THE BRODIE CLUB

Established 1921

Website: http://thebrodieclub.eeb.utoronto.ca

THE 1,084th MEETING OF THE BRODIE CLUB

The 1,084th meeting of the Brodie Club was held on Tuesday, 05 May, 2015 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: Bill Crins
Secretary: George Bryant

The meeting was called to order at 7:36 pm and was attended by 22; 18 members and 4 guests.

Roll Call: Present: Beadle, Bryant, Crins, Currie, Dunham, Dunn, Eadie, A. Falls, B. Falls, Hussell, A. Juhola, H. Juhola, Kotanen, Machin, Martyn, McAndrews, Obbard, Sutherland.

Guests: Katy Thomas (guest of Beadle), Sharon Hick (McAndrew), Carolynn King and Kathryn Falls (Falls)

Regrets: Abraham, E. Addison, R. Addison, J. Bendell, Y. Bendell, Bertin, Curry, Daniels, Eadie, Johnson, Iron, Pittaway, J. Rising, T. Rising.

Minutes: Approval of past minutes was moved by Falls, seconded by J. Hussell

Committee Reports:

Ontario Nature: Bryant, on behalf of G. Slessor reported that $255.00 had been collected towards funding a student to the ON summer camp. The minimum funding per student is $300, leaving a shortfall of $45. An envelope was passed to permit previously absent members to make a contribution. (The shortfall was covered.)

Field Trip and Picnic: Bryant reported on behalf of the Field Events Committee. Date is Sunday, June 14, 10 a.m. at the Ontario Nature Cawthra Mulock Reserve. See attachment for details.

Program: B. Falls reminded members that the September meeting will consist of members' presentations. Volunteers are asked to contact B. Falls**.**

Announcements: None

SPEAKER:

Biology and Ecology of Odonata

P. Kotanen introduced Dr. Shannon McCauley, an Assistant Professor of Biology at University of Toronto, Mississauga (UTM).

Our speaker provided a brief overview of the taxa. This is an old group of insects with the fossil record going back to ~250 million years BP. Some dragonflies then had wingspans of 70 cms. The aquatic larva of today are remarkably similar today to those of fossil forms. Larval stages last from as little as 28 days to as long as six years less productive waters such as in northern Ontario.

Dragonfly nymph with hinged lower jaw extended underwater

All odonates are predators both as adults and larvae. They are the top predators in fishless ponds. In ponds with minnows, Darner larvae can take a 3" minnow using their prehensile labia to capture prey.

Unlike other orders, there is very little re-arrangement of body parts during metamorphosis. As adults emerge from the larval exoskeleton, they drop upside down from the larval case before the wings are spread, then climb upright and pump fluid into the wings to expand them before they dry out.

Alfred Lord Tennyson was probably the first to describe this phenomenon poetically, in *The Dragon-fly:*

> Today I saw the dragon-fly
> Come from the wells where he did lie.
> An inner impulse rent the veil
> Of his old husk: from head to tail
> Came out clear plates of sapphire mail.
> He dried his wings: like gauze they grew;
> Thro' crofts and pastures wet with dew
> A living flash of light he flew.

Newly emerged dragonfly

McCauly is interested in how climate change might impact dragonflies, in particular, their larvae. In California she studied this by placing dragonfly larvae in large cattle tanks with some heaters set 2.5°C higher than ambient, to mimic conditions 50 years' hence. Emerging adults exposed to higher temperatures were the normal size but had smaller wings, which might impact dispersal abilities.

American Rubyspot

Ontario is very rich in dragonfly species. We have eastern, western and northern species. Dragonflies have a wide base to the hind wing allowing gliding and long distance migration. Damselflies have petiolate fore and hind wings—they are fine scale fliers. Dr. McCauley reviewed some of the more prominent odonate families. Male Rubyspots (see photo) obtain more matings is they have larger red wings spots. *Anax junius*, a migrant dragonfly, follows the same route as birds but uses air currents to a greater extent. They can travel up to 120 kms. in one day. This is the only odonate species large enough to carry a radio transmitter!

Anax junius

The range of Ontario odonate fauna is changing with many species now being found farther north.

Using a Sharpie, scientists can mark dragonfly wings and study their habits. At the UoT Koffler Reserve, dragonflies were marked and released over fields and forest at varying distances from their ponds. At a distance of 130 metres, all came back to the pond. But when released 500 metres away, they were not deterred by open fields, but most would not pass through forest. The conclusion is that the increase in forest cover in the past century may impede the movements of animals.

At Matchedash Bay in Georgian Bay, Dr. McCauley and her students studied dragonflies in the coastal habitats. They considered multiple factors such as isolation, distance from boating channels and varying habitats. One conclusion was that wave action is deleterious to dragonfly development. Interestingly, some species were found predominantly at isolated sites; possibly they were avoiding boats channels and other competition. Zebra mussels are impacting dragonflies. Some larvae have been found covered in mussels, and some were even tied to the substrate by the mussel byssel threads.

Questions:

Crins asked whether natural wave action would not have the same effect as boat wake action. Apparently not. Boat waves have a different trajectory—they hit from all directions, whereas natural waves follow a consistent pattern. The dragonflies occupy sites on the lee side of rocks affected by natural wave action.

B. Falls asked how far south migratory dragonflies go. Up to 2800 kms; to Florida and the Gulf states.

Bryant asked about Subarctic Darners, which breed in splash pools along the north Lake Superior shore. How do the larvae survive the winter? The larvae freeze solid and despite the brutally cold temperatures overwinter successfully.

D. Dunham thanked the speaker.

FIELD OBSERVATIONS AND BOOK REVIEWS

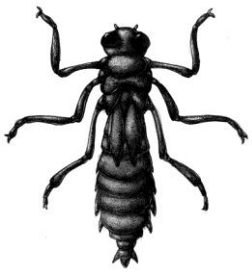
H. Juhola noted that she and A. Juhola had just crossed the Canadian prairies by train west to east on the same date as in the past three years. This year they observed eight large flocks of Snow Geese, whereas in previous years they had only observed one flock.

Falls suggested bird spring migration was a little late this year. He recommended screening 'The Messenger,' aka 'Songbird SOS,' based in part on Bridgett Stutchbury's work on the reduction in numbers of migratory songbirds.

H. Juhola recommended 'Where Do Camels Belong?' by Ken Thompson, 2014. The book suggests invasive species are not necessarily all bad. Man is usually in a hurry to control nature, but left alone it often manages without our interference.

The meeting adjourned at 8:37 PM.

NEXT MEETING: Members' Night, 15 September.



Dragonfly larva

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2015 Brodie Club Outing

Sunday, June 14, 10 a.m.

Ontario Nature's Cawthra Mulock Reserve

Close to Toronto, the 108 hectare property north of the Oak Ridges Moraine has two streams, tributary to the Holland River, bisected by an esker, a variety of habitats including cedar swamp, marsh, pond, old fields, barn foundations, a network of trails and a pleasant mix of flora and fauna.

http://www.ontarionature.org/protect/habitat/cawthra_mulock.php

Directions: Travel north on Bathurst Street from Green Lane/Millers Side Road. The nature reserve is the second driveway on the left (west) side at 18462 Bathurst Street and is marked by a green and white Ontario Nature sign. The parking lot has space for only seven vehicles so plan to park along the driveway just past the residence.

Lunch: at the gardens of David and Deirdre Tomlinson, 181 Centre Crescent, Aurora, about fifteen minutes from Cawthra Mulock. Directions to be given at the reserve.

Optional Afternoon Activity: David Tomlinson has the key to an interesting wetlands complex under development just five minutes from his residence.

Washrooms: There are none in the reserve but lots of fast food establishments on Yonge Street at Newmarket just east of Bathurst.

Bring picnic lunch, drinks, repellents, and picnic chairs. If planning to attend, please email George so he can visualize parking. As always, guests are welcome.

Queries?? George Bryant g.bryant@sympatico.ca or 647-444-6039
David Tomlinson 905-727-8979

Background Info to Cawthra Mulock Nature Reserve

Provided by Megan Anevich, Nature Reserves Coordinator, Ontario Nature

The Cawthra Mulock Foundation donated the Cawthra Mulock Nature Reserve to Ontario Nature in 2003. Originally the home of Cawthra and Julyan Mulock, it was the Mulock's wish to ensure that the property was conserved and used for nature appreciation. After her husband's death, Mrs. Mulock donated the property to Ontario Nature.

There are two wetlands on the property forming part of a Provincially Significant Wetland Complex. There are remnants of a silo and foundation on the property that were part of the original farmhouse. An orchard was located east of the original building. The farmhouse burnt down about 1906.

Mrs. Mulock was born in England and married Cawthra Mulock, a Canadian. In 1955, the Mulocks purchased the southern 200 acres, from the family that had lived in the original farmhouse. The Mulocks continued to live in England for almost 20 years before moving to the Newmarket area in 1973.

At the time the property was purchased by the Mulocks, most of it was actively grazed fields. The large tract of mixed and deciduous forest looked much as it does now, but the rest of the property was rented to neighbouring farmers for cattle grazing. A road ran from Bathurst to the original farmhouse. Farmers who rented the fields to graze their cattle maintained the road through the 50's and 60's.

In 1964 a gatehouse was built and George Woodruff became the tenant and caretaker for the property. In 1966 the dam was built, the pond dredged, and the pines and spruce trees planted. The pond is approximately 2 hectares (4.9 acres) in size with a depth of 1.5 meters The dam was removed by Ontario Nature in 2008 to restore natural stream flow.

The main house was built in 1971-1972, and the Mulocks moved in 1973. The family created a number of trails throughout the property. Many of the trails are still visible today; others have grown over.

There was a roadway and bridge over the creek in the area where the pond was created. This bridge was already in existence when the Mulocks purchased the property, and was likely used by farmers to get their farm vehicles out to the fields.