

THE BRODIE CLUB



Established 1921

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

THE 1,097th MEETING OF THE BRODIE CLUB

The 1,097th meeting of the Brodie Club was held on Tuesday, 13 December, 2016 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: Riley

Secretary: Martyn

The meeting was called to order at 7:30 pm and was attended by 32; 24 members and 8 guests.

Roll Call:

Present: E. Addison, R. Addison, Bertin, Bryant, Currie, Curry, Daniels, Dengler, Dunn, Eadie, A. Falls, B. Falls, Hussell, Iron, King, Machin, Martyn, Peter, Pittaway, Reading, Riley, J. Rising, T. Rising, Slessor

Guests: Bob Kortright (Bryant), Peter Mills (Peter), Hugo Kitching (Peter), Patrick Moldowan (U of Toronto student; Brodie Club guest), Katherine Lindsay (John Riley), Greg Daniels (Daniels), Steve Laforest (King), Richard Aaron (Dengler)

Regrets: Abraham, Beadle, Crins, Obbard, Peck, Rapley, Sutherland

Minutes:

Committee Reports:

Program Committee: E. Addison announced the speaker and topic for the 1098th meeting (Nancy Dengler on C4 photosynthesis).

1100th Meeting Committee: Bryant reviewed the details regarding current registrations and email invitations. It was noted that some members might not have received the invitation attachment.

Announcements:

King announced that Brodie Club Member, Glenn Coady, was honoured with the Conservation Award from the Pickering Naturalists Club for his work with Piping Plovers at Darlington Provincial Park. During the Brodie Club Members Night (meeting 1094) in September, Glenn spoke about his team's efforts to protect two nesting pairs of plovers and the seven chicks that resulted from these nestings.

SPEAKER:

Justin Peter introduced the speaker, Peter B. Mills, author of Metamorphosis: Ontario's Amphibians at all Stages of Development. Peter's presentation entitled *Metamorphosis: Changing the Way we Look at Amphibians* focused on the process of completing his book from start to finish.

Peter has had a lifelong passion for natural history and art. Growing up he kept detailed notebooks full of his natural history observations, sketches and paintings. In high school, Peter was an avid reader with a particular interest in illustrated natural history books, including wetland-focused art books by David M. Carroll (www.carrollartgallery.com). His interest in wetland wildlife led Peter to paint a wetland-inspired mural of a Spotted Turtle (*Clemmys guttata*) on the door of his then-classroom. The Group of Seven artists and Tom Thomson also heavily inspired him. Peter continues to paint with traditional media such as acrylic on canvas, in a style that emulates these influences.

While in university, Peter became interested in the art in field guides. Peter was fascinated by the style of this type of art where important features of subjects are accentuated, lighting is controlled and there is no noise and distortion. His time spent as an interpretive naturalist at Algonquin Park further developed his passions and synthesized his love of art and natural history. He began experimenting with a different art form: digital art. His computer became the canvas and his mouse the brush. There are several benefits of digital art, including the ability to fill in tiny details, ensuring proper proportions of the subject and perfect colour matching. Peter's first use of digital art in a field guide was his publication Somatochlora of Southern Ontario, profiling the dragonflies in the genus *Somatochlora*, the Emeralds. This was his first professional attempt of combining art and natural history.

With one successful field guide publication complete, Peter began planning a field guide on Ontario's herpetofauna. There was, however, one major obstacle in the pathway of this new book; there were already several good books widely available that covered this group of animals, including a couple of new publications. All of these books however lacked detail in the development of amphibians; most only focused on the adults. These books included considerable information on using tadpole mouthparts for identification purposes, an approach that is difficult to understand and requires collecting the tadpole for dissection. Peter's philosophy of "not being afraid to leave the old ways behind" pushed him to develop a unique field guide for amphibians and their development. Peter also wanted to create a field guide that highlighted caudata breeding behaviours, as they are far less understood than those of anurans. When he began this book he understood that there were a lot of things to consider including funding, patience, research, creating several illustrations and raising larval amphibians. Peter began the process recognizing three key steps: field season; indoor season; completion. He was not certain how many seasons would be required to complete the final product, as every species required images of the full life cycle from egg to adult.

The field season, representing the warmer months of the year, involved Peter spending his time exploring various habitats with the essentials: dip-net; calipers; notebooks; and collection containers. Field seasons were also a time for rearing young amphibians, requiring that he feed hundreds of hungry mouths. The anurans were fed boiled spinach and algae, as they are herbivorous in the wild. The caudata, which are carnivorous, were fed invertebrates including midge larvae, mosquito larvae and fairy shrimp. Amphibian larvae face many challenges in natural environments, including predation, injuries and evaporation of their vernal breeding pools. In captivity there are

other challenges including providing the correct amount of exposure to sunlight, UV radiation, diet and water quality.

METAMORPHOSIS

Ontario's Amphibians
at all Stages of Development



Written and Illustrated by
PETER B. MILLS

Colder months represented the indoor season, a time of reflection, illustration, and writing. Peter attempted to standardize illustrations of the tadpoles and larvae; however, when this was not possible, he created several illustrations to capture variation. A good example of this is the variation in Gray Treefrog (*Hyla versicolor*) whose tadpoles are highly variable in colour; for this species he created a couple of different illustrations. Peter accepted a position as the artist-in-residence in Quetico Provincial Park, where he completed the illustrations of his book.

In the final stages of completing the book, Peter had to find a logical way to communicate the information to the user. He accomplished through a well-planned layout, educational narrative and over 250 illustrations and diagrams. Peter's book *Metamorphosis: Ontario's Amphibians at all Stages of Development* is an excellent resource for Ontario amphibians and is sure to be a valuable companion for any naturalist in the field.

Questions following the presentation:

Richard Aaron: What was the magnification of the microscope on the final video?

Mills: Unknown. A relatively inexpensive microscope was used to film the blood vessels in a developing Red-backed Salamander (*Plethodon cinereus*).

Dunn: Was the book a full time endeavour?

Mills responded that he began the book while he was in teachers college and decided to take an 8-10 month break to focus on completing the book.

Eadie: Did you know that Dr. Brodie was a relative of Tom Thomson?

Mills: Yes (and it was understood that they spent time hiking around the Don River).

T. Rising: Are all caudata larvae insectivores?

Mills: Yes, they are. The Red-backed Salamander (*Plethodon cinereus*) is the only species that skips the aquatic larval form. It hatches out of the egg as a smaller version of the adult.

Curry: Lars Jonsson, the ornithological illustrator commented when he paints a bird, he paints that specific bird and it is not a representation of the species as a whole, just an individual at a particular moment in time. What are your thoughts on this?

Mills: The book showcases variations among the illustrations to demonstrate different characteristics and account for the plasticity of amphibians. It is an interpretation of the animal.

T. Rising: Does spinach vs. a natural diet make a difference in the development of the tadpoles?

Mills: Yes. Amphibian larvae are highly variable (plastic) organisms and will look different

feeding on diet, range and UV exposure. Field guides are generally only effective for a particular area.

Eadie: Do you use a mouse or graphic tablet to illustrate?

Mills: All illustrations thus far have been done with a mouse, however a graphic tablet may be a useful tool in the future.

Martyn thanked the speaker.

OBSERVATIONS

Riley: A flock of Snow Buntings was on his property.

Peter: There have been many American Robins feeding on the crab apples in downtown Toronto recently.

Daniels: There seems to be a greater number of chickadees this winter.

NEXT MEETING

The next meeting will be Tuesday, 17 January. Brodie member Dr. Nancy Dengler will present: *Inside C4 photosynthesis: leaf evolution and development*.

The meeting was adjourned at 9:00 pm.

CORRESPONDENCE

The Membership Committee received an application for membership from Katherine Lindsay. Her application has been welcomed and approved by the committee, and they have forwarded Kathy's biography for inclusion in these minutes.

PROPOSED NEW MEMBERS

Katherine (Kathy) Lindsay

Born: Dallas, Texas, 1952

Interests:

- Natural history, conservation of natural areas, flora and fauna, the management of invasive species
- Environmental and outdoor education
- Beekeeping, farming and land restoration

Education and work history:

- B.A. University of Toronto, B.Ed. Ontario Institute for Studies in Education, University of Toronto
- Ontario Ministry of Natural Resources (Biologist: coordinated and conducted biophysical inventories of parks and natural areas (ANSIs) across southern Ontario)
- Kortright Centre for Conservation Toronto Region Conservation Authority (Education Assistant: coordinated and taught curriculum-based environmental education programs)

- Mono Cliffs Outdoor Education Centre, Toronto District School Board (Outdoor Education Specialist: taught curriculum-based programs to junior and intermediate students)

Key influences:

Places

- The fields, forests and ponds of our family farm in Mono
- The Niagara Escarpment, especially Mono Cliffs, Caledon and the Bruce

People and Experiences

- My parents, Bill and Peggy Lindsay, with whom I learned from an early age about nature, conservation (planting trees to restore eroded lands, gardening, fishing) and environmentally-sound farming
- Many shared experiences studying and enjoying nature with my husband John Riley
- Studying botany at the University of Toronto with a dynamic group of field botanists
- Field studies of natural areas of the Niagara Escarpment for the Niagara Escarpment Plan