THE BRODIE CLUB

ROYAL ONTARIO MUSEUM OF ZOOLOGY

THE 971th MEETING OF THE BRODIE CLUB

The 971th meeting of the Brodie Club was held on Dec. 10, 2002 in Room 432 of the Ramsay Wright Zoological Laboratories of the University of Toronto.

Chairman: Ron Scovell

Secretary: Oliver Bertin

Attendance: 16 members and 12 guests

Enid Machin, wife of late zoology professor John Machin and guest of Ann Falls;

Tanja Durbic, Gaby Binette, Monica Granados, students, & Kevin Seymour, ROM curator of palaeobiology, guests of Jock McAndrews;

Rosemary Addison, guest of Ed Addison;

Doug Tozer, a Trent MSc student who is working on the Breeding Bird Atlas, guest of Jean Iron;

Tara Hannah, granddaughter of Fred Bodsworth;

Glenn Coady, guest of Hugh Currie;

Alison Tasker, daughter of Mary and Ron Tasker;

Ellie Larsen, UofT professor of developmental genetics, guest of Bruce Falls;

Eleonora Bertin, guest of Bertin.

NEW BUSINESS:

Michael Boyer suggested that members may like to visit or become members of the Oak Ridges Trail Association, which runs a 160-km trail from Palgrave to Gore's Landing on Rice Lake. The trail travels on a mix of roads and trails, and connects with the Transcanada Trail and subsequently the Bruce Trail. Membership costs $21 and includes a guide book with 10 maps which indicates points of historical or natural interest.

Bodsworth recommended two books as excellent Christmas presents: *Ontario Rocks* by Nick Eyles (Fitzhenry & Whiteside), which was also recommended by McAndrews, and *The Sibley Bird Calendar*, published by the National Audubon Society.

Treasurer Jennifer Young asked all procrastinating members to submit their annual dues, $10 for individuals and $15 for families. She asked for cheques payable to the Brodie Club or cash. Her e-mail address has been changed to jryoun@sympatico.ca.

Falls said the February speaker will talk on the status of the Great Lakes.

Ron Tasker recommended acceptance of the November minutes.

MEMBERSHIP COMMITTEE:

The membership committee is pleased to nominate Ellen Larsen for membership in the Brodie Club. Ellie has attended the requisite three meetings and has supplied us with the following information. We think she would be a great asset to the club.

Ellen Larsen

I am a professional biologist at the University of Toronto, exploring, from a genetic and developmental point of view, Darwin's dictum that biodiversity evolves from "descent with modification." My professional interests are motivated by a lifelong fascination with plants and animals, where and how they live and how they develop. Most weekends, I spend in the country at the boundary between alvar habitat and the Canadian Shield enjoying the variety of organisms, plant, vertebrate and invertebrate which this location supports. Although I am a laboratory scientist, I have been given the opportunity to help conduct field courses in the Arctic and Algonquin Park. In Algonquin Park, the course *Photography for Ecologists* allowed me to share my hobby of nature photography. I have also enjoyed my visits to Costa Rica and New Zealand where I found the different biota overwhelming.

SPEAKER:

Falls introduced the speaker, Dan Brooks, a professor of biodiversity in the UofT Dept. of Zoology. Brooks studied as a tropical field biologist in Mississippi and was a faculty member at UBC before joining UofT 10 years ago. He has been keenly interested in the biology of Latin America for 27 years.

Voyage of Discovery:
Maximizing our efforts in the global inventory

Brooks said he first visited the tropics in 1975 as a young and impressionable master's student from Mississippi. He flew to Colombia to meet his professor and was immediately struck by two images: The wonderful biology of the tropics and the disparity between the wealth of the United States and the poverty of Latin America. This was drawn home the first morning when he saw soldiers travelling the streets at dawn picking up the dead bodies of young, homeless children who had died of exposure the night before.

He has spent considerable time in northeastern Costa Rica, an area of huge biological diversity but also a region where people have to struggle to live. This has led to a difficult balancing act between the desire of biologists to preserve the natural fauna and flora and the need to foster socioeconomic development.

He noted that ecotourism has fallen by 83 per cent since the terrorist attack on New York in September, 2001, prompting him to point out that, as usual, the poor and defenceless typically suffer the most from events such as these.

The problems extend over much of Latin America. In Sao Paulo, Brazil, there are 11 million people and massive over-grazing in the countryside nearby. In Honduras, there is widespread clear-cutting, yet the land can only be used for three or four years before it plays out. Most of Costa Rica was clear cut and subsequently abandoned, with regeneration considered difficult if not impossible. Parasites are a huge public health problem and local cemeteries are filled with young children.

Speaking as a biologist, Brooks said the sad reality is that 50 per cent of the world's species are doomed to extinction within a generation however hard we try to preserve them. "It's probably too late to save them. The best we can do is to try and save as much of the remaining 50 per cent as possible."

One of the greatest impediments to the preservation of species around the world is the sheer lack of knowledge of what is there -- the unfortunate reality is that it is very difficult to save a species unless it has a name. Every jurisdiction needs an inventory of the extant species in the area, but those inventories simply do not exist. The problem is overwhelming.

Only 10 per cent of the species in the world are known, and most of the references go back to one type specimen in the original description. Many of those original recordings are imperfect, if not inaccurate.

It is very difficult to rectify the situation given the enormity of the job. Costa Rica is one of the most diverse areas of the biological world, but even that tiny country is hamstrung by the lack of taxonomic resources. Even doing an inventory of the United States or Canada – with all their wealth – is virtually impossible.

"The U.S. doesn't have enough people to do its own taxonomy. There are not enough taxonomists in Canada to meet the legal requirements for imported species," he said.

Part of the problem is the lack of interest in basic taxonomy among funding agencies, the lack of support for museums and even the lack of interest in taxonomy within universities, where the subject is often considered old-fashioned or dull.

But in the field, there is a huge interest in biodiversity, even in the poorest places in the world where the local people treasure the wild animals that surround them. The poor will invariably feed themselves first, but they do appreciate the wild species and will do all they can to save them if they can.

Brooks is tackling both problems in Costa Rica. He is trying to inventory the species while creating employment by training local Costa Ricans to help him. Several of his staff have become excellent biologists even though they could never afford to go to university. One of his staff can even identify 1,100 species of plant by eye -- in the dry season when the plant has no leaves.

Brooks lamented the lack of knowledge of local parasites in Costa Rica. There are huge numbers of the animals – often eight to 10 species of parasite for each host -- yet virtually every species he comes across is new to science.

Brooks does much of his work in the Guanacaste conservation area in northeastern Costa Rica, a World Heritage Conservation site the size of New York City. It is a tremendously diverse region, much of which survived clear-cutting because of its inaccessibility. The area includes three volcanoes, lowlands, deserts, rainforests and super-saturated, mountain cloud forests, so difficult to reach they have never been collected.

Brooks has also visited a region in northwestern Costa Rica, an area that Oliver North and the Central Intelligence Agency used for gun-running. The CIA kept people out of the area, allowing the local flora and fauna to flourish.

There are 950 species of birds in the region and 600 in the conservation area, an incredible variety of parasites – "a walking zoo of parasites," he said -- and a huge and diverse mix of mammals, reptiles and amphibians.

Unfortunately, most of the amphibians above 1,000 meters have been killed by a pathogenic fungus, common in the North American Great Lakes region, which appears to have been introduced by biologists or ecotourists.

There are five cat species in the area, including the jaguarundi, a local feline about the size of a bobcat. It is a strange-looking animal with a canine-like head that is rarely seen. Brooks came across one that had been killed on the local highway and discovered the stomach was full of plant material, a strange diet for an obvious carnivore.

The area is full of biological oddities. There are trees that apparently developed long thorns to withstand predation by mammals that no longer exist. Acacia trees often co-exist with vicious ants that protect them from predation. The ants invade the tree, which grows a hollow cavity that the ants use as a nest. If the tree is disturbed, the ants come out by the thousand and bite the intruder. There are many tree frogs, a version of our leopard frog, wildly coloured lizards and a large variety of highly poisonous snakes, many of which would be deadly if stepped upon.

QUESTIONS:

- Brooks said there is a real problem with bad taxonomic information. Brooks believes fewer than 50 per cent of PhDs can identify the species they deal with because they have no experience of animals in the field outside the laboratory. But taxonomists are often their own worst enemy. The science is often dismissed as boring or old-fashioned. Many taxonomists need to demonstrate concrete benefits from their work if they are to win funding for their projects.
- Brooks suggested a variety of ways to make taxonomists more productive, including the use of software and digital imaging to identify species. Brooks takes GPS, hand-held computers and digital cameras on field trips to record information on the spot, allowing him to collect accurate and complete information on the species and where it was caught. He can often identify the exact tree in which a bird was seen. The internet is a vital tool for disseminating the information he collects.
- There are huge gaps in our knowledge even in much-travelled areas. The birds in parts of northeastern Costa Rica have never been surveyed, even though most people assume the species inventory had been completed long ago. "The flowering plant systematists have done a very good job," Brooks said. "They have been everywhere. Almost everything has been done. But everything else is up in the air."
- Many parasites are host-specific. He rarely finds the same parasite in a different host.

The speaker was thanked by Ron Tasker.

OBSERVATIONS:

Scovell recently made the seventh recording of a Ross' Gull in Ontario on a trip to Niagara with the South Peel Naturalists Club.

Other observations were postponed to the next meeting due to the late hour and the desire of the members to partake of the Christmas fare.

The meeting adjourned at 9:53 pm.

NEXT MEETING:

The next meeting will be held at 8 pm on Jan. 21, 2003 in Room 432 of the zoology building. The speaker will be Dr. Anurag Agrawal of the Dept. of Botany at UofT who will talk on *Offence-defence interactions between insects and plants.*

A Jaquarundi

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