

THE BRODIE CLUB



Established 1921

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

THE 1,092nd MEETING OF THE BRODIE CLUB

The 1,092nd meeting of the Brodie Club was held on Tuesday, 19 April, 2016 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: Glenda Slessor

Secretary: George Bryant

The meeting was called to order at 7:30 pm and was attended by 33 (26 members and 7 guests).

Roll Call:

Present: E. Addison, R. Addison, Beadle, Bertin, Bryant, Coady, Crins, Currie, Curry, Dunn, Eadie, A. Falls, B. Falls, Hussell, Iron, Martyn, McAndrews, Obbard, Peter, Pittaway, Rapley, Reading, J. Rising, Seymour, Slessor, Speakman.

Guests: Jim Hamilton, Neil MacDonald and Diego Nazar (guests of Bertin), Graham Bressick (Casselman), Warren Dunlop (Crins), Heather Speakman (Speakman), Sharon Hick (McAndrews).

Regrets: Abraham, Carley, Daniels, Dengler, A. Juhola, H. Juhola, Larsen, Peck, T. Rising, Sutherland, Tomlinson, Zoladeski.

Minutes: Moved to accept the minutes by R. Curry and seconded by R. Addison. Unanimously approved.

Committee Reports:

Program Committee (E. Addison): On May 17, Andrew Peregrine will give a presentation on Lyme disease. Bruce Falls pointed out that September is members' evening. Interested members should speak to Bruce.

1100th Meeting Committee (Bryant) The 1100th Brodie meeting will be March 14, 2017, the custom being to recognize these anniversary meetings with a reception and dinner. An organizing committee was established: E. Addison, R. Addison, G. Bryant, H. Currie, R. Dunn, A. Eadie and J. Peters. A. and B. Falls to assist.

Field Trip Committee (Curry and Rapley): The June field trip will be held on Saturday June 25th, featuring a trip to the zoo and a behind-the-scenes tour. Brodie members and guests will assemble at the atrium for 10 a.m. orientation and a visit to Weston Pond, just restored by TRCA. The baby pandas are certainly the major attraction now. Golf carts may be available.

Ontario Nature (Slessor): Brodie has received a receipt from ON for \$350 for our support of a summer student.

New Business:

R. Addison reported that the excellent publication *Bees of Toronto* is now available free from any branch of the Toronto library.

SPEAKER:

Ed Addison introduced the speaker, member John Casselman. Casselman earned his PhD. from UofT, studying under the legendary Ed Crossman. Retired from the MNR, he is adjunct professor at Queen's University and still actively engaged in research.



Historical Perspective—Observations and Reminiscences on Lake Sturgeon

Casselmann introduced his comments by stating that over the years he had learned a lot about fish, but even more about fishers, when he was a guide on the St. Lawrence River -- the latter being critical to his understanding of fish and fisheries.

Sturgeon were over-fished by gillnets in the late 1900's and essentially disappeared from Lake Ontario. They persisted in the St. Lawrence, however, where fishers caught them regularly in the 1,000 Islands area, on the shallower, Canadian side of the river, separate from the main shipping channel on the U.S. side. The biggest sturgeon recorded there, 237 pounds, was caught in 1949. More typically, commercially caught sturgeon were fish of 40-50 pounds. Fish caught in the St. Lawrence River were all shipped to Brooklyn, New York, where they were smoked. This was because they had a high fat content and smoked well.

Fishers knew that the sturgeon fed on soft bottom, but sites with honeycomb limestone cobble were a good spot to catch them. This is limestone riddled with holes made by snails scraping off algae, and snails are a favoured sturgeon food source. If a sturgeon's snout was abraded, then commercial fishers knew the fish were starting to root on the bottom and feed on snails, and could then be caught with hooks baited with cut alewife (shad).

Since the 1960's researchers have been tagging fish from the Glenora Fisheries Research Station. Undersize juvenile sturgeon were acquired from commercial fishers, exhibited at country fairs and then released. Two tagged fish released in October were caught eight months later -- by the same fisher on the very same hook lines as when first captured -- having homed 112 km downriver back to their home area.



Dams on the St. Lawrence led to a major decline of sturgeon fishing, and retirement from the field of the old-time fishers. The sturgeon fishery was closed in the late 1950s. We now know that sturgeon are much less active in years of low water flow. In the 1930's water levels were 1.5 metres lower in the St. Lawrence. Warm years are more productive for spawning, and growth and recruitment are greater during El Nino years. Spawning takes place in May. Before the Moses Saunders Dam was built in the late 1950s, sturgeon spawned 100 km downstream in the Long Sault Rapids. This area is now a lake and sturgeon are starting to spawn in other, smaller tributaries, also downstream (e.g., mouth of Oswegatchie River, 33 km away). Historically, fishers rarely saw gravid females on the fishing grounds, but in 1964 a 110-pound gravid female was caught by a fisher. (Casselmann always remembers the date because he got married that year.)

Beginning in 1993, New York State began stocking sturgeon in the river, marking them by removing several scutes. This was not a perfect method because scutes can be lost during spawning, but several have been caught -- the first was in 1999.

Recently John began a four-year research project (2011–2014) on sturgeon funded by the Ontario Species At Risk program. Using a 6-10” mesh net, researchers caught nine sturgeon on the first night they tried. Subsequently they index-netted (sampling at random sites) and caught 105, including five fish that had been tagged by others in the Oswegatchie River, downstream. Researchers implanted 33 fish with acoustic-telemetry transmitters, making a small incision that also allows the fish to be sexed. Wounds were then sealed with sutures and tissue cement. Only one treated fish died, and that was eight months later, so likely not a result of the transmitter. The transmitters allow very precise locating of the fish and electronically send back temperature and pressure (which reveals depth).

Acoustic tracking showed that velocity of water is very important for sturgeon. They prefer a current velocity of 0.12—0.18 metres per second. The acoustic trackers also showed that bigger fish go deeper and prefer faster current. Resident sturgeon in this section of the river glide more than swim, suspended off the bottom. Relative to total depth of water, the fish on average stay at the 14% level above the bottom in daytime move up slightly to the 20% level at night. Summer assemblages gather out in the middle of the river, off the bottom. Sturgeon move into the shallows at night to feed; using shallowest water in May to September and deepest in winter. In winter, 96% return to the same area. They may go down river in spring to a new spawning area, however, so management is needed over a broad area.

Also learned in this study is that sturgeon’s diet has changed dramatically. They used to eat a lot of alewives, along with snails. But they have now switched to zebra mussels and gobies. Gobies are sucked up during bottom feeding through the fish’s extruded proboscis. There are now 100 gobies to a square metre in some areas of the St. Lawrence and Great Lakes, so there is no shortage of food.

In the fall of 2014 the researchers employed drawdown long lines for 2,100 hook days over 42 days. Fish caught this way were heavily stressed and could fight the hook for a 12-to-24-hour period. Netting is preferable because the fish tangle up and are unable to struggle. However, it is almost impossible to re-catch sturgeon in nets. The fish seem to learn to avoid them.

Casselman concluded that there has been a substantial resurgence in sturgeon numbers. Because there are no longer fishers regularly exploiting the population, no one realizes the fish are there. Casselman’s gut feeling after having studied the species is that in the right habitat, there are likely to be a couple of thousand sturgeon in this part of the St. Lawrence. This is a fascinating animal and the recent research has helped scientists learn much more about its life history.

Questions following the presentation:

Bertin: The mouth of the Detroit River had sturgeon -- what is their current range? A: They are increasing in numbers and are more widespread than they used to be. Some are in the St. Clair River just like 100 years ago. Water velocity has also been found to be important for their presence there.

Obbard: Where and when do they feed on gobies? A: At 10-12 metres, at night. Gobies are small fish—they are everywhere and can handle strong currents.

Rapley: Rochester and Wisconsin zoos are big on re-stocking sturgeon. What are the results of this?
A: Sturgeon are long-lived—we need to be patient. The sturgeon fishery was closed down because of concern over pesticides. This meant we also lost the fishermen who knew where the fish were – and stocked fish may take a long time to learn their way around. It may take fifty years to see how the sturgeon do here.

B. Falls: Are they actually bottom-feeders? A: Yes, but they do this at night, and otherwise are suspended, gliding. When they feed, they come in shallower, to approximately ten metres off the bottom. They are a cool water fish.

Dunn: Did the now-extirpated sturgeon in the Great Lakes also use currents? A: Yes, there are internal currents in all the lakes. These are wind-driven and can match the speeds in the St. Lawrence that are favoured by sturgeon.

Bertin: Never mind the sturgeon, what are you finding out about freshwater eels? A: There is a very interesting ongoing telemetry study on the elusive eels. We're starting to get a feel for winter habitat. At other times of the year, they reside in burrows during the day—seeming to have a domicile. This is a criterion for preservation of habitat for Species At Risk, so it has implications for conservation.

Eadie: What do you mean by domiciles? A: Just that, some of these fish have lived in the same spot for a considerable time and seem to move on a seasonal basis.

Curry: With climate warming, what impact will there be on sturgeon? A: Preferred temperature for sturgeon is 18-19°C, but they live at 20°C or even higher in summer. They aren't very active then.

Riley: Are there any on the Bruce Peninsula? A: Yes, the south end of Lake Huron used to have an important commercial fishery. However, almost all of the smoked sturgeon sold in Ontario now comes from Quebec.

The speaker was thanked by Bob Curry. A fascinating talk about an animal which we cannot observe directly and how human activities and alien introductions have impacted sturgeon.

OBSERVATIONS

E Addison observed 19 vultures yesterday circling their stand of White Pines. On a warm evening the vultures were still soaring at 8 p.m.

Bryant on April 17 noted emerging dark Green Frogs, congressing Wood Frogs and cold Leopard Frogs on a warm road at night. He wondered why the latter were not still in the water.

Dunn: Reported that Hussell had seen two frogs that had been mating when squashed on a road. Two unsquashed frogs were mating on top of the heap.



Rapley: The Beamer hawk watch seems slow this year. The zoo is going to try their convalescing Black Vulture in flight soon.

Casselman: Every year he is seeing more swans on the St. Lawrence River.

Iron: She was on the Carden alvar recently. There was a great, deafening display of frogs, three Loggerhead Shrikes and many meadowlarks.



Coady: There were six Little Gulls at Second Marsh. In the morning they come in off the lake in the morning and perform courtship flights.

J. Rising recommended Metamorphosis: Ontario's Amphibians at all stage of development by Peter Mills, Website: <http://www.peterbmills.com/metamorphosis.html>

The meeting was adjourned at 8:58 pm.