

THE BRODIE CLUB



ROYAL ONTARIO
MUSEUM OF ZOOLOGY

THE 1,028th MEETING OF THE BRODIE CLUB

The 1,028th meeting of the Brodie Club was held at 7:30 pm on March 18, 2009 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chairman: Jennifer Young
Secretary: Oliver Bertin

The meeting was attended by 26 members and eight guests:

- Brenda Gibson, guest of Ann and Bruce Falls
- Sharon Hick, guest of Jock McAndrews
- Barbara Welch, guest of Fred Bodsworth
- Leslie Withers and Paul Gray, guests of Ed Addison
- Natalie Atkinson and Dan Barcza, guests of David Tomlinson
- Robert Ritchie the Younger, guest of Oliver Bertin

Several members sent regrets including Ken Abraham, Bill Crins, Don Huff, the Juholas, Kevin Seymour and Ron Tasker.

The minutes were approved as written with one change. The speaker at the previous meeting was Dr. Ronald Williamson, rather than Wilkinson.

NEW BUSINESS:

- There was no new business arising from the minutes.
- Bruce Falls announced upcoming meeting topics. Dr. Martyn Obbard will talk on *The Bears of Hudson Bay* at the next meeting, on April 21, while Chris Darling will speak on *Charles Darwin as Naturalist* at the May meeting, which will be held on May 5, two weeks earlier than usual to accommodate migrating birds.

Members were encouraged to consider the date and location of the summer field trip, which is usually held in June. Trudy Rising suggested a botany/birds hike in the Bala area, with lunch at the Risings' cottage. The club could visit the Torrance Barrens, also known as the Torrance Barrens-Dark Sky Reserve. Ann Falls offered a link to the website. <http://www.muskokaheritage.org/natural/torrancebarrens.asp>. Hugh Currie made another suggestion, that members visit Thicksen Woods where Glenn Coady has recently bought a house. The trip will be discussed again at the April meeting.

SPEAKER:

The speakers were members Rosemary and Ed Addison who spoke on their recent trip to Australia.

Land Forms and Fauna

Ed and Rose Addison visited Australia in June 2005 [mid-winter] and September-October 2008 [spring]. They spoke about four general regions – the tropical rainforest of the northeast, the Sydney-Canberra region on the east coast, Uluru in the dry centre and the Perth region on the Indian Ocean.

The Highland Rain Forests of the northeast are one of the wettest area in all of Australia. The high humidity supports a subtropical highland rain forest inland and lots of crocodile habitat on the coast.

In the high country inland, there is usually a deep duff layer in the forest which provides a unique nesting incubator for the Brush Turkey (*Alectura lathamii*). Like all megapodes, the male builds a compost pile. In the case of brush turkeys the incubating compost pile may be four meters across and one meter high, into which several females lay up to 50 eggs. The males regulate the internal temperature of the mound at 33C-38C for incubation. The hatchlings dig themselves out and fly within a few hours, allowing them to fend for themselves.

Ravenshoe is the highest community in Queensland at 930 m. It is also one of the wettest places in Australia, with about 4 m of rain a year, frequent rain (it rains on 9 to 21 days a month) and high humidity.

The highland rain forest has lots of epiphytes, wallabies, a plethora of arboreal and ground-dwelling marsupials, including tree kangaroos, sugar gliders and many species of opossum.

Only 15 minutes away from the highland rain forest is a dry sclerophyll ecosystem that supports a distinctly different community of flora and fauna. One distinctive sign of life was a termite mound that stood about eight feet high and was estimated to be 700 years of age.

Inland from the coastal resort of Cairns is **Undara**, a flat region with extinct volcanoes within the McBride geological province. Volcanoes were active in this province as recently as 190,000 years ago. The land is very flat with a 5° slope so lava from the volcanoes flowed for long distances within river beds, creating lava tubes that are the longest in world at 160 km in length. That led to the aboriginal name for the area, Undara, meaning *long way*. These lava tubes can be recognized from aerial photos as a green line of vegetation across the dry plain. The lava tube is a moist micro-site that offers an abundance of minerals and is less prone to hot brush fires, a common event in the surrounding area.

Sydney-Canberra

Once again, moving inland from Sydney to Canberra , the vegetation changed from the lush growth along the coast to dull, dry browns. Ed commented on an extensive, flat plain beside the highway, not realizing that it was a dried out Lake George, which hosted sailing regattas only 25 years ago.

In Canberra, they stayed with an old friend, Dave Spratt, who took ecology courses from Bruce Falls in the early 1960s. Dave and Ed were summer students of Doug Pimlott's and have kept in touch for the ensuing 35 years. Dave went to Australia for a PhD on marsupial parasites, the start of a distinguished career as a wildlife parasitologist.

Canberra is in a very dry part of Australia, dry enough that it is illegal to wash your car and your house windows or water your lawn, and dry enough that the annual flower beds at the House of Parliament remain unplanted.

Along with the droughts, salinity is a growing problem in many rural areas and towns especially in the south-west of [Western Australia](#). Prior to English settlement in 1788, [groundwater](#) levels were in [equilibrium](#). But the removal of deep-rooted plants, perennial trees, shrubs and grasses and their replacement by annual crops and pastures caused what is now called dryland salinity. The problem has become so bad that Western Australia is losing per hour farmland the size of one football field and the salt content of Adelaide's drinking water may exceed World Health Organization standards for desirable drinking water in two of every five days within 20 years. Moreover, increased salinity could lead to the extinction of about 450 species of native flora and 250 species of invertebrate water fauna in the Western Australian wheat belt.

Magpies can be quite a nuisance throughout much of Australia during the nesting – or swooping – season when a small percentage (around 9%) of the Australian magpies become highly aggressive. They use alarm calls and beak snaps and sometimes will swoop in from behind or the side to peck or bite at a person's face, neck, ears or eyes. More rarely, a bird may dive-bomb and strike the intruder's head with its chest. Some people biking to work in Canberra wore spiked helmets that were designed to deter attacks by magpies. Magpies are a protected native species, so it is illegal to kill or harm them. However, this protection is removed in some Australian states if a magpie attacks a human.

Closely related to the Magpie is the Pied Currawong. It is a bit larger and has a yellow rather than a red eye. Their songs travel quite far, and are very distinctive. It has adapted to suburban areas, feeding on berries of ornamental plants. Currawongs are increasingly found in Sydney and Canberra year round. A pair of Pied Currawong may kill about 40 broods of small birds to raise one brood of its own.

Rainbow Lorikeets are much better bird neighbours than Currawongs. They feed mainly on pollen and nectar and the tip of the tongue has hairy projections for that purpose. They also eat flowers, seeds, insects, and some fruit, often feeding while upside-down in flocks of about 20 birds. They roost in flocks of thousands of birds.

The Red Wattlebird is a large noisy honeyeater. The common name refers to the fleshy reddish wattles on each side of the neck. Like Lorikeets, Wattlebirds have highly developed brush-tipped tongues adapted for nectar feeding. The Crimson Rosella is another noteworthy species. Most of the population is found in the SE corner of Australia, in wetter areas with large eucalypts, which provide nesting cavities.

There are nearly 60 species of kangaroos in Australia. Grey Kangaroos prefer open grassland for browsing and areas of bush for daytime rest and sleeping. Like all [kangaroos](#), they are mainly [nocturnal](#) and [crepuscular](#), and are mostly seen early in the morning, or as the light starts to fade in the evening. A joey seen in its mother's pouch one minute surprised Rosemary and Ed by its large size when out of the pouch. Male gray kangaroos have the nickname Stinker because they have a distinctive curry-like odour. Males sometimes fight over potential mates by leaning back on their sturdy tails, "boxing" each other with their strong hind legs.

Montague Island

Montague Island is a nature preserve with 47 species of fauna, just off the Australian coast southeast of Canberra. The channel between the island and mainland is richly laden with krill, which attracts many species including: four species of Shearwaters (*Puffinus*) – Buller's, Sooty, Wedge-tailed and Short-tailed. Humpback whales migrate with their calves in the spring from calving grounds in the north, down both the east and west coasts of Australia as they head for the Southern Ocean for the summer. Montague Island also has dolphins, Australian fur seals, New Zealand fur seals, Silver gulls, and the Little Penguin. It is the most northerly nesting habitat in Australia for the little penguin, *Eudyptula minor*.

Kikuyu grass is a major weed on the island. Originally introduced in the early 19th century to help feed animals kept by the lighthouse keepers and their families, it makes movement and nest building on the island next to impossible for the Little Penguins and the four species of Shearwaters. The local staff have been eradicating the Kikuyu grass and rehabilitating the area with natural vegetation that doesn't block the penguins and shearwaters.

The Masked Lapwing is one of the few swoopers among Aussie birds. It has a spur on its wings that is used to strike animals approaching its nest. Attacks are most vicious on other animals, such as ravens, cats and dogs, but it does not hesitate to attack humans when they threaten their young.

Inland

The "red centre" is well named with its red sandy plain with relatively little relief and sparse vegetation. Annual rainfall is highly variable, between about 100 cm to just under 1 metre, with the peak rainfall during the winter.

Desert oak: These bottle brush-shaped trees are not oaks at all, but an *Allocasuarina*, a species with highly drought-adapted foliage with the leaves reduced to small scales encircling long segmented branchlets, which look like pine needles. Young trees have a distinctive narrow form, which morphs into a weeping habit as they mature. Drought-tolerant silver-leafed plants and hummock grass grow around the Desert Oaks.

Hummock grass, *Triodia*, dominates the vegetation in the arid, low-nutrient soil of the sand plain. It typically grows as an expanding dome with the new growth on the outer surface and long, long roots. Australian aborigines collected the seeds and ground them to make seedcakes. The resin in the stems was used as an adhesive in spear making.

There was evidence of kangaroos on the highways in the early morning. Their feces are dry, very like moose and deer winter pellets. Kangaroos are able to survive without drinking water if they have sufficient green food.

Red roos: The main species of kangaroo in the "red centre" is the Red Kangaroo – the largest marsupial – with a marked difference between the larger male and the smaller female. Females are lighter and faster than males and are sometimes called "blue fliers" because of their coloration and speed.

Cattle: In parts of the red centre, European Australians have cleared tracts of land and established water sources to permit the grazing of cattle, which roam freely with fences few and far between. These water sources are a boon to kangaroos and many other species.

Vehicles traveling the outback are outfitted with "roo catchers" to minimize vehicle damage in collisions with cattle and wildlife. In the early morning, it is not uncommon to see a dead kangaroo every few kilometers. Because of all the road kill, many Wedge-tailed Eagles are observed in trees, on posts or soaring along above the tarmac scouting for carrion.

The Wedge-tailed Eagle is the largest [raptor](#) in [Australia](#). The wing span is 2.5 m for females and a bit less for males. It has an unmistakable wedge-shaped tail.

Uluru

In the heart of Australia's red centre is a huge monolith, which rises above a plain of almost perfect flatness. It is the second-largest monolith in the world (after Mount Augustus, also in Australia), more than 318 m high, 8 km around and nearly 2.5 km into the ground. It was named after Sir Henry Ayers, the Premier of South Australia in the 1870s, but is now commonly known by its Aboriginal name of Uluru. In 1987, it was made a World Heritage site and recognised for its geological and cultural values. The coloration varies depending on the time of day and the atmospheric conditions, anything from blue to violet to glowing red!

There is rain 35 days a year, with the yearly average mean rainfall of 0.3 m, less than a tenth of the levels at Ravenshoe on the north-east coast. As water runs off the top of the stone

and down the grooves in the sides, it wets the stone. This wet surface reflects light differently than the dry higher ridges, creating beautiful patterns of violet and red.

Uluru is one big stone, a coarse-grained sandstone, rich in feldspar, clay and iron oxides. It flakes, revealing the natural grey colour of the sandstone. The outer layers oxidize, turn red, become brittle and flake.



Google Earth shows the top view with parallel striations on the surface. Between 400 and 300 million years ago, there was an uplifting and folding. Sedimentary layers tilted nearly 90 degrees from the direction of deposition and differential erosion of harder and softer layers resulted in ridges along the sides of the rock.

From the top of Uluru, another rock feature breaks the surface of the plain, 28 km away. These mounds or domes – Olgas – are now called Kata Juta, or ‘many heads’ in the Aboriginal language. The highest dome is Mt. Olga, which is almost twice the height of Uluru. Unlike the single structure of Uluru, KJ has many domes separated by valleys and canyons, but only a small shifting or tilting so that the sedimentary layering at KJ has remained almost horizontal. Another difference is in the nature of the sandstone itself. There are large numbers of small boulders of sandstone, granite and ironstone bound together by muddy and sandy sediments. This conglomerate creates rubble fields at the base of the mounds making walking a challenge.

West Australia

Shark Bay, on the Indian Ocean on Australia's west coast is another World Heritage Site. The area was designated in part because it has some of the most accessible living stromatolites in the world, identified as such in 1954.

They formed because a shallow area halfway down the bay limits the circulation of water, resulting in water with twice the normal salinity. Microbial mats built from cyanobacteria and other microscopic organisms are the building blocks for stromatolites, which grow through the sediment and sand, binding sedimentary particles together and increasing in size layer by layer, eventually turning into rocks.

When they first appeared on earth about 3.5 billion years ago, there was little or no oxygen in the atmosphere. It was through the oxygen-generating activity of stromatolites that other animal life on earth was able to develop. Conversely, it is believed that the decline in numbers of stromatolites is related to the evolution of animals in an increasingly oxygen rich environment that consumed cyanobacteria and algae. Stromatolites are extremely slow growing. Those in Hamelin Pool grow at a maximum of 0.3 mm a year, so those which are a meter high are a few thousand years old. At Hamelin Pool, a high salinity area within Shark Bay, the salinity precludes most aquatic life, including all the predators of the micro-organisms upon which the stromatolite formations are dependent.

Ed noted that the surficial geology of West Australia is the antithesis of eastern North America. Exposed metamorphic rock is common throughout the Precambrian Shield in Eastern Canada, but it is much more of a novelty in West Australia. In fact, outcrops of metamorphic rock were designated as national or state parks in most places where it was observed.

A particularly interesting granite site is Torndirrup National Park, which has large round-shaped boulders known as tors. Australia collided with Antarctica 1,160 million years ago and rocks at the base of the Earth's crust between the two continents began to melt and rise, slowly forming a glue between the continents. This glue can be seen today in the granite tors of the park.

The surficial geology of the W.A. shorelines is predominantly heavily eroded and weak sandstone and limestone deposited rather recently over the older metamorphic rock. The layering in eroded sandstone can also be observed in the Murchison River Valley, where water and wind have eroded the sandstone, making beautifully artistic patterns.

There are lots of black and white birds in Australia. Ed and Rose showed photographs of a Pied Oyster Catcher searching for mollusks as the tide ebbed, and a Black Oystercatcher that had nested on the same dune for 15 years. Another black and white bird is the Black Swan. It has white flight feathers, which are seen during preening and flight.

The Australian Pelican is medium sized by pelican standards, but it has the longest bill (up to 40 cm) in the avian world. It is one of the world's heaviest flying birds but can stay in the air for 24 hours and cover hundreds of kilometers at a stretch. These pelicans sometimes act as a team. The smaller birds zip in and out, cooperating to herd and enclose schools of fish, then the larger ones swoop down on their trapped prey.

Laughing Kookaburras are found in large areas of Australia. They are kingfishers, which kill prey by bashing it against a perch and then swallowing it whole. Another bird with a wide distribution is the Emu, which grazes with cattle in agricultural areas. They were very skittish as they are hunted by farmers, but they were less afraid in non-agricultural lands.

Black Cockatoos bite off red grevillia stalks and drop the flowers to the ground. Unlike many Australian psitticines, the Western Rosella is sexually dimorphic – the female is mottled with green. The Galah is a noisy, flocking bird with wide distribution across Australia. The well-named Bronzewing is one of Australia's most common pigeons. It is able to live in most habitats with the exception of very barren areas and dense rainforest. Splendid Fairy Wrens looked like dancing bits of incredible turquoise and blues.

In WA, Whistling Kites were observed cruising the roads, riding on thermals looking for road kill. This species has benefitted from agricultural clearing. Accipiters were far less

common than kites. A photo of an immature Spotted Harrier, a slim-bodied bird with a striking white-spotted chestnut breast displayed an owl-like chestnut facial disc with a narrow light grey ruff around it.

Many Bobtail Lizards basked on the edge of black top roads. Their scales are quite large to maximize heat gain while basking and also for camouflage.

Stirling Mountains

North of Albany in southwest Australia are Porongurup National Park and the adjacent Stirling Mountains, the most southerly mountains in West Australia and the only mountains in SW Australia. At their highest, they are 1095 m ASL and the only area in WA to record snow on occasion, perhaps once annually. Because they are the only vertical obstacle in any direction, the peaks tend to alter the local, very dry weather conditions, leading to increased rainfall in the higher country.

The Stirling Mountains are narrow north to south, perhaps 10-15 km across, and about 60 km in length from west to east. They can be readily circumnavigated within a day. The mountains were formed of **metamorphic rocks** made from **sediments** deposited during the **Ediacaran Period** 630 to 542 million years ago. The sediments were subsequently metamorphosed to quartzites and shales and folded during the reactivation of basement structures during lateral displacements between Antarctica and Australia. They are comprised largely of shales and quartzites with very poor soil, creating a species-rich heathland flora.

The Stirling Range is one of the richest areas for flora in the world with representatives of 90 families, 384 genera and more than 1500 plant species, 87 of which are found nowhere else in the world. This list includes more species of wildflowers than in the entire British Isles. All of West Australia, but particularly The Stirlings, are definitely a pot of gold at the end of the rainbow and a subject worthy of future discussion.

QUESTIONS

- Australia has an incredibly diverse range of forests and flowering plants, many of them unique. Ed referred to three valuable species of eucalyptus, one of which was shipped to England for use in railway ties. The so-called “greenies” have tried with success to stop the over exploitation of the forests. They lobbied successfully for the passage of legislation that saw the number of sawmills cut to 10 from the original 100 in southwest WA. Now wood of the most marketable species can only be exported as ‘value added’ products such as furniture and not as lumber

- Bruce Falls noted that some forests have Karri trees that are 200 feet tall. They are the third-tallest species in the world.

- The Australian drought is very, very serious. Canberra has had a drought for five years, while southwest Australia had its first rain in years. It is certainly getting worse.

- Australia has an incredibly diverse flora and fauna probably because the species have had a very long time to evolve. The last glaciation was in the early Permian, 275-299 million years ago, before it separated from Africa and the other continents.

- Perth is isolated from the rest of Australia allowing it to keep out feral species. That has benefited ground-dwelling marsupials. Nevertheless, both some exotic plant and animal species have invaded and are a great challenge.

- Ed saw no reference to feral weasels and stoats, but cats grow to 25 pounds and cause terrible damage to native species.

- Bruce Falls said he used to visit Lake George in the 1960s looking for waterfowl. It is now dry.

- Bertin mentioned that Saskatchewan also has terrible problems with salinity, caused by the over-irrigation of crops.
- The temperature in Canberra reached 49C on a recent day that Dave Spratt was picking apples at his farm. The picking stopped until evening.
- Kangaroos are hard to photograph because they bounce away very fast.

The speakers were thanked by Jim Rising.

NOTES & OBSERVATIONS:

- After the meeting, Ron Pittaway passed on what may well be an urban myth. The story refers to a kangaroo that was hit by a car in the outback of Australia. The tourists thought the kangaroo was dead so they put a person's jacket on it and posed it for photos, but suddenly the kangaroo woke up and ran off with the car keys in the jacket leaving the tourists stranded. Perhaps this story was intended as a joke because it is an urban legend. See the link <http://urbanlegends.about.com/library/blroo.htm>
- Several members saw complimentary reviews of a recent book co-authored by member Paul Aird after the original author, Henry Kock, died suddenly. The book is *Growing Trees from Seed: A practical guide to growing native trees, vines and shrubs* by Henry Kock, with Paul Aird, John Ambrose and Gerald Waldron. 2008. Firefly Books Ltd. Richmond Hill. 280 pp.
 - Jim Rising said grackles, song sparrows, juncos and robins have started to sing, and he saw a Coopers Hawk.
 - Rose Addison said her first snowdrop opened the day of the meeting at her home in Aurora.
 - Bruce Falls visited Long Point with Ron Scovell, who now lives in Waterloo.
 - Richard Joos referred to Peter Pyle's second volume of *ID of North American Passerines*, which contains references to gulls and hawks. It is "incredibly informative," he said.
 - Trudy Rising saw snow fleas everywhere at her cottage, but they were particularly thick on Jim's footprints, which were slightly warmer. An otter was across the lake rolling in the snow on the bank of the lake just above a small area of the lake that had thawed.
 - David Tomlinson has flowering crocuses and snowdrops in his Aurora garden.
 - Barbara Welch, Fred Bodsworth's daughter, saw a brown mink at Colonel Samuel Smith Park in New Toronto.
 - Robert Ritchie saw turkey vultures on March 11 (first for the year) above the junction of QEW and Hwy 405, heard red-winged blackbirds on March 13, and saw cormorants along the Welland Canal on March 15. He saw many monarch butterflies on the island of Maui.
 - Sandra Eadie said she has seen monarchs in Bermuda. This population does not migrate.
 - Jim Bendell reported on the on-going controversy in the world of Blue Grouse speciation, and commented on the feathered dinosaurs, which apparently used feathers for insulation and display. He saw a Varied Thrush in the Ottawa Valley and snowdrops on his septic tank.
 - Jennifer Young demonstrated Birdscapes, a book by Miyoku Chu, which was published by Chronicle Books and the Cornell Laboratory of Ornithology. The book has innumerable dioramas with the appropriate sounds.
 - Several members led by Ron Pittaway, commented on the use of plastic trees and other disguises to camouflage microwave towers. Ron had sent a photograph of such a microwave tree to members as part of an April Fool's joke.

The meeting adjourned at 9:20 pm.

NEXT MEETING:

The next meeting of The Brodie Club will be held on April 21, 2009 at 7:30 pm in Room 432 of the Ramsay Wright Zoological Laboratories. The speaker will be Dr. Martyn Obbard, who will talk on *The Bears of Hudson Bay*.

Mammals I Have Seen

By Yorke Edwards

Our Western Correspondent

House Mouse – Twice we had them in our house, one running across the kitchen from the cellar; the other one crossing our living room from the fire place.

Pika – Seen on rocky hills in mountain areas. They are often standing beside their homes, just holes with some stones around them.

Water Shrew – One day from a flat place high on a mountain I followed a tiny stream, and there I found a small animal sailing by. It was a dead water shrew.

Cottontail Rabbit – Once when young, I saw one in a field of grass at the end of a street in Toronto. That in war time and I often went to a field to play in the grass.

Little Brown Bat – One hot summer's day, I saw a bat that flew around our house. Another time I went into a cave with lots of them, all up on the ceiling.

Raccoon – Once we had an old garbage can, which was always outside, and in the early mornings, a raccoon came to climb into it with its tail hanging out.

Yellow Pine Chipmunk – These chipmunks and the Least Chipmunks as well, both live across a large area of British Columbia and far down into the United States.

Woodchuck – They live across Canada on the open flat lands and in forests too, from sea to sea, all in holes in the ground, which are their homes.

Caribou – In winter snow, they reach well up into trees for lichens, but in summer they go up onto treeless mountains where they eat lichens from the ground.

Vancouver Marmots – All of them nearly died in their holes on a grassy bit of land above the forest, so someone took the few remaining ones away, then brought them back to their holes.

Hoary Marmot – In the mountains of southwestern B.C., at dawn, there were marmots by their homes making loud cries as they came down from trees on the rocky hills.

Moose – Big, black, and in small groups, they are often standing beside a lake in the shallow water eating water plants. Before winter, they go down to lower places.

Lynx – I've seen but two, once I met one while climbing up a mountain, and once I saw one sitting on a rocky place looking down as our car went by.

Marten – I've seen them several times up in their trees. They never seemed to try getting away; they just stayed high up on the tree while looking down at me.

Otter – Once they went into our small, old hut used for garden tools. They dug into the floor where their babies were born. We found their nest later.

Harbour Seal – We see them daily on the shore of an island not far from our house. One day, hundreds were on the edge of the island.

Jumping Mouse – In Algonquin Park, in three summers, I found that there are two kinds of jumping mice, one light brown, one dark brown, but both were white beneath.

Striped Skunk – Once I saw a skunk walking across a college field, while many people wondered what they were seeing that was so slowly wandering, with its tail straight up.