THE BRODIE CLUB

Established 1921

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

THE 1,114th MEETING OF THE BRODIE CLUB

The 1,1114th meeting of the Brodie Club was held on Tuesday, 20 November, 2018 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: Warren Dunlop
Secretary: Ricky Dunn

The meeting was called to order at 19:31 pm and was attended by 46 (28 members and 18 guests)

Roll Call:

Present: E. Addison, R. Addison, Aird, Bacher, Beadle, Bertin, Bryant, Crins, Currie, Daniels, Dengler, Dunlop, Dunn, A. Falls, B. Falls, Hussell, Iron, H. Juhola, King, LaForest, Machin, McAndrews, Moldowan, Obbard, Pittaway, Reading, Thomas, Tomlinson

Guests: Katherine Falls (guest of A. and B. Falls), Sharon Hick (McAndrews), Carol Pasternak (King), Marion Whittam, Betty McCulloch and Allison Zhang (Pittaway and Iron), Dierdre Tomlinson and Rae Hutchinson (Tomlinson), Ron Dengler (Dengler), Linda Pimm (Aird), Jim Eckenwalder (Dengler), Peggy Haist (Bertin), Leila Krichel and Katie Ziebarth (Moldowan), Mary-Lou Jorgenson-Bacher (Bacher), and guests of the club: Rose Mastin, Luke Mastin and Julie Wood.

Regrets: Abraham, Curry, Eadie, Johnson, Kortright, Larsen, Lindsay, Martyn, Peter, Rising, Seymour, Slessor, Sutherland.

At the end of the roll call, Crins welcomed new member John Bacher as a club member.

Minutes: October minutes were accepted (moved by Crins, seconded by Hussell) with the following corrections: Dengler's guest was James Eckenwalder, and Nancy is on the Refreshment Committee. The duplicate paragraph introducing the speaker was deleted.

Committee Reports:

Treasurer: Bryant reported on behalf of Kortright that the Club currently has 56 active members, including new member Bacher.

Program: E. Addison reminded us that David Tomlinson will be the speaker in December (see details at end of minutes).

Announcements:

Corresponding Secretary Thomas made three announcements:

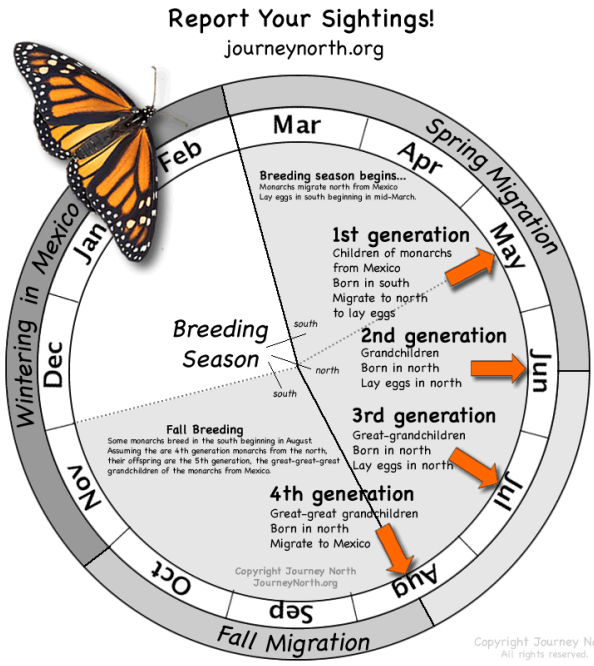
- The Environmental Registry of Ontario has announced a proposal for a March-December hunting season on Double-crested Cormorants, which will allow a 50-bird a day bag limit, including throughout the breeding season. This is likely to prove controversial. Details, and how to submit comments (3 January deadline) can be found here: https://ero.ontario.ca/notice/013-4124
- Member Kristen Martyn and her husband Cameron welcomed daughter Elena Katherine into the world on 23 September, having been alerted that it was time to go to the hospital by an Eastern Screech Owl calling outside their home.
- A memorial event was held recently in Kingston for Brodie member Claire Muller.

SPEAKER:

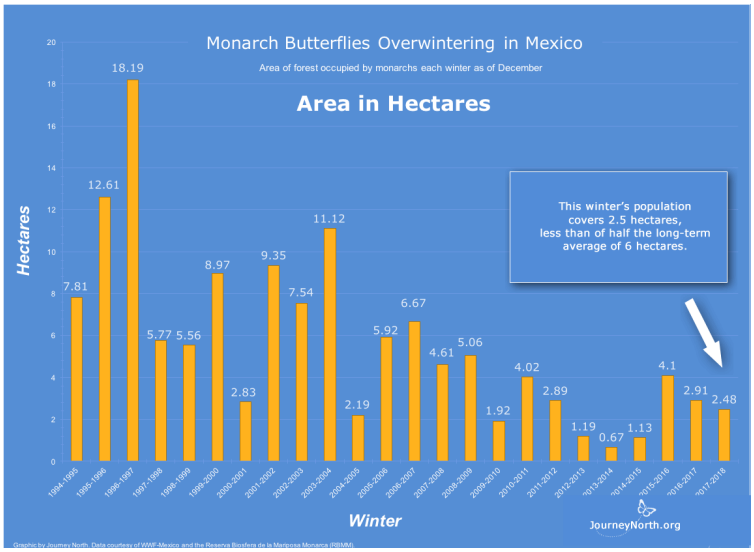
Pittaway introduced the speaker, Terry Whittam. Terry is a retired engineer whose hobbies include natural history, bee keeping, marathon running, and hawk watching. In the latter activity at Rosetta McClain Gardens, he became interested in Monarch butterflies and began a long-term tagging project there – the subject of his presentation.

Monarch butterfly tagging at Rosetta McClain gardens

Rosetta McClain Gardens is a relatively unknown park perched at the edge of Scarborough Bluffs, consisting of 15 well-manicured acres. Migrating hawks concentrate along the shoreline, and while hawk-watching there Terry noticed that Monarch butterflies were doing the same thing. Numbers recorded there over a fall migration can exceed 35,000. Learning of the Monarch tagging program run out of University of Kansas, which was inspired by the pioneering work of the late Torontonian Fred Urquhart, Terry obtained a tagging permit and quickly assembled a team of volunteers to help.

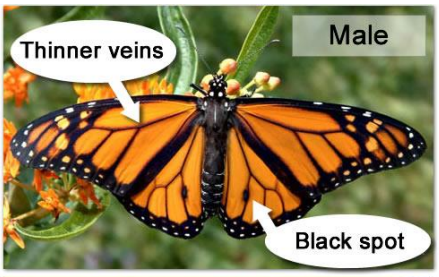


Monarchs overwintering in Mexico start to move north in spring, laying eggs in northern Mexico or Texas before dying. Their young continue north before producing a second generation, and so on to a fourth generation. Development from newly-laid egg to emerging adult takes 22-37 days, with speed dependent on temperature, and adults normally live about a month. However, butterflies in the fourth generation live about 9 months. Rather than breeding they go into diapause and spend all resources migrating to Mexico, refueling all the way. They overwinter in a small region of high elevation forest west of Mexico City, consuming nothing but water until they leave the winter area to start a new cycle of breeding.



The wintering area is limited to 11 known areas, which are threatened by illegal logging (though now being better controlled). Only 4 of these are open to the public, so aerial surveys are done to record annual fluctuations in the area of forest used for winter roosting. As shown in the graph at left, wintering population has greatly declined. It is estimated that a sustainable population would be about 300 million wintering individuals, or about 6 ha of occupied winter habitat. Declines have been caused primarily by purposeful reduction of milkweed, the plants used exclusively for egg-laying and growth of larvae. Although still plentiful in Canada, milkweed numbers have dropped elsewhere due to weed-control around farms and loss of habitat to human development. As well, success of metamorphosis can be reduced by a debilitating parasite *Ophryocystis elektroscirrha*, which is easy to spread. About 75% of Monarchs captured at Rosetta McClain are male, though the causes is unknown.

Terry described the tagging operation, which he has fine-tuned through experimentation to ensure safety of the butterflies even as he gathers valuable scientific information. He has found a material for netting that is fine enough to prevent the insects' claws from getting caught in its mesh, and uses special tools for rapid measurement of wing length, weight, body temperature (non-invasively), parasite incidence, and intensity of red colour in the wings (with a hand-held spectrometer). The deeper the red colour, the more fuel the butterfly has on board. Condition of wing wear is coded as 1=5 by eye, and each insect is sexed. Average weight is about 0.6 gm (range ca. 0.35-0.9). Females have shorter wings and weigh slightly less on average than males. The tags, sticky-backed paper discs, are placed in a particular spot on the underwing to reduce any effect on flight capability (see photo below). Tags weigh about 0.007 g (<1.5% of average body weight). The entire process from capture to release has been honed to <90 seconds. All data are recorded on a tablet using software by the non-profit company Dunkadoo, designed for recording data in the field and customized specifically for this project. This means data need no longer be transferred from paper to computer, and makes the data instantly available for analysis.



Terry's team began work in 2014, tagging 160 butterflies but getting no recoveries. Effort and success grew rapidly, and in 2017 they tagged 1487 and had 15 returns. Of the 2185 tagged this fall, a third should already be across the U.S. border into Mexico, with the rest close behind. Tags are most often reported from

butterflies that die during the winter and fall to the ground. Local people are paid U.S. $5.00 for each tag turned in, paid for out of proceeds from selling tags to the northerners who are affixing them. Some enthusiasts will regularly photograph large sections of winter roosts, then search the images for tags (which show up as white dots). They then return to relocate the marked insect and use high-powered lenses to capture information from the tag.

Terry described a trip he took to one of the four winter roosts accessible to the public, in Machero. This town has become a tourist destination, providing guides and horses to take visitors on an uncomfortable 45-min trek to the point where horses can no longer proceed, then leading you for another half hour up a steep climb to the roost. A rope enclosure corals visitors at a good viewing spot, which can be chosen anew each day.

Although many people tag Monarchs, Terry is among the few who collect detailed scientific information. His team has a higher recovery rate than most others (1.5-2%, vs. under 1%), despite being about as far from the winter areas as you can get. This might mean that Scarborough has direct connectivity with the Machero roost, but as most wintering areas can't be searched there is no way to determine this.

Questions following the presentation:

Pasternak: is the person tagging in Port Stanley collecting extra data? Answer: Not now, but he might start. There is also tagging at Hawk Cliff.

Moldowan: Are the tags standard issue and preprinted? Answer: Yes. They are printed and sold to project registrants by MigrationWatch.org, for U.S. $105 per 100 tags. About 1000 are recovered annually in Mexico.

Currie: Do the insects lose much mass during flight? Answer: Recaptured individuals at our site may lose up to 50% of their mass over several hours.

Moldowan guest: Do you see a lot of butterflies with the *Ophryocystis* parasite? Answer: None have been found at our site. Infestation increases as you go south, and people raising Monarchs for release have to be very careful not to propagate the parasite as it is easily transmitted.

Daniels: With the large number of people tagging and 11 winter sites, might there be connectivity with other sites too? Answer: Possibly, but most of the winter roosts can't be visited to find out degree of connectivity. It seems most likely that tags from any one northern site would be spread out among the roosting areas.

Pimm: Why is the male proportion so high? Answer: This isn't known. The proportion is even more lopsided on the east coast. *[Editor's note: a quick literature search unearthed a paper documenting decline of female proportion at wintering sites over the past 30 years. The Ophryocystis parasite affects females more than males, which may be a factor. Another paper noted that males migrate a bit earlier than females, indicating they may enter reproductive diapause sooner – which in turn may increase their chances of surviving to be part of the overwintering generation. However, that doesn't explain change in sex ratio over time. Lots more study needed!]*

Hussell: Is the male-female ratio in Mexico the same as on the migration route? Answer: Not known how the ratio varies among regions within a season.

B. Falls: Might the higher recovery rate for tags put on at Rosetta McClain be due to your more efficient and rapid handling during tagging? Answer: Could be, but there are no comparative data.

Oliver Bertin thanked the speaker.

FIELD OBSERVATIONS

Bertin: While in England, Oliver observed Red Squirrels, which appear bigger than ours (photo at left). Estimated population in U.K. is about 140,000 and declining, due to a virus carried by introduced Eastern Gray Squirrels that doesn't harm the carrier but causes fatal tumors in the native species. The virus is now spreading to the Continent. Last week, Bertin saw a white Gray Squirrel in the Trinity-Bellwoods area, and found online (https://www.blogto.com/city/2018/05/white-squirrel-trinity-bellwoods-toronto/) that this is a local hotspot for white squirrels. He dug around further and found more extensive information (https://www.untamedscience.com/biodiversity/white-squirrel/) on this phenomenon and other locations in North America where there are local concentrations.

Hutchinson: For the first time in 35 years at her location in Aurora, Rae saw large flocks of Sandhill Cranes flying over: 100 one day and 2-300 on another. They called loudly enough to be heard through closed windows.

Aird: On a trip to Forillon National Park on the Gaspé, Paul and Linda watched a lynx for about 25 minutes, getting lots of photos.

Iron: Jean described a visit to Goderich to see a Calliope Hummingbird, the smallest North American hummingbird whose normal range is on the west coast. The hosting home-owners are very welcoming and have provided heated shelters for food and bird, but will close their property to addition visiting birders in about a week. Currie added that there was another Calliope in Ohio last year.

Daniels: Reported that Buffalo, NY expects Thanksgiving (2 days from now) to be the coldest in 125 years.

Moldowan: Patrick displayed the mangled partial carapace of a Snapping Turtle found in Algonquin Park in early November. It carried tag W17, identifying it as a snapper tagged in 1989 as an adult male weighing 13 kg. It had been seen alive twice this summer. The shell had punctures and extensive damage that suggested a black bear was most likely to have been the predator.

NEXT MEETING

The next meeting will be on 18 December, at which David Tomlinson will speak on "Mapping, monitoring and managing urban breeding bird populations." Members are reminded to bring along Christmas consumables for all to enjoy.

The meeting was adjourned at 21:10 pm.

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