius. In earlier tests about 125 pigs kept a greenhouse between 15-17 degrees in -41 C.

"The other thing it was doing was creating carbon dioxide, which is important for plants. Sometimes they have to pay to add CO<sub>2</sub>, so it was saving a cost for the greenhouse."

The duct system preserved most of the energy but filtered the air through a bio-filter of wood chips, which eliminated almost all of the smell of the animals.

"It's just a big problem all over the world ... there is a huge issue of odour from the hog barns and it's just unpleasant, unhealthy," Mahmood said.

He added that pigs also produce more heat and emit more carbon dioxide than chickens, which makes them ideal for the pairing. Mahmood said that the idea will eventually be used widely because it's economically viable, socially useful, and sustainable.

### High-pressure Sodium and LED Lights

Greenhouse plants grow best when they receive sixteen hours of daylight per day followed by eight

hours of darkness. In southern Manitoba, however, the longest winter days are about eight hours long, and of course days are even shorter in northern Manitoba.

Lights are also one of the most expensive parts of running a greenhouse, largely due to electricity costs. At Blue Lagoon last year, Hydro experimented with high-pressure sodium (HPS) and light-emitting diode (LED) lights to lengthen the growing day with a minimal power requirement.

The LED lights offer the advantage of specific colour targeting: five blue LED bulbs (each with sixty diodes) interspersed with eight red LED bulbs (plants require only these two colour wavelengths). The system consumes ninety-seven watts to light up to sixteen square feet, and the bulbs last more than 50,000 hours.

The high-pressure sodium (HPS) light system is a more greenhouse-specific technology, but the results of Hydro's tests have proved inconclusive. The HPS system consumes 1,000 watts to illuminate up to thirty-six square feet, and lasts 8,760 hours.

The HPS-lit plants were larger, lusher and fuller than the plants grown with no additional light, but the LED-lit plants ultimately fared the best. They were 30 per cent taller and 15 percent more lush than the HPS plants, and 50 percent taller and more lush than the plants that received no supplemental lighting. In addition, LED lights use one-tenth the electricity of conventional HPS system, although the light system is four times more expensive.

In fact, in terms of the daily costs of the various systems, LED lights present by far the best value. In February 2008, Hydro calculated the daily operating costs for various systems: \$5.36 for an electrical heater, \$2.56 for heat mats \$0.34 for HPS lighting, \$0.11 for the earth charger and \$0.03 for LEDs.

### Now What?

LEDs are the greenhouse technology to watch. But as the demand for local, organic produce increases, it seems certain that more greenhouses will consider adding new features — high-tech or low-tech — and staying green year-round.

# Canada Designates Bisphenol A as “Toxic”

By Sandra Madray, Chemical Sensitivities Manitoba

IN OCTOBER 2008, bisphenol A (BPA), one of the 200 chemicals currently under review by the Canadian federal government, was classified as toxic under the Canadian Environmental Protection Act (CEPA). The government concluded that BPA is entering the environment at concentrations that could harm human health and the environment.

BPA is a high volume chemical with a global production of 4 billion kg in 2006. It is commonly found in plastic baby bottles, lining of some food cans, dental fillings, many hard plastics, and reusable water bottles, among many other products.

As a result of being classified toxic, BPA will be added to the List of Toxic Substances (Schedule 1) of CEPA. This gives the federal government the power to manage this substance through various management regimes including regulations and therefore, take action as it sees necessary. Internationally, Canada is the first jurisdiction to declare BPA toxic.

BPA has been classified by the European Chemicals Bureau (ECB) as a reproductive toxicant: it is a substance which causes concern for human fertility based on sufficient evidence of reproductive toxicity in experimental animals. Low-level exposure to BPA, particularly during sensitive life cycle stages, can result in permanent hormonal changes, developmental or reproductive capacity.

Further evidence has implicated BPA in heart disease, diabetes, early puberty in girls, breast and prostate cancer, obesity, attention disorder and hyperactivity disorder in humans. A study released earlier on in 2008 by the *Environmental Health Perspectives* journal found BPA to interfere with chemotherapy in breast cancer patients. One report in 2007 analyzed more than 250 scientific studies on BPA with most of them concluding that the chemical posed health risks to laboratory animals. Many of the studies funded by the chemical industry found no health risks.

The federal government is proposing to ban the importation, sale and advertising of polycarbonate baby bottles made with BPA. The government has also proposed to adopt a precautionary approach for BPA in food packaging for products intended for newborns and infants by adopting the As Low As Reasonably Achievable (ALARA) principle to minimize exposure of these vulnerable populations to BPA. The government will, therefore, develop stringent migration targets for BPA in infant formula cans, but these targets have not been identified.

The government has come under attack for this management strategy. It is possible to have safe BPA-free can linings for food. One would also have to ask: why not use glass jars with BPA-free lid linings or BPA-free lined cans for baby food and other canned food?

Laboratory testing has shown that BPA leaches from polycarbonate baby bottles as they are heated to acceptable temperatures. This has caused great concern for parents and rightfully so since the levels of BPA in these tests were found to be higher than those levels that have the potential to do harm to human health.

As part of the proposed management plan for BPA, the government has stated that it “will explore the option of establishing stringent migration targets for bisphenol A in canned foods in general.” In order to better define exposure estimates for BPA from all pre-packaged food sources, including canned foods, the government plans to add BPA to the list of chemicals to be regularly monitored as part of the 2009 cycle of the Canadian Total Diet Study (TDS).

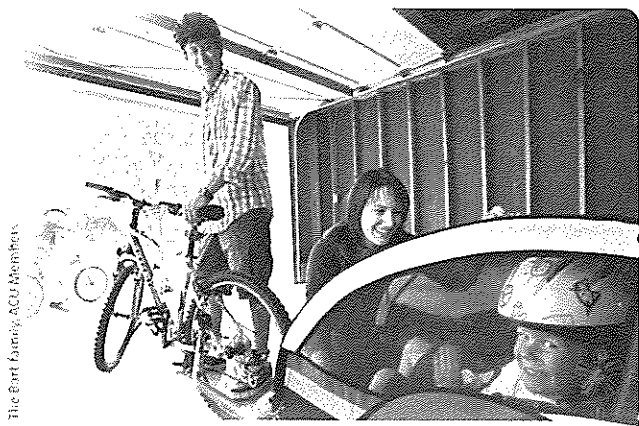
There is some disappointment with this management approach for canned foods since it does not consider the prohibition of this chemical in foods. While human exposure levels will be better defined through monitoring, there is no strategy to actually reduce the concentration of BPA in all canned foods. Our exposure to BPA is chronic and taking into consideration its health effects, prohibition of this chemical for food application would be justified.

While there are many proposals for risk management in the various areas of usage for BPA, the government has decided that exposure to BPA through cosmetic use is minimal. While it may be minimal it can be considered chronic exposure but what really, what are the safe limits for this usage?

Another area of concern is occupational exposure to BPA which has not come under very much scrutiny. Environmental and health groups have urged the government to assess this exposure, but it is not covered under CEPA.

The entire process — including time for public comments and then the final risk management regulations pertaining to BPA — could take up to four years.

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## International Eco-friendly Holiday Recipes

By Tessa Vanderhart

**MEAT AND POTATOES** aren't always an eco-friendly choice, and Tofurkey is neither local nor delicious. Whether your holiday involves a traditional family dinner or nothing remotely Judeo-Christian, December is still a tough time to eat green. Or is it? Local dry goods, onions and potatoes still fresh from this fall, and some international inspiration can help you face the holidays in a surprisingly nutritious and delicious light, and 95 percent of the ingredients can be found in Winnipeg, even in December, as either local or organic, or both!

### Portuguese Bean Tarts

These traditional Christmas treats are the perfect blend of sweet and savory. It's hard to imagine why so many Asian sweets use beans — but these tarts exemplify why.

#### Dough:

- 1 cup spelt flour (local, organic)
- 1/4 cup cold butter (local, organic)
- 1 local egg
- Sprinkle of salt

#### Filling:

- 1 can chickpeas or white beans, drained (organic), or one cup local beans, cooked
- Zest of 1 lemon (or 1/2 orange) (organic)
- 2/3 cup sugar
- 2 egg yolks
- Pinch of cinnamon and/or nutmeg
- Handful of almonds or hemp seeds

To make the dough, mix all ingredients together, cutting in the butter. Add a bit of warm water to make the dough blend more easily. Let rest in the fridge for half an hour.

Blend all filling ingredients together. Add more citrus if desired, to taste.

Roll out the dough onto a flat, floured surface. Cut into rounds using tart cutter, perogy cutter, or just a common glass. If you have a tart/mini muffin pan, you can put the rounds into the pan; if not, just spoon about 1 tbsp. of filling into the middle of the round and fold it like a perogy. Fry in a small amount of light-tasting oil (perhaps sunflower) until lightly browned, or bake at 350 degrees for about 15 minutes. Dust with icing sugar.

### Swedish Orange, Rye, and Cranberry Stuffing

One alternative is to buy a Balkan rye from Bread & Circuses or make your own, but this bread-less, grain-focused stuffing is much more satisfying, and very diet-friendly.

- 1 cup spelt berries (local)
- 1 cup rye berries (local)
- 1 cup wild rice (local)
- 1 cup steel-cut oatmeal (local)
- 1/2 cup hemp seeds (local)
- 1/2 cup flax seeds (local)
- 1/2 cup sunflower seeds (local)
- 1/3-1/2 cup oil (sunflower, hemp or flax) or butter
- 3 large oranges (pref. organic)
- 2-3 cups cranberries, frozen (organic)
- 1/4 cup sugar (brown or white, or agave nectar) — optional but recommended
- 1/2 cup walnuts — optional
- 2/3 cup dried fruit or chopped apples — optional

Boil spelt and rye berries (note: not actually berries, just grain seeds) and rice with 5.5 cups water for 35 minutes. Add oatmeal and continue to boil for 10 minutes. Drain excess water. Combine in an ovenproof dish with seeds (any of hemp, flax, and sunflower), cranberries, oil, sugar and optional nuts/fruits. Clean oranges as well as possible and grate all zest into dish. Squeeze all juice from oranges into dish. If it's not "orangey" enough, add additional orange juice. Bake at 350 for 15-20 minutes to blend flavours.

### Baked Pickerel Curry

Fish is the traditional Ukrainian Christmas Eve dish, as it's apparently considered meatless. One of Manitoba's great delicacies is pickerel, and you can still get it fresh — or frozen. Adding turmeric makes the dish much less authentic, but healthier (so many nutritional benefits!) and much more delicious.

Combine all ingredients in heavy, high-walled pan and bake at 450 for 13-20 minutes, or until fish flakes easily with fork. Serve with lime wedges.

Optional: add 4 large potatoes, boiled and chopped (plus additional 1/2 cup milk and double all spices)

- 2 lbs. Manitoba pickerel
- 1 cup milk, pref. 3% (organic, local)
- 4 tbsp. good-quality turmeric
- 2 tsp. salt, pepper, chopped garlic, paprika

### Namasu Salad

In Japan, the most important national holiday is New Year's Eve, and the days following it. This traditional raw salad is a great way to nurse your body back to health after a season of over-consumption, or provide a counterbalance to a starch-heavy meal.

- 1 cup carrots (local, organic)
- 1 cup daikon radish (local) or parsnips (local, organic)
- 1 cup cucumber (local, organic)
- 3 tbsp. rice vinegar
- 1 tbsp. sugar or agave nectar
- 1 tbsp. ginger

Shred or grate veggies and ginger, combine all and refrigerate 12-48 hours.



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# GreenSpace Youth Conference

By Andrea Swain, Coordinator, Manitoba Envirothon

ON OCTOBER 29, 2008, the Manitoba Environmental Youth Network provided environmentally minded youth in Manitoba a space to hear local activists speaking on environmental topics, gain new skills, plan joint actions and help build the future of the environmental youth movement in Manitoba at their second annual GreenSpace Youth Conference.

Thirty-two students and teachers participated in a full day of presentations, skill-building activities, and action planning around three main themes: Inside the Bottle — a closer look at bottled water with the Canadian Federation of Students; Protecting Manitoba Forest — with the Wilderness Committee; and Climate and Diet — tracing the connections with the Manitoba Food Charter and Climate Change Connection. Many of the students indicated that learning about the issues in these workshops was a highlight of the day. A grade 10 student from École Pointe-des-Chênes in Ste. Anne said: "We have a class on these issues and I want to know more about stuff that I didn't know before and that isn't well publicized or told to us."

In addition to the three main themes, the students and teachers participated in a number of socializing activities such as speed networking, the human knot, a GreenSpace café, and shared a delicious lunch provided by a local catering company. It was this opportunity to meet and network with other like-minded people that students felt was the best part of GreenSpace. Meeting other kids who care and meeting people who were as passionate about the environment as they are was a big part of what made the day worthwhile for the students.

A teacher from J.H. Bruns Collegiate in Winnipeg described workshops like GreenSpace as being "a professional development opportunity for her students." She said that opportunities to develop youth-adult partnerships, learn about leadership, and learning beyond the walls of their school are all part of the J.H. Bruns Collegiate philosophy. A grade 12 student from Vincent Massey Collegiate in Winnipeg said that GreenSpace "opens up possibilities by learning what other schools are doing, and for schools who are just starting it could provide a real jump start to their programs."

When asked what they would like the Manitoba Environmental Youth Network to do to advance the youth environmental movement, the participants of GreenSpace overwhelming said that we should host more events and opportunities for networking! At a recent follow-up meeting, the volunteer organizers of GreenSpace decided to focus their energy on two of the suggestions that participants gave for future activities: a youth green drinks event and a field trip to learn more about an environmental issue.

A grade 10 student from École Pointe-des-Chênes said that GreenSpace was "a fun way to learn and really showed me that we need to start changing." The Manitoba Environmental Youth Network aims to capture this sense of fun as they move forward with their new initiatives. The Network is also a starting point for change, so if you are interested in learning more about the GreenSpace event or about what other green-minded youth in Manitoba are up to, visit the Manitoba Environmental Youth Network at [www.mbecoyouth.org](http://www.mbecoyouth.org).

## Manitoba's Lands & Waters

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## Ethical Purchasing: Developing an "Outside the Box" Policy

By Anne Lindsey

**WHAT BETTER TECHNIQUE** to attract attention than to hold a Fair Trade Chocolate Tasting? Really, who could resist?

That's just what happened at the Winnipeg Ethical Purchasing Committee's "Shop Outside the Box" Ethical Purchasing Expo held at the Millennium Library. Intended to showcase the growing numbers of worker co-ops, local and fair trade shopping options and community economic development businesses in Winnipeg and Manitoba, the event provided an opportunity not just to sample chocolate, but also to sample the wide array of wares and services on offer from this "alternative" economic sector.

### Support and Awareness

The sector is undergoing a bit of a boom, thanks to the efforts of a number of groups: SEED Winnipeg and the Assiniboine Credit Union have worked on training and financing; Fair Trade Manitoba and the Manitoba Council for International Cooperation have been able to publicize the benefits of fairly traded goods; and the Community Economic Development Network and the Social Purchasing Portal ([www.sppwinnipeg.org](http://www.sppwinnipeg.org)) continue to assist. Add these to a growing awareness amongst citizens about the effects of their purchasing habits on everything from worker health and safety to poverty reduction to the environment, and the time is right for this collection of small businesses to prosper.

Bill Granger of the Vasa Cooperative, one of the Expo's organizers, said, "The event was a great success, as it drew a large and diverse crowd and introduced them to the many options available in Winnipeg [for] those seeking to make a difference with their dollar."

### A Challenge

Earlier this year, Fair Trade Manitoba issued a challenge to organizations and companies to develop "Fair Trade Purchasing Policies." It got us thinking here at the Eco-Network. For years now, we have endeavoured to ensure that our purchases and operations minimize our negative impact on the environment.

### An Ethical Procurement Policy

We always use real dishes instead of disposables at our events, we purchase Fair Trade and organic food for catering needs, whenever possible, and use local suppliers. We seek out 100% post

consumer, non chlorine-bleached paper products, and use a local environmentally friendly company for our cleaning needs. Visitors to the EcoCentre know that we have worked and continue to work hard to make our space as "green" as possible. We thought, why not write this down — a procurement policy to reflect our purchasing habits and to guide us in the future? Such a policy can act as an educational tool for our staff and volunteers, and if publicized — for the other people we interact with in the community.

### Taking it a Step Further

So we are proud to announce our new "Environmental/Fair Trade/Local/Organic Purchasing Policy." See it on our website [www.mbeconetwork.org](http://www.mbeconetwork.org)

Green Procurement is nothing new — many companies and institutions have been developing and adopting Green Procurement policies over the last decade or so. But we're taking it a step further by incorporating a set of community economic development standards — the Neechi Principles — created by Winnipeg's Neechi Foods Worker Coop. So, not only will we take things like social development and local reinvestment into account, we will go further. For example, we are actively promoting the use of public and self-propelled transportation in our operations, and are seeking out Eco-Logo branded products to reduce our environmental footprint.

### We Aren't Perfect

By the way, we are not perfect! Far from it — sometimes budget realities or convenience (or heaven forbid, ignorance) cause us to make a less sustainable choice. And let's face it, our very way of life in the Western world challenges sustainability every inch of the way. But we feel we are making good progress, and we encourage, nay, challenge, all Manitobans — whether in their homes, organizations, institutions or businesses — to take up the cause!

## Please Support Our Annual Appeal

By Anne Lindsey

**BY NOW**, many readers will have received our Annual Appeal letter. It's our yearly request to all our supporters to make a financial contribution to our work. A huge thank you to everyone who has already responded!

### Where are the Funds Used For?

All funds raised from the Appeal go straight into our Core Budget — in other words, they help to pay for the rent, utilities, supplies, and all of the other things that an organization needs to keep it running day to day. Maintaining operating budgets is a challenge for every charity and non-profit group — especially for groups in the environmental sector. Every donation we receive is another indication to governments and foundations of our relevance to the community.

### How Can I Give?

Donations can be made in a variety of ways: you can contribute securely by credit card through our website at <http://www.mbeconetwork.org/getinvolved.php#Donate> (specify Annual Appeal), or you may choose to make a monthly contribution direct from your bank to ours. Please call us to make arrangements.

Or you can donate the traditional way, and send us a cheque. All contributions over \$10 are eligible for a charitable tax receipt. If you are interested, we also gratefully accept contributions to our in-house Endowment Fund (again, please specify this choice), or to our Agency Endowment Fund at the Winnipeg Foundation (contributions should be made directly to the Winnipeg Foundation, earmarked for the MEN/TREE Legacy Endowment Fund).

### Thank You!

We appreciate any support that you can provide. Please join us in our Mission to "...promote positive environmental solutions by connecting people and groups in our communities!"

<http://www.mbeconetwork.org/getinvolved.php#Donate>



Staff and Board members of the Manitoba Eco-Network wish all Eco-Journal readers a happy, safe and "green" holiday season.

**Front row:** L to R. Anne Lindsey, Susan Lindsay, Tamara Baker, Julie Fine  
**Back row:** L to R: Sacha Kopelow, Joseph Prymak, Jim Chapryk, Curt Hull, John Coombs

**Missing:** Sandra Madray, Dennis Cunningham, Lise Smith, Erica Young, Hope Colobong, Brian Miller

# Winnipeg Trails Benefit From 2008 Upgrades

## City Funds TCT, Identifies New Routes

By Les McCann, President, Manitoba Naturalists Society

**WINNIPEGGERS HAVE SEEN** huge improvements to our local recreational trail system over the years. This success is complementary to MNS's objective of promoting nature related educational and recreational activities.

What a difference a year makes. Information on trail developments was presented at our December 2007 Indoor Program, Pathways & Roadways — Progress on Active Transportation in Winnipeg. The program featured Beth McKechnie from Resource Conservation Manitoba, and Janice Lukes, Trail Coordinator with the Winnipeg Trails Association.

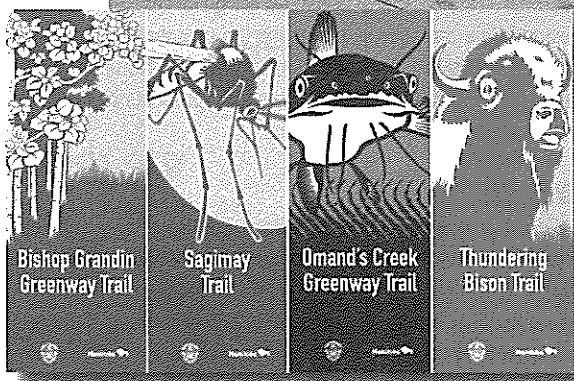
This past spring, Winnipeg's Active Transportation Advisory Committee, after a series of intense meetings, recommended more than sixty new trail projects to the City, prioritizing more than twenty of them. This planning involved over forty organizations, including the MNS. The City of Winnipeg has identified approximately 450 km of desired active transportation routes.

As of June 2008, there were 130 km of recreational trails completed and by the end of this year there will be 190 km. Projects that were confirmed this past spring included pathways that would be constructed alongside two roads that are being twinned, McGillivray and Inkster boulevards. Also, the Northeast Pioneers Greenway Trail (NPGT) will be completed through to Knowles. The City's request to the Province for funding related to a Disraeli Freeway repair plan (that includes a new pedestrian-bike bridge) may affect the NPGT. Part of the enhancement of our trail system has included signage, starting with Northeast Pioneers Greenway, Sentier Cloutier, Harte, Bishop Grandin Greenway, and Sturgeon Creek Greenway Trails. Also, 216 marker signs were to be installed along twenty-five Winnipeg trails throughout the summer of 2008.

The Trans Canada Trail (TCT) is a great symbol of Canadian unity and commitment to healthy living. In



Photo courtesy of: Les McCann



Four examples of new trail signage.

October 2007, \$2.5 million in funding was announced for plans to complete the Winnipeg portion of the TCT. The TCT is an 18,000 km recreational corridor winding its way through all the provinces and territories, linking over 800 communities along its route. In Winnipeg there are eighty-one kilometres of the TCT, which follows the Red and Assiniboine Rivers and

Paul Jordan, Chair of the Winnipeg Trails Association, Member of Parliament Rod Bruinoo, and the Honourable Kerri Irvin-Ross, Minister of Healthy Living (L to R) attended the October 2007 announcement of \$2.5 million of tripartite funding for the Bishop Grandin West/Harte trail extension of the Trans Canada Trail.

meanders through forests, parks, historic neighbourhoods, and along old rail lines and creeks.

Ongoing upgrades to the Winnipeg TCT include an extension of the Bishop Grandin Greenway on the south side from Lagimodiere Blvd. to Whyte Ridge, and an extension of the 6.5 km Harte Trail near the Assiniboine Forest that will link the TCT pathway into Assiniboine Park and FortWhyte Alive. The Harte will ultimately attach to the Bishop Grandin Greenway. The Headingley community has become connected to the Harte Trail too, by way of Beaudry Park. The MNS has been part of the planning group for the Headingley Grand Trunk Trail.

We can look forward to forthcoming trail announcements and the enhanced opportunities they will offer for us to enjoy more of our natural areas.



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