eco Manitoba eco-network journal

v.20. no. 5 November/December 2010

Keep Genetically Engineered Fish off the Menu

By Josh Brandon

ILLUSTRATION COURTESY OF NIGEL SUTCLIFFE

A GE Atlantic salmon, depicted with a DNA microarray, would incorporate genes from two other species.

CANADA IS SET TO BECOME the launching pad for a new wave of radical biotechnology. The first genetically engineered (GE) animals for human consumption are on the menu for regulatory approval in the United States and GE salmon is the entrée. AquaBounty, the company behind the GE fish, proposes to produce the eggs in Prince Edward Island. The fish's growth hormone genes were developed using Canadian publicly funded research. However, the Canadian government's inadequate framework for assessing GE animals could result in the product being approved for export without an analysis of the environmental, social, or human health consequences of GE fish.

GE Salmon

For 15 years, U.S.-based AquaBounty has been seeking approval from the U.S. Food and Drug Administration (FDA) for their genetically engineered salmon. They call their product AquAdvantage and claim that the fish will grow to market size twice as fast as conventional farmed salmon. It takes genetic material from growth genes of the Pacific Chinook salmon and an antifreeze producing gene from an ocean pout (an eel-like species), and transplants them into Atlantic salmon. The resulting GE fish would grow all year round instead of just part of the year, and could be produced in inland freshwater pens.

Inside this Issue:

In September 2010, the FDA held public hearings on AquAdvantage. Their initial assessment found the fish safe for human health and the environment. At the hearings critics pointed to the FDA's "sloppy science." The Center for Food Safety disclosed that the FDA had knowingly withheld evidence from two other U.S. governmental organizations that oppose the plan, the Fish and Wildlife Service and the National Oceanic and Atmospheric Administration. Hearings and deliberations on the product continue.

Environmental risks

AquaBounty promotes its product as a solution to dwindling food supplies, overfishing and rising food costs. However, their GE fish presents risks to the environment that could wipe out biodiversity, destroy local industry and produce an unsafe product no one wants. Once GE fish are produced on a commercial scale, contamination both of the environment and of the food supply is a virtual certainty. Environmental contamination could end up wiping out wild fish populations, as the aggressive GE stock competes for food and habitat with native populations. New diseases could spread from enclosures and harm natural populations, even if the fish manage to be contained. Aboriginal groups, commercial fisheries and salmon-dependent communities are all at risk.

continued on page 8 >>

Volume 20, Number 5
November/December, 2010
(date of issue: December 1, 2010)

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
Phone: 204-947-6511 / Fax: 1-866-237-3130
info@mbeconetwork.org
www.mbeconetwork.org

Editor: Joel Trenaman
editor@mbeconetwork.org

CONTRIBUTORS THIS ISSUE:
Grant Baldwin, Josh Brandon, Scott Falkingham, Anne Lindsey, Jen Rustemeyer, Vere Scott, Nigel Sutcliffe, Erica Young, Karla Zubrycki.

Design & Layout: Tracey Shillington
www.simplelifedesigns.ca

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.

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

Executive Director's Letter

Reflections on the Evolution of the Environmental Movement

ONE BENEFIT OF BEING AROUND FOR THE LONG HAUL in a civil society movement is seeing it evolve. At the risk of dating myself, I thought I'd reflect a bit on this topic. It's evident to me that environmental activism is changing — and largely because of the evolving world of communications. At Moving Messages, a session during our recent Member Group Forum, I learned it had a name: we've moved from "Web 1.0" or basically "information out," to "Web 2.0" which is much more interactive.

My own activism predates the Web even — as volunteers with Concerned Citizens of Manitoba, we wrote letters to governments and to the Editor, did direct actions like protest gatherings and street theatre, and pushed our message in the mainstream media. We had no website, were only the most rudimentary of email, and Facebook had not even been thought of. Important tools for us were the typewriter and the filing cabinet. Personal communication meant a great deal.

Hmmm ... has it really changed that much? We're still lobbying politicians, writing to the editor and firing off news releases. The computer is a fancy typewriter and elegant filing cabinet. The communication is huge. It's that other piece — the interactive one — that is the fashion of today. Almost no self-respecting group would be without a website, and not just a passive website, but one with blogs, video, Facebook links — all the bells, whistles and tweets. Heck, a whole industry is flourishing to support the new tools. It's creative, exciting and even fun. Moreover, we in the industrialized world have fingertip access to an unlimited universe of information, advice, warnings, tips, feedback and connections. It just about takes your breath away.

But what about that interactivity? Does it make us better activists? More effective? Without a doubt, the means are with us to communicate with an unprecedented audience AND to seek their feedback and ideas. We can "experience" distant issues with our ears and eyes, rather than have to rely on the printed word. But does that lead to real and sustainable change for the better? I'd love to know.

Possibly, it links to another trend that I think I see: declines in traditional "membership" in environmental organizations. In recent times, being a "member" of a group meant a certain loyalty to the cause, a willingness to engage in the group's activities, and to support the group with time and money. And all are important because to maintain credibility in the eyes of decision-makers, groups need commitment; to do the work they do, they need engagement and volunteers; and to employ staff and provide resources they need funds. If I'm not mistaken, that concept of membership is changing. It's not that environmental issues are no longer important to people, far from it. But are youth perhaps more likely to want to "belong" to a Facebook cause than an actual group? If that's the case, the online community buzzes and the traditional groups are at risk of languishing if they don't keep pace with that desire.

I did an informal "focus group" on this topic recently when I was speaking to Michael Dudley's class at the Institute of Urban Studies. This small group of informed and active young people told me that "there's just too much information" coming at them, that there are "so many things that are important," that "there are too many groups," that they'd "like to give money to all the causes that are important, but couldn't afford it on a student's income." Most of them were not members in the traditional sense, of any groups — yet they support and greatly value the work of many.

All environmentally concerned people (in fact, all of civil society) have much to learn from this. Groups do have to adapt to new realities in communications. And the online community needs to know that established organizations with their body of knowledge and larger perspective are important if we want to achieve more than just supporting "the flavour of the month."

I'm interested in hearing what Eco-Journal readers have to say!

Anne Lindsey
Executive Director, Manitoba Eco-Network

eco-events in Manitoba

For more environmental event listings see our website calendar at www.mbeconetwork.org.

DECEMBER

1 – 12 Festival of Trees & Lights

A celebration of holiday traditions, the festival has raised over half a million dollars for local charities since it started in 1988. Opens 10:00 a.m. every day, MB Hydro Gallery (360 Portage Ave). For more info and to see daily events: www.friendsconservatory.com.

18 Christmas Bird Count

Explore the Oak Hammock Marsh and surrounding area during the Annual Christmas Bird Count. Members $5.00, non-members $5.00 + admission (includes lunch). For more info: 467-3243.

JANUARY

18 – 20 Reflections on the Red

The 28th annual Red River Basin Land & Water International Summit Conference will be held in Fargo, North Dakota this year. For more info and registration: www.redriverbasincommission.org or 204-982-7250.

FEBRUARY

7 The Lake Winnipeg Foundation Commitment to Lake Winnipeg

The Lake Winnipeg Foundation is dedicated to restoring and protecting the health of Lake Winnipeg and its watershed. It promotes the use of scientifically-based, sustainable lake and watershed management practices in all economic activities. Examples of funded projects will be provided at the event. 7:30 p.m. at Franco-Manitoban Cultural Centre. Cost: $2.00 for NM members, $3.00 for non-members. For more info: call 943-9029 or www.manitobanature.ca.

Please email your event notices to info@mbeconetwork.org.

OF SPECIAL NOTE

Please support our Annual Appeal

November is the month that we send out our Annual Appeal to members and donors. If you didn't get the letter, please check out why these contributions from folks in the community are so important to us, and what kind of work they support! See our website at www.mbeconetwork.org, and consider a donation to our ongoing work.

Thanks to everyone for your contributions and dedication to a cleaner, healthier planet. The best gift you can give for the holidays is to pass along your interest and passion for the earth to someone else. From all of us here at the Eco-Network, we wish you a peaceful and sustainable holiday season!

The Role of Citizens in the News

Research shows public contributions sound early warnings, but are they heeded?

By Karla Zubrycki

ANTHROPOLOGIST Margaret Mead once said: "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has."

Manitoba has such citizens dedicated to the health of Lake Winnipeg and its waterways. One way in which some of them try to contribute to their world is through letters to the editor. While researching *Winnipeg Free Press* coverage of Lake Winnipeg water quality from 1991 to 2008, I learned that there are "word warriors" in the midst of us who were raising alarm bells about water quality long before government started to address the issue seriously.

Citizens reporting initial water quality concerns

In the 1990s, years before Grand Beach weekends were tainted by repugnant and potentially toxic algal blooms, citizens and grassroots NGOs were drawing attention to Lake Winnipeg water quality in the pages of Winnipeg's largest daily newspaper.

In fact, it was citizens and NGOs that most frequently brought up water quality concerns from 1991 to 2000. As shown in Figure 1, during that time period citizens raised this concern more often than any other group studied, while a few small NGOs, such as Interlake Citizens for a Clean Environment, were also active on the topic. It was not until after the year 2000 that government and scientists, today seen as the "experts" and "problem-solvers" for Lake Winnipeg water quality, became highly active in the debate.

For example, one 1995 letter from a citizen questioned the application of hog manure on fields in winter, raised concerns over the proliferation of hog barns on sensitive lands in the Interlake, and ultimately asked if these developments could cause water quality problems.

In 2007, the province banned winter application of hog manure and placed a permanent moratorium on new hog barns in the Interlake; essentially, like the letter writer, the province recognized that a higher degree of water quality protection was needed.

There were other examples of citizen foresight. In 2000, Robert Ridgen wrote: "The government should begin by imposing an immediate freeze on further expansion of the industry." It was not until more than six years later that the government declared just such a moratorium.

The Manitoba Association of Cottage Owners, a non-governmental group, also seemed to be visionary. In March 2003, the group suggested the province hire inspectors for leaking septic fields. In November of 2007, more than 4.5 years later, the government announced an "inspection blitz" on the Red River Corridor, the worst zone for problematic septic fields.

This pattern of citizens and NGOs suggesting changes in government policy years before action was taken raises some interesting questions. Is the fact that these regulatory initiatives were eventually carried out an indication that government was responding to public pressure, and that the letters were a well-oiled cog in the wheels of democracy?

Alternatively, should we be concerned that four to six years passed before these regulations were passed? Was citizen counsel overlooked while the condition of the lake worsened?

Letters as lip service to citizen inclusion?

These early warnings from citizens indicate a level of wisdom in the population that is valuable to democracy, a wisdom that could also provide insights in "hard" news articles, not just letters to the editor. In order to have a newspaper that actively engages democracy (one of the higher purposes of the press), one would expect its pages to be teeming with citizen voices.

However, of all source categories studied, citizens were clearly given the least credit for their perspectives in "hard" news. Citizens were sources only seven per cent of the time, compared to a whopping 47 per cent for government. Non-governmental organizations, to which citizens might belong to help give their views weight, represented only 13.1 per cent of sources, also arguably a low percentage (see Figure 2).

Citizens were further snubbed by the amount of space they were given in hard news; less than 100 words were spent describing their perspectives 84 per cent of the time in "hard" news. These were often simple "streeter" quotes. By contrast, government was limited to under 100 words only 70 per cent of the time.

In other words, government was given more room to have its say — arguably an indication to readers that institutional views are "more important."

	Citizens	NGOs	Government	Scientists	Business/ Industry
1993	1	0	0	0	0
1994	1	1	0	0	0
1995	1	0	1	0	0
1996	0	0	0	0	0
1997	2	1	0	0	0
1998	0	0	2	0	0
1999	1	0	0	0	0
2000	5	2	0	0	0
2001	0	2	1	1	0
2002	2	0	2	0	0
2003	3	4	7	1	1
2004	5	3	4	3	0
2005	3	3	8	3	0
2006	5	2	10	0	4
2007	2	4	11	1	0
2008	1	3	3	2	2

Figure 1.

Citizens	6.9
NGOs	13.1
Government	47.5
Business/Industry	6.7
Scientists	8.3
Other	17.5

Figure 2.

Joe Dolecki, economics professor with the University of Brandon and member of Citizens for the Responsible Application of Phosphorus (CRAP) is concerned what such patterns mean for democracy. In his eyes, the media today have abandoned their role of serving the public good, and are "part of the instrumentality of control over populations and control over ideas." Ideally, he would like to see news media that are more attuned to helping improve their communities.

"Historically, newspapers have functioned as a means of inter-community communication and debate, discussion, and a place where ideas are shared... They've functioned as an organizing tool for people."

Part of media commitment to communities would involve including citizen voices more on its pages, he suggests, and not limiting citizen comments to the letters-to-the-editor page.

That's not to say that letters to the editor are not valuable. Indeed, they are. They are a way for citizens to contribute to a sort of public forum, and to critique the day's issues. That said, the simple fact is that letters to the editor are less prominent than "hard" news and opinion pieces. On a superficial level, they are short, contain no visuals and have smaller headlines — all factors which help reduce the attention they draw.

Ruth Pryzner, active citizen and member of Citizens for the Responsible Application of Phosphorus, says she rarely writes letters, as they must be so short that they have little meaning.

"Especially when you're dealing with a complicated issue or policy problem, you can't get a dialogue going in any meaningful way because you can't do anything other than express a really simple opinion. Then, it all becomes a question of people giving their opinions without any facts to back it up."

In addition, letters are placed further from the front page in the paper (on average, on page 13) than "hard" news. Imagine the average Free Press reader and his or her many commitments in a day; if this person has only ten minutes to read the newspaper, on which pages will most of the minutes be spent?

Truly, some may turn first to the letters to the editor (or perhaps the comics). However, it could be argued that the majority would start at page one – the "most important" stories.

On a deeper level, letters may be seen as less credible, as they are more opinion-based than fact-based. Executive Director of the Manitoba Eco-Network, Anne Lindsey, heard it from the horse's (i.e. *Free Press* editor's) mouth. When she asked how the newspaper chose which letters to publish, she was told they were "looking for opinion, as opposed to fact. If you state too many facts you might not get published."

While emotionally-charged letters might make for entertaining reading, the question must be asked: are they always best for democracy? Emotions can persuade, but facts help build rationales for sound decision-making.

These findings on citizen inclusion in news coverage — that they are most often relegated to the letters to the editor section, and rarely find their way into "hard" news coverage in a meaningful way — indicate that our news media is dysfunctional in how it is serving our democracy. Self-reflection may be needed on the part of our news media; it is important to consider whether or not the fact that 47 per cent of sources were governmental reflects that government always has the most valuable information, or if perhaps the fact that citizens don't issue ready-to-publish news releases has resulted in news that is neglecting valuable grassroots voices.

Karla Zubrycki recently completed her Master's in Environment and Resource Studies at the University of Waterloo.

Where the Northern Sun Shines

Co-op members living sustainably in Manitoba

By Anne Lindsey

DOWN A COUNTRY ROAD, just a few kilometers south of Steinbach, Northern Sun Co-op Farm is a working, shining example of how we might live a little more lightly on this earth. Did I say a little? Make that a lot. The 17 members of this co-op have much to teach the rest of us about how we might actively change our impact in the areas of food, energy and waste reduction. The staff of Eco-Network and our affiliated projects took a field trip to Northern Sun on a sunny day this past October. We came away inspired.

Co-op members each have their own home on the land, built with primarily locally available and especially reclaimed materials. Many of the roofs, including that of the circular Community House are metal, fashioned from discarded printing plates from a local printer. They are durable, long-lasting and very affordable. Most of the homes are built by the community members themselves, drawing on the expertise that has developed in the co-op over time. They are sunny and bright, and demonstrate a loving and skillful craftsmanship in features like ceilings and floors. They are also comfortable – heated in the winter by super-efficient Amish woodstoves that include water reservoirs for on-demand hot water. Firewood is hauled out of the woodlot by goat-drawn sled!

Some of the homes are straw bale construction, including the community's sauna house.

Northern Sun is "off the grid," that is, they are not hooked into Manitoba Hydro. Yet they use electricity for many purposes – lighting with super efficient and strategically-placed low-wattage LED bulbs, grinding flour, pumping water, powering sound systems and even computers. Their power is generated by a windmill and solar panels, ingeniously set up to maximize generation and efficiency thanks to the creative mind of Gerhard Dekker, truly a pioneer of sustainable energy in Manitoba. One brilliant invention of his is a portable stove that can boil water, and even cook a one-pot meal using just a few twigs as fuel. It's an excellent appliance to replace firing up a stove (wood, gas or electric for that matter) for a quick meal or cup of tea.

Water is obtained from a series of wells on the property – some shallow and one deeper artesian well. A clever and extremely low-energy pumping system means that there is always plenty of clean fresh water for all applications on the farm, and for domestic use.

And that water is never sullied with human waste. All waste on the farm is composted using a combination of vermi- and bin-composting, resulting in a fertile, pathogen free source of fertilizer with which the soil in the gardens has been built and developed over the years. This system is particularly intriguing considering the enormous water and energy usage and skyrocketing costs of traditional sewer systems in the broader society.

When it comes to food, Northern Sun is pretty close to self-sufficient. Members keep chickens, a small herd of cattle (and sometimes pigs), and super abundant gardens produce a wide range of veggies, herbs and fruit. Much of the harvest is dried in giant solar food driers, and members use cold storage rooms, canning and curing as food preservation techniques. Dawn Buchanan, a founding member of the co-op, grows garlic as a small commercial crop, and members also pick the plentiful mushrooms growing in the vicinity. Her son is building a

PHOTOS COURTESY OF ANNE LINDSEY

Far left: MEN intern, Amanda, climbing the windmill tower.
Left: Inside the Northern Sun community house.
Above: The new greenhouse: straw bale building technology.
Right: Solar food driers.
Right middle: The wood-hauling goat enjoying some attention.
Right bottom: Building the new greenhouse.

large and beautiful straw-bale greenhouse to help extend the growing season. We were struck by the sense of respect that Dawn demonstrates to the animals which she slaughters herself. "You have to ask the permission of the herd" before culling an animal, she says. As Gerhard points out – the community is not trying to feed the world from their organic farm. Their goal is to supply their own needs and avoid bringing in food from far away. They seem to be succeeding.

The co-op rural lifestyle may not be everyone's dream, but Northern Sun gives us a glimpse of what is possible in our relationship with the earth and our use of resources, given some creativity and determination. Leaving the farm, we were plunged once again into the high-demand world of industrial farms, international trucking on the Trans-Canada, and a largely unsustainable cityscape back in Winnipeg. Our visit provided food for thought, ideas for lightening our own load, and the abiding question: How can smaller-scale applications like Northern Sun's be up-scaled to suit towns and cities?

Gerhard and Dawn are open to holding workshops about a wide range of sustainable living topics. The co-op also hopes to develop the use of the Community House for groups seeking retreats and for educational purposes. Contact them at: 204-434-6143.

We are most grateful to Northern Sun for hosting us and answering our many questions on our field trip!

<< *continued from page 1*

Fish Off the Menu cont'd...

Holes in the regulations

AquaBounty proposes growing eggs in Canada and then flying the fry to Panama. There, in the Panama highlands, the fish would be grown to market-size then shipped to the U.S. for consumption. This globe-trotting plan would allow the fish to skirt environmental regulations of all the countries involved, since no government would oversee the product through its whole lifecycle from egg to plate.

The company has made its application to the FDA contingent on egg production and rearing occurring elsewhere to avoid domestic opposition. Meanwhile, the production of genetically engineered animals in Canada falls through regulatory processes of Health Canada, the Canadian Food Inspection Agency and the Department of Fisheries and Oceans. As early as 2001, the Royal Society of Canada's Expert Panel on Biotechnology raised concerns about the inadequacy of regulations dealing with GE salmon. The panel found that unpredictable and unintended reactions to the introduction of novel genes are "the *rule* rather than the exception in fish." For this reason, it recommended against approving GE fish.

The Canadian government has done little to improve GE regulations since. The sole avenue for assessing GE fish comes from a little used section of the Canadian Environmental Protection Act. The "Products of Biotechnology" regulations provide only a 120-day comment period, with no guarantee that even a "toxic" biotechnology product would not be produced and exported for commercial sale.

In 2007, Health Canada, which is responsible for assessing the safety of food in Canada, responded to a FDA on a draft risk assessment on animal cloning. It noted that Canada was asking biotechnology companies to hold off on requests for assessing cloned animal products in Canada, because "there is currently insufficient data to guide the pre-market safety assessment of these products." The same should be said, *a fortiori*, about GE animals. The data on GE animal products is scant. For Health Canada to conduct a thorough and proper safety assessment of GE salmon, it would have to divert resources from other more pressing food safety concerns. In the absence of demonstrated consumer demand for genetically engineered salmon, Health Canada's holding stance should be maintained. Health Canada's position must be supported by other departments of government, including Environment Canada, which should not allow the production of GE animals in the first place.

What does this mean for Manitoba?

1. Manitobans will be eating GE salmon soon enough if it is approved.

If Canada does not approve the fish for sale here, GE fish will soon contaminate our food supplies nevertheless. Canadian and US food chains are so interlinked that it would be difficult to keep the GE fish out. Several other GE contamination incidents, including GE rice and corn have demonstrated that what gets into the U.S. food chain ultimately ends up on store shelves in this country. Canada is in a position to stop the production of GE fish by not allowing AquaBounty to produce its GE eggs here. If we wait for GE fish to appear in our rivers and oceans, or grocery shelves, it will be too late.

2. GE fish could flood the market

GE fish will have negative impacts on Manitoba fisheries. Genetically engineered salmon could flood the market with cheap fish alternatives. It is unlikely that GE fish would be labelled so consumers may turn off eating fish, wary of consuming an untested product. Commercial fishers in Manitoba and the Manitoba Aquaculture Producers Association have opposed GE fish. Both are growing industries. GE salmon will displace markets for sustainably produced fisheries here in our own province.

3. Approval of GE salmon will pave the way for other GE animals

Biotechnology companies have many other genetically engineered animals under development. A GE trout is already under development. Perhaps most significant for Manitoba is the GE EnviroPig. This is a pig that is purported to produce less phosphorus than conventional pigs. With 14 million pigs in this province, Manitobans should be carefully watching the development of how GE animals are regulated.

Wider implications

The genetic engineering of animals will take food off the farm and into the laboratory. The effects would be even more far reaching than the first wave of genetically engineered crops, such as corn, canola and soy that began 15 years ago. Those crops were largely confined to animal feeds and processed ingredients.

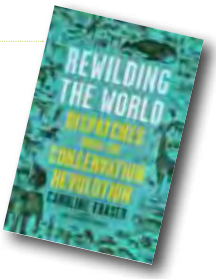
In the 1990s, biotechnology companies hoped to gain rapid control over wide swaths of our global food system. Public backlash and organized resistance from environmentalists, consumers, and farmers on all continents prevented agribusiness corporations from genetically engineering the most important cereal crops like wheat and rice and also kept GE out most fruit and vegetable produce for direct human consumption. If GE meat is approved, it would leave consumers staring this technology in the face for the first time on a widespread scale. It would be the biggest transformation of our relationship to food since the industrialization of agriculture in the twentieth century.

The public deserves to have their concerns heard over such a dramatic change in the food system. In Canada, the Canadian Biotechnology Action Network is coordinating action against GE animals. To get involved, sign their petition, access their letter templates, or to find out more information at Cban.ca.

Resources on Biodiversity

THERE'S QUITE A DIVERSITY OF RESOURCES AVAILABLE to Manitobans wanting to be more informed about environmental issues. Did you know that the Alice Chambers Memorial Library is only one of seven libraries with a focus on the environment that all join together as the Environmental Libraries of Manitoba?

To highlight the International Year of Biodiversity, we each contributed our top items on the theme to a reading list that gives Manitobans a taste of what these great libraries have to offer. Here's a sampling of the books, magazines, websites and even a museum exhibit we included. The complete list is available at: http://envirolibraries.mb.ca/readings-on-biodiversity/.



Rewilding the World: Dispatches from the Conservation Revolution

By Caroline Fraser
Metropolitan Books, 2009. 416p.

"Scientists worldwide are warning of the looming extinction of thousands of species, from tigers and polar bears to rare flowers, birds, and insects.... Now Caroline Fraser offers the first definitive account of a visionary campaign to confront this crisis: rewilding. Breathtaking in scope and ambition, rewilding aims to save species by restoring habitats, reviving migration corridors, and brokering peace between people and predators." *Source: http://rewildingtheworld.com/*

Manitoba Naturalists Society

Naturescape Manitoba: All You Need is a Little Space.

Manitoba Naturalists Society, 2006. 285p.

"Naturescape Manitoba is a "how-to" and source book for "people who want to bring back a bit of the natural world to their surroundings, attract more birds and butterflies to their garden, or simply do something different in their yard. It's an exciting new book ... providing readers with information and a wide range of project ideas for native planting, low-maintenance yard care and water conservation."
Source: http://www.manitobanature.ca/publications/books.html#Naturescape

Canadian Parks Council

Aboriginal Peoples and Canada's Parks and Protected Areas: Case Studies.

"These case studies profile innovative collaborations between aboriginal organizations, communities, park agencies, First nations and other stakeholders to conserve biodiversity and cultural heritage and share the environmental, social, cultural, educational and economic benefits of parks and protected heritage areas."
Source: http://www.parks-parcs.ca/english/cpc/aboriginal.php

Manitoba Museum

Natural Wonders: A Celebration of Biodiversity [Discovery Room Exhibition], running from April 1, 2010 to March 31, 2011.

"Natural Wonders is a colourful, fascinating exhibit that celebrate the beauty and diversity of nature with that showcases rarely-seen specimens from our Natural History vaults. Explore the wonder of the natural world through four different environments: oceans, forest, grasslands & deserts, and fresh water. "
Source: http://www.manitobamuseum.ca/main/2010/04/16/natural-wonders-a-celebration-of-biodiversity/

Featured Book Review

Caves & Karst in Manitoba's Interlake Region

By Scott Falkingham

CAVES & KARST IN MANITOBA'S INTERLAKE REGION is comprised of surveys conducted by the Speleological Society of Manitoba (SSM). This expanded second edition, edited and compiled by W.D. McRitchie and K.M. Monson, was published in 2000.

Among other things it includes an explanation of how caves are formed, the flora and fauna inside, and how they are found. From beginning to end, it tells the story of the caving movement in Manitoba starting with the very first field trip in 1987 when the St. George Lake Bat Cave was discovered — still the largest bat hibernacula in the province.

The book contains 84 surveys of the most important/impressive caves found in Manitoba. However, they represent only a portion of more than 225 caves discovered so far. These caves have been organized into three major geographic areas: Grand Rapids Uplands, Lake St. Martin and the Southern Interlake. To find and survey the caves featured in this book, members of the SSM have investigated hundreds of square kilometers of Manitoba wilderness and invested thousands of volunteer hours.

Other endeavours of the SSM include leading caving trips for young people, from Boy Scouts to Eco Odyssey groups, and helping introduce them to the outdoors. The conservation of caves and karst in Manitoba has been, and continues to be, an important facet of the organization and members have been vocal about the need for the protection of caves. They have been instrumental in the designation of the first cave ecological reserve in Manitoba (Lake St. George Caves Ecological Reserve) in 1997 and a second (Walter Cook Uplands Caves Park Reserve) in 2001.

SSM's latest projects focus on community outreach and exploring new, uncharted areas. In the last number of years the group has worked to increase public awareness and our accessibility in hopes of finding a new source of cave locations: people. Therefore, if you know of any caves in Manitoba, please report them via Cavingmanitoba.com.

Changing Conceptions of Life

A précis of Fritjof Capra's *Ecological Literacy & Systems Thinking: Connecting the Dots*

By Vere Scott

THE MAJOR PROBLEMS OF OUR TIME — the push for economic growth, resource depletion, pollution, energy, climate change, human population, poverty, hunger, peace, justice — cannot be understood in isolation. They are interconnected and independent; they are systemic.

The problems are facets of a single crisis, a crisis of perception. Most people, especially those in our institutions hold concepts of an outdated worldview. It is a perception of reality inadequate for dealing with the crisis.

This crisis — these problems — requires a radical shift in our perceptions, thinking and values. We may be at the beginning of such a fundamental change in worldview. It would be a shift as radical as that of the Copernican revolution.

This realization has not yet dawned on political and corporate leaders. Most are unable to "connect the dots." They fail to see how the major problems are interrelated. Moreover, they refuse to recognize that their proposed solutions affect both future generations and other living systems.

Systems thinking

Many scientists have realized that we need a radically new conception of life. This new understanding is emerging. The universe is no longer seen as a machine composed of elementary building blocks. Rather, the material world is a network of inseparable patterns of relationships. The planet is a living, self-regulating system. The view of the human body as machine and a mind separate from it, is being replaced by one that sees not only the brain, but also the immune system, body tissues, and each cell as a living, cognitive system. Evolution is no longer seen as a competitive struggle for existence, but rather as a cooperative dance in which creativity and the constant emergence of novelty are the driving forces. With the new emphasis on complexity, networks, and patterns of organization, a new science of quality (as opposed to the one focusing on materials and quantity alone, is emerging slowly.

This new conception of life involves a new kind of thinking — thinking in terms of relationships, patterns, and context. In science, this is known as "systems thinking." Scientists realized that a living system — a cell, an organism, ecosystem, or social system — is an integrated whole. Its properties cannot be reduced to those of its parts. Its "systemic" properties are properties of the whole; properties which none of its parts have. Systems thinking involves a shift of perspective from parts to the whole. "The whole is more than the sum of its parts."

What does this mean? In what sense is the whole more than the sum of its parts? The answer is: relationships. The essential properties of a living system depend on the relationships among its components. Systems thinking means thinking in terms of relationships. Understanding life requires a shift of perspective, not only from the parts to the whole but also from objects to relationships. These relationships include the relationships among the system's components and also those between the system as a whole and its surrounding larger systems. Those relationships between the system and its environment are what we mean by context. Systems thinking is always contextual thinking.

Understanding relationships is not easy for us. It runs counter to traditional scientific understanding. In science, we have been told, things need to be measured and weighed. But relationships cannot be measured and weighed; relationships need to be mapped. So there is another shift of perspective: from measuring to mapping, from quantity to quality.

Ecological literacy

Applying the new concept of life to the study of the living structures, metabolic processes, and the evolution of Earth's myriad organisms, we notice that the outstanding characteristic of Earth is that it has sustained life for billions of years. How does Earth do that?

To understand how nature sustains life, we need to move from biology to ecology, because sustained life is a property of the ecosphere and its ecosystems rather than of a single organism or species. Over billions of years of evolution, the Earth's ecosystems (the ecosphere) have evolved certain principles of organization to sustain the web of life. Knowledge of these principles of organization, or principles of ecology, is what Capra calls "ecological literacy."

In coming decades, the survival of humanity will depend on civilization's ecological literacy. To be eco-literate means understanding the principles of organization of living communities and using those principles to design sustainable

human communities. Eco-literacy must become a critical skill for politicians, business leaders, and professionals in all spheres. It should be the most important part of education at all levels — from primary and secondary schools to colleges, universities, and the continuing education and training of professionals.

Children, students, corporate and political leaders, all must understand the fundamental facts of life — that one species' waste is another species' food; that matter cycles continually through the web of life; that the energy driving ecological cycles flows from the sun; that diversity assures resilience; that life, from its beginning more than three billion years ago, did not take over the planet by combat but by networking.

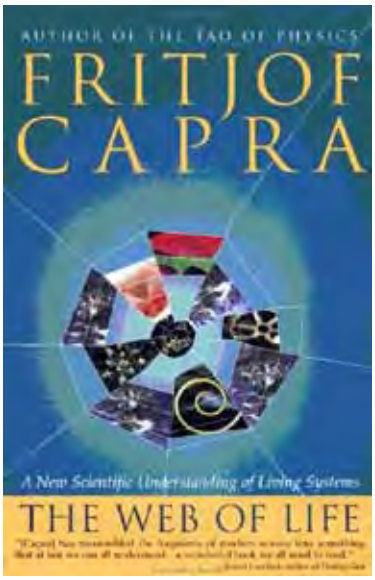
These principles of ecology are closely interrelated. They are different aspects of a single fundamental pattern of organization that has enabled nature to sustain life for billions of years. In a nutshell: nature sustains life by creating and nurturing communities. No individual organism can exist in isolation. Animals depend on the photosynthesis of plants for their energy; plants depend on the carbon dioxide produced by animals, as well as on nitrogen fixed by bacteria. Together plants, animals, and microorganisms regulate the entire biosphere and maintain conditions conducive to life.

Sustainability, then, is not an individual property. It is a property of an entire web of relationships. It always involves a whole community. This is the profound lesson we need to learn from nature. The way to sustain life is to build and nurture community. A sustainable human community interacts with other communities — human and nonhuman — in ways that enable them to live and develop according to their nature. Sustainability does not mean that things do not change. Sustainability is a dynamic process of coevolution rather than a static state.

REFERENCES

Systems Thinking and the State of the World: Knowing How to Connect the Dots. Fritjof Capra www.earth-policy.org/images/uploads/Capra_lecture_PB3.doc

Interconnectedness of World Problems www.earth-policy.org/images/uploads/capra_pb3.ppt



One of Capra's other books addressing systems theory.

Systems Thinking requires shifts in perspective from:

parts	→	the whole
objects	→	relationships
measuring	→	mapping
quantity	→	quality
linear	→	nonlinear thinking

When you map relationships, certain patterns occur repeatedly. Networks, cycles, feedback loops, are examples of patterns of organization that are characteristic of life. The outstanding property these patterns have in common is that they are nonlinear. All living systems are nonlinear systems. Hence, systems thinking also involves a shift from linear to nonlinear thinking.

Linear system:

e.g. apple juice production:
apples input -> apple juice output.

Linear thinking:

e.g. if economic growth is good, more of it is better.

The study of nonlinear systems is exceedingly difficult. A new mathematics called "nonlinear dynamics" (popularly "complexity theory") has risen in recent decades. Surprising patterns are revealed beneath the seemingly chaotic behavior of nonlinear systems.

In contrast to the quantitative description used for linear systems, powerful computers can portray a nonlinear system (relationships) as visual, geometric shapes, as a pattern. Thus, the mathematics of nonlinear systems is one of patterns, of relationships. These geometric patterns visually represent the complex dynamics of nonlinear systems.

Fritjof Capra's Eight Principles of Ecology

Center for Ecological Literacy, http://www.ecoliteracy.org/

1. Networks
2. Nested Systems
3. Interdependence
4. Diversity
5. Cycles
6. Flows
7. Development
8. Dynamic Balance

The Clean Bin Project

Documentary and cross-country tour challenge Canadians to stop making garbage

By Jen Rustemeyer

MY PARTNER GRANT AND I spent this past summer cycling 7,600 kms across the country for the sake of garbage. Well, maybe not for the sake of it, but definitely because of it. It started a couple of years ago when we decided to have a friendly competition to see who could produce the least amount of garbage in an entire year.

Grant and I weren't overly materialistic fashionistas by any means, but in our late twenties with no kids and no mortgage, we definitely had disposable income to burn and a basement that was beginning to bulge with electronics and outdoor gear. We were starting to feel guilty about our consumer-based lifestyle, and we were generating nearly a full can of garbage each week!

Long story short, we figured that with a few rules and some healthy competition we could cut down on our waste and consumption and have some fun at the same time. Our rules were simple:

- No buying stuff. (Food and soap were ok as was spending money on experiences as long as we didn't break rule #2.)
- No producing garbage. (We avoided packaging and chose not to buy anything that came in non-recyclable or excess packaging.)
- Take responsibility for your waste. (We took all waste produced personally by us home with us to recycle, compost, etc.)

And it was pretty successful. By the end of the year, we had just four pounds of garbage each (compared to more than 750 pounds for the average Canadian), and surprisingly, people were interested. We became unintentional advocates for living zero waste, speaking at community events and presenting to municipalities. I wrote a blog about our progress called The Clean Bin Project, and we made a comedic documentary film of the year's experiences.

When it came time to share the movie, it was a natural fit for us to do it in a way that would not only draw attention to our environmental message, but also be conducive to a grassroots (read 'low budget') tour. And that is how we ended up cycling across Canada from June to September as part of The Clean Bin Project film tour.

Grant and Jen looking in their bins.

PHOTOS COURTESY OF GRANT BALDWIN

High from winning a MOBI award from the Recycling Council of BC and hosting a sold out premiere in Vancouver, we hit the road carrying camping gear, a laptop, a movie poster, and even a few door prizes. We organized six screenings before we left and planned another 24 from the saddles of our bicycles, changing our route to include different communities as people contacted us. We relied on "community champions" in each town who could help us organize.

I can't say enough about the kindness and enthusiasm we encountered on our tour. We stayed with many strangers-come-friends who got to know us through the blog or helped us set up a screening and ended up inviting us into their homes. In Alfred, Quebec, we were picked


The author riding in Saskatchewan.

up by a complete stranger outside a grocery store who invited us home to a gourmet meal and soft bed. In Kimberley BC, they packed a theatre with over 100 people and contacted us later to say they have since started their own community zero waste challenge called Clean Bin Project Kimberley! Many people emailed us to say they have now started composting, have given up disposable plastics, or just to tell us how much they appreciated the humour in our film.

A couple years ago if you told me that I would spend a summer bicycling Canada talking about garbage, I never would have believed you. But then again if you told me that it was possible for Canadians to cut their garbage by more than 75 per cent, I would have thought you were joking. And now I know that it's not only possible, it's starting to happen.

For more tips and recipes, go to www.cleanbinproject.com
For information on the film go to www.cleanbinmovie.com

Canada PM 40010075 Postage paid at Winnipeg, MB. Return undeliverable Canadian addresses to: **Manitoba Eco-Network,** 3rd Floor–303 Portage Ave., Winnipeg, MB R3B 2B4