



THE 1,020TH MEETING OF THE BRODIE CLUB

The 1,020th Meeting of the Brodie Club was held at 7:30 pm on April 15, 2008 in the Ramsay Wright Laboratories of the University of Toronto.

Chairman: Oliver Bertin

Secretary: Kevin Seymour

There were 26 members and 5 guests, who included:

- Eleonora Bertin, wife of former member Leonard Bertin, guest of Oliver Bertin
- Natalie Atkinson and Dan Barcza, guests of David Tomlinson
- Don Smith, guest of Bruce Falls
- Brenda Gibson, guest of John Sparling

The minutes of the 1,019th meeting were approved with no changes.

NEW BUSINESS:

The May meeting has been moved to May 6 – **two weeks earlier than usual** – to accommodate Canada’s migrating birds. John Casselman will be the speaker: “Eels at the Edge: An ancient and valued species and resource, in unprecedented decline”.

Rosemary Addison reported as Ontario nature rep:

In Feb 2007, the Greenbelt Council recommended that the government develop criteria to determine areas of the countryside where the Greenbelt could be extended. The Ministry has drafted criteria with which to consider requests from municipalities to expand the Greenbelt. The government is looking for feedback on the draft criteria. Meetings/workshops are to be held: April 17 in Niagara Falls, April 22 in Peterborough, April 24 in Barrie and April 30 in Markham. Draft expansion criteria are on file, or can be obtained through www.greenbelt.ontario.ca

The summer field trip was discussed. There were two proposals on the table: **Ottawa Valley** (proposed by the Bendells) and **Hockley Valley** (proposed by Riley). The Ottawa valley trip could involve the weekend, and include some of orchids, marble mines, glacial deposits, the Canadian Museum of Nature, limestone caves, Gillies Grove, alvar habitat and the historic canals. Rosemary Addison looked into the price of renting a 49-seater bus, and found it to be prohibitively expensive (about \$50 per person, assuming a full bus!). The June 21-23 weekend would be best for the orchids. The Hockley Valley trip would include Mono Cliffs Provincial Park for early morning birding, exploration of the cliff edge for ferns and fern allies and a walk to McCarston Lake. Lunch could be at the Riley/Lindsay farm. Afternoon activities could include a visit to Scots Falls. A vote was taken, and the **Hockley Valley** trip was preferred, for **Sunday June 8th**.

SPEAKER:

Fluctuations of Deer Mice in Ontario in Relation to Seed Crops

Bruce Falls spoke while Ann Falls ran the PowerPoint slides. The talk was based on a paper published in 2007 under the same title, in *Ecological Monographs* 77: 19-32, authored by J. Bruce Falls, E Ann Falls and John M. Fryxell.

Bruce outlined the early history of the Research station at Algonquin Park. In 1945, the biological inventory began, involving such people as Yorke Edwards, John Speakman, John Crosby and Dalton Muir. In 1946, they started to work in the wildlife area, and 'the Edifice' was built. People involved included Clifford Hope (ROM) and Doug Miller doing a bird census, Yorke Edwards doing small mammals and Jim Bendell. In 1947, Dave Fowle was in charge, and new buildings including a living quarters and lab were constructed. In 1948, personnel included Don Smith, Robert Bateman, Yorke Edwards and Doug Davies. In 1949, Bruce started his PhD. In 1950 Ann arrived on a field course. Hal Cumming worked on mice, and there was the suggestion that a Standard Trap Line should be monitored. From 1952 to 1987, the same trap lines were used, and since 1987, Ron Brooks at the University of Guelph has continued the work, resulting in 66 years of data. On the Falls' 50th wedding anniversary, they finally had a manuscript on the topic, and they then brought in Fryxell from Guelph to update the statistical methods.

What are the advantages of these kinds of long term studies? Not only to do show long term trends and allow one to predict events from one year to the next, they become baseline studies for shorter term studies and most importantly allow one to look for common features of recurrent events.

The methods: trap lines were set in several forest types. Lines consisted of 10 sites 10 meters apart. The same baited trap lines were used year to year, with most lines having one trap per site, although three hardwood lines had two traps per site. Lines were trapped for three nights at a time, twice per month from May to September. Mice that we caught were aged, sexed, weighed and given numbered ear tags and then released. A few mice were snap-trapped and dissected to check for breeding status.

The study area is largely coniferous, around lakes and along rivers. When mixed, there is the inclusion of Aspen and White Birch. Generally the Sugar Maples are on the hills and the conifers are in the valleys. Three lines had mixed forests that were cut over in 1940; other lines were primarily coniferous or hardwood lines.

A dozen species of small mammals were captured; eight were common enough to have enough data for analysis. These included *Peromyscus maniculatus* (the study animal), the Deer Mouse, a denizen of northern hardwood forests and occasionally *Peromyscus leucopus*, a more southerly distributed taxon. Other species included the Chipmunk (*Tamias striatus*), the Red-backed Vole (*Clethrionomys gapperi*), two species of Jumping Mouse (*Zapus hudsonius* and *Napaeozapus insignis*), the latter being the more common, the Short-tailed Shrew (*Blarina brevicauda*) and two species of longer-tailed shrews

(*Sorex cinereus* and *Sorex fumeus*), the Red Squirrel (*Tamiasciurus hudsonicus*) and the Northern Flying Squirrel (*Glaucomys sabrinus*).

Peromyscus was most common in hardwoods and cutover areas, whereas *Clethrionomys* was absent from the hardwood areas. *Blarina* and *Napaeozapus* had irruptive years. Are fluctuations in other mammals scaled to those fluctuations observed in *Peromyscus*? Yes: especially in Chipmunk, Red Squirrel and Short-tailed shrew.

Predators: the marten (*Martes americana*) population fluctuated with the deer mice population. Data for this conclusion came from outside of the park

Peromyscus habits: they are active from dusk until 5 am. They climb trees to eat seeds and store them for the winter. They also add insects to their diet in summer. Since Chipmunk and Deer Mice populations fluctuate and both eat seeds, does the mammal cycle correlate with the seed crop? Basically yes: when there is a bumper crop of seeds (usually due to a warm summer in the previous year), the mice populations peak the year after. The mice populations breed earlier in peak years. Body weights greatest at start of peak summers and decline later. Young grow poorly in peak years; achieve greater weights in non-peak years. Breeding in a peak year drops off in early summer, and in a non-peak year breeding continues all summer.

Scenario: Mice breed all summer in non-peak year. When a heavy maple seed crop falls in September, the mice feed on, and store the seeds. Mice therefore have good over winter survival (only 20% loss in a good year, whereas there can be 70% loss in a bad year). Breeding in the following spring and early summer is strong, numbers peak in July, then breeding sharply decreases in midsummer. Young grow slowly and fail to breed. Heavy mortality occurs (food shortage? strife? predation?) because there is a normal or poor seed crop this September, and poor over-winter survival. The population stays low until the next big seed crop.

Two variables that are not well known are mouse behaviour and the effects of predation.

Interestingly, there is good summer breeding BEFORE the seeds fall in a bumper crop year. Maybe there is synchrony of seeds from other tree species, or they are feeding on the developing seeds before they fall?

Big Picture: Warm summer in Year 1. Heavy maple seed crop in Year 2. Mouse peak in Year 3. Mouse numbers crash in Year 4. This may well be a widespread phenomenon in northern hardwood forests.

QUESTIONS:

Is migration of mice in or out of the study area a significant factor? Probably not.

Couldn't predation be driving the whole cycle? No, mice seem to fluctuate with the seed cycle and then predators probably track the mouse populations.

How important a role do the food caches play? Not enough data.

Why is there continuous breeding in a non-peak year? Maybe strife or predation peak in a peak year prevent continuous breeding, which is the norm.

How old do the mice get? Ear tags and recaptures suggest that it is a rare mouse that survives two winters.

Do chipmunks also fluctuate in the same way? Yes.

What else do the mice eat? Insects, mushrooms.

Is there evidence of global warming in this long term mouse data set? Basically no, but chipmunks seem to be on the increase.

Is there evidence for a decline in mouse populations due to acid rain? No.

Bob Curry thanked the speaker.

NOTES AND OBSERVATIONS:

David Tomlinson noted successful crow nests on his property for only the second time (squirrels normally predate the nest). Three crows helped at one nest and two at the other nest.

Rosemary Addison noted a Mourning Cloak butterfly today.

Helen Juhola noted Marsh Marigold and Bloodroot blooming today.

Jim Bendell demonstrated the use of the noose he mentioned at last month's talk. It is used for catching both Blue and Spruce Grouse. He also demonstrated the hoot call of the Blue Grouse, and noted that this call varies geographically.

Bruce Falls noted that Blue Grouse seem to be able to differentiate individual calls. The hoot of a neighbouring grouse elicits little response, while those of a strange bird, or unknown bird, results in a strong response.

Fred Bodsworth noted that Thick-billed Murres become accustomed to their neighbours' calls. Fred also elaborated on his daughter-in-law's Lynx story in Sioux Lookout reported last month, and he brought photos. Now three and four individuals are commonly being seen together.

Norma Martin noted a Marten had come to her bird feeder.

Kevin Seymour noted the Bohemian Waxwing irruption this year, maybe the largest on record in Toronto. He had more than 50 in a tree across the street from his house in East York.

Trudy Rising noted the ROM's Darwin Exhibit was quite good and recommended it!

The meeting was adjourned at 9:35 pm.

NEXT MEETING:

The next meeting will be held **two weeks earlier than usual** – at 7:30 pm on May 6 at the usual place – to accommodate Canada's migrating birds. John Casselman, a former doctoral student at the UofT Department of Zoology and later senior fisheries scientist with the Ontario government at the Glenora station in Picton, Ont., will talk on "Eels at the Edge: An ancient and valued species and resource in unprecedented decline".

New Birds Seen

By Yorke Edwards

Our Western Correspondent

We live by the sea and are often looking out our windows at a large island close to us to the south. To the east, there is a beach along the south edge of a golf course. Winter here usually has no snow, and often that golf course has about a dozen Hudsonian Whimbrels. They live close together, staying there all winter. They usually stay very much together, but once they came close to us, into our garden, right under one of our windows. Among them, I saw one that was much bigger than the others, with a longer bill that circled well down. We have never again seen a Long-billed Curlew.

When I was young, I drove a small truck through southern British Columbia, often through Vancouver. Several times, I saw a few unusual black birds on wires above the streets, while I was driving along under them. They were Starlings, the first ones I had seen, and I wondered if they had arrived from Japan or Siberia, close to Alaska. Later, I found that the starlings were sent in cages to New York, and were freed there to nest. Years later, I

saw one going across the Clearwater Park's wild western mountains, going westward along the edge of a long and narrow lake, and flying by the sea, going north into Alaska. But they were not able to fly the 50 miles across the sea to Russia or Japan.

One fall day, we had a male Harris' Sparrow sitting on our fence, and soon bird watchers were walking down our short road to see him. We saw him first on our fence, back of the house by the sea, but soon he was on our fence at the edge of the road. I phoned birders, who called others and soon a small crowd was on the road looking back at the still unbothered sparrow. He was quite still, and so were the people. He had spent the summer somewhere, in some part of the area from northwest Alberta to northwest Alaska.



In the spring, I often see a few small crowds of Pomarine Jaegers flying by, going far north to nest on Arctic islands. In the fall, they go far south to beyond Australia, dropping on the sea to find food and rest as they go along. When I see them in the spring, they are going to the Far North, where they make their nests near the edge of the sea. Their need is a summer in both the North and the South.