

THE
BRODIE
CLUB



ROYAL ONTARIO
MUSEUM OF ZOOLOGY

THE 1005TH MEETING OF THE BRODIE CLUB

The 1005th meeting of The Brodie Club was held on Oct. 17, 2006 at the Ramsay Wright Zoology Laboratories of the University of Toronto.

Chairwoman: Ann Falls
Secretary: Oliver Bertin

There were 22 members and four guests.
Jeremy Hussell, guest of Rose Addison
Dorothy Andrews, guest of Fred Bodsworth
Eleonora Bertin and Peggy Haist, guests of Bertin
Glenda Slessor and Bob Curry, guests of Bruce Falls

The minutes of the September meeting were approved with minor changes.

NEW BUSINESS:

The following members were acclaimed to club positions for the 2006-2007 year. Trudy and Jim Rising will serve until January 2007, when they leave for Oaxaca and Guanojuato, Mexico for three to six months to study several species of sparrow.

Secretary - Oliver Bertin

Treasurer - Aarne Juhola

Membership - George Bryant, Ann Falls, Kevin Seymour, Jennifer Young

Programme - Fred Bodsworth, Hugh Currie, Bruce Falls, Marc Johnson, Jock McAndrews, Jim Rising to January, 2007

Representative to Ontario Nature (FON) - Trudy Rising to January, 2007, thereafter Ed Addison

Refreshments: - Trudy Rising to January 2007, thereafter Ed Addison

Archivists: - Sandra Eadie, Kevin Seymour

Charlotte Ann Hall Lennox

Aug. 13, 1933 – Oct. 19, 2006

The Brodie Club members join in sending their deepest sympathies to Charlie Lennox, long-time member and corresponding member of The Brodie Club, following the passing of Charlotte after a stroke. Her charm, curiosity and warmth of character made her an integral part of our organization, befitting a Prime Minister's descendent and a University of Toronto President's niece. Charlie says that she got turned on to natural history by the Brodie Club minutes, which came regularly to Charlie, and she remained a keen naturalist, conservationist and wonderful field trip companion for the rest of her life.

Charlie met Char in Toronto following his RCAF service in WWII while she was working as an X-ray technician. They were married and lived in Toronto until Charlie's retirement from the University of Toronto faculty when they moved to Char's native Nova Scotia. Here, they divided their time between their own natural history paradise within range of Bicknell's Thrush and many good things on Cape Breton Island, and Wolfville in the Valley. Their daughter Sheena and son-in-law Gordon Filewych live in Winnipeg which is the city Charlie had grown up in.

We look forward to seeing Charlie at future special events of the Brodie Club but Char will be sorely missed.

Yours truly,
R. Tasker, M.D., FRSC

Member Ken Abraham is the ninth recipient of the Distinguished Ornithologists Award. The award is offered annually by the Ontario Field Ornithologists to people who have made outstanding and authoritative contributions to the scientific study of birds in Ontario and Canada. Abraham was honoured because he is "respected worldwide for his knowledge of waterfowl and shorebirds, particularly Canada Geese, Cackling Geese, Brant, Snow Geese and Marbled Godwits."

The award was presented to Abraham by fellow Brodie Club member Jean Iron at the OFO annual convention in Ottawa on Sept. 30. Brodie Club members have dominated the awards from the beginning. Of the nine recipients, seven have been associated with the Brodie Club as active or corresponding members. The previous winners include: Earl Godfrey (a non-member who was curator of birds at the national museum in Ottawa) 1997, Ross James 1998, Murray Speirs (a UofT professor who was associated with the club but never a member) 2000, George Peck 2001, Bruce Falls 2002, Bob Curry 2003, Jim Rising 2004, and Ron Pittaway in 2005. There was no award in 1999.

Claire Muller sent the following note to the club:

The Brodiers All, especially Rosemary Addison, Ellen Larsen, Robert Ritchie and Oliver Bertin:

Thank you all for trying to help me find and send off "Trees of Canada" or equivalent to Cuba. Apparently I was too ambitious, and must confine myself to sending much smaller items in order not to compromise the security of my friend, or jeopardize his customs clearance in Cuba. Security is very tight there and even if suspicions prove to be unfounded, embarrassing delays might be encountered, so the original plan is being scrapped.

Thank you all again.

Sincerely, Claire Muller

- Member David Tomlinson and his Merlin's Hollow garden were written up in the Aurora, Ont. newspaper.
- The current issue of the Wilson Journal of Ornithology has an article on noted Ontario biologist Jim Baillie.
- Ontario Nature rep Trudy Rising reminded members of that club's 75th anniversary celebrations and gala dinner on Nov. 14. The Brodie Club and other founding clubs will be honoured.
- Juhola would appreciate payment of annual dues: \$10 for individuals and \$15 for families.
- Prof. Robert Reisz of UofT's Erindale College will talk on dinosaurs at the next meeting, on Nov. 21, 2006. His speech is entitled: "The earliest dinosaur embryos and their significance for evolutionary theory."

SPEAKER:

Prof. Maydianne Andrade was born in Jamaica and educated at Simon Fraser University with a PhD at Cornell University. She has taught at UofT's Scarborough campus for six years. She wrote her first paper on cannibalistic spiders in 1996.

THE MATING STRATEGIES of CANNIBALISTIC SPIDERS

Andrade began her studies in Perth, Australia with the Australian Redback Spider, a relation of the Black Widow that is known for the divergent size of the two sexes. The female is very large, black with a red hourglass underneath the abdomen and a red stripe on its back. The male of the species is the size of a grain of rice, pale-coloured and nondescript.

Her talk dealt with three areas. The evolution of the mating strategies, terminal investment in the mating game and male behaviour.

In most species, males tend to be more competitive, brighter-coloured and flashier than the female. They try harder to mate and tend to multiple matings. But the female is more selective and chooses the one she wants to mate with.

There are other differences. The female invests her reproduction resources into a relatively small number of very large, expensive eggs, and tries to maximize the success of each mating. They look for the best quality male they can find. The male, however, spends relatively little energy producing huge numbers of sperm, in the hope that at least one will produce a successful offspring.

Andrade has studied several of the 30 species of Black Widow, both in the lab and in the field using an infrared light that allows her to observe the mating behaviour of these spiders without being seen.

Redback Spiders typically hide in rocky places during the day, emerging at night to tend the web. The female is often the size of a large marble, while the male is closer to a grain of rice. The females tend to copulate once and lay a large number of eggs. Between 90 and 100 per cent of the males die during copulation and are usually eaten afterwards.

In many of the females tend to be bigger eight instars when the male. Females grow for the male. Females live to eight weeks for the

The life cycle is have two copulatory organs — coils — on their heads, while females have a receptacle under their abdomens just in front of the red hourglass. Females tend to stay put on the web after they mature, while the males go searching for a female to mate with. When they find one, they engage in a long courtship dance that can last for five hours.

There is intense competition for the female's attention. Andrade found between two and eight males in courtship behaviour on a typical day. If the dance is not to the female's liking, she will ignore the male, flick him off the web or eat him. If accepted, the male inserts one of his two copulatory coils into the female and inflates it. He then somersaults under the female and lands with his abdomen adjacent to her mouth. She inserts her fangs into his body and injects digestive fluids. He releases the coil and leaves. Twenty minutes later, he returns to the female, inserts the other copulatory organ and copulates for a second time. He somersaults towards her mouth a second time, she inserts her fangs again and this time finishes him off.

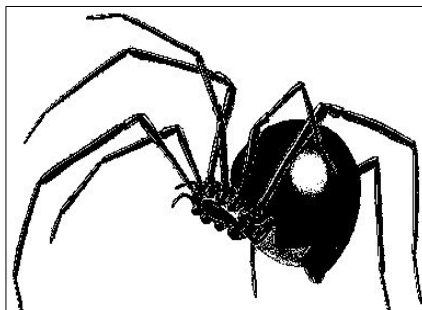
Andrade found that males typically outnumber females because they mature faster and there is a higher turnover. percentage of males — 0.2 per cent unable to find a suitable female, or discovered that 98 per cent of males mouth, and 85 per cent of males die of them are eaten by the female. On of the females mate more than once.

The cannibalistic behaviour probably not consumed as a food therefore not very nutritious.

The males who die tend to transfer far more sperm over a longer mating period, and cannibalistic females are less likely to mate for a second time.

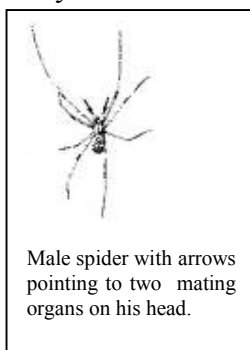
The longer mating period allows the male to insert a plug into the female receptacle, thus preventing her from mating a second time. This plug breaks off the end of the male's coil and remains inside her for the rest of her life.

From the male perspective, the male that completes the copulation — and dies — tends to block mating by successive males, making him the sole father of her offspring. But the female



Black Widow species, the because they have seven or growing, compared to five with for 75 days, compared with 45 for about two years, compared male.

pertinent. The males usually



Consequently, a very small — actually mate. The rest are are rejected. Andrade also somersaulted into the female's during or shortly after mating. Most the other hand, less than 30 per cent

is very curious. The males are because they are so small and Instead, the cannibalism seems

doesn't necessarily want to be limited to one male. Some females discard the male after the first copulation, leaving the door open for a second male, a second breeding and a wider gene pool.

Males optimize their fitness for copulation in several ways. They maximize their chance of survival during the first copulation, leaving them available to come back for a second attempt. They minimize the damage from the female bite, using muscle contractions to constrict the part of the abdomen that comes into contact with the female fangs. Andrade found that 73 per cent of males with a constricted abdomen survive the first copulation, compared to a 20-per-cent survival rate for spiders without the constriction.

Smaller males tend to be at a disadvantage in the spiders' big-is-better world. But they sometimes compensate for their size by sneaking in and mating while the larger male is still performing.

Males also engage in long and complex dance patterns because females prefer males that take the time to perform a "better" dance. Females sometimes strike at males that underperform or rush the job, sometimes kill smaller males or flick them off the web.

After all, males compete, while females choose.

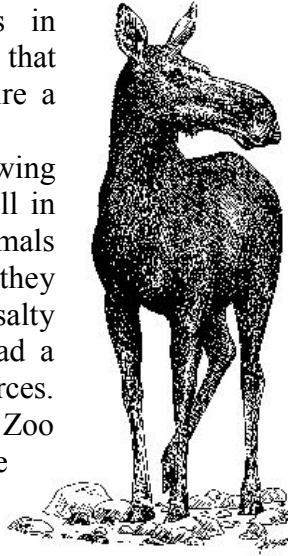
QUESTIONS:

- Andrade does not yet know what advantages cannibalism provides for the female. Males receive paternity benefits from a successful copulation, and cannibalism offers few disadvantages. After all, the males will soon die anyway. The benefits for the female are harder to determine. Males are not a good source of food because of their small size, but they may contain a hormonal trigger of some sort that allows breeding to succeed. Such triggers are found in *Drosophila* fruit flies.
- The term Black Widow spider applies properly to a related species that is found in the southern United States. It likely got this name because people often found dead males in the web with females. But it could be because of the male's short lifespan rather than because of cannibalism.
- There are two species of Black Widow whose distribution spread into Canada. Andrade is studying one of these in British Columbia and searching for populations of the other in Ontario.
- Andrade wasn't sure whether females try to eject the plug in hopes of mating a second time.
- These spiders mate all year around, in the wild and in the lab, offering the researcher more opportunities for study.

The speaker was thanked by Helen Juhola.

NOTES & OBSERVATIONS:

- McAndrews has found references to the Pottageville Swamp near Schomberg in at least three books on the natural history of Ontario. Several members, including John Sparling, have visited the swamp in recent years. McAndrews plans to visit the area in January.
- One member wondered why moose are difficult to find in zoos. There are, in fact, several moose in the Toronto Zoo, but Ed Addison said they rarely live for more than three to four years in captivity, compared to eight to 12 years in the wild. He suspects that moose are not happy with artificial complex natural diet with the diets. They seem to require a appropriate bacterial mix.



- Bill Rapley sent the following note after the meeting:
Moose do not do really well in captivity. We have had some success over the years. Most of our animals have come in as orphans with the females being hit by cars when they are crossing the road and possibly searching for salt. They crave salty plants in the aquatic environments in degree of success by providing aspen pellets and good browse sources. We have had a significant amount of breeding success at Toronto Zoo often producing twins.

Moose do have serious acute digestive upsets and sudden deaths due occur. This is despite very aggressive animal CSI attempts to find a diagnosis. Other zoos such as in Minnesota and in Quebec have had very good success. The appropriate climate has been a major factor. Russia has done very well with mooses and historically almost domesticated this species and used them to pull wagons in Siberia etc.

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It is one of my very favorite species. I worked with Ed Addison many years ago with his moose projects raising this challenging species for research studies in Algonquin.

- Hugh Currie reported a flock of 50 Black Ducks on Gull Island, near Presqu'ile, a rare occurrence. There were no Mallards in the group.
- Bob Curry launched his latest book *Birds of Hamilton and Surrounding Area* on the Thursday before the meeting. It costs \$60 through Curry or the Hamilton Naturalists Club.
- Ed Addison bumped into Robert Ritchie in Niagara Gorge. Ritchie — son of long-time member R.C. Ritchie — is a naturalist with the Niagara Parks Commission.
- Jeremy Hussell has seen a third Black Swan in the wild. The latest was near Silver Creek on the Bruce Trail, west of Toronto. The Black Swan is an exotic from Australia and reportedly has a nasty temper.
- Fred Bodsworth gave an interesting account of Thick-billed Murres on Prince Leopold Island, near Somerset Island in the High Arctic. The nestlings flutter down to the water where they are met by the father. They swim together to Newfoundland and then fly back. The initial flight is made after dark to minimize predation by Glaucous Gulls. Apparently, the fathers are able to find their own offspring by voice — or peep — among the thousands of similar babies that are fluttering down together.
- Falls said up to 300,000 birds a day funnel through a narrow area between the cliffs and the sea north of Veracruz, Mexico. The birds include Broad-winged Hawks, Turkey and Black Vultures, Wood Storks and White Pelicans.

- Falls noted the launch of a new ornithological on-line journal named *Avian Conservation and Ecology*. It can be found at <http://www.ace-eco.org>. The journal is free to readers, but authors pay for inclusion.
- A recent issue of *Avian Conservation and Ecology* has an interesting article by a University of Windsor professor on evidence that the Ivory-billed Woodpecker can still be found in the Florida panhandle.
- McAndrews said Crawford Lake mud dating to 1300-1500 AD contains pellets that are packed with pollen (corn, sunflower) and seeds (sunflower, purslane, nightshade) derived from Iroquoian corn fields. DNA analysis implicates Canada Geese that fed in the fields and came to roost on the lake. This may explain how prehistoric corn pollen entered the mud of rain forest lakes in Ecuador and Panama. Candidate bird carriers are Muscovy duck and black-bellied whistling duck.
- Pittaway sent the following note after the meeting: The mainland North American Ivory-billed Woodpecker and Cuban Ivory-billed Woodpecker are usually treated as two closely related subspecies. But a recent study by Fleischer et al. (2006) analyzed mtDNA from museum specimens. Their results suggest that Cuban and mainland Ivory-billed Woodpeckers are two separate species that split about one million years ago. Also, it was thought that Ivory-billed Woodpeckers could have been introduced to Cuba by Native Americans in prehistoric times because of the high value placed on ivory-bill artifacts. However, a mid-Pleistocene divergence does not support this hypothesis. Most importantly, there is now a DNA barcoding resource to identify samples or remains of mainland North American, Cuban and Imperial (in Mexico) Campephilus woodpeckers. He referred to "an excellent layman's version" of a recent paper from Cornell University that can be found at http://www.birds.cornell.edu/ivory/latest/woodpeckerDNA/document_view.



MEMBERSHIP NOMINATIONS:

Bob Curry and his wife Glenda Slessor have been nominated for membership in The Brodie Club. They have submitted the following biographies.

Bob Curry:

Bob is a retired Halton Region high school teacher with a life-long interest in all aspects of natural history.

He has been studying birds and other wildlife for more than 50 years. During that time he has seen more than 345 different species of birds in Hamilton and more than 420 in Ontario. In addition, he has a keen interest in herpetology taking many trips to study and photograph reptiles and amphibians. He is also interested and knowledgeable about lepidoptera (butterflies and moths) and odonata (dragonflies and damselflies). He has written many papers, notes and articles on these subjects for journals and newsletters.

Bob has served as president of the Hamilton Naturalists' Club, chair of the Long Point Bird Observatory and as chair of the Ontario Bird Records Committee, the body that keeps the official list of birds seen in the province. At the annual meeting of the Ontario Field Ornithologists in September 2003, Bob was honoured as the sixth recipient of the Distinguished Ornithologist Award given for his outstanding contributions to the scientific study of birds in Ontario.

Bob serves on several local committees concerned with improving our natural environment. In recent years he has conducted summer field inventories of the fauna of Hamilton and Halton. He authored the *Breeding Birds of Hamilton* as part of the Hamilton Natural Areas Inventory and *The Reptiles and Amphibians of Halton Region* as part of the Halton Region Natural Areas Inventory. In addition, he has written and edited *Birds of Hamilton and Surrounding Areas*, a comprehensive book about the history of birds and bird study in the Hamilton area. He and his wife Glenda travel extensively in search of birds and other fauna.

Glenda Slessor:

I am a retired secondary teacher and department head whose teaching subject was English. My literary background includes the study of Canadian Literature. Readings, which explore the Canadian wilderness experience, have been of special import since I was a child.

My personal interest in birds and plants has been a hobby for many years, in the Bruce Peninsula and the Muskoka districts of Ontario in particular. I began to engage in natural studies more intensively in the last 15 years, expanding my interest in bird studies, and adding the study of Ontario butterflies, dragonflies and insects.

I have served on the executive of the Hamilton Naturalists' Club for 5 years, first as Director of Bird Studies, and then as Conservation Director. I was leader of the Bird study group of the club for 4 years, and am currently on the Bird Study Group committee, to plan programs and run meetings for the organization. I occasionally write articles for the Wood Duck, the journal of the HNC.

At the moment, much of my time is devoted to the Birds of Hamilton Production Committee. Now that the book is published, my job is publicity and sales.

I look forward to the Brodie Club association. So far, I've had the pleasure of three meetings: a fine dinner celebrating the 1000th meeting with a study of underwater hot spots; moose ecology; and an exploration of those cannibalistic spiders from Australia.



Humber River's Salmon

By Yorke Edwards
Our Western Correspondent

When I was about to return to Victoria from Ottawa, I was given two booklets of historic stories about Ontario's salmon, both from The Royal Society of Canada. One was written by W. Sherwood Fox who wrote: "The Literature of Salmon salar in Lake Ontario and Tributary Streams." Some parts of that story are below, telling when Toronto had abundant salmon from rivers near the town.

'The Humber River was a famous salmon stream (as the fish) yearly, going their way through the rapids even as far as Bond Head. Every village and hamlet along its banks as well as the many lumber camps feasted copiously on salmon from this river each year from April to November.

'Apparently the Credit was the best salmon river of the Caledon mountain ... Enormous catches were made at Erindale where an old Indian dam halted the fish in their upward progress. Mrs. Jameson, writing just prior to 1839, reports that here in a single night the young men of a family caught as many as two hundred. Mr. Magrath, a few years before, states that he and his brother speared one hundred and twenty salmons of a night. He adds that they are now becoming less numerous.

'The period during which each year the salmon were available for food purpose was a long one. This fact and the certainty of the supply must have been no negligible economic factor to both the native Indians and the early settlers. The earliest record date in the year for the capture of salmon is March 17th, on which day each year the Honorable Charles Small of Toronto served a lake or river salmon at his table. Until the rivers froze over late in November or early in December, fish could be found in the head waters. A season of eight months in which a good supply of a food of the first was virtually guaranteed by nature was an inevitable boon to a people who were not encumbered by a superfluity of wealth.'

Near the end: 'But the day of this easy abundance has long since passed. Indeed, we note that before 1840 the supply was diminishing. By 1870, the Lake Ontario salmon had become rare, and citizens and government had begun to rue their mad waste of a great natural resource.'

At the end: 'I believe that Lake Ontario (salmon) was a race that migrated periodically to and from the ocean. But to what rivers it resorted we can no longer determine.'

People do change the world. Y

NEXT MEETING:

Prof. Robert Reisz of UofT's Erindale College will talk on dinosaurs at the next meeting in Room 432 of the Ramsay Wright Zoological Laboratories at 7:30 pm on Nov. 21, 2006. His speech is entitled: "The earliest dinosaur embryos and their significance for evolutionary theory."

