THE BRODIE CLUB

Established 1921

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

THE 1,108th MEETING OF THE BRODIE CLUB

The 1,108th meeting of the Brodie Club was held on Tuesday, Feb. 20, 2018 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: Bill Crins
Secretary: Oliver Bertin

The meeting was called to order at 19:38 pm and was attended by 21; 17 members and 4 guests.

Roll Call:

Present: E. Addison, R. Addison, Beadle, Bertin, Crins, Daniels, Dunn, Hussell, A. Juhola, H. Juhola, Kortright, Lumsden, Moldowan, Obbard, Reading, Thomas, Tomlinson.

Guests: Rachel Gottesmann (guest of Kortright), Steven Price (Hussell), Dierdre Tomlinson and Rae Hutchinson (Tomlinson).

Regrets: Abraham, Bell, Bryant, Curry, DeMarco, Dengler, Dunlop, A. Falls, B. Falls, Iron, Johnson, King, LaForest, Martyn, Peter, Pittaway, Rising, Seymour, Slessor, Sutherland.

Minutes:

Minutes of the previous meeting were accepted as posted on the website.

Committee Reports:

Membership: Bill Crins welcomed new member Katie Thomas. Her biography was included in the minutes of the previous meeting.

Program: Ed Addison announced that Dave Beresford from Trent University's School of the Environment will speak on the *Biting Flies of the Hudson Bay Lowlands* at the next meeting. It will be held Tuesday, March 20, 2018 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto. A large crowd is expected.

Announcements:

Oliver Bertin, speaking on behalf of Trudy Rising, suggested a car-pooling arrangement for older members who have had trouble getting to meetings in the ice and snow this winter. Members may contact Oliver &/or Trudy if they would like to participate in a car pool, either as driver or as passenger.

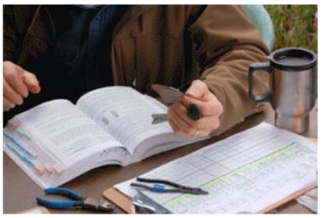
SPEAKER:

Dr. Erica Dunn was introduced by Steven Price, president of Bird Studies Canada in Port Rowan, ON, which grew out of the Long Point Bird Observatory. Ricky is an active member of the Brodie Club, and has been involved both professionally and personally in the operation of bird observatories in Canada since the late 1960s.

"What good is a bird observatory? Past, present and future"

The world's first bird observatory, "Vogelwarte Rossiten," was established on the Baltic sea coast in East Prussia – now part of Russia – in 1897. It drew inspiration from a book by Heinrich Gätke, who studied bird migration for decades on Heligoland Island, in the North Sea. Rossiten (now the Rybachy Biological Station) is on the main flyway from Russia to southern Europe and Africa, and up to 500,000 birds may be seen there in a single day. Johannes Thienemann was the first director, starting the German banding scheme and developing programs that have defined bird observatories ever since. About a million birds were banded at Rossiten alone before 1945. Thienemann conducted simple experiments, for example using observers with field telephones to track the speed of individually identifiable birds over a span of several miles. He recruited the public to help band White Storks and to report their movements – an early example of citizen science – and generally popularized the study of ornithology through writing, radio broadcasts and film.

A second bird observatory was established on Heligoland in 1910, and others soon followed, notably Sempach (Switzerland, 1924), and a series of sites around Great Britain. The U.S. banding scheme began somewhat later, in 1920. The Austin Ornithological Research Station on Cape Cod (1929) was one of the first banding stations in North America, focusing on study of breeding terns, but the first stations recognized today as classic observatories include the Long Point Bird Observatory (1960), and other well-known stations in western Pennsylvania, California and Massachusetts that followed soon after. Today there are likely several hundred observatories around the globe, but the number is unclear because many do not call themselves bird observatories, and some that do actually don't fit well into commonly used definitions.



A classic bird observatory is generally defined as a field station collecting long-term data on birds – particularly migrants -- with capture and banding as a core technique for collecting data on age, sex and condition. Most observatories also conduct a wide variety of other counts and surveys, mainly of birds but also of other organisms, and often follow standardized procedures and levels of effort that make results much more useful. Nearly all run educational and outreach programs, including classes for school groups, internship programs and formal training for banders and university students. Many professional ornithologists today were inspired to go into the profession

because of early experiences at a bird observatory. (This is hardly a new development. Niko Tinbergen, who shared a Nobel Prize in 1973 for work on animal behaviour, was sent by his father to Rossiten in 1925 to encourage him to take his natural history interests more seriously!)

Bird observatory operators are often untrained in analysis and publication of their data, but academic researchers have picked up the slack. Dunn gave highlights from a few of the many scientific publications that have mined the large samples of long-term data available from observatories. For example, a study on the timing of migration at Long Point showed that male warblers arrive earlier in spring and depart slightly later in fall than females, giving them more time in northerly latitudes. Banding has shown that adult *Empidonax* flycatchers finish fall migration well before juveniles, completing their post-breeding moult on the wintering ground rather than prior to migration as most species do. White-throated Sparrows have two colour morphs, with "white-striped" females being more assertive than "tan-striped." Banding has documented a slightly earlier spring migration in white-striped females, giving them first choice of males that have already arrived at the breeding grounds.

Many studies have looked for effects of climate change on the date of first arrival on spring migration. Most such work shows earlier arrival over the past several decades. Bird observatory data, however, which cover entire migration seasons, give a more complex picture. In many species the bulk of migrants are not arriving earlier than in the past, even though the date of first arrival has advanced. Less noticed is that some species are now leaving the north later in fall, a phenomenon that merits more study.

Other studies based on bird observatory data sets have documented the local weather conditions that cause more birds to stop over at a particular location. Age data for fall-banded birds indicate that young birds are more likely to turn back to the nearest land when faced with a large barrier to cross, such as a Great Lake. Weight data can be used to estimate daily weight gain during stop-over at the banding sites, which is useful for conservation assessment.

Dunn analysed Long Point's weight data for Red-breasted Nuthatch, an 'irruptive' species (one with a highly irregular volume of fall migration) and found that weights of birds moving south did not vary with the size of the irruption. By contrast, birds returning in the following spring were significantly lighter after massive irruptions than in other years. Comparison of Long Point data to Breeding Bird Survey results for eastern Canada showed that the breeding population was also lower following a major irruption.

As well as mining observatory data from the past, many researchers have collaborated with bird observatories to collect new data. The field stations are often used by graduate students, and Long Point alone has been the site of thesis work on everything from insects to fish to bats and trees. Observatories often train researchers on how to collect bird data, or collect it for them. In a study on birds as a means of spreading Lyme disease, 12 observatories in eastern Canada checked 40,000 birds, and found ticks on only 2%. As only 8% of those ticks carried the Lyme disease organism, the researchers concluded that migrating birds were not an important factor in the spread of the disease. Bird observatories are also partnering increasingly with academics to study migration routes and speed with new technologies such as satellite transmitters, geo-locators, and automated radio telemetry. Simple equipment used at some observatories contribute to studies of decision-making by migrants as to direction and timing of departure from a stop-over site.

Bird observatories have undoubtedly contributed a huge amount of unique knowledge to the study of bird migration during the past 125 years, but one might ask whether this can continue. Dunn has a positive outlook, based on numerous changes in bird observatory operations in recent times.

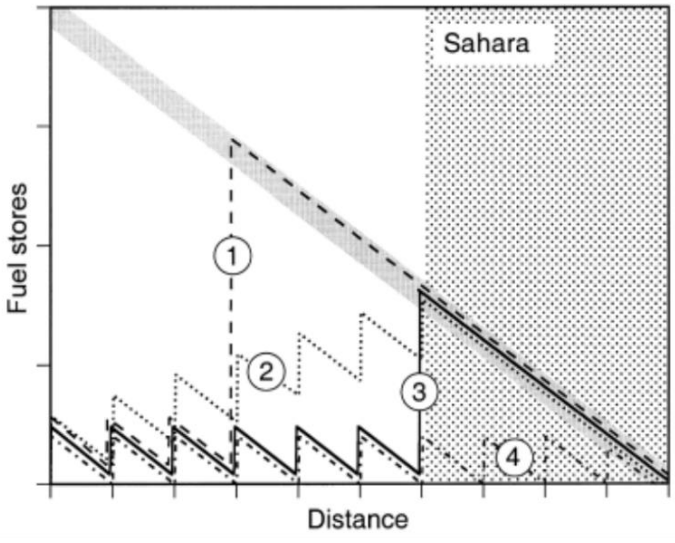
Observatories are increasingly providing career opportunities for trained biologists who can initiate new research and collaborations with others that will result in scientific publication. This has been accomplished in part by expansion of their scope to include conservation-related work and outreach programs that can bring in contract funds and donations. Affiliation with a large organization, such as Long Point Bird Observatory's connection with Bird Studies Canada, or Intermountain Bird Observatory with Boise State University, can provide funding opportunities and services to the observatory while the latter fulfills part of the larger organization's mandate.

Another development is increased participation in networks, in which even small amateur-run observatories can make contributions to valuable research projects overseen by others. Dunn cited several examples: a network of stations extending to South Africa run by a Polish university, a group of disparate organizations (academics, consultants, government agencies, bird observatories) with a common interest in tracking bird and bat movements in northeastern North America, and a conservation-oriented network in the Midwest collecting data to inform best placement of wind turbines and protected stop-over sites.

The Canadian Migration Monitoring Network, a project of Bird Studies Canada, consists of over 20 stations from the Pacific to the Atlantic, which work together to produce data on population change on a national scale for boreal forest-nesting species that are not monitored by any breeding or wintering season survey, but which can be tracked on their migration by bird observatories. Participating sites have also collected feather samples for chemical analysis that indicates breeding ground origin, which is important for conservation purposes.

Recently, bird observatories have begun to communicate and cooperate on a global scale. A study of spring migration phenology that was organized at the first International Bird Observatory Conference (2014, in Sweden) has just been submitted for publication. Data for 175 species, from 22 bird observatories across Canada and northern Europe, showed that median migration date has advanced a week over the past 60 years. The date by which 95% of migrants have gone by has not changed, however, so spring migration overall has lengthened.

Dunn's favourite example of how observatories can collect data that are not available from any other source is the Western Palearctic-African Songbird Migration Network. This temporary network included 30 research groups in 18 countries that banded 400,000 birds of 34 target species in a three-year study. The data revealed different migration strategies for several species that breed in northern Europe and cross the Mediterranean and the Sahara to winter in central Africa. All begin with short flights with stop-overs to refuel for the next flight (sawtooth pattern on graph), but then diverge markedly:



Schaub & Jenni 2000. J. Ornithol. 141: 441-460

1) The Sedge Warbler (#1 on the figure) keeps moving until it finds a superior stopover site, then stays there until ready to make a single flight to the wintering area;

2) The Garden Warbler and Pied Flycatcher gradually build weight so that when they reach the Mediterranean they can depart immediately for the long flight to the wintering area;

3) The Reed Warbler doesn't build up any reserves until just before the barrier, where it stops for extended fattening before crossing; and

4) The Spotted Flycatcher seems not to amass extra fat at any stage, and presumably keeps foraging as it crosses the Sahara.

Such variation in strategy has big implications for conservation actions aimed at ensuring the preservation of good stopover habitat where it is most needed: not all species have the same requirements. No such information is available for any other place in the world, including North America, and bird observatories could play a key role in obtaining it.

Dunn summed up by noting that bird observatories are becoming more specialized, more professional and more diverse, as well as working together in more productive ways. She thinks they have a bright future.

Questions:

ED ADDISON: Asked whether the four groups of European birds behave differently because they have different needs. DUNN: Yes. The Sedge Warbler needs marsh habitat that is patchily distributed, so doesn't pass by a good spot when it finds one. It seems there must be very predictable good conditions for Reed Warbler at the edge of the Mediterranean for it to wait before fattening up, but I don't know what they eat.

KEN READING: Noted that member Ron Tasker collected a huge amount of data at a banding station he ran at his cottage at the western end of Manitoulin Island from 1954 to the mid-1980s. He wondered what happened to Tasker's records. DUNN: Don't know, but likely nothing was done with them.

KATIE THOMAS: Noted that moth trapping is often done at British bird observatories but not in North America.

STEVEN PRICE: Asked whether he correctly understood one slide showing spring migration has advanced about seven days in 50 years. DUNN: Yes – the change is much more general across species and continents than was previously realized.

OLIVER BERTIN: Asked whether the valuable and detailed data from the Long Point Bird Observatory had proven useful in converting U.S. President Donald Trump and his fellow climate-change deniers. DUNN: If the climate-change deniers have not been converted already, our studies won't do it.

DAVID TOMLINSON: Noted that the wintering grounds in the south are dwindling every year due to logging, farming and human encroachment, so knowing where birds spend the winter is probably more important than knowing the breeding grounds. DUNN: A lot of work is being done to identify those, too, both with feather isotopes and tracking technologies.

SID DANIELS: Asked whether lengthening spring migration would mean fewer individuals are seen on any one day, making most observers feel there are fewer migrants than in the past. DUNN:

Possibly, but the distribution of peak migration may be shifting to earlier dates while the tail end does not change, such that you would still see the same number of birds at the peak of migration. Data could be checked to see if this is the case, though I suspect it would vary among species.

The speaker was thanked by Ed Addison for her enlightening talk. He said it was wonderful to see the cooperation between different observatories as they expand the range of their studies.

NOTES AND OBSERVATIONS:

SID DANIELS saw a chipmunk in his garden on Feb. 20, his first February sighting ever. Usually he sees them until November and then not until the next March. He noted that the outside temperature on Feb. 20 was an unusually high 16.5C in his garden, which is in North York northwest of the intersection of Yonge St. and Hwy. 401.

STEVEN PRICE noted honey bees on the warm Feb. 20. They apparently come out on abnormally warm days, defecate and then return to their hives.

DAVID TOMLINSON has a giant cell phone tower close to his backyard in Aurora. Ravens often show up on the tower, even this year when workmen drove them away for an abnormally long six weeks while they conducted maintenance.

BILL CRINS added that ravens have become regular visitors to Peterborough. In past years, they were rarely seen south of the Shield. Now, they are found as far south as the Lake Ontario shoreline.

SID DANIELS has seen or heard a pair of ravens near his house almost every day this winter from September to January. He bought an audio Baby Monitor and installed it near his bird feeder so he can keep his ear to the birds even when inside his house.

STEVEN PRICE also uses a Baby Monitor to eavesdrop on nearby birds. He recently heard a Peregrine Falcon chasing other birds.

PATRICK MOLDOWAN recently saw what appeared to be a breeding pair of Gray Jays on their nest in Algonquin Park, the earliest occurrence he has seen in the park.

DAVID TOMLINSON brought along CDs of his latest book *The Breeding Birds of Aurora: Mapping, Monitoring, Managing*. It is available for download at https://natureaurora.ca/current-projects The impressive 200-page book documents 103 species and the effects of Aurora's population expansion from 13,000 to 50,000 people over the past 40 years.

The meeting was adjourned at 8:55 p.m.

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