Biodiversity UPDATE

NEWSLETTER of the FRENCHMAN RIVER BIODIVERSITY PROJECT

VOL. 1, ISSUE 1

Fall 2004

• • • • Freshwater invertebrate sampling in the Frenchman River system

Fresh water is habitat for a wide diversity of invertebrate life, from tiny mites to large mussels. Not only do these animals act as food for larger animals such as fish, birds, and muskrats, they also provide useful information. Surveys of the abundance and diversity of invertebrates are often used to determine the health of aquatic systems. Some species are tolerant of great chemical and temperature stresses (e.g. water boatmen), whereas others are very sensitive (e.g. stoneflies). Compared to a chemical test that tells you what

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Native mussels may be useful indicators.

• • • • Ecological monitoring in the schools

Beginning in early September, science 9/10 students from Eastend and Val Marie will be monitoring the Frenchman River as a unit in their school curriculum. Their activities will be integrated into approximately 12 scheduled classes stretched over an eight week period, with additional days spent on related activities or instruction. During a half-day field excursion, the students will collect water samples from up to three sites along the Frenchman River, while remaining activities will be in the classroom. They will also take photographs of the region, examine stream flow and water chemistry (pH, total dissolved solids, oxygen etc.), and identify aquatic invertebrates. The hope is that once these ecological data are collected,

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Local students will be collecting data from the Frenchman River.

• • • • What is the FRBP?

The Frenchman River Biodiversity Project (FRBP) is a multi-disciplinary research project that began in 2003 and will run until 2006. The aim is to assess the health of the Frenchman River and the sustainability of local activities by studying the aquatic biodiversity of the river and social interactions that affect the watershed. The FRBP is a joint undertaking of the Royal Saskatchewan Museum and the Canadian Museum of Nature, in partnership with local residents, university researchers, and representatives from provincial and federal government departments. ■

FRBP Steering Committee, March 2003

ROYAL SASKATCHEWAN MUSEUM

Canadian Museum of Nature / Musée canadien de la nature

Canada

INSIDE THIS ISSUE

A nod to our funders

Initial planning for the FRBP was supported by a $25 k grant from the EJLB Foundation, with additional grants totalling $17.5 k from Environment Canada for the production of written material and a summer student position. Current core funding ($70 k over two years) is from the Salamander Foundation and the Saskatchewan Heritage Foundation. Research funding has been provided by Parks Canada ($15 k) and through the Social Sciences and Humanities Research Council. ■

This newsletter is printed on Domtar Sandpiper paper which contains 100% post-consumer fibre and is processed chlorine free.

• • • • *Project goals and key people*

"How can we keep the Frenchman healthy?" This question came up repeatedly during initial community meetings about the FRBP and is now the central focus of the project. The biological side is being guided by Heather Proctor from the University of Alberta (www.biology.ualberta.ca/faculty/heather_proctor/). The aim is to describe communities of benthic (bottom-dwelling) invertebrates and to relate their abundance and distribution to land-use activities and other factors that affect local ecosystems. The social research is being directed by Diane Martz from the Centre for Rural Studies and Enrichment at St. Peter's College and the University of Saskatchewan (www.stpeters.sk.ca/crse/crse.html). The goal here is to understand people's beliefs and attitudes about the river and how they affect local decision-making and other community dynamics.

The FRBP is directed by a Steering Committee which includes seven people from the Frenchman area. There is also an advisory committee for interested agencies chaired by Rob Wiebe, Saskatchewan Watershed Authority, and a parallel committee for the broader community chaired by Robert Gebhardt.

Hopefully, when the project is complete, local residents will be equipped with a community-based mechanism that they can use to keep the river healthy. Other desired outcomes include:

– Increased awareness of the value of aquatic biodiversity as a measure of ecosystem health.

– Information about aquatic biodiversity 'hot-spots' and indicator species.

– Insights about where, how, and when different stewardship practices should be applied.

How can we keep the Frenchman healthy?

– Local opportunities for professional development and employment.

– New teaching tools and projects for elementary schools in the Frenchman drainage area.

The FRBP Steering Committee met for the first time in March 2003 and for the second time this spring. There has not been much activity between meetings because some anticipated funding did not come through, but initial benthic samples have been collected and analyzed, and local schools have been contacted to discuss how additional data might be collected by students. The Committee has also been developing a data management protocol to ensure that requests for land-owner confidentiality are respected. ■

For more information, contact Glenn Sutter at the Royal Saskatchewan Museum, phone: (306) 787-2859

Overview Report

A project report called *Overview of the Frenchman River Watershed*, published in March 2003, can be obtained by contacting the Royal Saskatchewan Museum at:

Frenchman River Biodiversity Project
c/o Glenn Sutter
Royal Saskatchewan Museum
2340 Albert St.,
Regina, SK
S4P 3V7

Phone: (306) 787-2850
Fax: (306) 787-2645
Email: gsutter@royalsaskmuseum.ca

If you have a fast internet connection (it has a lot of maps!), you can also download it from the St. Peter's website at: www.stpeters.sk.ca/crse/watersheds/frenchman_river.html.

FRBP committee structure

Steering Committee (SC)
Co-Chairs:
Glenn Sutter–RSM, Jean Lauriault–CMN
AAC Chair–Rob Wiebe, **CLS Chair**–TBD
BES Chair–Heather Proctor, **SDS Chair**–Diane Martz
CAC Chair–Robert Gebhardt (E)
Other community reps:
Raymond Schultz (V), Maurice Cote (V)
Lynn Grant (V), Ervin Carlier (V)
Kathy Morvik (E), Tom Pearson (E)

Agency Advisory Committee (AAC)
Chair: Rob Wiebe – SWA
DFO rep – Carol Churchward
SE rep – Ron Jensen
SAFRR rep – Lorne Veitch
PFRA rep – Bill Bristol
GNP rep – Pat Fargey

Community Advisory Committee (CAC)
Chair: Robert Gebhardt
Reps from key stakeholders, e.g. Schools, RMs, agricultural organizations, towns, etc.

Biology/ Ecology Subcommittee (BES)
Chair: Heather Proctor – U of A
Rolf Vinebrooke – U of A
Glen McMaster – SWA
Carol Churchward – DFO
Rob Sissons – GNP
Kevin Murphy – SE

Social Dynamics Subcommittee (SDS)
Chair: Diane Martz – St. Peter's College & U of S
Maureen Reed – U of S
Scott Bell – U of S

Communication/ Learning Subcommittee (CLS)
Chair: TBD
Karyn Scalise – PCAP

Abbreviations:

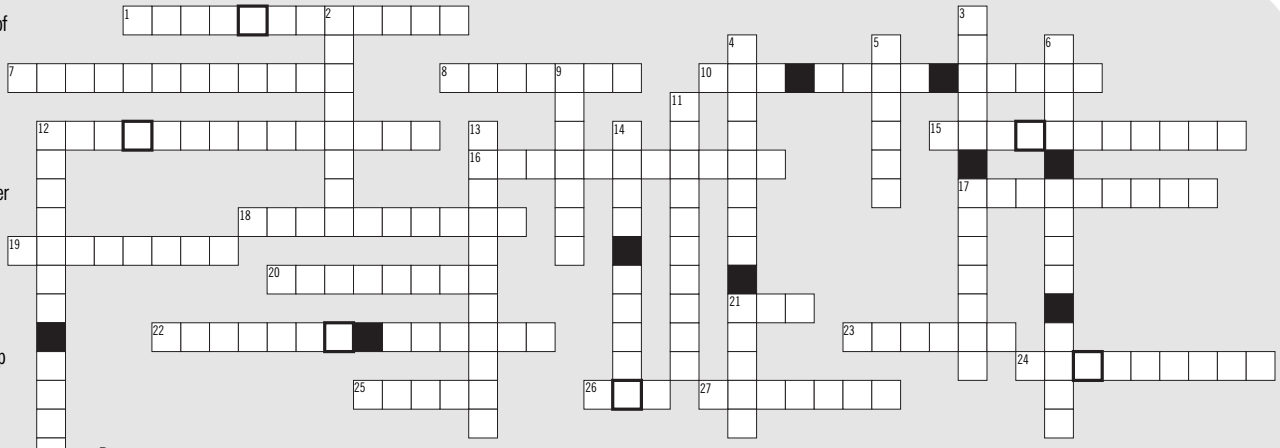
CMN	Canadian Museum of Nature
DFO	Department of Fisheries and Oceans
GNP	Grasslands National Park (Parks Canada)
PCAP	Prairie Conservation Action Plan
PFRA	Prairie Farm Rehabilitation Administration (Agriculture Canada)
RSM	Royal Saskatchewan Museum
SAFRR	Saskatchewan Agriculture, Food, and Rural Revitalization
SE	Saskatchewan Environment
SWA	Saskatchewan Watershed Authority
U of A	University of Alberta
U of S	University of Saskatchewan
V	Val Marie
E	Eastend

This crossword is built with words from the Frenchman River Biodiversity Project *(many found in this newsletter!)* and from local trivia. Have fun doing your own research!

Across:

1. Name of non-biting midges
7. The variety of plants and animals in a given area
8. Local author of: "Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed…if we pollute the last clear air and dirty the last clean streams…"
10. Nearby historical police route
12. Meeting the needs of the present without compromising the ability of future generations to meet their own needs
15. The most common dinosaur fossil found in the Frenchman area
16. 950 km long river and pre-European residents
17. Pre-European residents whose name is probably derived from the discoloration of moccasins with ashes

18. Park that will be the focus of this year's sampling
19. Drainage basin the Frenchman River flows into
20. Landscape carvers
21. National organization co-leading the Frenchman River Biodiversity Project
22. Nearby valley where 750 grizzly bear and 1500 elk hides were collected in one winter
23. Invertebrate that can live up to 50 years
24. An area drained by a particular watercourse or body of water
25. A tiny dipteran fly whose larvae is often found in slow-moving water
26. Provincial organization co-leading the Frenchman River Biodiversity Project
27. Bottom-dwelling



Down:

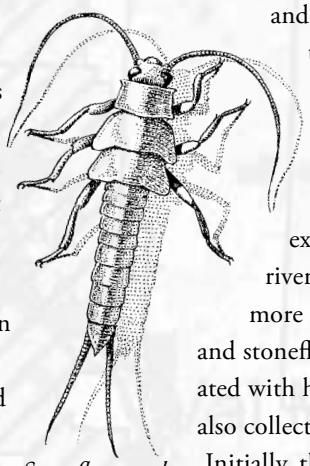
2. "Month" insect that hold their wings straight up
3. Insects tolerant of great chemical and temperature stresses
4. Tributary of the Frenchman River to be sampled this year
5. Immature form of many insects
6. Evergreen First Nation recreation location
9. Water scorpion family
11. "Heavy" sounding insects found in the Frenchman
12. Sioux chief who found refuge in the Cypress Hills
13. Insects that could almost help on the golf course
14. Circular dwelling remains

Unscramble the highlighted letters in the crossword to reveal the name of a famous former resident.

• • • • *Freshwater invertebrate sampling continued*

a stretch of water is like at a particular moment, the presence of particular groups of invertebrates can tell you what the water has been like over quite a long period of time, at least as long as they have lived there. For mussels, that can be as long as 50 years!

Studying the distribution of freshwater invertebrates also helps us understand how the waters of Canada were colonized after the glaciers retreated. Some families of invertebrates are restricted to certain parts of the country not because they can't live elsewhere, but because they haven't managed to colonize those places. For example, water scorpions (which are insects of the family Nepidae, not scorpions!) have not made it to Alberta but are present in Saskatchewan.



Stonefly nymph
Illustration by Paul Geraghty

The Frenchman River drainage is unusual in western Canada in that the river originates within Canada and then flows straight into the Missouri drainage in the United States. Because of this connection, the Frenchman may act as an "early warning system" for effects due to climate change. As waters warm, animals that were previously kept south of the border by harsh northern winters may be able to invade.

In September 2003, University of Regina researchers associated with the FRBP conducted a preliminary survey of aquatic invertebrates in the Frenchman River system. They concentrated on the main course of the river, and collected more than 40,000 specimens. Most of these were the larvae of non-biting midges (Chironomidae), which is to be expected in a slow-moving prairie river. However, there were also more than 1000 mayflies, caddisflies and stoneflies — insects that are associated with high-quality water. This survey also collected 1200 freshwater mussels. Initially, the September samples were identified only to very general groupings, but they have since been analyzed to a much finer level.

The Frenchman may act as an "early warning system" for effects due to climate change.

In August 2004, a survey team from the University of Alberta and Grasslands National Park will collect additional samples from the Frenchman. The team will be led by Dr. Heather Proctor from the U of A, and will include research trainees from Alberta and Saskatchewan. As well as collecting invertebrates with nets, the researchers will measure water speed, stream depth and width, temperature, and aspects of water chemistry. Most of the sampling effort will be concentrated in areas that were not well sampled last September, namely Grasslands National Park, and tributaries to the Frenchman River (e.g. Belanger Creek). The Park is of particular importance because it is providing funds that will support the collection and analysis of these data. This survey will help the Park to better manage its aquatic resources, and in combination with the previous study, provide the first overview of how invertebrate diversity is distributed across the Frenchman watershed. ■

Heather Proctor, 10 May 2004

Field assistant Iain Philips defies gravity while helping summer student Cortney Ebel collect samples in 2003.

Local voices

The FRBP is a different sort of research project because local residents are playing a major role in how it develops and what it does. This edition of *Local voices* features a piece by Robert Gebhardt. Future issues will include landowners, students, and other local voices.

• • • A baseline for water

Water, water everywhere, and not a drop to drink? Is this possible? If you have read the *The Life of Pi* the answer is a definite yes. If you are surrounded by fresh water containing contaminants, the answer again is yes.

The following are snippets of water-related information that require more discussion.

- Food chains: the circle of life must remain functional. Break it and unexpected and possibly devastating events occur.
- Can H two O be renewed or just recycled? Is rationing necessary? Who decides?
- The International Joint Commission held a meeting in Eastend on July 28. Someone is unhappy about the quantity of water received. Who and Why?
- Is water a basic right or just a basic need? One costs more than the other.
- Bottled water sells for $2.25/liter. There are fewer complaints about this than about the price of gasoline, which has reached 86.9 cents/liter. Why?

Joni Mitchell sang *Big Yellow Taxi* as a protest song. One of the lines reads:

"Don't it always seem to go, that you don't know what you got 'til it's gone?"

As Canadians we know that we have plenty of fresh potable water. The urgent question is: will this continue? Efforts are underway to monitor the water in the Frenchman River and establish a baseline for water quality using community-based expertise.

As a concerned citizen and a science teacher, I became associated with the Frenchman River Biodiversity Project to assist in achieving this goal.

Robert Gebhardt.

• • • Ecological monitoring continued

the students will exchange information with each other and contribute data to the FRBP's study of ecosystem health. If continued in the long-term (which is likely if the program is successful), they will quickly develop a database of water quality and biodiversity information about the Frenchman River.

At this point, principals of both schools are in support of the monitoring program, and Eastend School is interested in contributing the data that they collect to the FRBP.

Students will contribute data to the FRBP's study of ecosystem health.

Heather Proctor has provided an excellent classification tool that will help students identify aquatic invertebrates that are likely to be found in the river, and Diane Martz is lining up water-quality testing kits that will be used for on-site monitoring. The remaining monitoring equipment will be purchased through a larger University of Saskatchewan project on property management regimes led by Scott Bell and Maureen Reed.

The purpose of my Master's research is to examine how participatory-based approaches to environmental education in high schools may contribute to students' understanding of their local environment and sense of place, and how a learning community (involving the schools and the FRBP in this case) may strengthen these experiences. The questions I want to address include: How does participating in an ecological monitoring program improve students' awareness of their local environment? What meanings do students derive through participation in ecosystem stewardship activities? How do these experiences influence students' perceptions of the place in which they live? What is the role of a learning community in facilitating ecosystem stewardship within a high school curriculum?

Several aspects of the school monitoring programs are relevant to this research, including interpretations based on photography and writing assignments that will be used to create a mural entitled "My Favourite Places." These activities may extend into the students' social studies and art classes, but will remain linked to the ecological monitoring activities. I am also encouraging students to develop a logo for the monitoring program. As well as identifying the program, and possibly the FRBP as a whole, this logo could be used on signposts that mark school monitoring sites that are easily accessible by the public, such as those in parks. ■

Any comments, concerns, questions, or suggestions should be directed to my attention at the address below:

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Biodiversity UPDATE

This newsletter will keep local residents up to date about research findings, project activities, and related events. It will be produced twice a year, in the spring and fall, for the duration of the project.

This issue was edited by Glenn Sutter, co-chair of the FRBP Steering Committee. If you have questions or ideas for future issues, you can reach us at the address below or by contacting Robert Gebhardt in Eastend at (306) 295-3680.

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