THE BRODIE CLUB

ROYAL ONTARIO MUSEUM OF ZOOLOGY

THE 1,002nd MEETING OF THE BRODIE CLUB

The 1,002nd meeting of The Brodie Club was held on April 18, 2006 at the Ramsay Wright Zoological Laboratories at the University of Toronto.

Chairman: Helen Juhola
Secretary: Oliver Bertin

There were 22 members and 10 guests:
Emily and Peter Addison, and Melissa Rose, guests of Ed and Rose Addison
Eleonora Bertin, guest of Oliver Bertin
Glenda Slessor and Bob Curry, guests of Bruce Falls
Jeremy Hussell, guest of David Hussell
Sharon Hick, guest of Jock McAndrews

The minutes of the 1,001th meeting were approved without change.

NEW BUSINESS:

The May meeting will be held **one week ahead of schedule, on May 9**, to accommodate birds migrating through Point Pelee. The speaker will be member Bill Crins from the Ministry of Natural Resources in Peterborough who will tell us: "How are protected areas selected? Some results from Ontario over the past decade."

The June field trip is approaching fast. Members were asked for suggestions for a possible destination. Member Bill Rapley has offered to host The Brodie Club at the Toronto Zoo on Saturday and Sunday June 10 and 11. "If the club would like to come that weekend we could go behind the scenes and have a nice hike in the valley etc," Rapley said. Other offers are pending.

Ed Addison, Rosemary and Harry Lumsden offered to host a trip to their homes for a tour of Harry's garden and swan habitat and then lunch at the Addisons' nearby. The Addisons will be available only on June 3 or June 24.

The Brodie Club has received two applications for membership, from John Casselman and John Sparling. They have both attended at least three meetings. Their applications are attached.

Jock McAndrews noted after the meeting he has "seen Lord God Birds and so too can you. They are on display in the hallway outside the gift shop of the Buffalo Museum of Science. Beside them are a pair of Pileated Woodpeckers. The two species appear to be identical in size

although the internet says the Ivory-bill is 20 inches compared with 15 inches for the Pileated. More distinctive is the orange-white bill and a white saddle-back of the Ivory-bills."

SPEAKER:

The speaker was member Ed Addison, who told us about his experiences with moose. He studied parasitology at the University of Guelph before moving to the Ontario Ministry of Natural Resources where he spent several decades studying the health of wild animals in Algonquin Park and throughout the rest of the province. At MNR, Addison said, most people studied just one species. But he worked on the health of wildlife, giving him the opportunity to work on lots of difficult and interesting animals. "It was a licence to do what I wanted," he said. "People told me I should pay the government for the right to work because so many people would love to do the job."

A Difficult Year in the Life of a Moose

Addison is just the latest in a long line of Brodie Club members who have worked on moose. Many of the Brodie Club alumni wrote papers on moose, often citing each other's work.

Yorke Edwards, now retired in Victoria, spent a lot of time with them in the late 1940s and early 1950s. Albert Allin was a brilliant pathologist who worked on parasites out of Thunder Bay in the 1940s and 1950s, while Edwards and Dave Fowle wrote a paper on the carrying capacity of a forest that cited Brodie Club members Rod Stanfield, Robin Hepburn and Harry Lumsden.

A.T. Cringan and C.D. Fowle wrote papers that cited C.H.D. Clarke and a young guy at UBC and Queen's named J.F. Bendell. Fowle and Lumsden, by the way, were two of the first biologists to use aerial surveying techniques in Ontario to study moose, in 1958.

Moose have been in Canada a long time. They arrived between 10,000 and 14,000-years ago. They bred fast, giving a population that now numbers about 100,000 in Ontario and one million in North America.

The word moose is an Algonkian name that means "twig-eater" or perhaps "he who eats the bark of young trees."

They have poor eyes, but make up for it with big ears that act like a pair of parabolic receivers. The nose is a prize characteristic that gets longer as the animal gets older. The male usually has a light forehead and a dark snout, while females have a nose of an even colour. Moose have molars and lower incisors, but no upper incisors. They use their tongue to grab leaves and twigs and manoeuvre them back between the molars.

Moose have one prime driver and that is energy, in the form of food. They allocate their energy to survival, first and foremost, with growth second, followed by reproduction. The more energy the moose obtains, the more is left over for reproduction. There is a direct relationship. In a bad year, a moose may have only one or no young, but in a good year, in a good climate, they may have twins or even triplets. Triplets are rare in Ontario, but they are more common in Sweden, which has a milder climate and more available energy thanks to the North Atlantic Gulf Stream currents.

Forest fires are important for moose because they promote a lot of young highly nutritious growth well within the two metre height where much of moose browsing occurs. This

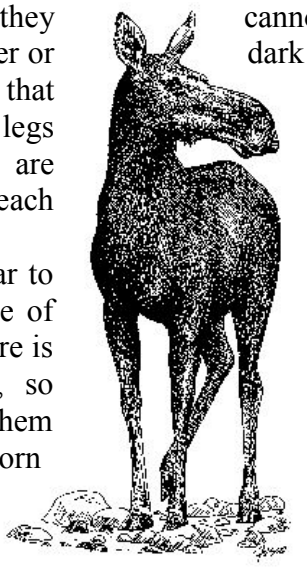
is important food for moose, allowing them to survive, grow and reproduce. Fires in the boreal forests are particularly beneficial to moose 3-25 years after a burn.

In the winter, moose lack deciduous leaves and the nutrition from twigs and balsam fir is low relative to leaves in spring and summer. Moose generally eat only the current annual growth [growth in most recent growing season] of trees and shrubs. To fill their rumen in early to mid-winter requires the current annual growth of about 250 1-2 m high trees every day or 7,500 every month. Later in the winter, moose reduce their intake of food.

"I didn't realize how much being a large vegetarian in a northern climate affects what they do," he said. And that means they have a huge impact on the forest.

In winter, the forest is a desert. The water is frozen and unavailable for use. Open water is dangerous, and snow is expensive to use because it takes so much energy to convert into water and raise to body temperature. Water is such a problem that moose try to conserve as much water as they can.

Cold weather is not a problem for a moose. They are well adapted to winter, with a woolly undercoat that keeps them warm, especially when they curl up like a cat. Summer is more serious for a moose because they cannot handle the heat. When temperatures rise, they head for water or dark undergrowth where it is cooler.



Moose have very long legs that allow them to wade into deep water and through deep snow. These legs offer a good defence against a prime predator, wolves. Wolves are infrequently killed by those sharp hooves. In studies on Isle Royale, each wolf typically eats five or six moose in a winter.

Spring is a good time of year to be a moose. There are lots of new leaves and twigs with an abundance of energy and protein. At this time of year, one limiting factor is salt. There is very little salt in the surficial rock and soil of the Canadian Shield, so moose search for whatever sources are available. That often brings them out to the road. s

The young are usually born during the last 3 weeks of May. This is the height of the calving season on moose range throughout the world.. When islands are available, moose often calve on small islands, away from bears and wolves. When born, they weigh perhaps 17 kilograms and look like a cigar with four toothpicks. They grow fast, often putting on one kilogram a day by late summer. Calves spend most of their time feeding on moose milk, a very rich food, before switching to leaves. Young calves eat dirt, presumably to restock their rumen with bacteria that provide enzymes to help digest plant material.

Flies are a problem in summer. Often the only way to escape them is to go into the water, a favourite haunt of the moose, especially on hot days. Moose can handle the cold, but they don't like temperatures over about 20C. Hot weather is very hard on them and their energy balance. They try to conserve energy by cooling off in cool water. Perhaps the most important attraction to water is the presence of aquatic vegetation, some species of which are able to concentrate relatively high levels of sodium. Moose selectively eat the aquatic vegetation with the highest levels of some elements, particularly sodium.

Antlers are a mystery. Males grow them every spring, a process that requires a huge amount of energy and calcium. The antlers grow so rapidly they have been used as a model for cancerous growths. Antlers have no particular purpose except to impress other males.

Male moose eye each other during the fall rutting season, and the male with the biggest set of antlers usually wins. The males rarely have to fight. The one that blinks first backs off and goes away. Rutting behaviour appears to be an ingrained, innate habit. Addison talked about one male that was born and raised in captivity. It used to intimidate stumps in the rutting season, sometimes charging them.

Parasites are a serious problem for moose. Thousands of young ticks hang onto each other and to plants in the autumn, waiting for a moose to brush past. The ticks grab onto the moose with their legs, hang on, feed and lay thousands of eggs, which hatch in spring. Ticks can be so numerous that they make the moose anemic. They also itch so much that the moose scratches and rubs its hair off, leaving it vulnerable to heat loss and death in the late winter and early spring.

Brain worms are another problem. These worms are not a problem for deer, but they cause brain damage in moose. One characteristic is a circular track in the snow. An infected moose will sometimes stagger in huge circles until it finally dies.

QUESTIONS:

- Ken Reading has seen moose in the northern tundra of Keewatin, near the Arctic Ocean. Sometimes moose migrate 20 or 30 kilometres from the summer highlands to the winter lowlands, near rivers.
- Young moose are hard to feed in captivity. They tend to get diarrhea, often a serious problem for captive young moose. They are sometimes fed with Carnation milk or milk powder. Sometimes leaner diets are better because they lessen the problem of diarrhea.
- Moose probably kill a lot of wolves with their hooves.
- Tuberculosis is very rare, far more rare than in elk, bison or domestic cattle. Cattle probably infect the bison, but have less contact with moose.
- Falls questioned the use of antlers. They appear to be an intimidation technique to sort out the biggest, strongest, most virile male. Moose appear adept at comparing each others antlers, and rarely fight unless of equal size.
- Moose can be easily tamed if adopted early. It is amazing how tame they can be, Addison said. But they can be aggressive, even dangerous, in the rutting season.
- Addison mentioned one biologist who experimented with different sizes of antlers. He found that moose with bigger antlers intimidated those with smaller racks.

The speaker was thanked by Glenn Coady.

NOTES & OBSERVATIONS:

- Addison recently saw 100 plus Tundra Swan in the Harriston area, and Snow Geese for the first time in years in North Glengarry.
- Enid Machin saw Wild Turkeys for the first time north of Madawaska.
- Falls saw moose nuggets for the first time near his cottage, north of Apsley.
- Rose Addison photographed a wild turkey in her yard in central Aurora
- Jean Iron saw a Snyder's Great Horned Owl on Manitoulin. It was a pale subspecies of the more common variant. She has posted two photos and a description on her website:

http://jeaniron.ca/Owls/snyders2006.htm. The subspecies is named after L.L. Snyder, who worked at the ROM and was a founder of the Brodie Club.

NEXT MEETING:

The May meeting will be held **one week ahead of schedule, on May 9**, to accommodate birds migrating through Point Pelee. Usual place and time, 7:30 p.m. in Room 432 of the Ramsay Wright Zoological Laboratories. This will be the last meeting of the season.

The speaker will be member Bill Crins from the Ontaro Ministry of Natural Resources in Peterborough who will speak on: "How are protected areas selected? Some results from Ontario over the past decade."

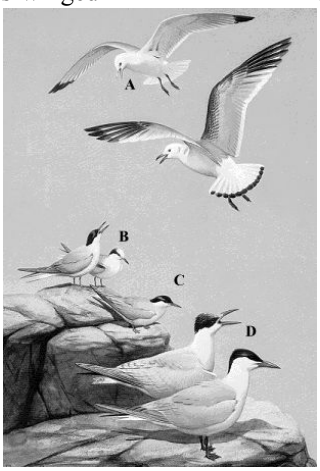
My Two New Parks

By Yorke Edwards
Our Western Correspondent

Years ago in B.C.'s Miracle Park, which is north up the east coast from Victoria, I was working with young university helpers making a tent museum to show people the many interesting things in the park's forest.

In the evenings, I often walked along the park's sandy shore, and would see far ahead a crowd of white gulls on a point into the sea. Later, I went up to find it was a small island named Mitlenatch, not far from shore.

The huge number of Glaucous-winged Gulls, hundreds of them, were nesting near the island's shore. Some had wings coloured gray to their ends, others had darkened wing tips, but all were one species.



The last time I went to Mitlenatch, the winds rose and the waves became white, so we couldn't use our small rented boat to return home. We sat at the quiet edge of the island's sandy shore to eat a dinner of delicious raw oysters. Later, in the dark, we went behind the island's rocks to sleep. Winds roared just above us, waves roared below. Hours later, we woke up to find two policemen looking down at us. A park person had phoned to tell them we needed help.

A few months later, Mitlenatch Island became a provincial park, and there was someone every summer, to keep people away from the gulls, and to show birds, plants and seashore salt-water creatures.

Years later, I often drove to a long beach on the west side of Vancouver Island, near the small town of Tofino. I wished it would become a park with a long and narrow beach and the forest behind it, with a road just a few miles to a village. Beyond the town, there was no road northward.

Now called Long Beach, it first became a provincial park and much later a national park. One April day, I drove my government Jeep north from Victoria, then across Vancouver Island to near the sea, and soon was driving along the wet edge of Long Beach. I was often there, but this time, I saw a crowd of gulls at the far south end. Driving slowly I was soon near them.

Most were the expected Glaucous-winged Gulls with some Californias. Close to those were Mew Gulls that had nested not far north up the shore, and standing near them was a line of ten Black-legged Kittiwakes and one Red-legged Kittiwake, all in a line close to me.

That Red-legged one is rarely seen even on Alaska's mainland, living mostly over the sea and nesting on the west half of Alaska's long row of western islands.

My bird books have several 'Red-legs' in them, but have little information. *The Birds of Canada* book (the second one, from Ottawa) says only that a Red-leg was once found dead in the Yukon. We can now add that once a Red-legged Kittiwake, was alive in British Columbia. Y

Cutline:
A: Black-legged Kittiwake
B: Common Tern
C: Arctic Tern
D: Caspian Tern

John Malcolm Casselman

Ever since I grew up in the 1,000 Islands section of the St. Lawrence River in the 1940s, I've been interested in the pursuit of natural science, particularly aquatic things and fish. My family encouraged me to be inquisitive, to seek knowledge, and to associate with a broad group of people of like mind who closely watched the natural environment and the world about them, in particular the river, its fish and fisheries. My long-standing associations with the St. Lawrence River led author Shaun Thompson to designate and profile me as one of his legendary "River Rats," and I'm proud of it!

Before attending university, I worked as a fishing guide on the 1,000 Islands section of the St. Lawrence River. This encouraged me to pursue science in depth, primarily because of a concern about society's insatiable desire to consume natural resources with no apparent concern about the consequences or sustainability. I attended the Ontario Agricultural College at Guelph specifically so that I could pursue fisheries science. I graduated with a Bachelor of Science from this affiliate of the University of Toronto and was a member of the last graduating year to receive that degree from U of T. I stayed on at the new University of Guelph and completed a Master's degree on northern pike of the St. Lawrence River, including some data I had already collected early on as a fishing guide. I then attended the University of Toronto, associating actively with the Royal Ontario Museum and its staff, and completed a Ph.D. in 1978.

While at Toronto, I became familiar with a group of people who met frequently at the ROM and were known as The Brodie Club. Indeed, my professors and mentors at the ROM and U of T, Drs. W.B. Scott, E.J. Crossman, and F.E.J. Fry, were members. I came to know and associate with many Brodie Club members in these departments. I attended a few meetings with my mentors at that time. I was particularly interested in what I considered to be important aspects of the club's activities — the pursuit of natural observational science and philosophy. However, graduate work and a subsequent career were full-time commitments.

My own professional career has afforded me the great opportunity to pursue natural science in depth, mainly in relation to the aquatic environment, fish, and fisheries. I have published more than 100 scientific papers, written several book chapters, and am currently co-editing a book for the American Fisheries Society. Recently I was asked to present a talk on global climate change, fish, and fisheries and to attend meetings of the club (including the 1,000th), and I regularly receive the minutes of the meetings. I have very much enjoyed my association with many former members and have a similar association with many current members.

I am interested in waterfowl, but I am not a birder in the more formal observational sense. Having grown up around the upper St. Lawrence River and continuing that 50-year association and living now on both the lower Bay of Quinte and the St. Lawrence River, I am able to indulge in this particular interest. I am active in the outdoors and am increasingly interested in the natural world around me.

I recently retired as Senior Scientist with the Ontario government, supervising fisheries research on Lake Ontario. I feel I now have more time to continue some of my earlier pursuits and interests. I still hold a Senior Scientist Emeritus position in the Ontario Ministry of Natural Resources but now pursue my profession through a position as Adjunct Professor at Queen's University at Kingston, where I have an office and research laboratory. I am still very active professionally and recently travelled to China to examine fisheries problems in the Tibetan Highlands at the invitation of the Chinese Academy of Sciences.

My active professional life can probably best be exemplified by the past several weeks. I have given two invited lectures and one seminar at Queen's University. These have been on global climate change and calcified structure analysis of fish. I have given two guest talks to naturalist groups, one at Cloyne and one in Almonte; have been involved in a scientific review of a National Science Foundation research study that I jointly conduct in arctic Canada; gave an invited seminar on the catastrophic decline of the American eel in the Great Lakes Basin and consulted with colleagues at the Department of Fisheries and Oceans Institut de Maurice Lamontagne in Mont-Joli, Quebec; gave a guest lecture for Natural Resources Canada in Ottawa; met and worked with a colleague from the Canadian Wildlife Service on cormorants and fish; and chaired a meeting of the American Fisheries Society 2010 Meeting Time and Place Committee.

I have been, and remain, actively involved in the American Fisheries Society and have been president of the Canadian Division.

I am active and interested in formally joining the Brodie Club and associating with the members, many of whom I have known personally

for many years. Several have very kindly offered to sponsor this application: W.B. (Bev) Scott, Harry Lumsden, and Oliver Bertin.

I hope that this personal overview encourages the membership to consider me as an active member. I feel that we have much in common. Having looked at some former writings associated with the Brodie Club, I feel that I could easily relate to an organization that has "no president, no vice-president and no business," particularly if it brings together observationally inquisitive people, independent of profession, who have a love for, an interest in, and a fascination for the natural world around us.

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John Sparling

I have attended a number of the Brodie Club Meetings over the last few months, and have enjoyed coming, listening to the speakers and discussing natural history with other members afterwards. Now, after a little consideration, I feel that I would like to be considered for membership in the Brodie Club. Bruce Falls, and several other members of the club suggested this.

A little about myself: I came to the study of natural history, at an early age, and at school was known for my passion for birds, mammals and plants. This ranged from nighttime badger watching, walking many miles to watch birds at local lakes and hotspots, searching for rare plants and bird watching in the Scottish highlands, and wandering the byways and woods around my home.

I received an honours degree in botany and zoology at the University of London in the UK, and then continued ecological research completing a doctorate in wetland and peatland ecology. I taught plant ecology at University of Toronto, and had research interests in forest and peatland ecology in Southern Ontario, the boreal forest and the Hudson Bay Lowlands. Throughout this time I was a keen botanist and birder.

Starting in the mid 70's, I ran my own environmental consultancy working on many environmental projects including those for National, Provincial and local parks, watershed and river studies, road, pipeline and hydro alignments and resource-based projects in Southern Ontario and the Canadian boreal region.

I retired, so called, in 2000; I thought a good round figure. Since then my interests continue to be wide ranging with some priority given to birds and plants. In retirement, I have had the opportunity of enjoying birding and botanising trips to Costa Rica, Swiss Alps, Pyrenees, The Camargue and recently to India. I have also renewed my previous interests in fungi and lichens, and have recently undertaken, with other mycologists, fungal inventories of Gros Morne N.P., Southern Labrador, and a number of sites in Ontario including Carden Twp. alvars.

A friend once told me that as we age we tend to return to those pursuits that fascinated us as children. It seems that I have returned to my childhood days, if ever I left it.

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