

THE
BRODIE
CLUB



ROYAL ONTARIO
MUSEUM OF ZOOLOGY

THE 1,051st MEETING OF THE BRODIE CLUB

The 1,051st meeting of the Brodie Club was held at 7:30 pm on Tuesday, November 15, 2011 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: George Bryant
Secretary: Ricky Dunn

The meeting was attended by 30; 23 members and 7 guests.

Roll Call:

Present: E. Addison, R. Addison, Bertin, Boswell, Bryant, Currie, Curry, Dunn, Eadie, A. Falls, B. Falls, D. Hussell, J. Hussell, A. Juhola, H. Juhola, Larsen, Machin, McAndrews, Reading, T. Rising, Slessor, Speakman, Tasker.

Regrets: Abraham, J. Bendell, Y. Bendell, Bodsworth, Bousfield, Crins, Gray, Iron, Norm Martin, Norma Martin, Pittaway, J. Rising, Seymour, Sutherland, Strickland, Tomlinson, Young.

Guests: : Marie Schommer and David Denham (Rising), Sharon Hicks (McAndrews), Rob Falls (Falls), Terry Marescaux (Bertin), Harry Frania (Curry/Slessor), and Pat Diamond (wife of the speaker).

Minutes: There were no comments on minutes of the previous meeting, which were accepted without a formal vote.

Announcements and New Business:

- Ricky Dunn was added to the Archives Committee (R. Addison/T. Rising)
- George Bryant reported on the meeting between the ad hoc Brodie Club committee and Locke Rowe, chair of the Ecology and Evolutionary Biology Department at U of T. Locke indicated the departments' willingness to provide a meeting room (either existing space, Room 414, or a room in EEB), a source of potential speakers, guests and members if the Club so wished, joint activities, e.g., use of Koffler Centre for some meetings or field outings, some secretarial support and development of a web presence. Discussion noted that we like our current meeting room and it is not in any jeopardy, but that other suggestions should be followed up. While the Brodie Club wants to continue having membership by invitation, it is open to additional public view and eager to encourage more guests, with a view to

increasing membership. The connection with EEB offers more opportunities on these lines, but is highly unlikely to overwhelm us. The following motion was proposed and unanimously accepted: “The Brodie Club wishes to enter into an informal association with the Ecology and Evolutionary Biology Department of the University of Toronto as offered by the chair of the department, Professor Locke Rowe, in November 2011.” (B. Falls, T. Rising)

- Dunn noted that in writing mini-bios (suggested guidelines were circulated by e-mail shortly before the meeting) members do not have to adhere closely to the examples provided. Members should feel free to set their own tone. The most important parts are your name and your interests relevant to Brodie Club.
- T. Rising noted that Glen Coady was recently married. Brodie members send their congratulations, and Trudy will send a card.
- B. Falls announced upcoming programmes. Our next meeting, Tuesday, December 13, will feature Brock Fenton, from University of Western Ontario, who will speak on bats. The January talk is “Ants and Plants in the Tropical Forest” given by Megan Frederickson of the Faculty of EEB.

SPEAKER:

The speaker, Jack Imhoff, was introduced by Ed Addison. Jack is the National Biologist and Director of Conservation Ecology for Trout Unlimited Canada. He recently retired as a Provincial Aquatic Ecologist with the Ontario Ministry of Natural Resources, and is an adjunct professor at the Universities of Guelph and Waterloo.

Navigating the Biodiversity of Canada’s Stream Corridors: An Exploration

Jack
And
life
just



‘why’
river

prefaced his talk by recounting that he had been invited to the Brodie club as a speaker by John Riley about 20 years ago. just as he had a love of “everything flowing” then, he continues to love being outside, to learn about the “ribbons of that connect”, why things are there and what they do, and not the “what?” but the “why?”.

Aquatic biologists can study a stream in isolation to learn ‘what’ it is in form, biota and health, but they cannot learn without looking beyond the banks of the stream to take in the corridor and indeed, the entire watershed. To really understand a river, you have to “get your head out of the water.” Geomorphology in combination with climate, determine flow rates and what plants and animals will live both in the water and on surrounding land. Watershed characteristics (size, number and isolation of branches) influence biodiversity and ability of biota to colonize beyond a particular stream. “Context is all.”

It is also being recognized that “you can’t set foot in the same stream twice.” Streams are in constant flux, and that lack of stability is an important feature in the adaptive strategies

of stream biota. Young streams cut deep valleys and carry a lot of silt, then age into slower-moving streams that meander across flatter valleys. Meandering streams cut into banks at corners and deposit silt in the straights. Vertical morphology changes in parallel, with deeper pools forming where cutting occurs, and shallow riffles forming in the straights. These features are constantly on the move. Eventually a stream may reach a stage of dynamic equilibrium, in which the pattern (for example, number of meanders, pools and riffles) stays about the same, but the relative size and location of features may keep changing. Attempts to maintain a stream in a particular state can actually destroy it.



Recognizing the importance of landscape context, and of natural flux of stream morphology, provides lessons useful in preservation and restoration. Conservationists interested in terrestrial ecosystems are increasingly aware of the importance of streams and stream corridors in achieving their goals. Imhoff provided examples from around the world that expanded on these main themes, accompanied with lovely photographs of habitat and biota.

Riparian zones are beginning to be considered as ecozones in their own right, as opposed to simply transitions between wet and dry. They often function as linear wetlands, with high diversity and productivity as a result of being flooded regularly. In developed areas such as southern Ontario, stream corridors are often the most natural areas remaining in the landscape. Some Ontario stream edges support endangered plants and animals, such as parts of the Maitland River where there are queen snakes, wood turtles, ‘lizard’s tail’ (a plant), six of the seven species of redhorse suckers found in Ontario, and remnants of tall grass prairie (which thrives in the disturbance caused by periodic flooding). Up to half of the food eaten by fish can come from insects and vegetation produced on land surrounding riparian zones, and about a quarter of food for birds near a river may come from aquatic sources. In western salmon streams, corpses of salmon that die after spawning fertilize both stream waters and the shoreline, such that insect and plant life along river banks are especially abundant.

Riparian zones have global ecological significance. In arid regions, such as much of western North America, river corridors are linear oases in the midst of much less productive land, and have long been a focus of conservation efforts. In Australia, drought periods are especially frequent and prolonged, such that the riffle portions of rivers that normally connect deeper pools may dry up, leaving a distinctive ‘chain of ponds’ that provide a unique habitat. A study in a wetter part of Australia showed that clear-cutting along a stream could change it completely by causing increased run-off and greater erosion which carves out surrounding landscape and carries off nutrients. Leaving a vegetation buffer, and restricting the area clear-cut can prevent this from happening. Similarly, stream buffers are now a feature of most forestry operations in North America.

Trout Unlimited focuses on the conservation of cold-water streams, not just the protection of trout. Its approach is to “preserve the best and restore the rest.” Stream corridors are now being considered as ‘centres of excellence’ for conservation. Stretches of river that have remained relatively pristine can be used for education purposes and serve as core areas on to which restored habitat can be added. Examples of such areas in Ontario include

sections of the Grand River (Paris to Brantford), Young's Creek (near Victoria, Norfolk County), and Maitland River between Goderich and Auburn (where Carolinian and boreal biota can be found in close proximity). Part of the goal is to join 'islands of green' (isolated areas of natural habitat) with 'corridors of blue and green' (healthy river corridors). By building linked networks of habitat the odds of local extinction are reduced. Some examples of restoration showed that much can be accomplished in a relatively short time.

- In a BC example – Nile Creek - side channels were rebuilt and flooding of a nearby forest was restored, with dramatic effect on stream health. Pink Salmon run increased from almost zero fish 20 years ago to present numbers of 107,000.
- In Black Creek, Ontario, cattle were fenced out in 1982, and by 2009, there was a nicely vegetated and treed border. There is good evidence that keeping cattle out of streams is not only good for the streams, but also keeps herds a lot healthier.
- One season after a 186 year-old dam was removed from the Marden Creek near Guelph, a large pond had reverted to a cold-water stream. The hope is to get cold-water fish back into the system, and into Guelph itself. There are approximately 5,000 old dams on Ontario waterways well past their life cycle. Removing a dam restores natural heritage and photographs can preserve cultural heritage.
- A restoration near Markdale decreased water temperature of a stream entering the Saugeen. Colder water supports less algae, which is a healthier situation for people as well as fish.



With climate change and continued development, it is more important than ever to maintain healthy watersheds. They are at the lowest point on the landscape, and therefore carry everything that runs off from above. Many fish species and aquatic species have very narrow temperature tolerances, and aquatic biota can tell you a great deal about status of the stream and its biological health. Streams are therefore a great focus for conservation efforts.

QUESTIONS:

Q. E. Addison: Did the Maitland River suffer damage from the August tornado that went through Goderich?

A. The tablelands and valley suffered lots of flattened timber, which is being cleared. The river itself wasn't much blocked, but may become so as downed timber gets washed downstream. However, long-term effects probably won't be too bad, and in fact, many Ontario streams have a deficit of wood content.

Q. Are beaver good or bad for streams?

A. Both. They certainly change stream dynamics, and can change a V-shaped valley to a broader area. However, they generally don't destroy banks, and a given dam often doesn't last more than 10-15 years. Beaver are part of the natural landscape, and other aquatic biota have evolved to live with their effects.

Q. Curry: In rehabilitating streams, do you reintroduce species?

A. On occasion, but usually Trout Unlimited projects are in places that haven't yet lost all key species. Also, the Species at Risk Act makes it difficult to move endangered species. Worse, presence of an endangered species can prevent restoration of a stream and banks, so all you can do is watch the species disappear. We have found a small colony of wood turtles on Bronte.

Q. Bryant: Have you noted Wood Turtles on the Maitland?

A. Yes, on the main Maitland and on forest trails and a small creek near Holmesville. A local farmer practising no tillage has rebuilt his woodlot to enhance wood turtle habitat.

Q. T. Rising: You mentioned several species of suckers. Are they all native?

A. Yes.

Q. D. Hussell. What are the prospects for continued funding for restoration?

A. "Phfff." Governments cut funds to environment when the economy is bad. Private groups and industry are doing much better with funding at this stage. On a positive note, the policies are good.

Q. Henry Frania: At what level of urbanization do you simply give up on a stream?

A. This is a social question, as much as biological. Even if stream can't be returned to anything like a natural state, it can be worth doing what you can, to provide the 80 percent of city people who have no exposure to natural habitats with a hint of what they're missing, and to encourage support of work being done elsewhere. Unfortunately, our planning acts do not allow for creativity, and it pushes us towards the same old solutions even when we know they don't really work.

Q. Eadie: I noticed great numbers of frogs on mats of vegetation in the Beaver River near Collingwood and a complete lack of them once the river was passing through farm areas. Could you comment on that?

A. Urging farmers to leave a wider buffer, 10 metres rather than 3, is a challenge as they are trying to maximize production. However, change is happening. Two years after fencing cattle out of Hog Creek, the local vet has noted that herd health has improved by 85%: a happy by-product of stream protection.

The speaker was thanked by Oliver Bertin.

NOTES & OBSERVATIONS

Tasker had brought some Inuit artifacts from to the November, 2010 meeting. He had recovered these from a new road cut on a trip to Victoria Island. Tasker reported that since then he has taken them to an expert who determined they were from the Dorset age, rather than modern, as holes had been gouged rather than drilled.

Curry saw a common sulphur butterfly today – a late date.

D. Hussell saw Coots, Tundra Swans and other waterfowl at Long Point today – almost a spring scene except for the taller vegetation. In response to a query by Bryant, Hussell

responded that there has been an increase in numbers of Tundra Swans at Long Point in the fall since the 1970s.

Bryant was recently in China, and was impressed not only by the high levels of pollution, but by the many plant species that have close relatives in North America, such as staghorn sumac, camellia, sweet gum and striped maple.

Curry noted that the British Royal Society has now put 60,000 of its older publications [online](#) (1665 up to 70 years ago), where you can read them for free.

Bertin reported that European Starlings are flocking up in huge numbers near Casa Loma. Tasker added that it used to be like that at Toronto General Hospital. For a fascinating video of flocking starlings on the Ot Moor near Oxford, Britain try this link: <http://www.youtube.com/watch?v=XH-groCeKbE&feature=related>

Speakman recently saw a Red-bellied Woodpecker at Beaverton. The species has greatly expanded its range in Ontario, and Dunn noted that they have been reported at bird feeders in Thunder Bay.

The meeting was adjourned at 9:30 pm and was followed by refreshments and discussion.

CORRESPONDENCE

Ed Bousfield elbousf@rogers.com sent the following e-mail" on Nov. 24:

Again, sorry to miss the Club's monthly meeting, which will likely persist until next March.a recent book of probable interest to Brodie Club "birders" is: Mills and Laviolette (2011) -- Birds of Brier Island, Nova Scotia Over the years, about 350 species have been sighted, the most of any place in the Maritimes. (Bertin spoke about Brier Island at the September 2011 members' night- RA)

http://www.chebucto.ns.ca/Science/NSIS/Birds%20of%20Brier%20Island_order_form.pdf



Also of interest to aquatic biologists may be: E. L. Mills (2011), "The Fluid Envelope of Our Planet", U. of Toronto Press, 434 pp., an historical account (up to about 1970) of the development of physical oceanography. Although world-wide in scope, it emphasizes the key roles played by Canadian marine scientists including A.G. Huntsman, H.B. Hachey, and M.J. Dunbar.

NEXT MEETING

The next meeting will be held **Tues., Dec. 13** at 7:30 pm in Room 432 of the Ramsay Wright Zoological Laboratories.

Note that this is earlier in the month, being on the 2nd rather than the 3rd Tuesday and as is club tradition, members are invited to bring **holiday goodies** to share during refreshments.



The speaker will be Brock Fenton from UWO presenting a talk on bats.