

Hormones and Hormone Mimics in the Aquatic Environment

By Karen Kidd

Over a decade ago, fishermen first reported developmental abnormalities in fish from rivers in the United Kingdom. Follow-up investigations revealed that up to 100% of the males in some reaches of the rivers had become feminized (Jobling et al. 1998). These fish had both male and female structures in their gonads, and in the worst cases, had developed eggs.

Wild male fish and males caged in the river were also producing precursors of egg yolk (proteins called vitellogenin) when exposed to the river water for only short periods of time. These proteins are produced by the liver in response to estrogen in the blood stream and are used to mature eggs in the ovaries prior to spawning.

Endocrine system impacts

Female fish normally only produce vitellogenin during the reproductive season in response to a rise in blood estrogen levels—the appearance of vitellogenin in males suggested that these fish were being exposed to something in the water that was mimicking an estrogen. It was evident from these studies that the endocrine system (the series of glands controlling growth, reproduction and development through the production of hormones) was being impacted.

The anomalies found in the gonads, along with the presence of vitellogenin in male fish blood, raised considerable alarm about the presence of hormone mimics in these rivers. As the studies in the United Kingdom progressed, it became evident that the seriousness of the injuries to fish were directly related to the number of municipal wastewater treatment plants (MWTP) discharging into that river (Jobling et al. 1998).

Many of the chemicals used in households are not com-

pletely broken down in the wastewater treatment process. As a result, outfall from these plants can contain complex and ill-defined mixtures of detergents, pesticides, antimicrobial agents, perfumes, plasticizers and pharmaceuticals. Some of these chemicals can interfere with or modulate the activity of sex hormones in the body, and produce biological responses that are similar to natural processes or that are in conflict with normal development.

Laboratory studies have been conducted to determine the substance(s) responsible for the feminization of male fish in rivers in the United Kingdom. It is now accepted that the estrogens produced naturally by women and the synthetic estrogen women consume in birth control and hormone replacement therapies are mainly responsible for the feminization of male fish (Desbrow et al. 1998).

The hormones that control reproduction and development in humans are very similar or identical to the hormones used by any wildlife with a backbone. It is logical then that additions of human hormones to rivers and lakes would impact upon the reproduction of the wildlife downstream.

Estrogens secreted in urine

Statistics Canada reports that about 16% of women over the age of 12 are consuming synthetic estrogen either in birth control pills or in hormone replacement therapies. These estrogens are excreted in urine, transported to the MWTPs and not completely broken down in the wastewater treatment process.

Studies on other MWTPs have shown that bacteria present in the treatment process can degrade all estrogens to some degree, but that the synthetic estrogen is more resistant to breakdown (only about 80% is degraded; Layton et al. 2000). The remaining estrogens are then discharged into receiving waters.

These estrogens are potent hormones and hormone mimics, and even the very low parts per trillion (ng/L) levels measured in rivers (Daughton and Ternes 1999) are high enough to have profound impacts upon the fish.

Little is currently known about the fate of these hormones in

see "Estrogens: Potent ..." on page 6 ►



Vince Palace, author of one of the studies, with Karen Kidd at the Experimental Lakes Area in Ontario.

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2003 Environmental Awards Nominations Recognize Environmental Excellence!

The Manitoba Eco-Network invites
you to submit nominations for our 2003
Environmental Awards.

Established over a decade ago, the MEN
Environmental Awards were created to
"recognize significant contributions to
the awareness and protection of Manito-
ba's environment", particularly in the
non-governmental community. Given
periodically, the awards have saluted the
efforts of diverse Manitobans working on
a wide variety of issues and concerns. Past
winners include the late Alice Chambers,
environmental lawyer Brian Pannell, the
Friends of Oak Hammock Marsh and

Anishinaabe Turtle Island Protectors. For
a complete list of past award winners,
please check our web site at
www.web.net/men

A selection committee named by the
Eco-Network Steering Committee will con-
sider nominations in the following cate-
gories: Individual female; Individual male;
Group; and "Special". Please submit your
nomination in writing by April 1 to MEN
Awards Committee, 2-70 Albert Street,
R3B 1E7; by fax to 989-8476; or email to
mbeconet@mts.net Please include infor-
mation as to why your nominee deserves
recognition.

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Petition for Nation-wide Ban on Smoking in Indoor Public Places

A petition has been started calling for
the Prime Minister, national health min-
ister and provincial premiers and health
ministers to work towards a nation-wide
ban on smoking in indoor public places.

According to the Canadian Council for
Tobacco Control, "Tobacco use is the
most significant cause of preventable dis-
ease, disability, and premature death in
Canada, responsible for more than 40,000
deaths every year. Tobacco kills three
times more Canadians each year than al-
cohol, AIDS, illegal drugs, car accidents,
suicide, and murder—all combined!"

The petition was created by Dennis
Bayomi, a longtime member of the Eco-
Network and graduate student in com-
munity health at the University of Mani-
toba medical school.

Anyone interested in helping to cir-
culate the petition can print copies from
the web at www.healthyfuture.ca/Issues/Smoking.html Printed copies can be re-
quested by sending a stamped self-ad-
dressed envelope to Canadians for a
Healthy Future, Box 702, Winnipeg, MB
R3C 2K3. For further information, call
(204) 888-6336.

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Eco-Erratum

In our last issue (November/December
2002), an incorrect phone number for the
International Erosion Control Association,
Northern Plains Chapter was printed. The

correct phone number for their informa-
tion resource line is (204) 478-1322. We
apologize for any inconvenience our error
may have caused.

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Eco-Network Steering Committee, 2002-2003

Larissa Ashdown, Eco-MAFIA

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Amy Hawkins-Bowman, Organic Food Council of Manitoba

Scott Kidd, Canadian Parks and Wilderness Society, Manitoba Chapter

Glen Koroluk, Winnipeg Water Watch

Joseph Prymak, Consumers for Responsible Energy

John Sinclair, Resource Conservation Manitoba

CEC Hearings on Winnipeg's wastewater collection & treatment systems A Process as Muddied as the Red Itself

By Liz Dykman

During the Clean Environment Commission hearings regarding Winnipeg's wastewater collection and treatment systems, there was a great deal of confusion as to just what these hearings were all about. In his opening remarks Terry Duguid, chair of the CEC, made quite clear the CEC's understanding of the situation—they were asked by the province to conduct a review hearing of the city's plan under their investigative powers in the Environment Act. Soon after he concluded his remarks, however, a representative of the Province's Conservation department stated that Environment Act licenses would flow from this CEC hearing. This raised a number of concerns on the part of some participants, who understood the hearing to be an information gathering session, not a formal licensing process.

Serious concerns

The main issues of concern to participants are as follows:

First: If this is in fact a licensing hearing, why are the license applications on file over a decade old? The city's current proposals for updating the water pollution control centres can not be identical to those submitted way back in 1990, can they?

Second: Where is the Environmental Impact Statement (EIS) required for Class 2 developments under the Environment Act?

Third: The timelines for the hearings are too short for a licensing decision.

John Sinclair moved that the hearings be suspended until the City of Winnipeg filed a current license application and EIS. Barring that, he suggested that the hearings at least be postponed for 90 days to give participants greater time to prepare. He also asked that the participant assistance program be reopened, to allow more applications for funding from potential participants.

Citizen participants at the hearings said that they would most likely have prepared differently if they knew this was a licensing hearing. The delegation from Environment Canada

was working on the assumption that this hearing was not about licensing and had therefore, not intended to participate, insisting that they would only make detailed comments about the proposal after seeing an EIS.

Variety of issues raised

There were several public participants registered to present before the hearing, including an ad hoc group who received participant funding, allowing them to bring in an expert on wastewater issues from Boston. The ad hoc group consisted of Merrell-Ann Phare, Linda Orlando, Rodney McDonald, John Sinclair and Kenton Lobe. They raised issues such as the lack of attention to emerging problems in wastewater, including endocrine disruptors and pharmaceuticals. Best practices from other jurisdictions were highlighted. They provided comment on the consultation process as well, reproving the lack of both proactive public engagement and, specifically, consultation with affected First Nation and Metis communities. The group made excellent presentations and submitted a document of over 800 pages.



Clean Environment Commission panel members at the Winnipeg hearing. Photo by Liz Dykman

Carolyn Garlich, on behalf of the Council of Women of Winnipeg, emphasized the inappropriateness of a 50-plus year time frame for addressing the combined sewer overflow issue. This concern was echoed by local citizen Dr. Eva Pip, who again warned that serious action is needed if the already diminished biodiversity of Lake Winnipeg is to be preserved. Scott Kidd, a citizen of Winnipeg, emphasized the need for source reduction rather than just an end-of-pipe approach. He also raised the point that not requiring the City to provide an EIS sets a dangerous precedent for other Environment Act proposals within the province.

Hearing process extended

On the final day of scheduled hearings the CEC ruled on the motions put forward by John Sinclair. Although they rejected both motions, they adopted many of the recommendations. The CEC has extended the hearing process, requested that the City provide an EIS, and reopened the Participant Assistance Program for intervenors. The timelines are still short, but these changes are a step towards addressing the need for careful and informed deliberation by the public about how the City of Winnipeg deals with its sewage waste.

While most people would agree that it is time to finally get the City's WPCC's licensed, it should be done in accordance with the environmental assessment procedures as set out in Manitoba's Environment Act. The quick and dirty approach is not the best way to make important decisions affecting water quality in Manitoba.

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What's Happening

Feb 6 eco-MAFIA presents Eco-Eclectica, an evening of local musicians in support of Consumers for Responsible Energy (CoRE). Pope's Hill, Dan Frechette, DJ Co-op, Effector and Finding Susan, at the Pyramid Cabaret, 176 Fort St. Tickets available at Manitoba Eco-Network, Into the Music, Urban Bakery and the UW Info Booth for \$5 or \$6 at the door. Doors open at 8pm.

Feb 6 Consumers for Responsible Energy (CoRE) is relaunching its freshly designed website at <http://www.hydrohurts.mb.ca>

Feb 8 Fort Whyte Centre Winter camping and survival workshop 10 am - 4 pm

Feb 11 Agriculture and Carbon Management Conference at the Victoria Inn, 1808 Wellington Street. No Cost. Register by contacting Dennis Cunningham at (204) 958-7705 or dcunningham@iisd.ca

Feb 12 Project Peacemakers Peace Forum, 12 noon at the Lutheran Church of the Cross, 560 Arlington. Meagan McKenzie will be speaking on her experience in Palestine. Call 775-8178 for more information.

Feb 15 International Day Against War—Meet at City Hall at 1pm, march to Legislature. This call-out by the European Social Forum is organized in Winnipeg by Peace Alliance Winnipeg and the No War Against Iraq Coalition (Mb). Over 30 groups have endorsed the coalition (Aboriginal, labour, religious, women's, youth & student, etc.. Call 775-8178 or visit www.acp-cpa.ca for more information.

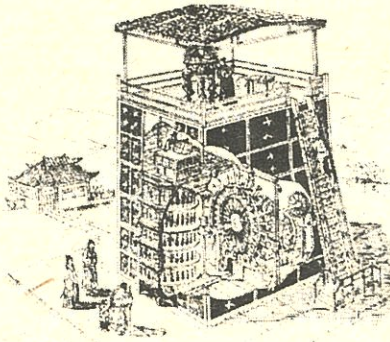
Feb 16 Coalition to Save the Elms Winter Tree Identification. Enjoy a sleigh ride through the forest at Camp Assiniboia presented by forester Mike Allen. Bring the whole family! 2:30 to 4:00 p.m. at Camp Assiniboia, west of Winnipeg off Lido Plage Road (map available from the Coalition office) \$10.00 per adult, children 12 and under free. Includes sleigh ride and fireside hot chocolate. Please note: Advance payment and registration is required. Space is limited so register early. Call (204) 832-7188.

Feb 18, Mar 4 & 18 Water Wisdom Lecture series. All lectures are at the Deaf Centre Manitoba Forrest Nickerson Theatre, 285 Pembina Hwy., Winnipeg at 7:30 pm. Admission \$5 per lecture or series of three lectures for \$10. Hosted by Water Widsom. See ad on page 7, phone (204) 955-4703, or visit www.waterwisdom.ca for more information.

Feb 18 Freshwater Forum. Manitoba Clean Environment Commission, Fisheries and Oceans Canada, and Manitoba Conservation are sponsoring a free public forum to discuss the current status and future of freshwater. 8:30 am to 5:00 pm at the Winnipeg Convention Centre. Call (204) 945-0594 or 1-800-597-3556 to register.

Feb 22 Seedy Saturday at the Assiniboine Park Conservatory 10 am to 3 pm. Co-sponsored by the Friends of the Assiniboine Park Conservatory and Seeds of Diversity Canada. Seed swap and workshops, including: Starting Seeds Indoors, Green Roofs for Wpg, Plants for the Prairie Landscape, and Composting.

Feb 22 Project Peacemakers 20th Anniversary Open House. 1-3 pm. Westminster United Church, 745 Westminster Ave. Call 775-8178 for more information.



A water-powered clock, built about 1090 in Honan, China

Feb 28 and Mar 1 Food Security Conference. This year's iteration of the Organic Agriculture Conference expands considerably to include the whole spectrum of Food Security in Manitoba. Speakers and workshops will deal with the health, economic, production and policy issues surrounding accessible, safe, affordable local food. Hear Janine Gibson, David Northcott, Rod Macrae, Fred Tait and Laura Rance, among others. Free community feast prepared by the Good Food Club on Friday, Feb. 28 at the Thunderbird House, with special guest speaker, Michael Ableman, and an opportunity to share ideas about food security. Workshops, a panel and tradeshow on Saturday, Mar. 1 at the Bulman Centre, U of W, including a delicious organic lunch. To register for Saturday's events, please contact Carrie MacElroy at (204) 927-3200.

Mar 2 Fort Whyte Centre Lake Cargill Fishing Derbies 12 pm Registration begins at 10 am or pre-register by calling (204) 989-8362

Mar 3 Manitoba Naturalists Society Indoor Program. Glacial Lake Agassiz with Dr. James Teller. History of the largest lake in North America and its impact on global climate. Pauline Boutal Theatre, Centre Culturel Franco-Manitoban, 7:30 pm. \$2 for MNS members, \$4 for non-members. Call 943-9029 for more information.

Mar 10 Manitoba Model Forest Climate Change Information Series: Impact & Adaptations in the Prairie Provinces Forests and Forest Industry. Workshop 8 am to 5:15 pm with discussion to 7 pm. University of Winnipeg Eckhardt-Gramatte Hall. Contact (204) 367-5232 or dube@manitobamodelforest.net to register.

Mar 11 Business and Kyoto Mechanisms Conference. Location TBA. For more information contact Dennis Cunningham at (204) 958-7705 or dcunningham@iisd.ca

Mar 15 Attention High School Students! Want to get involved with environmental activism or need help organizing at your school? Get involved with a Youth Environmental Conference. Contact UMREG (474-9118) or Eco-Mafia (786-9189) for more info.

Mar 26 Project Peacemakers Peace Forum the Lutheran Church of the Cross, 560 Arlington. Speaker TBA. Call 775-8178 for more information.

Mar 21-28 Environmental Awareness Week! Join UMREG for workshops, films and speakers on Globalization & the Environment: business & trade, agriculture, climate change, environmental health and water issues. Confirmed keynote speaker Percy Schmeiser, Saskatchewan farmer sued by Monsanto. Events and times vary. Contact UMREG 474-9118 or umreg@hotmail.com for more info or to get involved.

Apr 7 Hogwatch Manitoba is holding a benefit Info-Concert with guest speakers, visuals, live music and comedy. 7:30 pm at the West End Cultural Centre. Contact (204) 947-3082 for more information.

May-Sept Living Earth Culture Village Residency at the St. Norbert Arts Centre. 15 positions for women who have experience in art, environmentalism and/or community development for a unique 4 month summer intensive experience in alternative architecture, sustainable living, archeology, language, song and ritual. For more info see www.snac.mb.ca. Contact Louise May at lmay@snac.mb.ca or (204) 269-0564.

Local Activists Honoured

Queen's Golden Jubilee Medal

Three local environmental activists were recently awarded The Queen's Golden Jubilee Medal. Congratulations are due to Anne Lindsey, Don Sullivan and Gaile Whelan Enns.

The Commemorative Medal for Her Majesty Queen Elizabeth II's Golden Jubilee was created to mark the 50th anniversary of The Queen's accession to the throne on February 6th, 1952. It is awarded to people who have made a significant contribution to Canada, to their community or to their fellow Canadians.

Anne Lindsey

Anne Lindsey is familiar to most readers of Eco-Journal as the current Executive Director of Manitoba Eco-Network. Anne has been active in local environmental organizations since the early 1980s. Her important contributions include work on nuclear waste issues for the Concerned Citizens of Manitoba, and terms as a board member of the Winnipeg Coordinating Committee for Disarmament and the national board of Friends of the Earth. She is a co-founder of Time to Respect Earth's Ecosystems (TREE), and the Organic Food Council of Manitoba. She also works with the Campaign for Pesticide Reduction in Winnipeg. Anne's central role with Eco-Network (since 1989) has made this organization a focal point for environmental activism in Manitoba.

Don Sullivan

Don Sullivan is an award-winning environmental writer, researcher, photographer and activist. He is the Executive Director of the Boreal Forest Network and spokesperson for the Manitoba Future Forest Alliance. Don was the recipient of the 1995 Manitoba Eco-Network Award for his outstanding contribution to the awareness and protection of Manitoba's envi-

ronment. Don was the lead project coordinator for the North American Forest Forum held in September of 1996, and the successful "Forests of the Northern Lights Conference" held in Winnipeg in September 2002. Don was a contributing writer and researcher to *At the Cutting Edge*, a book by Elizabeth May. He also provided the Canadian content and contacts for the international boreal forest story featured in the June 2002 issue of National Geographic.

Gaile Whelan Enns

Gaile Whelan Enns provided coordination for World Wildlife Fund Canada's Endangered Spaces Campaign in Manitoba, resulting in protection of over five million hectares of crown land. She continues to work for completion of Manitoba's network of protected areas as the Manitoba Director, Wildlands Campaign, Canadian Nature Federation. Work with industry, affected First Nations, environmental organizations, and government, are all part of her work to protect Manitoba's lands. Technical landscape assessment tools and conservation biology methods are essential in her work. Ms. Whelan Enns is currently a member of the National Conservation Council to Sierra Club Canada. She participates in planning whenever Winnipeg hosts international environmental events.

Dr. and Mrs. Ralph Campbell Award

Congratulations are in order for John Sinclair, Chair of the Manitoba Eco-Network Steering Committee (representing Resource Conservation Manitoba). In fall of 2002, John was the recipient of the Dr. and Mrs. Ralph Campbell Outreach Award from the University of Manitoba, where he teaches in the Natural Resources Institute. This award is given to a faculty member who "enlarges and enriches the contacts between the university and all segments of the community".

John richly deserves this recognition, bringing his academic expertise and connections to a host of community projects and organizations. John is deeply committed to public and community involvement in environmental decision-making and education. Besides his long-time work with the Eco-Network and RCM, John is a Board member of the Manitoba Product Stewardship Corporation, past Chair of Winnipeg's Waste Minimization Advisory Committee, Co-Chair of the Environmental Assessment and Planning Caucus of the Canadian Environmental Network and a Board member of the Manitoba Model Forest. And this is just a sample of his involvement! Thanks, John, from all of us who have benefited from working with you.

ECO

Connecting Manitobans ParkWatch

Stay Informed! Get Involved! Act Locally!

These are the catch phrases of activism, but they are more than clichés. Informed citizens involved at the local level are key to ensuring that the ecological health of Manitoba's parks and protected areas is a top priority. This is the basis for Canadian Parks And Wilderness Society Manitoba's new ParkWatch program.

So, if you have ever wanted to tell someone about a special place that needs protection, express concern about a new development, or logging or mining activity in a park, suggest a way to improve a trail, or respond to any number of issues that concern the health of our parks—then there is a role for you in ParkWatch.

To learn more, come to an informal gathering/slide show to discuss these issues and learn how to take action.

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Estrogens: Potent disruptors

... continued from page 1

Canadian waterways. Studies are being done by Environment Canada, Fisheries and Oceans Canada, and several universities to determine their concentrations in the aquatic environment in more heavily populated areas and whether there are any impacts on the aquatic life in Canada.

Whole-lake experiment

Although it has been well established that individual male fish are being impacted by estrogen mimics, it is not known whether these feminized fish can still successfully reproduce. To address this question, Fisheries and Oceans Canada in Winnipeg has been conducting a whole-lake experiment at their research station in northwestern Ontario, the Experimental Lakes Area (ELA). This unique facility located 40 km east of Kenora has been operating for 30 years and specializes in large-scale studies on the impacts of stressors on aquatic ecosystems (www.umanitoba.ca/institutes/fisheries/#index). Access to these lakes is restricted and many have been monitored in their natural state for several decades. Long-term records exist on the water quality, plankton and fish populations in these undisturbed systems. A few of these lakes have been perturbed to study impacts of acid rain, excess nutrients, atmospheric deposition of mercury, and flooding on the aquatic food chain. One of the more recent experiments was designed to determine whether the male fish feminized by waterborne estrogens are still able to reproduce and sustain the fish population.

Synthetic estrogen added to lake

The whole-lake estrogen addition experiment is currently in its fourth year at the ELA. The synthetic estrogen used in birth control pills was added to one lake continuously over the summers of 2001 and 2002.

This estrogen, 17-ethynylestradiol (EE2), was dissolved in methanol and pumped into the propeller wash of a boat as it was driven around the lake. The EE2 was added to the lake three times a week between the end of May and the end of October to maintain constant and environmentally-relevant concentrations in the water, and a total of about 44 grams was added each summer (equivalent to what a city of about 200,000 people would be using over that same time period). This estrogen is added continuously to the lake because it does not persist in the water and will disappear within weeks of the last additions. Bacteria in the lake sediments are also capable of almost completely degrading EE2 within a few weeks.

Researchers from the Freshwater Institute (Fisheries and Oceans Canada, Winnipeg), Environment Canada, the United States Environmental Protection Agency, and the Universities of Manitoba, Saskatchewan, Guelph and Kansas are examining the effects of EE2 on all components of the food chain in this lake.

Shortly after the first additions of EE2 in 2001, the male fish (fathead minnow; pearl dace, white sucker and lake trout) began producing vitellogenin because of their exposure to this estrogen mimic (Palace et al. 2002). Reproductive development in the females was also impacted because the EE2 was stimulating egg production at times of the year when this normally wouldn't occur.



Aquatic vertebrates are affected by concentrations of estrogen measured in parts-per-trillion

To understand whether these impacts lead to declines in fish numbers due to reproductive failures, biologists are monitoring the size of the fish populations in the lake. If there are to be any declines, they are likely to appear first in the shorter-living species of minnows, and it is predicted that these fish will have lower-than-normal numbers in 2003. Because lake trout and white sucker are long-lived and the young are harder to catch in their first few years of life, it will take several more years of study to determine whether their populations have been impacted.

Impacts lower on food chain

In addition to the feminization of male fish in this lake, the study has shown that EE2 can impact upon the organisms lower in the food chain. Females of some of the plankton (microscopic organisms) are producing fewer eggs. The reproductive timing of some of the insects and leeches has been impacted

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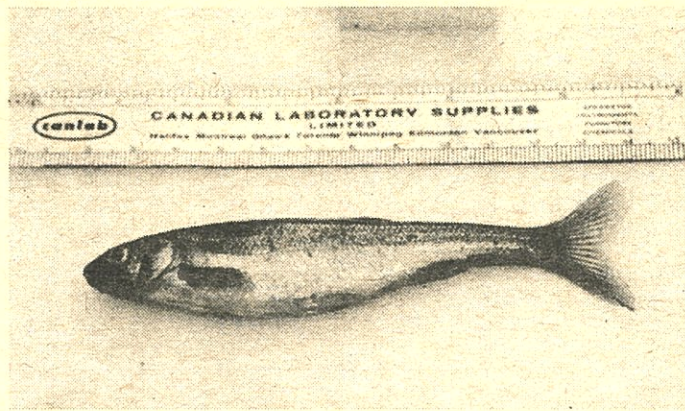
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- Environmental Assessment

due to the synthetic estrogen. A small percentage of the tadpoles in the lake have exhibited abnormal sexual development after the experimental additions started. It appears that this estrogen can impact almost all organisms in the food chain, and suggests that fish are not the only aquatic organisms at risk downstream of MWTPs.

Other pharmaceuticals of concern

The natural and synthetic estrogens are not the only substances in MWTP outfall that we should be concerned about. There are many other pharmaceuticals, such as pain killers and antibiotics, and personal care products that end up in the sewers and that are resistant to breakdown in MWTPs. There is little or no information on the impacts of many drugs and household products on wildlife in the waterways downstream of MWTP outfalls.

It is difficult to measure drugs or their by-products in the environment as they are often present at very low levels and the methods to detect them are not yet available. However, many of these compounds are designed to be biologically active at low concentrations. Given that a large number of drugs and other personal products are in the outfall of MWTPs, it is critical to understand whether these substances are having any impacts on the biota living in the receiving waters.



There is little or no scientific information on the impacts of many drugs and household products on aquatic wildlife downstream of municipal wastewater treatment plants

Karen Kidd is a scientist with the Freshwater Institute (Fisheries and Oceans Canada) in Winnipeg.

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Making Waves

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ADVANCE PURCHASING RECOMMENDED

Tuesday, February 18, 2003

Speaker: Dr. David Schindler
Killam Memorial Professor of Ecology
University of Alberta
Climate Change and Water Resources
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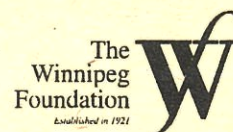
Tuesday, March 4, 2003

Speaker: Dr. Hans Schreier
Professor, Institute for Resources
and Environment
University of British Columbia
Clean Water: Reconciling Urban and
Agricultural Expansion

Tuesday, March 18, 2003

Speaker: Dr. Gordon Goldsborough
Associate Professor and Director of
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University of Manitoba
The Spirits' Narrows: The Lament of
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Lake Winnipeg water woes highlighted An Endangered Snail

By Heather Laird

Unnoticed by many, a wild creature unique to Manitoba is quietly going extinct. The Lake Winnipeg Physa Snail may lack the glamour of endangered species such as the panda or the condor, but its gradual disappearance is no less important. According to local biologist Dr. Eva Pip, we should all take notice, as this tiny snail's fate is "an epitaph for what is happening to Lake Winnipeg."

Dr. Pip, a professor at the University of Winnipeg, has been studying freshwater ecosystems in Manitoba for over forty years. She is particularly interested in molluscs and snails, and points out that "molluscs are important indicators of ecosystem health—they're very sensitive to water quality." In 1961, Pip found a small snail in Lake Winnipeg that she could not identify. At the time, she suspected it might be an unnamed species.

2001 survey of ninety sites

Nine years ago, when she was appointed to the Committee on the Status of Endangered Species in Canada (COSEWIC) Mollusc Working Group, she decided to review the snail's population status again. A 2001 survey of ninety sites on Lake Winnipeg representing suitable habitat found the snail at only five sites totaling less than five hectares. It had vanished from two sites where it was formerly common. Based on this disheartening information, COSEWIC took the unusual step of declaring the Physa snail a Priority 1 Endangered Species, al-

though a formal description of the snail as a "new" species has not yet been published. Pip expects that it may take several years for her description of the snail, which she has named *Physa winnipegensis*, to appear in a scientific journal. "By that time, it will probably be extinct", she says.

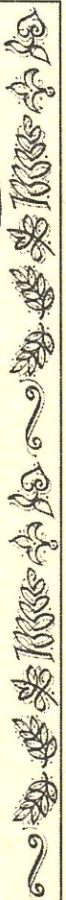
Decline in the water quality

The drastic decline in the water quality of Lake Winnipeg, especially marked over the last 25 years, seems to be responsible for the snail's disappearance. It is only found in areas of higher water quality. Pip identifies chemical runoff from farming, livestock wastes, urban effluent and sewage from cottages as significant contributors to the polluted condition of Lake Winnipeg.

The Physa snail lives on large boulders in water up to one metre deep, in wave action areas near the shoreline. Many of these areas are close to cottage developments and the snail has suffered from human disturbance. The snail is also adversely affected by copper sulfate used to kill algae near swimming beaches.

Despite the official COSEWIC designation, Pip is not optimistic for the snail's future. "It's found at too few locations", she says, "And the water quality in Lake Winnipeg is not going to get better. This should tell us something about what we're doing to the lake".

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Bringing Food Home...to the Inner City

By Jennifer deGroot

For most of the year Dan Wiens works for the Canadian Foodgrains Bank educating people about hunger. But in the spring and summer you'll find him on the Wiens Shared Farm, south of Winnipeg, which he shares with his wife Wilma and four children. Since last year the Wiens family has also shared their land with Sister Sheila, a Roman Catholic nun who moved onto the farm in hopes of creating a place of retreat and care of the earth.

"Shared Farm" refers not so much to the people living on the farm but rather to those who eat from it. The farm supplies more than 100 families with weekly boxes of fresh, organic, quality produce during the four short months of Manitoba summer. This year the sharing expanded beyond middle-class suburbs into inner city Winnipeg. People too poor to own a phone, often living in rooming houses, and who regularly use foodbanks and soup kitchens to avoid hunger now are eating better by being part of the Shared Farm.

How it all began

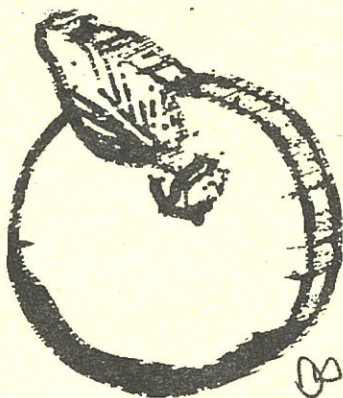
Early this spring members of the newly-formed West Broadway Good Food Club in inner-city Winnipeg expressed interest in receiving weekly deliveries of food direct from local farmers. But members didn't just want to eat the food. They also wanted to help grow it. The group spoke with Farmer Dan, as he's known, expressing interest in a partnership. Sister Sheila offered some of her land for the growing project and the work began.

Once or twice a week a group of inner-city residents drove out to the farm and spent the day getting down and dirty. First they seeded, then weeded, and then they harvested: corn, broccoli, beets, beans, carrots, lettuce, squash, pumpkins, tomatoes, and more. At the end of the day the group would drive back to the city with a vanload of vegetables they'd harvested for an ever-growing crowd of eager shoppers. Parked outside the local community centre, the van became the Veggie Van — providing a bag brimming with top quality produce to other Good Food Club members for minimal cost.

On several occasions the harvest has been so large that the group has sold the extra produce to neighbourhood grocery stores giving them funds which will hopefully one day make the program a sustainable one.

A day outdoors, outside of the city

Good Food Club members are more than enthusiastic about this inner-city initiative. The farm experience has given Elaine the chance to remember summers spent at relatives' farms as she was growing up. She and other members are grateful for the opportunity to spend a day outdoors, outside of the city. Greg, another member, was told by his doctor that he needed to eat more vegetables—the farm has provided that, and encouraged Greg to meet more people. The farm is a non-threatening place where people can learn to work together while participating in something bigger than themselves: watching life emerge. It is nothing short of a miraculous opportunity for people who are given few opportunities to accomplish anything.



"The price of vegetables is astronomical if you're on a fixed income," says Sharon, one member. Another, Lorraine, adds, "You can't get fresh produce at the food bank. Broccoli is too expensive for people on assistance even if you get disability (benefits). You can't ask for anything more than what the Veggie Van offers." And everyone agrees that the corn they harvested is the best corn they've ever eaten!

The Good Food Club has fulfilled some of Dan and Wilma's needs as well. "This farm is all about justice," says Dan. "Environmental justice is one piece but we also wanted economic justice." Dan, who with his family, has lived and worked in Haiti as well as southern Africa, says Canada is unique in that most poverty is found in urban areas. In much of the rest of the world, in contrast, poverty is very rural. Dan and Wilma were searching for ways that low-income Canadians could enjoy the food they grow. "We wanted to know that everyone who wants food could have access to it. Until now we haven't found a way to do that. This is the seed of something that will grow." As well, while most of their middle-class customers rarely come out to the farm, Good Food Club members come out every week. "It's another way of getting people involved in agriculture."

For more information on the West Broadway Good Food Club, you can call (204) 786-2283, or e-mail paxbene@hotmail.com

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The Future of Urban Transportation

New Books in the Alice Chambers Memorial Library

The future shape of transportation and the city is occurring now; subtle movements are "afoot" and they are shaping the landscape of the city in the near future. Thanks to Climate Change Connection, the following materials that focus on transportation and the urban environment are now available in the Alice Chambers Memorial Library.

"If humans were meant to walk, they'd stand upright, have two legs, and opposable thumbs."—The Quotable Walker

Two recent videos provide a good overview of alternative transportation, *Shifting gears: a look at alternative transportation* and *We aren't blocking traffic we are traffic!* Each video looks at bicycling in the urban environment, with *Shifting Gears* drawing on examples from the Netherlands and China, to provide a quick (15 min.) overview of the issues, while *We aren't Blocking Traffic* details the 'critical mass' bicycle movement and the reality of reclaiming the streets.

From changing attitudes about getting around the city, to changing the design of the city, the books *Car Free cities* and *Future transport in cities* provide great illustrations and practical alternatives to the many urban problems caused by a car dependent society. These books examine alternate technologies such as automated highways, monorails, new elevated systems, smart cars, and guided buses as well as fascinating urban design topologies for the car free city.

Bringing together all of these transportation issues within the broader context of ecologically responsible urban design is *Ecocities: Building Cities in Balance with Nature*, which is a passionate and thoroughly researched volume, written by Richard Register. *Ecocities* opens by looking at the city's place in nature, as well as the city throughout history, from its origins to the present. Register then describes his vision of the city of the future—a dense, lively and sustainable city that assists its residents in the pursuit of fulfillment while protecting nature's resources. *Ecocities* doesn't stop at description, it shows how groups and individuals can work, step-by-step, to make the city of the future a reality.

Finally, with all of the cases being made for alternative transportation and better ecological design for cities, it is important to note some of the current reality and how this came to be; an interesting piece with the title *Taken for a ride: Detroit's Big Three and the Politics of Pollution* does

just that. *Taken for a Ride* is a 500 plus page chronicle of the decades-long lobbying and deception used by the Big Three automakers, General Motors, Ford and DaimlerChrysler. These deceptions, the author argues, endanger public health, risk energy instability, and alter the world's climate with inefficient toxic vehicles that the Big Three could have improved. It is in this area of noncompliance that the book is most interesting, with conclusions that make one wonder if the Big Three might one day stand alongside the tobacco industry's seven Dwarves for intentionally polluting humanity.

Books reviewed:

Crawford, J.H. *Carfree cities*. 324p., 2002.

Doyle, Jack. *Taken for a ride: Detroit's big three and the politics of pollution*. 560p., 2000.

Holroyd, Peggy and Hugh Moloney. *Shifting gears: a look at alternative transportation*. VHS, 15min., 2001.

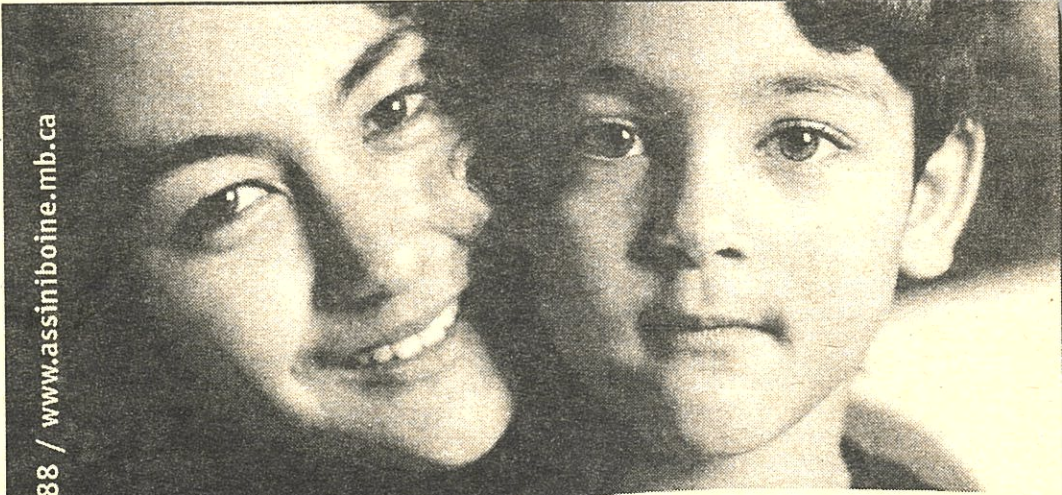
Register, Richard. *Ecocities: Building Cities in Balance with Nature*. 292p., 2001.

Richards, Brian. *Future transport in cities*. 162p., 2001.

White, Ted. *We aren't blocking traffic we are traffic: a movie about Critical Mass*. VHS, 50min., 1999.

For a full list of climate change materials located in the ACML see: http://www.climatechangeconnection.org/pages/men_library/acml.html

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Director of World Health Organization Speaks Out Electromagnetic Sensitivity

By Arthur Firstenberg

One-third of people with severe chemical sensitivities also develop some hypersensitivity to electric and magnetic fields. This includes some Manitobans. Currently, the most active research is being done in the Scandinavian countries—very little is being done in North America.

Perhaps Dr. Brundtland's high profile will help to initiate further research in this area as well as help this issue achieve a much-needed increase in public awareness.

Reprinted from No Place to Hide newsletter, June 2002

Cautious with cellphones

"It's not the sound, but the waves I react to. My hypersensitivity has gone so far that I even react to mobile phones closer to me than about four metres," says Gro Harlem Brundtland.

She is the Director-General of the World Health Organization (WHO), and she was talking to Aud Dalsegg, who interviewed her for the cover story of the Norwegian newspaper Dagbladet on March 9, 2002.

The former Prime Minister of Norway never owned a mobile phone herself, but she often received calls on her associates' phones. Now she says there is a reason to be cautious about the technology.

Discomfort & Headaches

"In the beginning I felt a warmth around my ear," she told Dalsegg. "But the problem grew worse, and turned into a strong discomfort and headaches every time I used a mobile phone." At first she tried to avoid the pain by cutting her calls short, but this did not work. Nor was it sufficient to stop using the phones herself, because everyone around her, including at her workplace at the WHO in Geneva, uses them.

"I gradually understood that I had developed a sensitivity to this type of radiation. And in order to not be suspected of being hysterical—that someone should believe that this was only something I imagined—I have made several tests: People have been in my office with their mobile phone hidden in their bag or pocket. Without my knowing whether it was off or on, we have tested my reaction. I have always reacted when the phone has been on—never when it was off. So there is no doubt."

The headaches from mobile phone radiation subside about a half hour to an hour after the exposure stops, she said.

Head of World Health Organization

A medical doctor and master of public health, Brundtland gained international recognition in the 1980s for championing the principle of sustainable development as chair of the World Commission on Environment and Development. In October 1996 she stepped down as Prime Minister of Norway, after heading her government for more than ten years. She has headed

the World Health Organization since July 1998.

Brundtland was careful in the interview to say that the danger from mobile phones has not been scientifically proven: "We do not at present have enough scientific evidence to put out a clear warning. It is not established, for instance, that the radiation can cause brain cancer. WHO has a long ongoing study, and in two or three years we will have better answers to all these questions."

But she told her interviewer that "I understand the scientists

who warn us. I think there is reason to be cautious, and not to use these phones more than necessary. Some people develop sensitivity to electricity and radiation from equipment such as mobile phones and personal computers. Whether this sensitivity can lead to serious outcomes such as cancer or other diseases, we still do not know, but I am convinced this must be taken seriously."

At the WHO, the coordinator for the International EMF (Electromagnetic Field) Project is Australian biologist Michael

Repacholi. He belittled his boss's concerns. In the Swedish newspaper Arbetsliv on March 18, 2002, he is quoted as saying: "There have been many studies in this area. In the laboratory environment it has been investigated as to whether hypersensitive persons can detect mobile phone radiation. The results until now have shown that this is not the case. I know that Mrs. Brundtland says that she has made several tests of her own to show that she can detect the radiation. As researchers we are aware that certain people are more sensitive than others, and research should concentrate on studying this group and their symptoms. A parallel example is air pollution, which has little health effects in the general population, but hits the subgroup of asthmatics hard."

Repacholi's division of the WHO has published a fact sheet which states that there is no scientific reason to recommend special precautions with mobile phone use. "Our recommendations are based on scientific results. There needs to be more scientific research in this area. If a clear link is shown between mobile phone radiation and negative health effects, I guarantee we will change our recommendations," he said.

No Place to Hide is a publication of the Cellular Phone Taskforce, an environmental organization that serves as a clearinghouse for information about injury to health and the environment from wireless broadcasts. They can be contacted at P.O. Box 1337, Mendocino, CA 95460, USA. Phone (718) 434-4499 or (707) 937-3990.

For further information, contact: Marg Friesen, Chemical Sensitivities Manitoba Coordinator at (204) 261-8591 or e-mail: madray@autobahn.mb.ca

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3rd Annual Seedy Saturday

February 22, 2003, 10:00 am–3:00 pm Assiniboine Park Conservatory

Co-sponsored by the Friends of the Assiniboine Park Conservatory and Seeds of Diversity Canada, this 3rd annual celebration of the horticultural heritage of the prairies will again bring gardeners together for a day long program of presentations and displays. The event has a 'made in Manitoba' theme featuring native plant nurseries and local horticultural societies. The popular **seed swap** table runs all day. Bring packages of your treasured seeds to share. There will also be lots of seeds for sale, from heritage tomatoes to native flowers to unusual perennials collected in the gardens of Assiniboine Park. The days are getting longer—time to get your seeds!

Seedy Saturday Program:

10:00 am Display open, seed swap begins

11:00 am *Starting Seeds Indoors.* Conservatory Greenhouse Supervisor **Chris Tarrant** shares some inside information on success with seeds. Learn when and how to start seedlings indoors, and how to keep them thriving until transplant time. Expand your garden beyond the standard flower and vegetable varieties available at garden centres by starting your own plants from seed. Chris and his staff produce thousands of bedding plants every year here at the Conservatory.

12:00 pm *Green Roofs for Winnipeg.* Green roofs are an exciting new landscape technology—constructed on building-tops—for a number of relevant reasons including:

- reducing and slowing storm water runoff, therefore alleviating the volume of storm water in the city's sewers,
- insulating to decrease roof-top temperatures and reduce air-conditioning loads, reducing the urban heat-island effect
- producing oxygen, improving air quality, and
- aiding emotional, social and community well-being.

Two new green roofs are under construction in downtown Winnipeg: on the Mountain Equipment Co-op building and on one of the Red River College Princess Street campus buildings. **Ruth Rob**, instructor in the Greenspace Management Program at Red River College, will be speaking on the detailed planting design for the Princess Street building. This project will be of interest to all who follow new technologies, as well as those interested in sustainable, low maintenance landscapes.

1:00 pm *Made in Manitoba: Plants for the Prairie Landscape.* Manitoba has a rich history of horticultural research and plant introductions. **Rick Durand**, manager of the research and development program at Jeffries Nurseries Ltd., Portage la Prairie, will bring us up to date on the new cultivars introduced for the Manitoba landscape and garden in the past decade. Specifics such as ornamental qualities, mature size, maintenance and site requirements for each cultivar will be discussed.

2:00 pm *Composting Workshop.* Good gardening begins with the soil! Get your home composting questions answered. This 1 hour workshop, presented by the **Compost Action Project**, includes discussion on the basics of composting; home composting methods and the varieties of bin types; and the benefits of using the finished product. The workshop is informative, interactive and fun. If you are really inspired and can't wait for spring, be sure to find out about indoor composting with worms!

The Palm House, the floral display area, the restaurant and the gift shop will be open all day. Join your fellow gardeners in this green haven on a prairie winter's day. Admission is by donation. For more information please call the Friends of the Conservatory at 837-4324.

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The Manitoba Eco-Network

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Group members are entitled to nominate representatives for a position on the Eco-Network Steering Committee. Group membership is open to any non-governmental, non-profit group which has as one of its objectives the enhancing or furthering of environmental quality, protecting the environment or environmental education.

A supporting membership includes a subscription to **Eco-Journal** as well as notice of events and regular updates on issues and is open to any individual.

