THE BRODIE CLUB

ROYAL ONTARIO MUSEUM OF ZOOLOGY

THE 981st MEETING OF THE BRODIE CLUB

The 981st meeting of The Brodie Club was held on Jan. 20, 2004 at 7:30 pm in the Ramsay Wright Zoological Laboratories of the University of Toronto.

Chairman: **Hugh Currie**
Secretary: **Oliver Bertin**

There were 28 members including corresponding member **Charles Lennox** of Englishtown, N.S., and four guests.

Sharon Hick, guest of **Jock McAndrews**
Kara Brodribb, guest of **John Riley**
Charlotte Lennox, guest of **Ron Tasker**
John Saunders, guest of **Bertin**

The minutes of the 980th meeting were approved as written by **Trudy Rising**, seconded by **Sandra Eadie.**

NEW BUSINESS:

There were several noteworthy events following the January meeting.

- **Harry Lumsden** has been made a Member of the Order of Canada.
- **Ann Fowle** has shown encouraging improvements and expects to be transferred to York-Central Hospital for rehabilitation. Members voted at the January meeting to send her flowers.
- **Ron Pittaway** was proposed as member. His biography was attached to the last minutes.
- **Lumsden** recommended a recent book, *Eighteenth-century Naturalists of Hudson Bay* by Stuart Houston et al, published by McGill-Queen's University Press in October, 2003. ISBN:-0 7735-2285-9, special price $39.60. (Regular price $49.95; Indigo has it for $34.96). The book tells about the Hudson's Bay Co. traders and the natural history observations they made over two centuries. Lumsden said it was "pretty thorough," while John Riley described it as "excellent."
- **Ken Abraham** Ken Abraham said South African miner de Beers is proposing construction of an open-pit diamond mine close to the Attawapiskat River on Hudson's Bay (Victor Project). De Beers is estimating $800-million to open the mine in hopes of an estimated return of $2.5-billion worth of diamonds. The mine could have major environmental impacts because it would involve transport of millions of gallons of fuel oil in Hudson Bay

and James Bay, de-watering one or more rivers and lakes, construction of new roads in a roadless wilderness, construction of a power station and the disposal of sediment and mine tailings. Abraham and Riley described it as a stunningly beautiful area with an unusual limestone formation. The project is currently in the environmental assessment stage.

- **George Bryant** offered members a variety of literature from the Federation of Ontario Naturalists.
- **Bertin** sent duplicates of the December minutes to all members by post and by e-mail, where addresses were available. Members were invited to choose one or both in future. The minutes can be prepared in both formats with little extra bother, while postage costs 49 cents a mailing. Bertin's e-mail was down for a week in January. Pls resend any messages that were not acknowledged to *obertin@globeandmail.ca*.
- **Bruce Falls** said the March speaker will be Ronald Brooks, Professor of Zoology at the University of Guelph and a member of the COSEWIC committee that designates species at risk. He will talk on "Conservation of Reptiles in Canada: Life Histories and Distribution."
- **McAndrews** suggested a minute's silence for former member **Edwin Crossman**, Curator Emeritus of the Department of Ichthyology at the Royal Ontario Museum who died suddenly at home on Dec. 21, 2003. His obituary in The Globe & Mail is attached.

SPEAKER:

The speaker was member **John Riley**, a former Ontario Ministry of Natural Resources biologist who has been principal scientist of the Nature Conservancy of Canada for the past three years.

## Blueprints, Big Pictures and Recent Conservation Planning in Ontario

Riley has been mapping Canada's natural history for some time, identifying priority areas for conservation action. He worked for MNR until two of his studies were censored and then shelved. He subsequently moved to Ontario Nature and the Nature Conservancy of Canada.

He estimated that southern Ontario has lost 70 per cent of its wetlands, 99 per cent of its prairie/savannah and 94 per cent of its upland forests. Those areas that are left tend to be less than 200 hectares in area, and often less than 200 meters across.

There have been many surveys of Ontario's natural history, including the 1969-1973 International Biological Program and the 1992 Rare Species Mapping Project. Many of these maps have now been digitized allowing Riley to use computer techniques to analyze the maps for "hot spots" of critical importance. That makes them a powerful tool for conservation purposes.

Riley uses the maps to catalogue peatlands, rare wetlands, alvars, prairies, savannahs and environmentally sensitive areas for a variety of users including conservation authorities and local municipalities. The digital maps can also be analyzed to find the most suitable corridors for Ontario Hydro, conservation authorities and similar bodies.

In 1994, Riley wrote a framework paper on corridors as part of the early attempts to conserve the Oak Ridges Moraine. The paper used a Canadian invention, the Geographic Information System, which uses sophisticated spatial analysis to classify the landscape. It allows planners to design conservation corridors such as the Niagara Escarpment, the Oak Ridges Moraine, shore lines, waterways and river valleys. Often Riley uses the digital mapping techniques to find pathways of least cost, often roads, hydro right of ways, areas of natural cover and streams.

This technique has led to the establishment of many big connectors including the Great Lakes Heritage Coast along the east side of Georgian Bay and long stretches of the Lake Huron and Lake Superior coastlines. Another potential corridor could extend from Algonquin Park in Ontario to Adirondack Park in upper New York State.

Ontario and its municipal and conservation authorities have become leaders in the documentation and mapping of natural-heritage resources. When mapping, planners tend to look for areas of natural and scientific interest, wetlands, species at risk, Carolinian forests, older-growth woodlands, high forest concentrations and areas of particular interest including alvars, prairies, bogs and fens.

Using digital techniques, a map is divided into thousands of tiny pixels. A computer is used to examine each pixel and assign a conservation value to each. The grading is based on the degree of forest concentration, to which is added species and habitats at risk, and then parks and protected areas to reach a total cumulative conservation score for each pixel. Finally, all pixels with a conservation value above a certain threshold are picked out to provide a map of the Natural Heritage System in a graphic form that is easy to read and comprehend.

Riley said these maps have been used by two premiers for conservation planning. "Boy are they impressed," Riley said. "This is the kind of planning that helped make the legislation and plan for the Oak Ridges Moraine possible," he said.

Riley's next step is the Blueprint Project, in essence, a portfolio of the sites that are most worth conserving. He has mapped various biodiversity targets, ecological systems, imperilled species, species of special concern and for want of a better word, species "hot spots." So far, he has catalogued 42 ecological systems, including alvars, bogs, savannahs and sand plains, assigning a score to each pixel to provide a map that is fairly representative of the areas worth saving.

Now that this work is underway, Riley would like a team of biologists to venture out of the computer lab and into the field to corroborate the computer conclusions. And then, he wants to use the digital maps to create natural heritage systems and to secure critical lands.

QUESTIONS:

- **Falls** asked how reliable the maps were given the difficulty of collecting natural history information to back up the data in the virtual map. Reynolds said the accuracy of the maps varies widely, but much of the data can be checked against aerial photographs and other sources of information.
- **Glenn Coady** suggested that map data be correlated with historical collections, bird nest data and GPS data.
- Reynolds acknowledged that biodiversity data is the next big frontier. "I can't imagine where we'll be in 10 or 20 years."
- **McAndrews** questioned the accuracy of the provincial forest inventory south of the Canadian Shield because the data is no longer updated regularly.
- **Bertin** asked how rankings are assigned. Reynolds said his staff used generally accepted rankings for rare species, such as the COSEWIC system.
- **Sandra Eadie** asked whether real estate developers could misuse the maps for their own purposes. Reynolds said the opposite tended to happen. Developers often avoid ecologically sensitive areas because they involve too many hassles. Instead, developers tend to gravitate to places that are "already wrecked."

- **Ed Addison** said corridors can be overdone. We already have millions of corridors that we never had before, as in the ballast water of ocean-going ships. They can act as corridors for disease or invasive species. "I would like to promote the benefits of isolation and fragmentation," Addison said.
- Another member noted that 13 species of Ontario tree are currently threatened by Asian insects and fungi that entered Ontario through modern corridors. The Atlantic and Pacific Oceans are great barriers that keep exotic species out.
- **Marc Johnson** wondered whether technology was running ahead of the science. "Should we be doing this stuff at all?" he asked. "It should be double-checked rigorously."

The speaker was thanked by **Tasker**.

NOTES & OBSERVATIONS:

- **Eadie** recommended the recent film *Master and Commander*, which had very good shots of the wildlife of the Galapagos Islands. She praised Patrick O'Brien's books on the Napoleonic Wars for their natural history.
- **Johnson** recommended *Captain James Cook* by Nicholas Thomas, published by Penguin Canada, which has good accounts of James Cook's three voyages to the Pacific. ISBN: 0-6709-11208, Indigo $25.20.
- **McAndrews** invited members to join him on a pollen-collecting expedition to meramictic Teapot Lake.
- **Lumsden** said he had tallied 470 Trumpeter Swans in southern Ontario as of September 1, and he has located about 50 more pairs since then. There are about 20 in the Rideau Lakes area and 20 to 40 near Kenora. The Kenora birds are probably from Minnesota because they have a habit of migrating north of their home.
- **Addison** spied a Carolina Wren on his feeder in Aurora.
- **Trudy Rising** spied a strange falcon, which other members said may be a domesticated gyrfalcon that escaped from its keeper at Pearson airport.
- **Riley** has seen flocks of up to 150 wild turkeys in Dufferin Co.

The meeting adjourned at 9:15 pm.

NEXT MEETING:

The next meeting will be held at 7:30 pm Feb. 17, 2004, in Rm 432 of the Ramsay Wright Zoology Laboratories at UofT. The speaker will be Mima Kapches, Curator of New World Archaeology, who will speak on Toronto’s archaeology.

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Obituaries
EDWIN J. **CROSSMAN**: 1929-2003

# All for the love of fish; Scientist wrote the bible on Canadian freshwater species, and spent his life studying and protecting them

CAROL COOPER
SPECIAL TO THE GLOBE AND MAIL
1,315 words
5 February 2004
The Globe and Mail

A lot of things about Edwin Crossman were big: his 6-foot-5-inch frame, booming voice, warm heart and love of nature, particularly fish. As a biologist, Dr. Crossman was a world authority on the pike family, especially the muskellunge, one of Canada's largest freshwater species. And he co-authored the hefty Freshwater Fishes of Canada.

Dr. Crossman, an ichthyologist whose field studies took him as far as eastern Russia, who wrote or co-wrote approximately 200 publications, and was a curator emeritus of the Royal Ontario Museum and professor emeritus of the University of Toronto, has died suddenly at the age of 74.

"He pursued fisheries and fishing with a passion," said John Casselman, one of Dr. Crossman's early graduate students and now a senior scientist with the Ontario Ministry of Natural Resources.

Over 13 years, Dr. Crossman and co-author Dr. W. B. Scott, then a curator at the ROM and professor of zoology at U of T, travelled throughout Canada and Alaska to study and document the life habits of 181 fish species, all the while working at both the museum and the university. In the comprehensive, landmark book Freshwater Fishes of Canada, first published in 1973, the authors describe each fish in detail, offering, among other information, its life habits, range, economic importance and even flavour when eaten.

*Freshwater Fishes of Canada* is considered a bible to fisheries professionals and sport fishers alike. It won the Wildlife Society Book Prize in 1974, and has been reprinted five times, the last in 1998 (with supplementary information).

It is particularly important to fishery-management officials, who use it to develop sound conservation plans for commercial and sport-fishing stocks. Both types of fishing are important contributors to the Canadian economy. According to a 1995 Fisheries and Oceans Canada survey, 4.2 million recreational anglers spent $7.4-billion in Canada that year on equipment, food, lodging and transportation related to their sport.

Yet, in the introduction to the 1979 reprint of Freshwater Fishes of Canada, its authors delivered bad news to its readers: "Preparation of much of the material in this book has been a depressing experience. Time after time when gathering the material for the write-up of a particular species, it would be found that the species had either disappeared from much of its former range . . . or that it had been completely extirpated from the North American scene."

Still, Dr. Crossman never lost his own love of recreational fishing, in part because of the contact with nature the sport gave him.

"We spent most of our life outdoors," said Marg Crossman, his wife of 51 years and research assistant. "We'd be out on the lake, going from an interesting place to another interesting place with a fishing line in the water." The family took only what it needed for consumption and even then used barbless hooks.

Not only did the Crossman family fish together, it studied fish together. Dr. Crossman took his wife and two children, John and Ren, on many trips into the field, teaching them to collect and prepare fish for study. There, Dr. Crossman exacted the same high standards from his family as he did from others. "He was a hard taskmaster, because if you're going to do scientific work, you can't be sloppy," Mrs. Crossman said.

In the process, the family learned to whitewater canoe, upright an overturned canoe and retrieve its load, and remove leeches. Once Dr. Crossman and his son emerged from a stream sporting 72 between them.

Dr. Crossman loved to eat fish, and not just the ones he caught. When teaching at U of T, he took his students to fish markets around Toronto. After examining different types, the group brought the fish home and ate them. And when ordering fish in a restaurant, Dr. Crossman loved to quiz the bewildered serving staff on the species of fish offered.

When he was young, fish caught by his father in the Niagara River and game hunted in the surrounding fields provided Depression-era eating. Edwin John Crossman was born in Niagara Falls, Ont., on Sept. 21, 1929, the only child of a Devon-born mechanical supervisor at a factory and a woman of United Empire Loyalist and Scottish descent.

He grew up and was educated in Niagara Falls, where a high-school teacher noticed his love of the outdoors and suggested he study biology at Queen's University. Graduating from there in 1952, Dr. Crossman completed his master's at U of T in 1954 and doctorate at the University of British Columbia in 1957.

That same year, he joined the ROM, then under the auspices of U of T, as assistant curator in the department of ichthyology and herpetology, concurrent with an appointment to teach at the university. There he impressed upon his students the importance of accuracy and certainty when identifying fish. Once, when serving with a provincial government advisory group, Dr. Crossman went through a lab in Northern Ontario. There he saw a student identifying a fish and became interested.

He asked the name of the fish, to which the student replied that it was a certain kind of darter. "Are you sure?" questioned Dr. Crossman. "Oh, I'm very sure," replied the student, pointing to the copy of Freshwater Fishes of Canada he had used to identify it, ignorant of its co-author's presence.

"Are you sure?" insisted Dr. Crossman, suggesting it could be another type of darter instead.

Dr. Crossman willingly shared his knowledge about fish with whoever showed an interest, speaking to their level of knowledge without being condescending. Over the years, he served as an adviser to many government and angling agencies, once soliciting support from anglers and taxidermists for a study project. Short of samples, he and Dr. Casselman asked for shoulder bones from trophy muskellunge for study. Five thousand were submitted.

Always concerned with conservation and the impact of introduced species, Dr. Crossman alerted the provincial government a few years ago to the lack of regulation for and potential problems resulting from the importation of live, foreign fish.

Intense, honest, yet personable, Dr. Crossman had a sly sense of humour. Once he invited a CBC crew visiting a field project to a dinner of boiled clams. Then he asked them to pass the clams, the biologist's term for guts, gonads and ganglia.

Dr. Crossman rose to become a full curator at the ROM, retiring from there and the university in 1995. Despite his official retirement, he continued to work at the museum two days a week and from home for the rest. Over the past three years, among other activities, he worked on an international committee that standardizes fish names in Canada, the United States and Mexico, including French and Spanish common names. The work results in a book published every 10 years, now called Common and Scientific Names of the Fishes of the United States and Canada.

Overriding all Dr. Crossman's activities was a concern for nature.

"He appreciated what the Good Lord gave us and felt very strongly that we should be good stewards of what we had received and we should leave it in better shape than we found it," Mrs. Crossman said.
Dr. Crossman died at home in Toronto on Dec. 21. He leaves his wife Marg, children John and Ren, and four grandchildren.

Memorial funds in Dr. Crossman's name have been set up at both Queen's University and the Royal Ontario Museum.