THE BRODIE CLUB

ROYAL ONTARIO MUSEUM OF ZOOLOGY

THE 990th MEETING OF THE BRODIE CLUB

The 990th meeting of the Brodie Club was held on January 18, 2005 in Room 462 of the Ramsay Wright Building of the University of Toronto.

Chairman: Kevin Seymour
Secretary: Ed Addison
Attendance: 22 members and 6 guests
Guests: Chester and Camilla Gryski, guests of Sandra Eadie
Joan Winearls, guest of Bruce and Ann Falls
Rosemary Addison, Melissa Rose and Pete Addison, guests of Ed Addison

Minutes of the 989th meeting were approved as circulated and there was no business arising from the minutes. Bruce Falls reported that the speaker next month will be John Casselman speaking about global warming and fish populations in Ontario.

NEW BUSINESS:

George Bryant has been the Brodie Club representative to the FON for the past four years and suggests that if we continue to be an affiliated club that he would like someone else to take over as rep. George feels that the unique character of the Brodie Club makes it a 'poor fit' as a member club in terms of the seven responsibilities that all member clubs of the Federation are supposed to fulfill and he recommends that we not renew the affiliation. Jim Rising noted that most of us are members of the FON anyway. Sandra Eadie noted that the Brodie Club was instrumental in the formation of the FON. Bruce Falls encouraged that the Brodie Club remain affiliated with the FON.

There was an announcement that the Durham Field Naturalists will be celebrating their 50th anniversary on May 28, 2005 from 1-5 P.M. at the Northwood Community Centre. All are welcome. The Master of Ceremonies for the celebration will be Ron Tozer and James Kamstra will be the speaker.

Jean Iron will be the speaker at next month's meeting of the Toronto Field Naturalists Club.

SPEAKER:

Bruce Falls introduced Eugene Morton, the evening speaker. Bruce first met Eugene at a science meeting and has been impressed with his original views ever since. Eugene was at Cornell University conducting graduate studies with field work on tropical passerines. When his major professor relocated to Yale, Eugene followed. After his Ph.D. at Yale, Eugene worked with the Smithsonian Institute for 30 years prior to retirement. He was also affiliated with the National Zoo. He is currently an adjunct professor at York University. For years, Eugene worked on bird song and later studied aspects of tropical ecology. He has authored or co-authored a number of books including a 1998 book on vocalization of animals and more recently *Behavioral Ecology of Tropical Birds,* published by Academic Press.

I heard a couple of versions of the title of the talk, one being:

WHY TROPICAL BIRDS ARE ODD

Eugene and his wife, a professor of ornithology at York University, wrote the book in part because of what he refers to as a "temperate zone bias". Most ornithologists studying birds are from and are familiar with birds of the temperate zone. In addition, most passerines for which detailed aspects of their behavior and ecology have been studied and documented are also temperate zone birds. The above factors have led to the "temperate zone bias", perspectives based on experiences limited largely to the temperate zone. This includes assumptions about passerines in general, assumptions that do not all apply to passerines in the tropics.

There were a number of aspects avian ecology that Eugene drew on as examples of differences between tropical and temperate passerines. However, the example that was the main topic of his presentation was differences in the sexual behavior of birds between the temperate and tropical zones, specifically the extent to which "extra pair mating" (EPM) occurs. This term was used interchangeably with "extra pair paternity" and "extra pair fertilization" (EPF). These terms refer to mature birds mating with birds outside their own territories and that the female and male attending a nest may not be the genetic parents of the offspring in their nest. The female bird usually, but not always, is a genetic parent. However, the male may or may not be a genetic parent.

Since the application of some of the modern genetic techniques to ornithology, it has become expected (based on the temperate zone studies, hence bias) that EPFs are common, in some cases even the norm for passerines. For example, EPFs of females for purple martins, tree swallows, indigo buntings and hooded warblers have been reported as 54, 47, 48 and 41% of females respectively!

Eugene also spoke of the increased species richness of birds in the tropics as compared to the temperate zone. For example, in one of the sets of data about hawks that Eugene displayed, there were 6, 8, 22 and 23 species of hawks in the temperate zone, Florida, the West Indies and Panama respectively.

He also noted the presence of territoriality in temperate passerines when they are in wintering in the tropics, and he noticed factors influencing territoriality. For example, Tennessee warblers defend about a two-square metre territory associated with a particular species of flowering tree. When pollinating the flowers, the Tennessee warblers get red pollen on their faces. Eugene also noted that orchard orioles are the only species of passerine in Panama that can open the flowers of a particular tree. Because it is not the breeding season for temperate passerines when in the tropics, the defense of territory does not distinguish between sexes. For example, when in the tropics a male hooded warbler will attack a female hooded warbler in defense of territory.

Female passerines are usually fertile for a limited period of time from four to five days before the laying of the first egg and through to the last egg. Males will 'mate guard' during the time while females are fertile.

If pairs of conspecifics are fertile at the same time, this is called synchronous fertility and this keeps males quite busy mate guarding within their own territories. This is in contrast to areas where a species may have individual pairs being fertile and nesting over a prolonged period of time, i.e. asynchronous fertility or asynchronous breeding.

In temperate areas, breeding occurs within a very short period of time. The breeding season is much more asynchronous in the tropics. For example, the temperate tree swallow has synchronous nesting with clutch initiation occurring in the two months of June and July. In contrast, the tropical mangrove swallow, is more asynchronous, with initiation of clutches occurring throughout a five-month period from January to May. Similarly, clutch initiation for the temperate breeding white-throated sparrow occurs within the three months from May to July in contrast to the tropical rufous-collared sparrow which will initiate clutches from January to December!

From one perspective, asynchronous breeding provides males the opportunity to attempt to breed outside of their territories once their own territorial mate is no longer fertile and the motivation for mate guarding has decreased. As such, from a "temperate zone bias", one would expect a much greater opportunity for EPFs in the tropical as compared to the temperate breeding passerines. However, this is not the case which from a 'temperate zone perspective' makes the sexual behavior of the tropical passerines appear somewhat 'odd'. Indeed, as synchrony in breeding, clutch initiation, etc. increase, EPFs increase!

Why do breeding passerines 'stay at home' in the tropics? With asynchronous breeding there is very limited overlap of fertile females. Thus, when a male travels off territory, it has a low chance of finding a fertile female and a higher chance of finding a defending male (males defend territory for longer than the fertile period).

In the synchronous breeding of the temperate zone, traveling males have an increased chance of finding fertile females and a decreased chance of defending against intruding males. With the synchronous breeding of the temperate passerines, females have greater opportunities to mate with other males during 'extra territory' forays.

Having synchronous males in the vicinity is a benefit to females making forays outside their territories because many males singing allows the females to make comparisons in the relative strength of the songs of numerous males.

There is also a correlation between the size of testes and the occurrence of EPFs. Testes are larger in species with high EPFs, of medium size in species with low EPFs, and lowest in tropical birds.

In the tropics, males of many species commit a lot more energy to nest building and incubation than do males of species breeding in the temperate zone. For example, with blue-eyed vireos the males make the nest and the male does at least 50% of the incubating. These factors are likely important influences that lead to a very low occurrence of 'extra pair young'.

The lesser elaenia is an 'intra-tropical' migrant. There are many interesting behavioral comparisons between the lesser elaenia and its relative, the yellow-billed elaenia.

Character	**Lesser Elaenia**	**Yellow-billed Elaenia**
Synchrony index	15-18%	9-10%
Testes mass	0.02	0.007
Male intrusion	0.3/hr	0/hr
Pair success	80%	100%
Male nest building	0	17%

Clay-coloured robins are tropical birds that do breed synchronously. In one area, they started breeding early whereas a short distance away (e.g. as little as 10 km), they started breeding later. However, within a single site they are relatively synchronous. The males generally only sing from early February to late March. Clay-coloured robins have high testosterone and larger testes relative to other tropical birds.

In tropical birds, testosterone seems to have little to do with the extent of mating. However, in temperate zone passerines, there is a positive correlation between EPFs and testosterone.

There are differences between tropical and temperate breeding passerines in the motives for defense of territory (see table below).

Territory Characteristics	**Number of Species-Panama**	**Number of Species – North America**
Breeding	42	224
Year-long	142	15
Army ant influenced	11	0
Mixed species flocks*	65	0
Fruit influenced	43	0
Lek	28	0

* an area (territory) will be defended by a group of species.

Both the lesser and the yellow-billed elaenia are 'fruit influenced' in the areas that they occupy. With these species, both the male and the female will leave the territory to look for fruit. The female will leave even when fertile.

With temperate zone breeding passerines, there is a high correlation between availability of food and time of breeding. However, in the tropics, periods of high food abundance and breeding may not always coincide. In the tropics, where food may be less of a limiting factor, time of breeding may be more influenced by predators.

Breeding in tropical birds can be different from temperate birds in ways other than by factors related to synchrony of breeding. Dusky Antbirds are interesting in that they have a permanent territory, permanent mates and the quality of their territories does not seem to have much to do with breeding sites.

Year	Number of Pairs	Number of Pairs with Young
1991	11	1
1992	23	0
1993	26	0
1994	28	1
1995	29	4
1996	30	2

From the above data, nesting success of the dusky antbirds was very low (5%). However, they appear to compensate for their low annual productivity by surviving for a long time.

There can sometimes be considerable shifting of male antbirds among territories. In some bird removal experiments, males removed were quickly replaced by other male dusky antbirds. When an original male was released some time later, it regained its original territory. This is very different from some temperate breeding passerines. Eugene noted that the returning male would not have regained its original territory had it been a red-winged blackbird!

Eugene summarized his presentation and encouraged a wide breadth of perspectives by saying "tropical birds are different, temperate birds are odd!"

QUESTIONS:

- Is testosterone only in male birds? Yes.
- Why would dusky antbirds not select for nest sites that would provide a higher degree of fledging success? There are compromises between their own safety and the safety of the nest.
- Is there a high degree of EPFs in colonial nesting birds? Eugene noted that he hadn't worked much with colonial passerines (e.g. purple martins). However, with purple martins he did note that females do prefer older males because they are survivors of some parasitic challenges to which a high proportion of younger males succumb.

Younger males are not appealing to them as mates perhaps because their 'survivorbility' has yet to be established. There are very low levels of extra-parental matings (EPMs) in seabirds. Razorbills have only one egg. The females have frequent EPMs but their only egg is fertilized by their mate. Reasons for the EPM in razorbills are unknown.

- There are highly seasonal environments in some areas in the tropics as compared to others. Do you see variability in synchrony associated with the degree of variability in tropical seasonal environments? I don't know.
- Do individual tropical birds maintain a consistency within their time of breeding, for example, always early or always late? It depends on whether it is a typical dry season breeder that feeds lots of fruit to their young. Also a pair may have prolonged breeding because of recurring predation. Re-nesting may occur 0-7 times in some species.
- What happens to the fledglings? Males often don't know which young are their own. In some species, males will sometimes defend nests other than their own.
- How does disruption of forest structure affect sexual behavior? In fragmented forests, there are fewer extra-territorial forays by females, because their chances of finding other males are reduced.
- What is the role of kinship on behavior of tropical passerines? There is a great difference between temperate and tropical passerines in sex roles. Males do 'everything' in the tropics, nest building, brooding, and feeding. This is all a positive investment because in the tropics all of the young are his!! There are exceptions. For example, the dusky antbird males do not invest such effort. However, dusky antbirds are so short-lived that kin relations do not have much time to develop. The sex role of males is greater with the degree of certainty that the young are 'his'.
- Wouldn't the evolutionist argue that behaviors are selected for survival? To an extent, but not necessarily. For example, there is no selection for survival of the individual following breeding in salmon. There would be selection for breeding (i.e. the potential to carry on genetic material) but not survival in some species.
- There is obviously a correlation between duration of breeding season and size of testes. Is there a cost/benefit to this? Having small testes in tropical birds can perhaps sustain the mating season. In tropical birds, to elicit an increase in testosterone levels, one may have to play back song for 90 minutes. In contrast, testosterone rises very quickly in temperate birds with very little play back of song. Large and quick responses would be costly over a long season.
- How is territory determined in mixed group flocks (MGFs)? A MGF territory size is defined by the needs of the larger species in the group. The smaller species will occupy a smaller part of the MGF territory. In some MGFs, one individual of a species will keep other conspecifics out (e.g. some warblers). The MGFs require a group of forest structures that is quickly and adversely affected by logging. As such, mixed group flocks are particularly fragile to disruption of forest structure. Some MGFs are very different from others. For example, fruits 'want to be eaten' for the purposes of seed release and dispersal and insects do not 'want to be eaten'. There are different behaviors of MGFs related to food habits of species within the groups.

The speaker was thanked by Jim Bendell.

NOTES AND OBSERVATIONS:

- Jock McAndrews - The stones from the crop of passenger pigeons that were brought to a previous meeting have been identified as quartz. Jock also discussed a piece of wood from beneath Toronto that has now been estimated to be 30,000 years old.
- Jim Bendell – The influx of great grey owls is widespread, from Quebec to Minnesota. One birder in the Ottawa Valley saw 47 individuals in the space of 30 km in one day.
- Arne Juhola – A house sparrow at Harbourfront was 2/3 white.
- Ron Pittaway/Jean Iron – They have been trying to age great gray owls by studying skins at the ROM. They seem to be able to tell 1½ year old birds from older birds. There are very few first-year birds in this current invasion. There were very few Microtus in the boreal this past summer which would increase the likelihood of a disastrous nesting season. Perhaps this explains why many of the birds they are seeing are what they believe to be 2 years plus.
- Glenn Coady mentioned that this appears to be the largest eruption of great grey owls in southern Ontario in recorded history. There apparently have been no great grey owls reported on the south side of Lake Ontario.
- There are abundant Microtus in central and southern Ontario. For the first couple of weeks after their arrival, some are suggesting that the owls are feeding heavily which is leading to increased daytime foraging. It was speculated that after they have recovered some of their condition that they are reverting to their more typical crepuscular hours for feeding.
- Glenn Coady mentioned that one dead great grey owl from the Leslie Street Spit weighed only 600 g.
- Bill Crins indicated that some great grey owls have stayed in lower latitudes for one or two years following an eruption.
- Kevin Seymour indicated that there are internal skeletal structural characteristics that can definitely differentiate between juveniles and adults. Up at the ROM they are collecting dead great grey owls, identifying them as juveniles or adults and checking the plumage for external characteristics that may indicate age. So far, no patterns seem apparent.
- Bruce Falls mentioned the hawk owl that people have been going to see out at Port Hope. It has been staying in the same predictable location for a number of weeks.
- Glenn Coady mentioned the black-throated gray warbler, Wilson's warbler and white-eyed vireo that were seen in the Toronto area in the week of, but not the day of, the Christmas bird count.
- Ron Scovell noted sharp drops in the numbers of individual of some common species at his feeders. Numbers of both mourning doves and chickadees are way down. Where Ron used to have 300-400 mourning doves at his feeders, he is now seeing only 50-60 doves.
- It was noted that numbers of Cooper's hawks have increased greatly (57%) in recent years and some have speculated that this increase may be associated with an increase in winter food from an increase in winter bird feeders.

NEXT MEETING:

The next meeting will be held at 7:30 pm on Feb. 15, 2005 in Room 432 of the Ramsay Wright Zoological Laboratories at the University of Toronto. John Casselman, a fisheries research scientist with the Ontario Ministry of Natural Resources will talk on "The Effects of Climate and Climate Change on Fish and Fisheries of the Great Lakes Basin."

Caribou are Reindeers:
Two names for one mammal

from corresponding member Yorke Edwards in Victoria

I was "working" for Victoria's B.C. Government, and was often in Wells Gray Provincial Park, a mountain area west of the Rocky Mountains and a third northward between the U.S.and the Yukon. The park is mostly mountainous but has a low, wide flat area covering the southern quarter. For ten years, I was in that area often and was always there with my friend Ralph Ritcey. One summer afternoon, we climbed the nearby Battle Mountain through its forest to a long grassland, a flat ridge with a few small trees. We took little food, just tea, water, a can of meat, bread, and not much else. At dusk we ate, then I wrapped into a small tarpaulin to roll under a little fir tree to sleep. At dawn, I looked out to face a surprised coyote. It ran, and I rolled from the tree to see it but it was gone. Then surprise again, for twelve caribou were running away in full flight toward the miles of the long and grassy field. Later, we walked that way.

In late morning, we came to the caribou upon a large patch of snow, and again they ran except for one still lying on the snow where the others had been. I walked to her, saw that her nose was well into the snow, then poked her and she was up and away. She had been sleeping. When about to leave, I saw that her nose had made two icey holes together with her nose deep into the snow and narrowing downward, and about two feet down. She had been sleeping with her nose in the snow. Why? For years, I wondered.

In another spring, I was in Tweedsmuir Provincial Park located on the east side of our furthest west mountains, an equal distance between the U.S. and Yukon. We three were riding along a high and open flatland of grassy edges with bits of the fir forest below. To the west were mountains with snow on their tops. The nearest one was named Wells Gray. (Gray again. He was once the B..C..Premier; and the park's name is from the British John Buchan, Baron Tweedsmuir). As we moved on, we were met by three young caribou very close to us, but soon they ran off. Perhaps our horses were their main attraction. Soon I was looking again at the Wells Gray Mountain with its long white steep slope down from the white flat above, and that sloping down were dark specks, many still on the top, others running down the slope. Out with binoculars. See 30 or 40 caribou. Most were together on the white flat above the slope, and often two or more would go down the slope in short zigs and zags, their heads swinging side to side while going down. What a mystery.

Some years later in a book about caribou, I read that two insects enter into the poor caribou. One puts its eggs into their skin; the other puts eggs into their nostrils. Those caribou that were zigzagging down the slope of snow were trying to be free from insects. Summers must be long and troublesome, but their adult insects must be free from them in winter. But none inside?

Recently, a friend gave me a bit of newspaper from Alaska that wrote about a Yukon mountain with a flat area high above a long slope downward from it. On that ledge the caribou stood through countless years making a yard layer of their frozen droppings. The caribou have not been in that region for thousands of years. There was no mention of insects.

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