

THE  
BRODIE  
CLUB



ROYAL ONTARIO  
MUSEUM OF ZOOLOGY

THE 999<sup>TH</sup> MEETING OF THE BRODIE CLUB

The 999<sup>th</sup> meeting of The Brodie Club was held on Jan. 17, 2006 in Rm. 432 of the Ramsay Wright Zoological Laboratories at the University of Toronto.

Chairman: Sandra Eadie  
Secretary: Ed Addison

There were 22 members and three guests:  
John and Brenda Sparling, guests of Bruce Falls  
Kay Hodgins, guest of Marc Johnson

The minutes of the 998th meeting were approved without change.

NEW BUSINESS:

Eadie announced the passing of Walter Tovell on Dec. 30 at the age of 90, and Keith Reynolds on Jan 8. He was 87.

Paul Aird spoke about Walter Tovell. He was a geologist working throughout Canada finding oil during the last world war. He became a member of the faculty in the Department of Geology at UofT. He was also Director of the ROM, Past President of the FON and an active supporter of the Niagara escarpment. His son John is in British Columbia at Simon Fraser University. Paul Aird attended the celebration of his life at the Dufferin County museum. He commented that Tovell was a most gentle man, always willing to give time to students on field trips.

Bruce Falls spoke of Keith Reynolds. Keith was a naturalist from his youth. He completed a Ph.D on jack rabbits and almost immediately joined the Ontario Department of Lands and Forests. He held many positions right up to Deputy Minister of Natural Resources and Secretary of Cabinet for Premier John Robarts. He provided a lot of leadership in natural history, was a very good diplomat and acted as go-between among different parties. He had a lot of clout as member of the premier's office. Fred Bodsworth remembers him bringing Premier Bill Davis to a Brodie Club meeting. Jim Bendell noted that Keith Reynolds opened a few eyes when he became such a senior member in the civil service since most senior positions in Natural Resources previously had been held by foresters. He was very active behind the scenes, having much of Second Marsh set aside in Oshawa. He was a member of The Brodie Club for many years and was recognized as honorary member a while back. Bertin noted that he was so

keen on the Brodie Club that he asked his daughter to bring the minutes to his retirement home so he could keep up with his old friends.

The Club observed a minute of silence.

Kevin Seymour reported that the committee work for the 1000<sup>th</sup> meeting is well in hand. The committee has checked the room at the Faculty Club. Ann Falls has about 30 replies for the dinner. The cut-off date for invitations is Feb. 7. There will be no official photographer at the 1000<sup>th</sup> dinner, so Sandra encouraged members to bring their digital cameras and a flash.

Former members Tom Parsons, Frank De Matteis and Michael Downing sent their greetings to the Club. Parsons is now living in Cape May, N.J., De Matteis lives near Owen Sound, and Downing lives in Halifax. All three are active naturalists.

Bruce Falls announced that Alex Mills will speak on bird migration at the March meeting.

Trudy Rising spoke as the Club representative to the Federation of Ontario Naturalists, now OntarioNature. She offered two CDs with instructions on how to respond to official plans. These are available for members to borrow and Trudy will make copies. Paul Aird agreed to complete the FON survey about the Species at Risk Act for the Club.

Sandra said she hoped all Club members would vote for somebody other than Tories during the federal election on Jan. 23 as a Conservative government would not be good for us. She also said that Bald Eagles and Peregrine Falcons will be downgraded from endangered status to at-risk in northern Ontario.

Ellen Larsen commented on the news that deep-sea fish, by all standards, are endangered as a result of over fishing.

#### SPEAKER:

Jock McAndrews introduced the speaker, Dr. Jim Eckenwalder. Dr. Eckenwalder was raised in southern New York State. He is a tree biologist and taxonomist who completed an undergraduate degree on members of the cypress/redwood family at Reed College, Oregon and a Ph.D. on poplars at the University of California. Following a stint as Assistant Taxonomist at Fairchild Tropical Garden in Miami, he joined the Botany Dept. at University of Toronto in 1978.

#### THE NATURAL HISTORY OF POPLARS

Jim Eckenwalder covered four subjects in his talk: basic structures, classification, hybridization among species and interactions with other organisms.

He began by saying that many of us may think of poplars as weed trees and may not have a high opinion of them. We have five species of poplar in Canada. They are found in moist habitats throughout Canada, with a band of intensity in the Southern boreal forest and the aspen parkland. Most poplars are found in northern latitudes, but the greatest diversity is in sub-tropical to tropical regions. There is a weird distributional outlier species in East Africa, but most remaining species are found further north [i.e. Mediterranean area and north].

Poplars are wind-pollinated and each tree is of a single sex. In male trees, stamens are on a small disk and each flower is subtended by a bract. The flowers emerge in early spring before other tree vegetation. The male flowers look a lot like pollen cones of white pines.

Female flowers are also catkins, comprised of a simple naked ovary with broad stigmas ready to capture lots of pollen, much like other wind pollinated species. Unlike most wind pollinated species that usually have single seeds and flowers, poplars have lots of seeds in each capsule.

Willows are the closest relatives of poplars, but they are predominantly insect-pollinated. While poplars are mainly wind pollinated, bees do visit female flowers and the buds of poplars to collect resin. As such, it is possible that there may be some insect pollination.

After pollination, fruits plump up about the time the spring ephemerals are flowering, at the end of April. Bud burst is around the beginning of May. Seeds fill out, taking advantage of the open canopy.

In very rare cases, male and female parts occur in the same structure. This is usually seen only in hybrids. However, when individuals occur with a mixture of both sexes, viable seeds are not recovered.

Dispersal occurs in more than one way. The capsules pop and release the seeds. They broadcast on the wind. The fluff is suitable moisture and conditions, most often along watercourses. The moist soil promotes germination and growth of the seedlings.

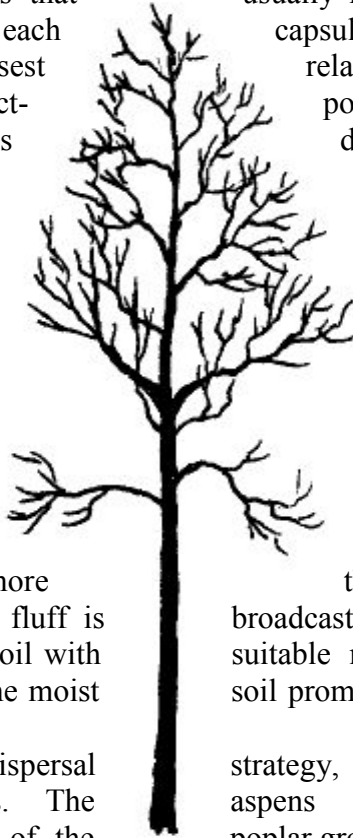
There is another dispersal strategy, by cloning large numbers of stems over very large areas. The aspens clone naturally, but the cottonwoods, also members of the poplar group, do not clone naturally.

Trembling aspen is the most widely distributed tree in North America, being present from the east to the west coast and from north of the Arctic Circle to southern Mexico in the western part of North America. The trees in the southern part of the range are found only on the north side of the largest mountains. In eastern North America, the trembling aspen is not found much south of Virginia.

Most plants rely on mycorrhizal fungi to get minerals from the soil. The roots of poplars have both ectomycorrhiza and endomycorrhiza. Some plants have only one type, others have both. In this relationship, the trees are both exploiting and being exploited by the mycorrhiza.

Aspens are unique in that they can photosynthesize in the bark in addition to the leaves. This occurs only in the smoother bark and occurs mostly in early spring. Poplars, other than aspens, have rougher bark in which photosynthesis does not occur.

There is a great deal of variation in leaf shape within poplars. There are two types of processes causing variation. One is 'heteroblasty,' which is a variation observed in response to the age of the tree. An example occurs in some of the Mexican poplars where



the leaves of young seedlings are lance-shaped, whereas the leaves are much broader and oval as the tree grows older.

The second process affecting leaf shape is called 'heterophylly,' in which the shape of leaves within a tree varies seasonally. The first leaves that open in the spring are pre-formed within the leaf buds. Poplars, unlike some trees, continue to produce new leaves throughout the leaf-out season. Some of these later leaves differ in shape from the early pre-formed leaves.

Both of these processes occur within some poplar species. Although seasonal heteropoly is common in aspen, it does not occur in all species of poplars. Heteroblasty and seasonal heteropoly account for most of the variation in leaf shape in poplars. However, this was not known by the early taxonomists, some of whom erected many species based on variation in leaf morphology.

The most species-distinctive leaves are the early pre-formed leaves whereas many of the neo-form leaves, formed after leaf-out, look a lot alike among species.

Pre-formed leaves do not necessarily drop earlier than neo-form leaves but some will drop earlier.

Some fossil leaves from the Eocene found near Green River, Utah are similar in shape to some of the leaves of current poplars. In fossils, lots of juvenile and lots of adult leaves are found but few intermediaries. For this reason, it was difficult to prove that juvenile and adult leaves were of the same species.

With very extensive analysis, differences in the variation in leaf shape of fossils can be detected between eastern and western poplars. Fossils of poplar leaves go back 45 million years before present. All current groups of poplars have reasonable fossil records. Fossils of cottonwoods are known back only 21 million years.

There are six groupings of fossil and living poplars, five of which are known in North America. The six groups include willow of Babylon, abaso, swamp poplars, cottonwoods and balsam poplars and aspens. It is rare that more than one member of a group occur together. However, an exception is the sympatry of trembling and large-toothed aspens right here in Ontario.

Hybridization between poplars may be easy or difficult to identify in the wild. Where it is seen, hybridization occurs where there is sympatry of the different types, e.g. hybrids are found where the ranges of cottonwoods and balsam poplars overlap. In North America, we have three types of balsam poplars and two of cottonwoods. Among the potential hybrid combinations, there are five combinations occurring in the wild. The hybridization suggests a high degree of promiscuity in poplars but there is less cross-fertilization than might be anticipated.

Hybrids are more susceptible to pests. Hybrids have been and are being grown as crops.

Hybridization, climate and site-specific characteristics can all affect growth. Jim showed us a 'cookie,' a cross-section, of a 180-year old poplar from Churchill, Man. that was only about 60% bigger in diameter than a three-year-old selected cottonwood from the southern United States.

In our area, we have only two native species of aspen, the quaking or trembling aspen and the large toothed aspen. In addition, we have the introduced white poplar. Because the trembling and large-toothed aspens are the most common, you might expect that hybrids between them would be most common. However, this hybrid type is the

least common of the three hybrids observed here. Flowering overlaps in all three species. Pollen competition appears to be the reason why the trembling x large-toothed hybrid is least common among hybrids in our area.

Poplars experience hazards. Seeds germinate and seedlings flourish in damp exposed soils. However, flooding shortly after seedlings root can wipe a lot of them out. In addition, ice from floods during winter/spring will knock down many flood-plain aspens.

Beavers prefer aspens as a food and wapiti chew the bark during the winter. Bears also climb aspen trees and feed on the catkins and young buds in spring. Many insects, shared with willows, also exploit poplars.

#### QUESTIONS:

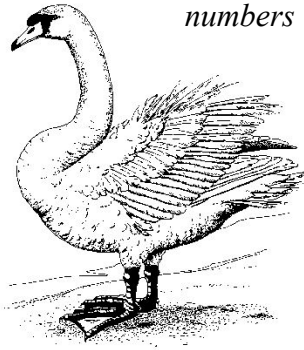
- Why do trembling aspens tremble? There has been no detailed study but it is speculated that they do so for thermo-regulatory reasons to keep the leaves from overheating. Cottonwoods also tremble but balsam poplars do not. There are very few tree species with flattened petioles.
- What determines the northern limit of distribution? Perhaps permafrost and/or winter temperatures? All poplars are trees, none are shrubs whereas in many other groups [e.g. maples, oaks, willows] some species are shrubs. They like moist sites at time of germination.
- How do Carolina poplars (a black poplar x cottonwood cross) spread? By their roots.
- Do some poplars pump more water than others? Those that are growing faster must be pumping more water.
- Paul Aird spoke about problems of sun scald on many types of hybrids.

Jim Rising thanked the speaker.

#### NOTES & OBSERVATIONS:

- Helen Juhola reported snowdrops in bloom at Courtyard Park on January 14. This is the earliest since 2002 when the first bloom was January 26. Fred Bodsworth's snowdrops are up 1/4".
- Ellen Larsen recounted how she tracked otter "troughs" over land for a distance of about one kilometer.
- George Bryant was in Mount Pleasant cemetery and observed a Pawpaw tree with broken branches. He suggests it may be raccoon damage. Pawpaw become poisonous as they mature. Fred says they are along the north shore of Lake Erie.
- George also noted fat squirrels with stumpy tails. There was some humour commenting on the possibilities of a cause-effect relationship!
- Ken Abraham noted spring songs of Cardinals, House Finches and Robins. Glenn Coady has also heard spring song from Starlings and White-throated Sparrows.
- Jim Bendell noted a variety of birds in the Ottawa Valley including a Bald Eagle and an abundance of Chickadees. Jim also noted that in Clarkson, there are hundreds of Scaup off shore, also Mute Swans, Bufflehead, Goldeneye, Redhead and Mallard. Baldpate (American Wigeon) used to be common there but none were seen on a recent visit.

- John Casselman, friend of the Club from Queen's University, wrote that he had seen a number of swans over-wintering on the St. Lawrence River in the Mallorytown/Brockville area. They may have been Tundra Swans. He noted that the Jesuits observed swans over-wintering in the Finger Lakes during the period 1656 to 1684. He quoted from the Jesuit Relations: *"Four leagues distant from here on the brink of the river (Seneca), I have seen within a small space eight or ten fine salt fountains. It is there that and from seven to eight single stroke of the net. the village, is fourteen two wide. It abounds with through the winter and in seen but continual clouds*
- Claire Muller replied that she and her friends have seen large numbers of Island near Kingston, and large numbers of Wood Ducks. The eagles and foxes try unsuccessfully to catch the ducks. She has at least three Snowy Owls in her area. She said there used to be as many as 30 owls in some winter, but she has never seen more than about five.



*numbers of nets are spread for pigeons hundred are often caught in a Lake Tiohero, adjacent to leagues one by one to swans and geese the spring, nothing is of all sorts of game."*

she and her friends have Tundra Swans on Wolfe along with Bald Eagles

#### NEXT MEETING:

The next meeting will be the 1,000th anniversary dinner. It will be held at the UofT Faculty Club at 41 Willcocks St., on Feb. 21 from 5 p.m. to 10 p.m., with cash bar at 5 p.m., **photos at 6:00 p.m (!!!)** and dinner at 6:30 p.m.

Please RSVP to Ann Falls by Feb. 7. Her address is 14 Tottenham Rd., Toronto M3C-2J4, telephone 416-444-4598. Ed Addison is organizing rides. Please contact him at 905-727-4476.

Bruce Falls will give *"A Retrospective Of The Brodie Club."*

Guest speaker Steve Scott will talk on *"Volcanoes, Life and Mineral Resources in the Deep Sea."*

See you there.

#### TREES REMEMBERED

By Yorke Edwards  
Our Western Correspondent

In the 1930s, Toronto's Castlefield Avenue ended at fields that were once part of a farm with lines of big trees at the edges of unused fields. One tree was a Basswood, the first tree I climbed, and on that tree I began watching birds, soon with a little 'Reed' bird book, the shirt pocket size. After the depression, our family went on Sundays in the new car, usually along roads by farmlands north of Toronto. Many times we drove under a large tree that was tall and leaning well over the road.

It became my favourite tree, and I still admire White Pines.

Through my three summers in Algonquin Park, I was usually in young forests, but there were also some parts with older trees. The biggest of all was the most interesting. It was large and rotting, a White Pine with a large old cut deep into its trunk. Its annual rings across the cut showed that it was well over 170 years old. All around it were many younger trees.

Both Oregon and California have a few scattered areas with the Bristlecone Pines. In southern Oregon's National Park, we drove to the top of a dead volcano that has a big lake inside it. Driving upward, trees became fewer, then none, but at the top there was a huge old rotting stump with two small pines growing out of it. Beside it was a sign saying that the stump was 4,000 years old. Nonsense, but that big rotten stump was a living pine tree very long ago.

Many years ago, White Birch trees saved Western Canada. In the 1600s, Europe wanted beaver skin hats, but their beavers became rare. America then beckoned, but France held the northeastern rivers and lakes, so a new British company, the Hudson Bay Co., used the many rivers west of Hudson Bay in light birch bark canoes collecting

beaver skins for the Europeans. Today the Company is still with us and is using about four other names for its stores, but not selling beaver hats.

Eastern Canadians like the Sugar Maple trees because they give rich syrup in spring when trees are pulling up sweet watery chemicals for making wood and leaves. Little metal tubes are cut through the bark to drip into small pails. Later, a fire nearby boils the watery syrup to thicken for the dinner table.

Our garden has three Broom trees, Italian and most unusual in almost every way. One begins with three trunks, each one 10 inches wide and on the ground, with branches that go up. One log goes for 11 ft before turning up. Leaves are long pale green needles, and their few pale flowers are hidden on top. Y



