

BLOMIDON NATURALISTS SOCIETY NEWSLETTER



VOLUME 18
NUMBER 2
JUNE 1991

Fall Programme

MONDAY EVENING MEETINGS: All meetings will start at 7:30 p.m. and, unless otherwise indicated, will be held in Room 244 of the Beveridge Arts Centre at Acadia University. All lectures and field trips are open to the public and BNS members are encouraged to bring friends and neighbours. Any changes in the date, time or subject of meetings are announced on posters, the Kings Kable notice board and in The Kentville Advertiser and The Hants Journal.

1. September 16 -- Totara and Takaha in Old Aotearoa (The natural history of New Zealand and its conservation). Martin Willison. Martin, who has strong interests in natural history and conservation, is a Professor of Biology at Dalhousie University.

2. October 21 -- Birds and Mammals of Northern India by Blake Maybank, editor and co-owner of Canadian Birding Magazine. This noted Nova Scotian and international birder will present an illustrated talk based on his 1989 trip to India.

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"The primary objective of the Society shall be to encourage and develop in its members an understanding and appreciation of nature. For the purpose of the Society, the word 'nature' will be interpreted broadly and shall include the rocks, plants, animals, water, air, and stars."

from the BNS constitution

The Blomidon Naturalists Society is a member of the Federation of Nova Scotia Naturalists, an Affiliated Member of the Canadian Nature Federation and a member of the Nova Scotia Trails Federation.

The Blomidon Naturalists Society is a registered charity. Receipts for income tax purposes will be issued for all donations.

Address correspondence to:
Blomidon Naturalists Society
P.O. Box 127
Wolfville, Nova Scotia
B0P 1X0

FIELD TRIPS

Unless otherwise noted, all times given are for meeting at the Robie Tufts Nature Centre parking lot. Leaders' telephone numbers are included to allow those without access to local news to confirm trips.

BNS members are welcome on the field trips below sponsored by other naturalists societies.

All active "field trippers" should note that about 60 events (mostly hikes and nature walks) have been scheduled for Provincial Parks throughout Nova Scotia during the summer of 1991 by the Nova Scotia Department of Lands and Forests under their "Parks are for People" program. Only those trips sponsored by the BNS are included in the following list. For a complete list, contact Tom Herman (542-2201), any Nova Scotia Department of Lands and Forests office or any Provincial Park.

1. Wednesday, June 19, 7:00 p.m. at Blomidon Provincial Park Administration Building -- The Geology of Blomidon. Gary Yeo (542-2201, ext. 179), a geologist at Acadia University, will discuss everything from dinosaurs to volcanoes during this field trip. Wear appropriate clothing for an evening walk.

2. Saturday, June 29 to Monday, July 1 -- Bon Portage Island. The cost per person will be \$30.00. For further details and to pre-register (a must), contact George Forsyth (542-7116).

3. July -- Annapolis Field Naturalists Orchid Walk. Details to be announced. Contact Gini Proulx (467-3235).

4. July/August -- Shoreline Walk. Dr. Graham Daborn, of the Acadia Centre for Estuarine Research, returns to lead the Annapolis Field Naturalists along the mud flats of the Annapolis River and Basin. For further details, contact S. Hawboldt (638-3387).

5. Sunday, July 7, 8:00 a.m. -- Methal's Pond. Bernard Forsythe (542-2427) will lead this canoe field trip to one of his favourite haunts. Come and see orchids, Lincoln's sparrows and other distinctive bog life. You will need a canoe, personal flotation device, boots and lunch for this all day trip. (Some of you will want to bring insect repellent too!)

6. Sunday, July 21, 1:00 p.m. -- President's Field Trip. Join Tom Herman (678-0383) and explore the Meander Intervale in Hants County. This unique habitat has many examples of plants, insects and birds characteristic of an Alleghanian intervale further south than Nova Scotia.

7. Monday, July 22, 10:00 a.m. at the service station in Barton, Digby County -- Life in a Managed Woodlot. Harold Alexander will take the Annapolis Field Naturalists on a tour of his woodlot and mill. Bring sturdy footwear, lunch and insect repellent. Contact Alison Thomson (532-2095).

8. Wednesday, July 31, 7:00 p.m. at Blomidon Provincial Park Administration Building -- Creatures of the Mud. Our creature of the mud, Sherman Boates (542-2201, ext. 594) will help you discover the unique animals that live beneath the mud under the world's highest tides. Please wear old footwear.

9. Saturday, August 3, 10:00 a.m. at Smith's Cove Lookoff -- Pond Life with Greg Turner (245-4689) of the Annapolis Field Naturalists. Bring waterproof footwear, lunch and a magnifying lens. Kids seven and up are welcome. Rain date: August 4.

10. Saturday, August 10, 1:00 p.m. -- An International Spectacle - The carpets of little grey sandpipers of Grand Pre. Jim Wolford (542-7650) will share with you the wonder of migration on an extraordinary scale as the semipalmated sandpipers feed and rest before beginning their non-stop flight to South America.

11. Wednesday, August 14, 7:00 p.m. at the Blomidon Park Administration Building -- Natural History of Blomidon. Bernard Forsythe (542-2427) will lead an introductory nature

walk through different habitats looking for birds, flowers, trees and insects typical of the home of Glooscap.

12. Saturday, September 7, 8:00 a.m. at the Antigonish Wildlife Management Area -- Mark Pulsifer (863-4513) and the Eastern Mainland Field Naturalists will show us the plants and animals of this extremely productive wildlife management area. Bring lunch, binoculars and boots.

13. Saturday, September 21, 11:30 -- The Shorebirds of Grand Pre and Evangeline Beach - a joint BNS/Halifax Field Naturalists field trip. Although the masses of semipalmated sandpipers will have left, the greatest variety of shorebirds can be seen at this time of year. Join Jim Wolford (542-7650) and find the elusive and confusing species of shorebirds.

Acknowledgements

Our thanks this time to:

Pat McLeod, whose slides and tales of Newfoundland made all of us, who have spent time there, anxious to return and those of us, who have never been, anxious to go;

Sherman Boates, along with Pam Mathews and Denise Packard, for explaining what they have learned about tree swallows from the "Little Brown Box Project" plus explaining more about the breeding biology of tree swallows (and the occasional fairy tale);

Allison Evans for covering the history of environmental planning. It was interesting to learn that the Technical University of Nova Scotia is now using the Wolfville Chimney Swift Project as an example of environmental planning;

our field trip leaders: Cyril Coldwell, Bernard Forsythe, George Forsyth, John Pickwell, Sherman Williams, and Jim Wolford;

and all our Newsletter contributors and production team.

SOCIETY NEWS

BNS Receives Environmental Award

The Blomidon Naturalists Society received a 1991 Nova Scotia Environmental Award in recognition of the Society's work on the Wolfville Chimney Swift Project. The presentation took place on May 8, 1991, in the Red Chamber of Province House. The Honourable John G. Leefe, Minister of the Environment, presented a plaque which was received on behalf of the Society by Harold Forsyth (former Chairman of the Chimney Swift Project Committee) and Peter Austin-Smith

(Past-President). Also in attendance was Sandy Bishop, Vice-President of the Canadian Federation of University Women - Wolfville, who nominated the BNS for this award. The plaque will be put on display at the Robie Tufts Nature Centre.

The Nova Scotia Environmental Awards are presented annually to individuals or groups that have made valuable contributions to the preservation and enhancement of the environment. Recipients are deemed to "have been instrumental in one of the following:

- 1) Increasing public awareness and understanding of our environment.
- 2) Enhancing, preserving, and protecting the environment.
- 3) Developing and/or promoting of a responsible environmental management program.

A project is nominated in one of ten categories; an Environmental Award is given for the best project within each category. A Certificate of Merit (essentially a second prize) may also be awarded within each category. The BNS tied for first place in the category "Citizens Group (over 50 members)" with the Sackville Rivers Association. A Certificate of Merit was also awarded in this category to the St. Margaret's Bay Area Recycling Team.

A total of 11 Environmental Awards and 10 Certificates of Merit were presented in the 1991 ceremonies. In addition, 33 Letters of Appreciation were sent to other candidates. We were pleased to see that in the category "Government" the Councils of the Towns of Berwick, Kentville, Wolfville and the Municipality of Kings Co. also received an Environmental Award.

Notes from the BNS Directors

by Tom Herman
Kentville, N.S.

The BNS Executive met on April 3 to review a variety of items. These included regular reports from the Treasurer and the Chair of the Nature Centre Committee, Harold Forsyth, the Newsletter Editor, Margaret Alliston, the Chair of the Program Committee, Sherman Boates, and the Special Publications Editor, Merritt Gibson.

Gibson reported modest progress on The Natural History of Kings County. However, recent reports from an unnamed source reveal frantic (relatively speaking) activity on the part of at least one of the authors. Stay tuned.

Plans for the 1991 "Parks are for People" interpretive programs have been finalized. In a cooperative effort between the Nova Scotia Department of Lands and Forests and BNS, a series of Wednesday evening field trips at Blomidon Provincial Park has been scheduled throughout the summer (see Field Trips). The full 1991 program for parks throughout Nova Scotia will be available at the June meeting of BNS. Additional copies can be obtained from me (Biology

Dept., Acadia) or at any Provincial Park. Interest has also been expressed in developing a similar cooperative venture with the Canadian Parks Service at Grand Pre.

Membership in our newly established Conservation Committee has been filled. Peter Austin-Smith was chosen to serve as Chair. Additional members include Ruth Newell, Marian Zinck, Peter MacDonald and Nick Hill. Richard Stern has agreed to serve as a consultant. We hope that additional BNS members will agree to do likewise. Please see the article by Peter Austin-Smith on present committee activities.

Peter MacDonald, secretary of the Federation of Nova Scotia Naturalists, provided the Executive with an update on Federation activities. The paid position of Executive Director in the FNSN has been terminated for the time being. Despite some initial growing pains the Federation appears now to be in a good position to carry out its mandate. We are looking forward to the Annual Meeting at Mount Saint Vincent University in early July, and hope that BNS will be well represented.

The BNS has recently been honoured with the presentation on an Environmental Award by the Province of Nova Scotia (see article in this Newsletter) for the role the Society played in the Wolfville Chimney Swift Project. The Directors of the BNS would like to thank the Canadian Federation of University Women - Wolfville for nominating our Society for the award.

The BNS was fortunate to receive a SEED position for an interpretive naturalist at the Robie Tufts Nature Centre this summer. The Nature Centre Committee recently chose Gawn Thompson for the position. He has since been busy developing new panels for the Centre, and a series of interpretive walks. I am sure that he would welcome suggestions and feedback from the membership.

The Directors have been approached by Robbins Elliott of the Wolfville Centennial Committee to discuss possible involvement by the BNS in a program or series of events during the 1993 Centennial Year. We have held one meeting, and have two further ones scheduled in June; we will report any progress. We would welcome suggestions from BNS members for appropriate activities.

We have also been approached by Leslie Heatherington of the Wolfville Business Development Corporation to co-sponsor an event or series of events this summer, centred around the swifts and the Robie Tufts Nature Centre. Again, we would welcome feedback from BNS members. Naturally we expect full cooperation from the swifts as well!

Call for Nominations **Blomidon Naturalists Society Board of Directors**

A Nominating Committee, chaired by Jean Timpa, has been struck to submit a slate of directors for approval at our annual meeting in October, 1991. If you know of someone who could and would contribute positively to the Society as a Director, please contact Jean (542-5678) before September 30, 1991.

Blomidon Naturalists Conservation Committee Report

by Peter Austin-Smith
Wolfville, N.S.

On April 11, the first meeting of the newly organized Conservation Committee was held in the Biology Department, Acadia University. Committee members are Tom Herman (ex-officio), Nick Hill, Peter MacDonald, Ruth Newell, Marian Zinck, and Peter Austin-Smith, Chair. The committee was established to provide information about various conservation concerns, to seek advice about such concerns, and to respond to them by making recommendations to the executive of the BNS.

The first tasks given to the committee consisted of reviewing a request by the Digby Fish and Game to consider the introduction of wild turkeys into the province and to investigate reports of the withdrawal of federal protection from the Kentville Sanctuary. A general discussion of these issues revealed that much more information must be gathered before any serious deliberations could begin. It was agreed that the Canadian Wildlife Service be contacted to ascertain their intentions regarding the Kentville Sanctuary. It was also noted that a report on introducing wild turkeys into the province had been written by Acadia wildlife students and attempts should be made to obtain a copy of the report for review by the committee. It was also suggested that one of the authors of the report together with, perhaps, a member of the hunting fraternity be invited to meet with the committee to express their views on this issue.

The next meeting of the Conservation Committee will be called when further information is available for discussion.

Subsequent to our meeting, it was learned that the Kentville Sanctuary remains a federally protected area even though it apparently does not meet the current criteria for a sanctuary. The only prohibition on these lands, which are both federal crown (DND) and private, is no hunting.

The Robie Tufts Young Naturalists Award

The Robie Tufts Young Naturalists Award was established by the Blomidon Naturalists Society in 1983, in memory of Dr. Robie Tufts, to encourage an interest in natural history. Winners have been:

1984	Tammy Ashley of Newtonville
1985	Paul Fairclough of Coldbrook
1986	Kasia Muldner of Wolfville Sean Timpa of Wolfville
1987	Michael Jodrey of Hantsport
1988	Stephen MacPhee of Wolfville Jelmer Wiersma of Bishopville
1989	Jason Jolly of Cambridge Simon Onyschuk of Kentville
1990	Mathew Buntain of West Brooklyn

Any resident, of Kings or Hants Counties, fifteen years of age or younger, may enter the competition. Projects entered may cover any subject concerning natural history: for example, a wildflower collection, descriptions of local bird observations, an essay on a natural history subject, a project describing the life cycle of insects, a geological collection, etc. The candidate should display an ongoing interest in the subject.

Questions concerning the competition should be addressed to:
Pat McLeod
Blomidon Naturalists Society
P.O. Box 127
Wolfville, N.S. B0P 1X0
Telephone: 542-7075

Nominations should be submitted to Pat McLeod by September 30, 1991.

Entries will be judged by the Executive Committee of the Society and the award(s) presented at the annual meeting in October. The prize will be one year's membership in the Society and a field guide of the recipient's choice.

Members of the Society are urged to nominate suitable candidates and/or encourage young people to enter the competition.

Federation of Nova Scotia Naturalists Newsletter

In the last BNS Newsletter, we indicated that each member of the BNS would receive, enclosed with his or her BNS Newsletter, a copy of the newsletter of the Federation of Nova Scotia Naturalists. Unfortunately, this information was inaccurate. As a member of the Federation, the BNS will receive only about a dozen copies of the Federation newsletter. Most of these are used by the executive to conduct your business; the surplus copies will be made available at our monthly meetings. However, for a \$5.00 fee, you can receive a year's subscription (four issues) of the Federation's newsletter. The fee can be sent to the BNS Treasurer along with your BNS membership fees. (See Membership Fee Form at the back of this Newsletter.)

BNS Newsletter Submissions Deadline - September 1, 1991

Please send or give all contributions to the Newsletter to:

George Alliston (542-3651)
R.R. 3
Wolfville, N.S. B0P 1X0

Send submissions for "Trivial Tidbits" only to Jim Wolford at:

Biology Department
Acadia University
Wolfville, N.S. B0P 1X0

See the instructions in "Trivial Tidbits" for submitting your observations. Last-minute observations can be phoned in to 542-2201, ext. 334 (leave a message) or 542-7650 (late evening to midnight).

The editors would greatly appreciate submissions being at least double-spaced to facilitate both editing and word processing. If you are able to submit articles in word-processed form, please contact the editors for technical details. Sketches or diagrams should be submitted in final form, preferably on a separate page.

CORRESPONDENCE

Little Brown Box Project Request for Information

If you have tree swallows nesting in a bird house in your area, we would be grateful if you would provide us with the following data:

1. Does either of the pair have an aluminium band on its leg? You need to have a very close look, with binoculars, at a swallow standing on a branch, pole, etc., to see if it is banded. We would like to hear from you even if the birds were not banded.

2. How many young birds were successfully raised by the parents (i.e. how many young birds actually fledged)? Young swallows usually leave the nest (fledge) about 16-17 days after they have hatched. We are interested even if the pair were unsuccessful and no young fledged.

Please call Sherman Boates at 542-2361 (home) or 542-2201, ext. 594 (work) with your information.
Thank you.

Letters

59 McNair Drive
Fredericton, N.B.
E3B 5J5

Dear Blomidon Naturalists,

My name is Melissa Brewer. I am 11 years old. I am very interested in whales. I would like to do fund raising for the whales and have a lot of people on my block that really care about whales and that have signed a support sheet that I have made. When I first got interested in whales I didn't think about how big a problem it really is but now that I've been doing more studying about the whales, the more seriously I took it.

When I first started getting interested in whales, some people told me it was stupid and I started to believe them but then I would say, "you can say how you feel but you can't say how I feel". I guess what I'm trying to say is that whales have every right to live just as we do. I'm

sending you two pictures and they show over 600 whales being killed and washed ashore in one day. I want to work with them when I grow up but I'm afraid the whales will all be dead by the time I become a marine biologist. I really love the whales and want to save them. I wish more people felt about the whales the way I do.

Melissa Brewer

P.S. Please write back.

Ed. Note: BNS has written to Melissa and, among other things, told her about Brier Island Ocean Study; a copy of her letter was forwarded to BIOS. If any of our readers wish to provide Melissa with other information or ideas, we're sure she would be pleased to receive your letters.

Dear Blomidon Naturalists,

I had occasion to be in the Niagara Peninsula area (Ste. Catharines) in late March of this year. On Tuesday, March 26, I found myself with a free day and, with binoculars in hand, drove to Grimsby which is located on the slopes of the Niagara Escarpment about ten minutes drive from Ste. Catharines along the Queen Elizabeth Way. My objective was to find the area on top of the Escarpment, where each year an observation team monitors the spring raptor migration.

After a few enquiries in the town of Grimsby, I was directed up Mountain View Road to the Ridge Road and finally to Quarry Road leading to the edge of the very steep bluff where the hawk watch takes place.

The road finally leads through a remnant of the Carolinian forest to a clearing and I came upon a group of very busy observers, eight in all, and one recorder who was hard pressed to keep up with the observers.

I introduced myself as being Nova Scotian and a member of the NSBS and the BNS. At this point, one of the observers detached himself and explained that, as a casual visitor, I could not have arrived at a better time.

After having traversed Lake Erie, the birds soar on the thermals rising from the Escarpment and then disperse across the broad farmlands. I raised my binoculars to observe "stacks" of buteos, accipiters, vultures, etc., floating in, very high against a bright, overcast sky. The observers had seven years of experience and were identifying the raptors by silhouette. Each year, for the past eight years, the hawk watch has been conducted daily (weather permitting) during the months of March, April and May. In 1990, a total of 19,203 individual raptors representing 15 different species was counted during 574.5 hours of observations.

It just happened that a major migration was taking place on the day of my visit. The total count for the 8:00 a.m. to 3:00 p.m. observation interval on the day of my visit was: red-tailed hawks, 235; red-shouldered hawks, 223; rough-

legged hawks, 18; sharp-shinned hawks, 37; Harris' hawks, 8; Cooper's hawks, 29; American kestrels, 8; peregrine falcons, 2; northern goshawks, 1; turkey vultures, 20; unidentified, 100; total, 679.

Yours very truly,
Allan Eddy

FIELD TRIP REPORTS

Wintering Waterfowl
March 17, 1991

by Bernard Forsythe
Wolfville, N.S.

After doubling up in Wolfville, our modest caravan of two cars swelled to nine or ten cars when we were joined by a large group of eager birders from the Annapolis Field Naturalists Society. The bright clear day provided excellent viewing of the many species of ducks seen, especially the males in their colorful breeding plumages.

Red-tailed hawks and two grazing white-tailed deer provided entertainment on the trip down. At our first stop on the causeway at the mouth of the Annapolis River, we carefully sorted out mixed flocks of goldeneyes, buffleheads, mergansers and scaup. We were rewarded with a flyby of a mated pair of Barrow's goldeneye. A kingfisher at this stop was a real bonus. I am used to seeing only a few buffleheads at a time and was amazed at the many dozens we saw on this trip.

The leader gladly received help in deciding our route from the Annapolis County participants familiar with the area. One couple even took us to their home where we were able to enjoy a very sociable lunch break. Continuing on to Digby, we added several more species of ducks such as oldsquaws, in their varied plumages, and white-winged and surf scoters swimming side by side. A red-necked grebe coming into breeding plumage was seen.

A stop at Prim Point added several more species: common eiders, horned grebe, and great cormorant. The highlight here was a small troop of purple sandpipers, our hardy winter shorebird from the far north.

It was now time to start heading back. The fine day, pleasant company, and lots of birds added up to an enjoyable field trip. We saw the grebes, loons, mergansers and all ten species of ducks promised in the field trip announcement. On the way back home, some of us saw the two short-eared owls, that an A.F.N.S. member had spotted earlier in the day, hunting the marsh beside the Annapolis River Causeway. A sincere thank you to all those who helped to make this a successful outing.



From My Back Yard at Horton Bluff
April 13, 1991

Sherman Williams
Avonport, N.S.

About 53 people arrived in my backyard for an afternoon hike along Horton Bluff. This was probably the largest gathering we have hosted in our yard since the building our house in 1967. The weather co-operated 100% with sunshine from blue skies in great contrast to the snowflurries that fell in the area during the previous 24 hours.

While waiting for low tide at the shoreline below, we focused on items in the yard on the upper side of the Bluff. We used my telescope to project our daytime star on a small screen in a box. While observing some large sunspots, many viewers noticed the Sun's image drift out of the field of view as the planet under our feet rotated the telescope out of line with the Sun. As if by prearrangement, an immature Bald Eagle glided over us at close range and gave everyone an excellent view of its underside.

We previewed examples of fossils in a collection that I had found in the Bluffs below. We then began our walk at the lighthouse at the top of the Bluff just beyond my yard. This lighthouse is part of the navigation system required for the ships that travel to and from Hantsport carrying gypsum. The first lighthouse on the site was built in 1851 and was serviced and kept by three generations of Rathbuns. The original structure was one unit which included the living quarters for the keeper and his family. In the mid 1960's, a new, automated lighthouse, monitored by computers from St. John, replace the old one. From this site, we had an excellent view of the rocky cliffs and shale beach below.

After a short hike along the railroad track on the cliff tops, we descended by a gentle track to the beach. We had views of the Avon River and the Hants County shoreline. Local residents know this area as "Sugar Loaf". At one point the tracks showed the sag due to spring-time slide of the bluff toward the beach. This requires continuous maintenance to keep the tracks level. It was here that we observed a well-travelled porcupine trail. It appeared that recently one porcupine had not yielded to a freight train; a few quills and some hide remained as evidence of the grim occurrence. It may be that the animal was in the habit of going to the beach to lick salt from the rocks.

On the beach, we proceeded westward but stopping occasionally to examine strata and flat rocks for possible fossils. We found ripple marks made by water currents long ago, small fish scales and spines, root and stem impressions of fern-like trees and imprints of raindrops in eon-old mud surfaces. Directly beneath the lighthouse, the rock layers are contorted into a fold causing the strata to dip eastward. As a result, when we walked westward, we progressed back in time along older and older rocks.

At Horton Bluff, we stopped to examine a copy of a drawing made by Sir William Logan from the same viewpoint in 1841. Logan discovered fossilized vertebrate tracks in a wagon load of flat rocks on the Windsor wharf and when he was

informed that the rocks had been collected at Horton Bluff, he had come to investigate. He later became head of the Canadian Geological Survey and had Canada's highest mountain named for him. Those tracks are some of the oldest known vertebrate trackways in the geologic record.

The trek culminated with a look at a well-known series of large, fossilized tracks made by some pre-dinosaur reptile or amphibian that had plod through the mud of that long-ago, Carboniferous swamp. This particular trackway was discovered in 1964 and studied by the Nova Scotia Museum in 1978. The tracks were quite well exposed, as is usually the case, if one visits the site early in the spring such as April, or later in the autumn such as October. The reason is that the vigorous action of the waves from April to October keeps silt from building up on the rocks that contain the tracks.

A short distance further on, the group scrambled up the short cliff, crossed a field and returned to my back yard. On the way, there was a nice view of Roy Bishop's Maktomkus observatory perched atop his house. Maktomkus is the Micmac word referring to the dark headland in whose vicinity we had just spent the last three and a half hours hiking and exploring.

Owls, Owls, Owls April 18, 1991

by Bernard Forsythe
Wolfville, N.S.



Judging from the number of phone calls, I anticipated that this was going to be a popular trip. When I arrived at the Robie Tufts Nature Centre, I found over 70 eager people ready to go owling. There were

three owl species mentioned in the field trip announcement, but I decided to push my luck and try for four: short-eared, great horned, saw-whet, and barred. We doubled up to shorten the caravan to 20-plus cars and snaked our way around the Grand Pre Dyke. Although no short-eared owls were spotted, there was a beautiful sunset to enjoy. Scratch one owl.

The next stop was at Cyril Coldwell's for the great horned owls nesting in the maple tree on his lawn. No owls could be seen over the nest. The adults were away taking a break. I put on my helmet and climbed to the nest for a look. Two healthy young owls huddled in the deep nestcup. Instantly, two angry adult owls flew in to buzz me and make threatening bill-snapping noises. The crowd below seemed impressed. Our first owl of the evening.

The caravan headed up the South Mountain for a stop at Peck Meadow. The small saw-whet owl's usual call is a tooting whistle that is not hard to imitate. We soon had one answering from a thick woodlot beside the meadow. Owl species number two accounted for.

It was such a beautiful evening we left the cars and walked up the road to a barred owl nest site. Soon after I tried a few of their eight-note hoots, a pair of barred owls gave us a long, impressive demonstration of their various courtship songs.

Before we headed back to our cars, Roy Bishop pointed out four planets: Venus, Mars and Jupiter overhead; some of us were a bit slow realizing the fourth planet was a bit closer to our feet. It was a great night to be out with good company and the trip announcement proved to be correct - three species of owls.

Amphibians April 22, 1991

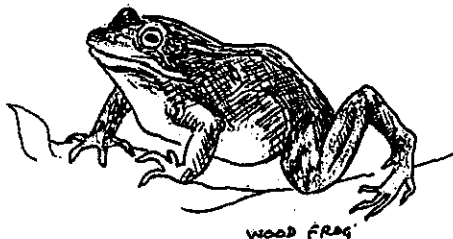
by Jim Wolford
Wolfville, N.S.



On Earth Day (Sunday, April 21) evening, the weather was horrible for a similar outing - cold, windy and rainy. However, ten stalwarts showed up and we did very well in seeing and hearing five species of local amphibians.

The scheduling of the next day's trip was announced at the well-attended April 15th BNS meeting. Monday night's weather was ideal for observations of amphibians. The temperature was quite warm, wind was minimal, and, best of all, a brief but heavy rain occurred in early evening. All of you who stayed home missed a wonderful evening's entertainment. Jim Reid and I (yes, that's all!) visited the three usual spots at Gaspereau. I'll tell you only about the wood frogs but we closely observed lots of other things.

At a dugout pond, spring peepers and wood frogs were calling strongly from open areas where they could be seen at very close quarters. Chuckling wood frogs mostly floated at the pond's surface. Many of these males were calling while breast-stroking, often toward other males. The vocal sacs made it look like they were inflating and deflating paired water-wings as they moved! And they all seemed totally oblivious to our presence. We also saw two pairs of wood frogs in amplexus, an apparently egg-laying female below the surface (strangely there was no male on her back), and fresh eggs.



**Birds in Your Hand
- An Evening for Children
April 23, 1991**

by Cyril Coldwell
Gaspereau, N.S.
as told to
George Alliston

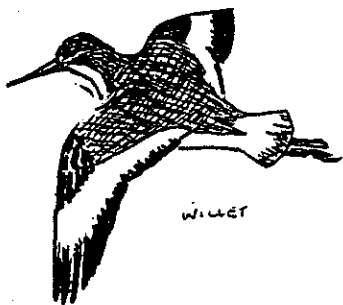
Prior to the "open house", Cyril had augmented the regular Acadia Biology Museum display with the skins of mammals including tiger, leopard, bear, fox, lynx and bobcat. (These excellent skins, before being donated to the Museum, had been tanned and made into "rugs" with intact heads, shiny glassy eyes and open, snarling mouths -- giving the appearance of enraged road kills.) Cyril had also just skinned out a road-killed great horned owl and had both skin and body on display as part of a taxidermy demonstration. Cyril had anticipated that perhaps a dozen children might appear and that he would conduct a brief tour and then let the children explore as they wished.

By 7:00 p.m. the children had begun to arrive, not in two's and three's as expected, but in 20's and 30's. Numerous Cub and Brownie troops, as well as parents with children, soon had the Museum crammed; the lineups at the Museum door were only exceeded by those at the washroom door. Cyril, being more-or-less pinned to the wall by his office door, took on many of the attributes of his displays, but was able to answer some questions and point the way to the washroom. In rather short order, a museum had become a zoo.

Ultimately, Cyril did manage to squeeze into his office and give his taxidermy demonstration which was greeted with reactions varying from great interest, through dismay, to nausea.

Cyril estimates that approximately 200 children, troop leaders and parents attended this event. Although logistics were difficult, all (except, perhaps, the nausea victims) seemed to have a good time.

**Spring Birds - A Pond Hop
April 28, 1991**



by Jim Wolford
Wolfville, N.S.

Sunny spring conditions resulted in a large turnout for this joint BNS/NSBS pond-hopping trip. Our 18-car caravan first stopped at the Wolfville wharf where three newly arrived willets got our trip off to a good start.

We then drove across the Grand Pre dykelands to the closest point to Boot Island. After seeing nothing notable there, our next stop

was the Wolfville sewage ponds where, in early morning, I had seen a glaucous and two Iceland gulls; they had flown elsewhere.

In Wolfville, I showed a raven nest in a tall spruce at the University Faculty Club. Then we had a "pit stop" at Hennigar's Farm Market.

Along the Greenwich railroad track there is a new bald eagle nest this year. We all walked into the clearing in the forest adjacent to where the nest is located and had a good view of both adults at the nest.

At a pond near Starr's Point, we saw a barn swallow with tree swallows and everyone had good looks at a palm warbler with a yellow-rumped warbler.

At Canning, along the Habitant River, there were about 100 Canada geese plus 14 greater yellowlegs. Canard Poultry Pond held about 20 green-winged teal and one blue-winged teal.

Our final stop was the Ducks Unlimited pond at New Minas where another barn swallow was seen with tree swallows.

This year I remembered to put sun-screen on my face but I forgot about my increasingly hairless dome (ouch!).



History and Natural History of the Neary Pines

May 11, 1991

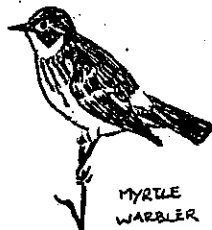
by George Alliston
West Brooklyn, N.S.

This was a repeat of a field trip first given in October 1990 which, because of poor weather and little advertising, was poorly attended. For a more detailed description of the area and its history, see the December 1990 Newsletter.

The day was sunny and unseasonably warm as a group of 14 naturalists, led by George Forsyth, began their walk along the D.A.R. from its junction with the Port Williams dyke road toward Neary Brook. Not only did we have beautiful weather but, before we had reached our main destination, we had observed two endangered species: the first, a pair of bald eagles, and the second, a train.

The Neary Pines, while covering only a small area, are nonetheless impressive. We estimated that some of the trees may be 120 feet high and probably were young trees when Columbus "discovered" America. While the size and heights of individual trees were impressive, equally impressive was the openness of the understory that permits a freedom and ease of movement denied us in the second (or third) growth forests we now consider the norm. Impressive too were the fallen carcasses of huge trees providing, in death, habitat for plants and creatures while slowly, perhaps over a period of hundreds of years, returning to the ecosystem the nutrients that had nourished them in life.

Bonuses that we had that the fall "trippers" could not have had (besides the weather) were spring migrant birds (yellow warbler, yellow-rumped warbler, redstart, brown creeper) and a nice patch of picking-size fiddleheads (ostrich fern) that, while sorely tempted, nobody picked.



Ferns, Mosses, and Lichens
May 19, 1991

by John Pickwell
New Minas, N.S.

On a cool, pleasant day, eleven of us gathered at Exit 12 of Highway 101 for the ferns, mosses and lichens field trip. We drove to the Milne Subdivision just below the New Minas water tower. Crossing Highway 101 via a large culvert brought us out into the swamp area where the first thing we saw was a pretty rosy pink moss, *Bryum pseudotriquetrum*, growing in the wet ground. On a nearby rocky outcrop, we found two species of Hair-capped mosses, *Polytrichum juniperinum* and *P. piliferum*. A study was made of how these two mosses thrive under such dry conditions. Mosses lose moisture very quickly since, in most cases, they are usually only one cell thick. When it is dry, they fold their leaves tight against their stems to conserve moisture. In addition, these two mosses have their leaf edges folded in toward the leaf centre, making them double thickness. We found both male and female plants; the female plants had newly forming "sporophytes". We then looked at two ferns growing on or near the rock formation; they were *Polypodium virginianum*, the Common Polypody, and *Dryopteris marginalis*, the Marginal Wood Fern.

Back in the swamp, we observed *Onoclea sensibilis*, the Sensitive Fern, and *Osmunda cinnamomea*, the Cinnamon Fern. Deeper still into the swamp, we were able to see two hybrid ferns growing close together: *Dryopteris boottii*, which is a hybrid of *D. cristata* and *D. intermedia*, and *Dryopteris slossonae*, a cross of *D. cristata* and *D. marginalis*. However, all we could see of these two ferns were last year's fronds, rather the worse for wear, as this year's growth was still in the fiddlehead stage.

On dryer ground, we found two species of the broom mosses, *Dicranum scoparium* and *Dicranum polysetum*, so-called because their leaves sweep over to one side like an old broom.

Leaving the swamp area, the group proceeded up the west slope path where we saw some of the *Acrocarpus*, or creeping, mosses (e.g. the Red-stemmed Feather Moss, *Rhytidiaelphus triquetrus*). On some of the rotten tree stumps we found Cup Moss, *Tetraphis pellucida*, and also Shiny Moss, *Hypnum imponens*.

Just before crossing the NSPC right-of-way, is a wet patch where a stream runs across the path. Here we were able to see such moss species as Step Moss, *Hylocomium splendens*, and Delicate Moss, *Thuidium delicatulum*. The ferns seen here were the Crested Wood Fern, *Dryopteris cristata*, the Lady Ferns, *Athyrium filix-femina* var *Michauxii*, in both forms: one with a green stem (rachis), forma *elatus*, and forma *rubellum*, with the wine-coloured stem. We had already looked at three species of Sphagnum along the way and here we found yet another. As we walked along the path, we found a number of club mosses, of the genus *Lycopodium*.



After crossing the NSPC right-of-way, the group stopped at a very interesting tree. We sprayed with water the many species of plants growing upon it and watched the various lichens turn from gray to green as the moisture soaked in and such mosses as *Ulota crispa* and *Orthotrichum sordidum* opened up. At his point, five of the group became concerned about the time and turned back. The six of us remaining continued around the entire walk coming back to Highway 101 about 1:30 p.m. Many other species of plants were observed along the way. Everyone showed great interest and, I think, enjoyed themselves.

Black Hole in the Spring
May 25, 1991

Sherman Williams
Avonport, N.S.

Located in our part of the universe, along the Bay of Fundy, there is a Black Hole. On May 25th, Larry Bogan and I led a successful descent into it. Twelve adventurers made up the expedition crew. Sunny weather prevailed. The woodland approach to the area was lush and green with new leaves and ferns.

Black Hole is the name given to a deep ravine carved into the North Mountain on the Bay of Fundy side near Baxter's Harbour. Tidal water of the Bay reaches part way up the ravine to a vigorous flowing stream. A short distance upstream, the narrow ravine abruptly ends in a vertical wall veiled in a magnificent waterfall that cascades into a rocky pool below. To an observer in a boat or ship passing offshore the ravine may well appear as a dark hole in the sea cliffs. In addition, several deep cracks in the walls of the ravine have the appearance of sea caves or "black holes".

After a careful descent into the upper end of the ravine, time was taken to observe and enjoy the spectacle of the waterfall. Later the group moved downstream to where the it met the high Fundy tide. A lunch break was taken here while waiting for the tide to drop. We had just settled into lunch when overhead, a very active bat put on a flying and hunting demonstration as it fluttered and criss-crossed the ravine possibly catching some of the many in-

sects that were in the air. Several of the insects (black-flies) were having lunch too (on us!).

At the conclusion of the lunch, the tide still had not dropped sufficiently to allow us to pass to the beaches on the Fundy shore, so it was decided to explore in a different direction. This involved hiking up a steep angled slope leading out of the ravine. Just as the people in the lead reached the top, there was a flutter of wings. At first it was thought that a grouse had flushed. A young chick was sighted, pressed motionless against the leaf litter. Its colour pattern made it almost invisible against the background. A second was sighted near someone's toe. Feet froze in position while the area was scanned for other chicks so perfectly blended into the colour pattern of the dried, curled leaves on the ground. Two others were found and by this time it was realized that we were looking at young woodcock. Later, I confirmed that the American Woodcock usually has 4 chicks, so it appears that we had seen the whole brood. After the initial flying escape, the mother had not made any appearance nor sound. Carefully we picked our way out of the chicks' "hiding" place and continued on.

Our temporary destination was the headland that overlooked the open Bay of Fundy on the east side of Black Hole. Along the way we were able to have a top view looking down into the deep cracks that were the "black hole" openings. A few minutes further on the woods gave way to the open coastline. Everyone seemed to enjoy the rugged, scenic view from the headland and its soft carpet of plants - an assortment of black crowberry with its spicy aroma, matted grasses and strands of cranberry plants. The waves were beating against the craggy basalt rocks below. Loons and eiders were sighted as they bobbed on the wavecrests offshore.

When we arrived back at the lunch site, the tide had dropped enough to allow us to hike out of the cove so that we could explore the sea caves or "black holes" along its sides. There are a variety of forms here, from deep crevices like the one we saw from above the cliffs to round holes that appeared drilled into the rock at water level. The beach at this point is a landscape of rock domes carved into contorted shapes by the waters of the Bay. The return trip was an easy walk off the beach back to the cars via a cottage access road. A sidetrip on the way back took us to a small stream that leaps over a high falls into a natural amphitheater facing the Bay of Fundy. Along the road we sighted many woods warblers and had an especially close look at a Least Flycatcher which was "che-bekking" loudly.

Although, if you were in a hurry, you could make the walk in a half-hour, I am sure our leisurely three hour trip was especially rewarding because we stopped to observe the many attractions of Black Hole.

ARTICLES

Weather for Spring 1991

by Larry Bogan
Cambridge Station

Weather Statistics for Kentville, N.S.
(Agriculture Research Centre)

Month	Mean Temp	Degree Days	Heating Fall (cm)	Snow (mm)	Rain (mm)	Precip Sunshine Hours	Bright
March	0.8 (-1.0)	535 (590)	69 (50)	75 (46)	146 (99)	116 (128)	30yr average
April	5.3 (4.4)	381 (408)	10 (15)	86 (66)	97 (83)	199 (152)	30yr average
May	12.1 (10.4)	189 (238)	0 (1.6)	128 (75)	128 (77)	243 (201)	30yr average
Total	6.1 (4.6)	1105 (1236)	79 (75)	289 (187)	371 (259)	558 (481)	30yr average
% of 30 yr ave.	n.a.	89%	105%	155%	143%	116%	

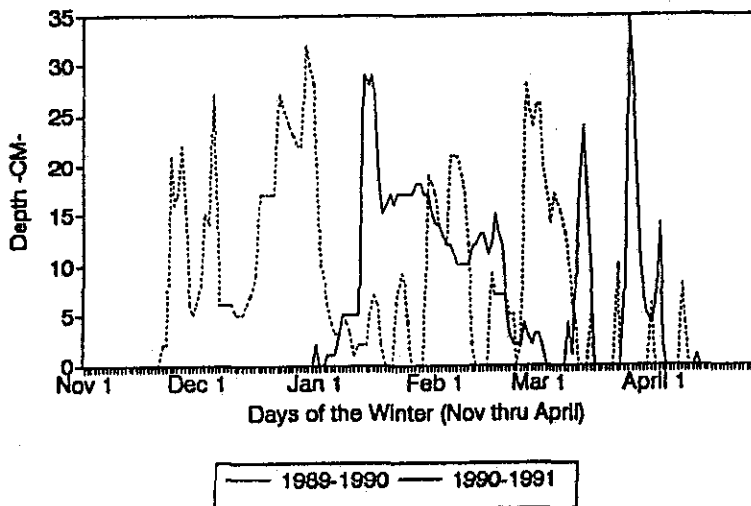
The above statistics show that the spring was a warm one but they hide the fact that we had a damaging frost on the 19th and 23rd of May. However those were the only days in May that had a minimum temperature below zero. Both April and March were warmer than the average and the whole period was 1.5 C above normal. This is reflected in heating degree days 11% below average. An even more dramatic statistic is that the growing-degree-days above 10C were 88 in May versus an expected 55 (May 1990 had only 37).

Precipitation was above normal by 43% mostly due to 55% more rain than expected. Yet... the whole period had 16% more sunshine than usual. So we had a warm, sunny and wet spring and we did not get the 1.6 cm of snow that is usually in May. Most of the rain came early in May and as a result we are now (June) experiencing a dry period.

It is interesting to compare the depth of snow on the ground for a couple of winters. The graph on the next page shows the snow cover for last winter compared with the 1989-90 winter. The total time that we had snow on the ground and the typical depths were not very different in the two years but 89-90 had snow much earlier in the season. Both winters had a long initial period of continuous snow cover then a series of freeze thaws. Last winter we did not have any heavy storms until late March where the large peak in snowcover occurs on the graph.

Snow Cover on the Ground - Winter

Shows the Differences in Snow Cover



Update on the Wolfville Chimney swifts

by George Alliston *
West Brooklyn, N.S.

The chimney swifts first arrived in Wolfville on May 7 and, we are happy to report, have been roosting (until June 3) exclusively at the Robie Tufts Nature Centre! Birds using the chimney in May are believed to be mainly migrants on their way to more northerly nesting grounds, so marked fluctuations in numbers of roosting birds can be expected as flocks of migrants arrive in and depart from the Wolfville area. From May 7 through May 11, an estimated 50 to 80 birds roosted in the chimney. On May 12, numbers jumped to about 180 and remained in the 120 to 180 range through the cold, windy and rainy weather we experienced on May 17 and May 18. On May 19, with the return of warm temperatures and sunshine, numbers of roosting swifts jumped to 540. Through the remainder of May, the estimated numbers of roosting birds have fluctuated from 150 to 600 birds with about 400 birds using the chimney between May 28 and June 2.

As has become the norm during the past couple of years, spectators assemble by the Robie Tufts Nature Centre each evening just before dusk to watch the spectacle of the swifts descending into the chimney. On the evening of May 15, the spectators that gathered at the Centre included scientists from all over the world who were attending an international conference on science and protected areas being held at Acadia (see March 1991 issue of the Newsletter). A beautiful sunset, numerous flypasts by the swifts

and their final "funneling" descent into the chimney left the visiting scientists (many of whom had never before seen a swift) quite impressed. The comments of a number of these scientists suggested that what they found most impressive was the spirit of conservation that caused this slightly eccentric structure to be preserved.

What can we expect from the swifts during the remainder of the year? Undoubtedly surprises! Nevertheless, let's do some speculating based on the small amount of information available on the biology of swifts. Mature swifts are involved in nesting and brood-rearing activities from mid-June through early August so we would expect the numbers of swifts roosting in the chimney to decline through mid-June as breeding pairs disperse into nesting habitat. (Swifts do not nest colonially but as single pairs in hollow trees, small chimneys, old buildings, etc.) The birds roosting communally in the chimney(s) from mid-June through much of July are non-nesting (immature, mostly one-year-old) birds. If productivity of young swifts was low in northeastern North America in 1990 as suspected (due to adverse weather conditions that spring), there may be relatively few one-year-old birds in the population this year. By mid-July, mature birds that have failed in their nesting attempts may begin to join the communal roosts of non-nesting birds. By late July and early August, one would expect a fairly dramatic increase in the numbers of communally roosting birds as the non-nesters and failed nesters are joined by successful adults and their young. From mid-August to early September, we expect the numbers of roosting swifts to decline rapidly from maximum numbers to zero as they migrate out of this area toward their wintering grounds in Peru.

As we witnessed last year, it is possible that the swifts could, at any time, switch allegiances between the two chimneys that are used for roosting in Wolfville. We have no basis to make any predictions as to why, when or if this might happen -- only the swifts know!

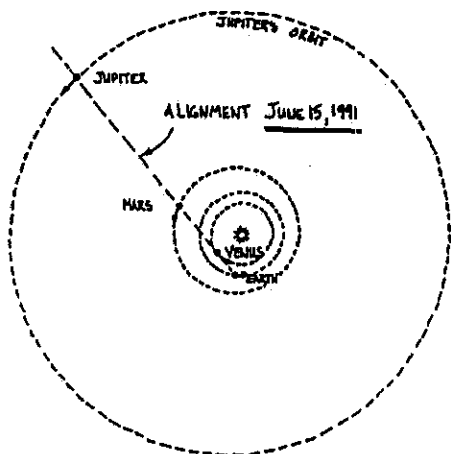
*from information provided by Jim Wolford.

Summer Astronomy 1991
-- Conjunctions and an Eclipse --

by Larry Bogan
Cambridge Station, N.S.

During this summer several planets will pass very close to each other in the sky. By the time you read this article, the first and best conjunction, on June 15, will have occurred. Hopefully, you will have been able to see it in clear skies. However, there is another in July. In July the Sun will also be eclipsed by the Moon for over six minutes.

The diagrams accompanying this article show the relative positions of the planets' orbits on the evenings of June 15 and July 15. In June, the planets Jupiter, Venus, Mars and the Earth were all aligned. As a result, Jupiter, Venus and Mars appeared to us at the same position in the sky that



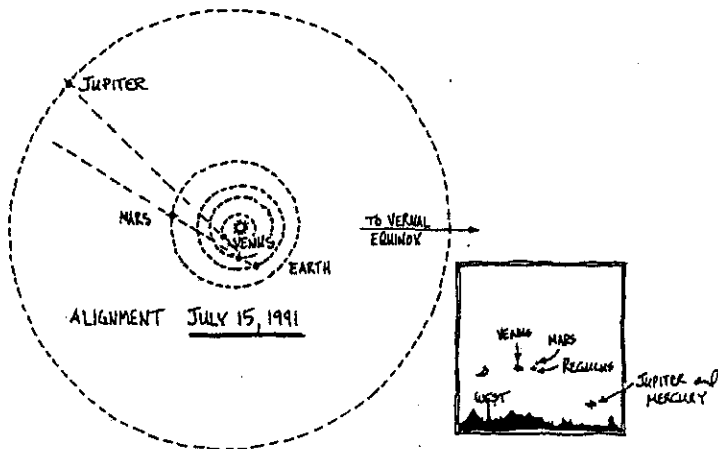
night. To add to the beauty, the crescent Moon moved through that region of the sky the same evening. You should have been able to see all of them in the same binocular field of view at 10:00 p.m.

The planets of the July conjunctions are not quite as bunched but there are still some close encounters. On July 14, Mars passes within a degree of the bright star, Regulus, and Mercury passes less than 1/10 degree from Jupiter. (To get a feeling for angular

distance, remember that the full Moon is a 1/2 degree in diameter.) Venus will be just south of Mars at this time and the young Moon will move by on July 13 and July 14. If you have never seen Mercury, this is the chance to let brighter Jupiter point it out like a beacon (Jupiter will be six times brighter than Mercury). They set shortly after sunset so you will have to catch them just after sunset.

Saturn will come into opposition with the Sun on July 27 so it will be rising in the southeast at sunset and visible all night. It is in the not too well-known constellation, Capricornus. It will be obvious because it will be the brightest "star" in the region.

The big event of this July is the total Solar Eclipse. If you happen to be on the big island of Hawaii, at the tip of the Baja Peninsula, or in Mexico City on July 11, you



will be treated to the longest total eclipse until the year 2132 A.D. Unfortunately, we will see nothing unusual here in Nova Scotia.

The Perseid Meteor Shower peaks as usual on August 12 and, this year, the Moon will be a thin crescent that sets early. Hence, there will be dark skies to see the dimmer meteors of the shower.

Venus will be passing between the Earth and the Sun in August and will not be visible. In September, Venus moves into the morning sky. On September 10, Mercury will pass close to Jupiter again but this time the two will be seen in the morning before sunrise (6:45 a.m.).

The summer is a grand time to enjoy the beautiful heavens in comfort but, because of the long daylight hours at our latitude, you will have to stay up late for skies dark enough to view the Milky Way. You will also have to observe when the Moon is not illuminating the atmosphere overhead.

During the following weeks the Moon is absent from the evening sky:

weeks of June 2 and June 9
July 7 and July 14
August 4 and August 11
September 1 and September 8.

The following are the approximate times for the end of twilight:

June 15	11:00 p.m.
July 15	11:00 p.m.
August 15	10:00 p.m.
September 15	9:00 p.m.

NOVA EAST

a camping-observing weekend at Fundy National Park

If you are interested in Astronomy as a hobby, want to learn more about the sky, or want to talk with amateur astronomers, you may enjoy attending the camping weekend of the Royal Astronomical Society of Canada at Fundy National Park. This occurs every year late in the summer and is sponsored by the Halifax Centre of the RASC. This year it will take place on Labour Day Weekend: August 30 through September 2. There will be talks on astronomy, public sky-viewing sessions, and day-time discussions. There will be many large amateur telescopes to look through and, if you like staying up all night observing the sky, you will have company. If you have any energy left, during the day you can explore the natural history of the park.

If you are interested in attending Nova East, contact me at 678-0446. I would also be interested in other members of the BNS who would like to learn more about the sky and are interested in astronomy as a hobby.

Mozart's Starling
- Editors' Comments

The following paper, entitled *Mozart's Starling*, recently appeared in the scientific journal American Scientist. The mere mention of scientific papers causes the eyes of many naturalists to glaze over as they conjure up images of tedious, jargon-ridden, reference-laden prose punctuated by bizarre tabulations and graphical presentations, and incomprehensible statistics. Occasionally scientific papers rise above this sometimes deserved stereotype. We believe that *Mozart's Starling* is such a paper. It explores the interactions of one of the most revered composers (Mozart) with one of the most reviled bird species (the starling) and, along the way, presents a scientific investigation of the mimetic propensities of the starling. The presentation is sophisticated, sometimes humorous, informative and understandable to the non-scientist. We hope you enjoy it.

In corresponding with the authors to obtain permission to reprint this paper, Meredith West advised that she will be coming from Indiana to give a seminar on "Mozart's Starling" this fall at Dalhousie University. She suggested that BNS members might like to attend. The sponsoring department at Dalhousie agrees that BNS members would be welcome. Since the date of Dr. West's seminar has not yet been confirmed, we will publish it in the September issue of the Newsletter.



Mozart's Starling *

by Meredith J. West
and Andrew P. King

On 27 May 1784, Wolfgang Amadeus Mozart purchased a starling. Three years later, he buried it with much ceremony. Heavily veiled mourners marched in a procession, sang hymns, and listened to a graveside recitation of a poem Mozart had composed for the occasion. Mozart's performance has received mixed reviews. Although some see his gestures as those of a sincere animal lover, others have found it hard to believe that the object of Mozart's grief was a dead bird. Another event in the same week has been put forth as a more likely cause for Mozart's funereal gestures: the death of his father Leopold.

The scholars who have reported and interpreted this historical incident knew much about Mozart but little, if anything, about starlings. To put the incident into better perspective, we will provide here a profile of the vocal capacities of captive starlings. Mozart's skills as a musician and composer would have rendered him especially susceptible to the starling's vocal charms, and thus we will also propose that the funeral and the poem are not the end of the story. Mozart may have left another memorial to his starling, an offbeat requiem for rebels.

Hier ruht ein lieber Narr,
 Ein Vogel Snaar,
 Noch in den besten Jahren
 Muss er erfahren
 Des Todes bitterm Schmerz.
 Mir blut' das Herz,
 Wenn ich daran gedenke.
 O Leser! schenke
 Auch du ein Thränchen ihm,
 Er war nicht schlimm;
 Nur war er etwas munter,
 Doch auch millunter
 Ein lieber loser Schalk,
 Und drun kein Dalk.
 Ich weis', er ist schon oben,
 Um mich zu loben
 Für diesen Freundschaftsdienst
 Ohne Gewinnst,
 Denn wie er unvermuthet
 Sich hat verblutet,
 Dacht er nicht an den Mann,
 Der so schön reimen kann.

Den 4ten Juni 1787.



A little fool lies here
 Whom I held dear—
 A starling in the prime
 Of his brief time,
 Whose doom it was to drain
 Death's bitter pain.
 Thinking of this, my heart
 Is riven apart.
 Oh reader! Shed a tear,
 You also, here.
 He was not naughty, quite,
 But gay and bright,
 And under all his brag
 A foolish wag.
 This no one can gainsay
 And I will lay
 That he is now on high,
 And from the sky,
 Praises me without pay
 In his friendly way.
 Yet unaware that death
 Has choked his breath,
 And thoughtless of the one
 Whose time is thus well done.

Mozart's starling was a European starling, *Sturnus vulgaris*. The species was later introduced to North America on an artistic note. The birds were imported from England in the 1890s in an effort to represent the avian cast of Shakespeare's plays in this country. Fewer than 200 birds were released in New York's Central Park. Population estimates in the 1980s hovered around 200,000,000 birds, a millionfold increase, making starlings one of the most successful road shows in history.

The vocal talents of starlings have been known since antiquity. The species possesses a rich repertoire of calls and songs composed of whistles, clicks, rattles, snarls, and screeches. In addition, starlings copy the sounds of other birds and animals, weaving these mimicked themes into long soliloquies that, in captive birds, can contain fragments of human speech. Pliny reported individual birds, mimicking Greek and Latin, that "practiced diligently and spoke new phrases every day, in still longer sentences." Shakespeare knew enough about their abilities to have Hotspur propose teaching a starling to say the name "Mortimer", an earl distrusted by Henry IV, to disturb the king's sleep (Henry IV, Part 1, act 1, scene 3). In the song cycle *Die schone Mullerin*, Schubert set to music a poem in which a starling is given a romantic mission: "I'd teach a starling how to speak and sing,/ Till every word and note with truth should ring,/ With all the skill my lips and tongue impart./ With all the warmth and passion of my heart".

Despite this wealth of anecdotal information, few scientists have studied the vocal behavior of starlings under the conditions necessary to separate fact from fiction. The

problem with starlings is that they vocalize too much, too often, and in too great numbers, sometimes in choruses numbering in the thousands (a flock of starlings is labeled a murmuration). Even the seemingly elementary step of creating an accurate catalogue of the vocal repertoires of wild starlings is an intimidating task because of the variety of their sounds. Other well-known avian mimics, such as the mockingbird (*Mimus polyglottos*), have proved as challenging, leaving unanswered key questions about the development and functions of mimetic behavior.

Some of the problems involved in the study of nonmimetic songbirds arise with mimics as well. Researchers must be able to find and raise songbirds from a young age or ideally from the egg under conditions in which their exposure to social and acoustic stimulation can be controlled. The birds must be observed for many months or sometimes years to capture fully the processes of cultural evolution and transmission of vocal motifs from generation to generation. And for all species, researchers must acquire expertise in the acoustic analysis of sounds to overcome their inability to hear much of the fine detail in avian vocalizations.

Because of these difficulties, many "definitive" pieces of work have been based on small sample sizes, often fewer than ten individuals, sometimes fewer than five. Larger samples are possible only with avicultural favorites, such as canaries (*Serinus canaria*) or zebra finches (*Poephila guttata*). Even with these subjects, research schedules must be accommodated to seasonal cycles. The kinds of vocalizations produced by a species can differ considerably throughout the year, with the most "interesting" sounds in the form of territorial or mating signals occurring for only a few months each year. In sum, songbirds are a handful.

Mimetic species add another layer of difficulty by including sounds made by other birds, other animals, and even machines. Thus, in addition to exploring how members of a mimetic species develop species-typical calls and songs - that is, vocalizations with many shared acoustic properties within a population - investigators routinely encounter individual idiosyncrasies. Why does one starling mimic a goat and another a cat? Given the abundance of sounds in this world, what processes account for the selection of models?

Baylis advocated studying just part of the mimic's repertoire as a first step, suggesting the examples of mockingbirds frequently mimicking cardinals (*Cardinalis cardinalis*). Although mockingbirds mimic many species, cardinals are a favorite. Why? What consequences accrue for mimic or model? By focusing on one model-mimic system, scientists might answer a number of questions surrounding the nature and function of mimicry. Further control of the model-mimic system can be gained by exposing birds to human speech, a vocal code with a more favorable signal-to-noise ratio. This heightens the probability that investigators can detect mimicry, and makes it easier to identify the origin of mimicked sounds and the environmental conditions facilitating or inhibiting interspecific mimicry. Here, the use of human language is not comparable to efforts with apes or

dolphins aimed at uncovering possible analogues to human language. Rather, the use of speech sounds is more properly compared to the use of a radioactive isotope to trace physiological pathways. Thus, when a captive starling utters "Does Hammacher Schlemmer have a toll-free number?" it is easier to trace the phrase's origin and how often it has been said than to trace the history of the bird's production of "breep, beezus, breep, beeten, beesix."

Over the past decade, we have studied nine starlings, each hand-reared from a few days of age. We have also collected information on the behavior of five other starlings, raised under similar conditions by individuals unaware of our work and unaware of starlings' mimicking abilities when their relationship with the birds began. Although many questions remain about the species's vocal capacities, the findings shed light on Mozart's response to his starling's death.

The 14 starlings experienced different social relationships with humans. Eight birds lived individually in what is called interactive contact with the humans who hand-reared them. Their cages were placed in busy parts of the home, and the birds had considerable freedom to associate with their caregivers in diverse ways: feeding from hands; perching on fingers, or heads; exploring caregivers' possessions; and inserting themselves into activities such as meal preparation, piano lessons, baths, showers, and telephone conversations. The humans spontaneously talked to the birds, whistled to them, and gestured by kissing, snapping fingers, and waving good-bye.

Explicit procedures to teach human words using methods prescribed for other mimicking species were not used. Six of the eight caregivers did not know that such training would have an effect until the birds themselves demonstrated their mimicking ability, and two refrained because they were instructed by us to do so. The birds could obtain food and water (and avian companionship in five of eight cases) without interacting with humans.

Three other starlings lived under conditions of limited contact with humans. After 30 days of hand rearing by us, they were individually placed in new homes, along with a cowbird (*Molothrus ater*). They lived in cages, rarely flew free, and were passively exposed to humans. They heard speech but were not "spoken to" because they did not engage in the kinds of social interactions described for the first group. The final three starlings lived together in auditory contact with humans. They were housed in an aviary on a screened porch of the caregivers raising one of the freely interacting birds. As a result, their auditory environment was loosely yoked to that of the other bird.

The information gathered on the starling's mimicry differed by setting and caregiver. Extensive audio taping was carried out for the nine subjects studied under our supervision. For three of the remaining birds involved in interactive contact, we used repertoires available in published works, supplemented by personal inquiries. For the last two we obtained verbal reports from caregivers.

Social transmission of the spoken word

The starlings' mimetic repertoires varied consistently by social context: only the birds in interactive contact mimicked sounds with a clearly human origin. None of the other subjects initiated such sounds, although all mimicked their cowbird companions, each other, wild birds, and mechanical noises. For the purposes of this article, we have elected to focus solely on the actions of the birds in interactive contact.

All of these birds mimicked human sounds - including clear words, sounds immediately recognizable as speech but largely unintelligible, and whistled versions of songs identified as originating from a human source - and mechanical sounds whose source could be identified within the households. For the three audiotaped birds, roughly two-thirds of their vocalizations were related to the words or actions of caregivers. The same categories applied to the remaining five birds, who mimicked speech, whistles, and human-derived or mechanical sounds (Table 1).

Many of the more impressive properties of the starlings' vocal capacities defy simple categorization. The most striking feature was their tendency to mimic connected discourse, imitating phrases rather than single words. Words most often mimicked alone included the birds' names and words associated with humans' arrivals and departures, such as "hi" or "good-bye". All phrases were frequently recombined, sometimes giving the illusion of a different meaning. One bird, for example, frequently repeated, "We'll see you later," and "I'll see you soon". The phrase was often shortened to "We'll see," sounding more like a parental ploy than an abbreviated farewell. Another bird often mimicked the phrase "basic research" but mixed it with other phrases, as in "Basic research, it's true, I guess that's right."

The audiotapes and caregivers' reports made clear, however, that nonsensical combinations (from a human speaker's point of view) were as frequent as seemingly sensible ones: the only difference was that the latter were more memorable and more often repeated to the birds. Sometimes, the speech utterances occurred in highly incongruous settings: the bird mentioned above blasted his owners with "Basic research!" as he struggled frantically with his head caught in string; another screeched, "I have a question!" as she squirmed while being held to have her feet treated for an infection. The tendency for the birds to produce comical or endearing combinations did much to facilitate attention from humans. It was difficult to ignore a bird landing on your shoulder announcing, "Hello", "Give me a kiss", or "I think you're right".

The birds devoted most of their singing time to rambling tunes composed of songs originally sung or whistled to them intermingled with whistles of unknown origin and starling sounds. Rarely did they preserve a melody as it had been presented, even if caregivers repeatedly whistled the "correct" tune. The tendency to sing off-key and to fracture the phrasing of the music at unexpected points (from a human perspective) was reported for seven birds (no information on

Table 1. Sounds mimicked by starlings

Greetings and farewells

hi	hey there	I'll (we'll) see you soon
good morning	c'mon, c'mere	breakfast
hello	go to your cage	it's time
hey buddy	night night	

Attributions

you're a crazy bird	nutty bird	you're gorgeous
bird	rascal	see you soon baboon
good girl	you're kidding	baby
pretty bird	silly bird	

Conversational fragments

it's true	OK	have the kids called
I suggest	I have a question	<i>whatcha doing</i>
that's right	defense	what's going on
basic research	thank you	all right you guys
because	<i>right</i>	this is Mrs. Suthers
I guess	who is coming	calling

Human sounds

<i>sighing</i>	<i>sniffing</i>	kissing
<i>coughing</i>	<i>lip smacking</i>	wolf whistle
<i>throat clearing</i>	<i>laughing</i>	

Household sounds

<i>door squeaking</i>	alarm clock	dishes clinking
cat meowing	telephone beep	gun shots
dog barking	keys rattling	

 Categories refer to social contexts in which humans produced the sounds, not necessarily the ones in which starlings repeated them. Italicized entries were imitated by four or more birds.

the eighth). Thus, one bird whistled the notes associated with the words (Way down upon the Swa-, " never adding "-nee River," even after thousands of promptings. The phrase was often followed by a whistle of his own creation, then a fragment of "The Star-spangled Banner," with frequent interpositions of squeaking noises. Another bird whistled the first line of "I've Been Working in the Railroad" quite accurately but then placed unexpectedly large accents on the notes associated with the second line, as if shouting, "All the livelong day!" Yet another routinely linked the energetically paced *William Tell Overture* to "Rockaby Baby".

One category of whistles escaped improvisation. Seven of

the eight caregivers used a so-called contact whistle to call the birds, typically a short theme (e.g., "da da da dum" from Beethoven's Fifth Symphony). This fragment of melody escaped acoustic improvisation in all cases, although the whistles were inserted into other melodies as well. One bird, however, often mimicked her contact whistle several times in succession, with each version louder than the preceding one (perhaps a quite accurate representation of the sound becoming louder as her caregiver approached her).

All the birds in interactive contact showed an interest in whistling and music when it was performed. They often assumed an "attentive" stance: they stood very quietly, arching their necks and moving their heads back and forth. The birds did not vocalize while in this orientation. Records for all eight subjects contained verbal or pictorial reports of the posture.

Clear mimicry of speech was relatively infrequent, due in large part to the birds' tendency to improvise on the sounds, making them less intelligible although definitely still speechlike. Other aspects of their speech imitations were also significant. First, the birds would mimic the same phrase, such as "see you soon" or "come here", but with different intonation patterns. At times, the mimetic version sounded like a human speaking in a pleasant tone of voice, and at other times in an irritated tone. Second, when the birds repeated speech sounds, they frequently mimicked the sound that accompany speaking, including air being inhaled, lips smacking, and throats being cleared. One bird routinely preceded his rendition of "hi" with the sound of a human sniffing, a combination easily traced to his caregiver being allergic to birds. Finally, the quality of the mimicry of the human voice was surprisingly high. Many visitors who heard the mimicry "live" looked for an unseen human. Those listening to tapes asked which sounds were the starlings' and which the humans', when the only voices were the birds'.

The particular phrases that were mimicked varied, although a majority fell into the broad semantic category of socially expressive speech used by humans as greetings or farewells, compliments, or playful responses to children or pets (see Table 1). Several of the starlings used phrases of greeting or farewell when they hear the sound of keys or saw someone putting on a coat or approaching a door. Several mimicked household events such as doors opening and closing, keys rattling, and dishes clinking together. One bird acquired the word "mizu" (Japanese for water), which she routinely used after flying to the kitchen faucet. Another chanted "Defense!" when the television was on, a sound that she apparently had acquired as she observed humans responding to basketball games.

Caregivers reported that it took anywhere from a few days to a few months for new items to appear in the birds' repertoires. Acquisition time may have depended on the kind of material: one of the birds in limited contact, housed with a new cowbird, learned its companion's vocalization in three days, while one bird in interactive contact took 21 days to mimic his cowbird companion. The latter bird, however, repeated verbatim the question, "Does Hammacher Schlem-

mer have a toll-free number?" a day after hearing it said only once. Some whistled renditions of human songs also appeared after intervals of only one or two days. An important variable in explaining rate of acquisition and amount of human mimicry may be the birds' differential exposure to other birds. The three birds without avian cage mates appeared to have more extensive repertoires, but they were also older than the other subjects.

The birds did not engage much in mutual vocal exchanges with their caregivers - that is, a vocalization directed to a bird did not bring about an immediate vocal response, although it often elicited bodily orientation and attention. Thus, the mimicry lacked the "conversational" qualities that have been sought after in work with other animals. As no systematic attempt had been made to elicit immediate responding by means of food or social rewards, reciprocal exchanges may nevertheless be possible. Ongoing human conversation not involving the starlings, however, was a potent stimulus for simultaneous vocalizing. The birds chattered frequently and excitedly while humans were talking to each other in person or on the telephone.

The starlings' lively interest and ability to participate in the activities of their caregivers created an atmosphere of mutual companionship, a condition that may be essential in motivating birds to mimic particular models, as indicated by the findings with the bird in limited and auditory contact. The capacity of starlings to learn the sounds of their neighbors fits with what is known about their learning of starling calls, especially whistles, in nature. They learn new whistles as adults by means of social interactions, an ability that is quite important when they move into new colonies or flocks. Analyses of social interactions between wild starling parents and their young also indicate the use, early in ontogeny, of vocal exchanges between parent and young and between siblings. Thus, the capacities identified in the mimicry of human speech and their dependence on social context seem relevant to the starling's ecology.

Other mimics and songsters

Studies of another mimic, the African gray parrot (*Psittacus erithacus*), also indicate linkages between mimicry and social interaction. This species mimics human speech when stimulated to do so by an "interactive modeling technique" in which a parrot must compete for the attention of two humans engaged in conversation. Extrinsic rewards such as food are avoided. The reinforcement is physical acquisition of the object being talked about and responses from human caregivers. Such procedures lead to articulate imitation and often highly appropriate use of speech sounds. Pepperberg reports that one bird's earliest "words" referred to objects he could use: "paper", "wood", "hide" (from rawhide chips), "peg wood", "corn", "nut", and "pasta". The parrot also employed these mimicked sounds during exchanges with caregivers in which he answered questions about the names of objects and used labels identifying shape and color in

appropriate ways. The parrot's use of "no" and "want" also suggested the ability to form functional relationships between speech and context, a capacity perhaps facilitated by the trainer's explicit attempts to arrange training sessions meaningful for the student.

Explanations of mimicry of human sounds in this and other species originate in the idea that hand-reared birds perceive their human companions in terms of the social roles that naturally exist among wild birds. Lorenz and von Uexkull elaborated on the kinds of relationships between and among avian parents, offspring, siblings, mates, and rivals. In the case of captive birds, humans become the companion for all seasons, with the nature of the relationship shifting with the changing developmental and hormonal cycles in a bird's life.

Mimics are not the only birds to show clear evidence of the effects of companions on vocal capacities. Two examples from nonmimetic species are relevant. In the white-crowned sparrow (*Zonotrichia leucophrys*), the capacity to learn the songs of other males differs according to the tutoring procedure used. For example, young males learn songs from tape recordings until they are 50 days of age but not afterward. They do acquire songs well after 50 days from live avian tutors with whom they can interact, copying the song of another species, even if they can hear conspecifics in the background. The potency of social tutors has led to a comprehensive reinterpretation of the nature of vocal ontogeny in this species. We tried tutoring nine of the starlings using tapes of the caregiver's voice singing songs and reciting prose. There was no evidence of mimicry, except that one bird learned the sound of tape hiss. And thus, if we had relied on tape tutoring, as has been done with many species to assess vocal capacity, we would have vastly underestimated the starlings' skills.

What are the characteristics of live tutors that make them so effective? The studies of white-crowned sparrows suggest that it is not the quality of the tutor's voice, but the opportunity for interaction. Indeed, we have studied a case where voice could not be a cue at all because the "tutor" could not sing. In cowbirds, as in many songbirds, only males sing. Females are frequently the recipients of songs and display a finely tuned perceptual sensitivity to conspecific songs. We have documented that acoustically naive males produce distinct themes when housed with female cowbirds possessing different song preferences. We have also identified one important element in the interaction. When males sang certain themes, females responded with distinctive wing movements. The males responded in turn to such behavior by repeating the songs that elicited the females' wing movements. Such data show that singers attend to visual, as well as acoustic, cues and that tutors can be salient influences even when silent. In this species, the social, as distinct from the vocal, conduct of a male's audience is of consequence.

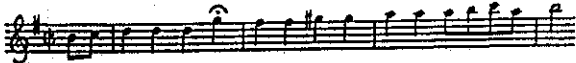
Studies of another avian group, domestic fowl (*Gallus gallus*), also direct attention to the importance of a singer's audience. In this species, male cockerels produce

different calls in the presence of different social companions. Emitting a food call in the presence of food is not an obligatory response but one modulated by the signaler's observations of his audience. Similar findings with cockerel alarm calls indicate the need to consider the multiple determinants of vocal production. Taken as a whole, the findings reveal that, for many birds, acoustic communication is as much visual as vocal experience.

Mozart as birdcatcher

Mozart knew how to look at, as well as listen to, audiences, especially when one of his compositions was the object of their attention. After observing several audiences watching *The Magic Flute*, he wrote to his wife, "I have at this moment returned from the opera, which was as full as ever But what always gives me most pleasure is the silent approval! You can see how this opera is becoming more and more esteemed". Mozart's enjoyment of the less obvious reactions of his audience suggests that, like a bird, he too was motivated not only by auditory but by visual stimuli. The German word he used can be translated "applause" as well as "approval", suggesting his search for rewards more meaningful than the expected clapping of hands. We now turn to the case of Mozart's starling and to the kinds of social and vocal rewards offered to him by his choice of an avian audience.

27. May 1784 Vogel Stahrl 34 Kr.



Das war schön!

Piano Concerto no. 17 in G Major, K. 453




Figure 1. Wolfgang Amadeus Mozart was also the delighted owner of a pet starling. He recorded the purchase of the starling in an expense book, noting the date, price, and a musical fragment the bird was whistling. The pleasure he expressed at hearing the starling's song -- "Das war schön!" (that was beautiful!) -- is all the more understandable when one compares the beginning of the last movement of his Piano Concerto in G Major, K. 453, which was written about the same time. Somehow the bird had learned the theme from Mozart's concerto. It did however sing G sharp where Mozart had written G natural, giving its rendition a characteristically off-key sound.

Mozart recorded the purchase of his starling in a diary of expenses, along with a transcription of a melody whistled by the bird and a compliment (Fig. 1). He had begun the diary at about the same time that he began a catalogue of his musical compositions. The latter effort was more successful, with entries from 1784 to 1791, the year of his death. His book of expenditures, however, lapsed within a year, with later entries devoted to practice writing in English. The theme whistled by the starling must have fascinated Mozart for several reasons. The tune was certainly familiar, as it closely resembles a theme that occurs in the final movement of the Piano Concerto in G Major, K. 453 (see Fig. 1). Mozart recorded the completion of this work in his catalogue on 12 April in the same year. As far as we know, just a few people had heard the concerto by 27 May, perhaps only the pupil for whom it was written, who performed it in public for the first time at a concert on 13 June. Mozart had expressed deep concern that the score of this and three other concertos might be stolen by unscrupulous copyists in Vienna. Thus, he sent the music to his father in Salzburg, emphasizing that the only way it could "fall into other hands is by that kind of cheating". The letter to his father is dated 26 May 1784, one day before the entry in his diary about the starling.

Mozart's relationship with the starling thus begins on a tantalizing note. How did the bird acquire Mozart's music? Our research suggests that the melody was certainly within the bird's capabilities, but how had it been transmitted? Given our observation that whistled tunes are altered and incorporated into mixed themes, we assume that the melody was new to the bird because it was so close a copy of the original. Thus, we entertain the possibility that Mozart, like other animal lovers, had already visited the shop and interacted with the starling before 27 May. Mozart was known to hum and whistle a good deal. Why should he refrain in the presence of a bird that seems to elicit such behavior so easily?

A starling in May would be either quite young, given typical spring hatching times, or at most a year old, still young enough to acquire new material but already an accomplished whistler. Because it seems unlikely to us that a very young bird could imitate a melody so precisely, we envision the older bird. The theme in question from K. 453 has often been likened to a German folk tune and may have been similar to other popular tunes already known to the starling, analogous to the highly familiar tunes our caregivers used. But to be whistled to by Mozart! Surely the bird would have adopted its listening posture, thereby rewarding the potential buyer with "silent applause".

Given that whistles were learned quite rapidly by the starlings we studied, it is not implausible that the Vienna starling could have performed the melody shortly after hearing it for the first time. Of course we cannot rule out a role for a shopkeeper, who could have repeated Mozart's tune from its creator or from the starling. In any case, we can imagine that Mozart returned to the shop and purchased the bird, recording the expense out of appreciation for the

bird's mimicry. Some biographers suggest an opposite course of transmission - from the starling to Mozart to the concerto - but the completion date of K. 453 on 12 April makes this an unlikely, although not impossible, sequence of events.

Given the sociable nature of the captive starlings we studied, we can imagine that some of the experiences that followed Mozart's purchase must have been quite agreeable. Mozart had at least one canary as a child and another after the death of his starling, suggesting that it would not be hard for him to become attached to so inventive a housemate. Moreover, he shared several behavioral characteristics with captive starlings. He was fond of mocking the music of others, often in quite irreverent ways. He also kept late hours, composing well into the night. The caregivers of the starlings we studied uniformly reported - and sometimes complained about - the tendency of their birds to indulge in more than a little night music.

The text of Mozart's poem on the bird's death suggests other perceptions shared with the caregivers. Mozart dubbed his pet a "fool" - the German word could also be translated as "clown" or "jester" - an attribution in keeping with the modern starlings' vocal production of "crazy bird", "rascal", "silly bird", and "nutty bird" and the even more frequent use of such terms in the written description of life with starlings. Mozart gets to the heart of the starling's character when he states that the bird was "not naughty quite,/ But gay and bright,/ And under all his brag,/ A foolish wag." And thus, when we contemplate Mozart's emotions at the bird's death, we see no reason to invoke attributions of displaced grief. We regard Mozart's sense of loss as genuine, his epitaph as an apt gesture.

No other written records of Mozart's relationship with his pet are known. He may have said more, given his prolific letter writing, but much of his correspondence during this period has been lost. The lack of other accounts, however, cannot be considered to indicate a lack of interest in his starling. We are inclined to believe that other observations by Mozart on the starling do exist but have not been recognized as such. Our case rests in part on recent technical analyses of the original (autograph) scores of Mozart's compositions, investigations describing changes in handwriting, inks, and paper. Employing new techniques to date paper by analyzing the watermarks pressed into it at the time of its manufacture, Tyson has established that the dates and places assigned to some of Mozart's compositions can be questioned, reaching the general conclusion that many pieces were written over an extended period of time and not recorded until the time of completion. The establishment of an accurate chronology of Mozart's compositions is obviously essential to those attempting to understand the development of his musical genius. It also serves our purposes in reconstructing events after the starling's funeral.

One composition examined by Tyson is a score entered in Mozart's catalogue on 12 June 1787, the first to appear after the deaths of his father and the starling. The piece is entitled *A Musical Joke* (K. 522). Consider the following

description of it from a record jacket: "In the first movement we hear the awkward, unproportioned, and illogical piecing together of uninspired material.... [later] the andante cantabile contains a grotesque cadenza which goes on far too long and pretentiously and ends with a comical deep pizzicato note.... and by the concluding presto, our 'amateur composer' has lost all control of his incongruous mixture". Is the piece a musical joke? Perhaps. Does it bear the vocal autograph of a starling? To our ears, yes. The "illogical piecing together" is in keeping with the starlings' intertwining of whistled tunes. The "awkwardness" could be due to the starlings' tendencies to whistle off-key or to fracture musical phrases at unexpected points. The presence of drawn-out, wandering phrases of uncertain structure also is characteristic of starling soliloquies. Finally, the abrupt end, as if the instruments had simply ceased to work, has the signature of starlings written all over it.

Tyson's analysis of the original score of K. 522 indicates that it was not written during June 1787, but composed in fragments between 1784 and 1787, including an excerpt from K. 453. This period coincides with Mozart's relationship with the starling. A common interpretation is that *A Musical Joke* was meant to caricature the kinds of music popular in Mozart's day. Writing such music, a course of action urged on him by his father, might have earned Mozart more money. And thus, the composition has also been interpreted in regard to the father/son relationship. Tyson disputes this view on the basis of the autograph score, as much of it was written before Leopold's death, and the lack of solid evidence that Mozart's relationship with his father was bitter enough to cause him to commemorate his first and foremost teacher with a parody.

Although we do not presume to explain all the layers of compositional complexity contained in K. 522, we propose that some of its starling-like qualities are pertinent to understand Mozart's intentions in writing it. Given the propensities of the starlings we studied and the character and habits of Mozart, it is hard to avoid the conclusion that some of the fragments of K. 522 originated in Mozart's interactions with the starling during its three-year tenure. The completion of the work eight days after the bird's death might then have been motivated by Mozart's desire to fashion an appropriate musical farewell, a requiem of sorts for his avian friend.

Last words

We have offered these observations on starlings and on Mozart for two reasons. First, to give music scholars new insights with which to evaluate one of the world's most studied composers. The analyses of the autograph scores and recent reinterpretations of Mozart's illnesses and death demonstrate the power of present-day knowledge to inform our understanding of the past. We have provided the profile of captive starlings as another way to gain perspective on Mozart's genius.

Second, we hope to spark further interest in the analy-

sis of the social stimulation of vocal learning. Although the role of social companions in motivating avian vocal learning is now well established, the mechanism by which social influence exerts its effects have only begun to be articulated. Part of the problem is defining the nature of social contexts. To say birds interact is to say something quite vague. Interact how? By fighting? By feeding? By flocking? By sitting next to one another? Measuring sound waves is easy compared to calibrating degrees of social influence. Moreover, social signals are multi-modal. The species described here make much use of visual, as well as vocal, stimulation. By what means do they link sights and sounds? Why are only certain linkages made? Answering these questions is the next challenge for students of communication.

One of the founders of the study of bird song, W.H. Thorpe, speculated that birds' imitation of sounds represents a quite simple cognitive process: "The essence of the point may be summed up by saying that while it is very difficult for a human being (and perhaps impossible for an animal) to see himself as others see him, it is much less difficult for him to hear himself as others hear him". Although we recognize the law of parsimony in Thorpe's remark, we are led by the evidence to seek a phylogenetic middle ground between self-awareness and vocal matching. We propose that some birds use acoustic probes to test the contingent properties of their environment, an interpretation largely in keeping with concepts of communication as processes of social negotiation and manipulation. An analogy with the capacities of echo-locating animals may be appropriate. Like bats or dolphins emitting sounds to estimate distance, some birds may bounce sounds off the animate environment, using behavioral reverberations to gauge the effects of their vocal efforts. They are not using Thorpe's behavioral mirror, necessary for self-reflection, but instead a social sounding board with which to shape functional repertoires.

In the case of our starlings, we also conclude that social sonar works two ways: human caregivers cast many sounds in the direction of their starlings and were often educated by the messages returned. The mimicry of vocal acts such as lip noises, sniffs, and throat clearing brought to the attention of caregivers routine dimensions of their own behavior that they rarely took notice of. The birds' echoing of greetings, farewells, and words of affection conveyed a sense of shared environment with another species, a sensation hard to forget. The caregivers' sadness in response to the illnesses, absence, or death of their avian companions also suggests that they had been beguiled by the chance to glimpse a bird's-eye view of the world. Most found themselves at a loss for words. And thus we turn to Mozart for fitting emotional expressions - his poem, his *Musical Joke*, and his appropriately grand burial for a "starling bird".

*excerpted from American Scientist, Vol. 78, March-April 1990, pp. 106-114, with permission of the authors.

TRIVIAL TIDBITS
of Local Natural History
March 1, 1991 to May 31, 1991
(with some earlier highlights)

selected and compiled
by Jim Wolford
Wolfville, N.S.

Plants

Two rare foliose lichens have now been photo-documented in West Hants Co.: *Ramalina pollinaria* at Kempt and *Sticta fuliginosa* at Cogmagun (KLC).

On May 19-20, frost damage was seen on magnolia flowers and the leaves of sensitive and ostrich ferns, walnut, beech and oak (GA, EG, JP, BBT, JW).

Reports of plants in bloom were: mayflower (very early), Apr 6, Annapolis Co. (GP); speckled alder, Apr 8, Port Williams (GF); purple trillium, May 10, Port Williams (GF); ram's-head lady's-slipper orchids, yellow violets, nodding trillium, May 20, near Poplar Grove and Brooklyn, Hants Co. (JW); coral-root orchids, June 1, Poplar Grove (JW); and cypress spurge, June 1, Melanson (JW).

Invertebrates (Insects, etc.)

At least four deer ticks were found in southwest Nova Scotia this spring, up to Apr 15 (CBC, CB, HS).

Insects reported chronologically: Mar 2, active small black spiders and a mosquito, Port Williams (GF); Mar 4, cabbage butterfly (SAC); Mar 21, a large American cockroach in bananas at a local store (JW); Apr 4, large swarm of midges (GF); May 8, a bee fly on dandelion (SAC); May 18, masses of iridescent alder flea beetles on alders (SAC, BW); May 20, a June beetle (BBT); by May 25, hatching black-and-yellow garden spiders, at Mosherville (SAC, BW); May 25, winged ants (JW); May 28, male giant water bugs carrying eggs on their backs (JW et al); and May 28-29, a green bald-faced hornet building a small nest (JW).

Fish

Smelt and gaspereau were first reported at Gaspereau, Apr 16 and May 7, respectively; the gaspereau run was small this year (CKC).

Herptiles

Reported were: a yellow-spotted salamander in an Annapolis Co. woodpile, Apr 6 (GP); Apr 6, spring peepers at Clementsvale (GP) and Gaspereau (CKC); a wood frog, Apr 8 (GP); Apr 13, six painted turtles basking at Greenwich (GD); Apr 27-28, single leopard



frogs at Canning and Starr's Point (JW); a redback salamander in soil among larch roots at Upper Rawdon, May 12 (FB); at Aldersville, May 21, under a wood-pile, a ball of about 25 (probably garter) snakes. A large one bit Jerome Cook on the lip and wouldn't let go!

Mammals

Bats flying in bright daylight were reported on Apr 14 (MT), Apr 26 (JGT), May 20 (BLF, BBT) and May 25 (SW, BNS).

Other mammals reported were: a still-whitish snowshoe hare in Blomidon Park, Apr 14 (MT); a yearling muskrat that had to be rescued from a chain-link fence at Wolfville School, Apr 6 (JT, SBN); a groundhog at Mosherville, Apr 5 (SAC); a yearling porcupine grazing on a weedy lawn at Wallbrook, May 6 (JW); another porcupine eating catkins high in a poplar near Rawdon, May 19 (SAC); in a gravel pit pond at Mosherville, poplar saplings cut by beavers, May 13 (SAC); a mink with a large fish at Chipman's Corner pond, Apr 16 (JGT); a probable arctic fox at Louisbourg, May 12 (CBC); coyotes at Mosherville, Feb 25 (SAC) and Chester Grant, Apr 29 (MD); a seal (possibly grey?) in the Kennetcook River at Mosherville, Apr 5-6 (SAC et al); and two harbour porpoises, at the mouth of the Cornwallis River, Apr 26 (BBT).



On Mar 29, in mid-afternoon, a deer was closely pursued by two dogs, through yards and along the highway, at Scotch Village (SAC). Bernard Forsythe reports that he's seen more deer than usual in Kings Co. this spring.

Birds

A common loon calling overhead at Clementsvale on Mar 18 must have been checking inland lakes for open water (GP). A possible western grebe was seen Apr 6 at Chebucto Head (JW, HF). Eight horned grebes were seen in breeding plumage off Lunenburg Co., Apr 20 (BLF).

An apparently healthy American bittern was in the middle of a paved road in Kennetcook, Apr 5 (GT). The earliest observation of a great blue heron was at Canning, Mar 27 (JGT). A tricolored (Louisiana) heron was seen at Upper Kingsburg, Apr 18 (JGT).

A great egret was on Cape Sable Island, Apr 27 (JGT). A cattle egret following a steer caught a frog on Apr 28 near Mahone Bay (JGT). A snowy egret was at Conrad's Beach, May 2 (JGT).

A strange-looking and unwary goose was at Delhaven, Apr 23-24 (JG). Bev Shanks saw a snow goose, with Canada geese, Apr 3, at Falmouth.

The only reports of brant were of 100, May 16-17, at Wolfville (BBT, JW). Canada geese were seen from Mar 8 (BBT) to Apr 28 (NSBS, BNS); two with yellow neck bands were seen at Canning, Mar 29 (MG).

Wood ducks were seen in early

April at Drain Lake and Canard Pond (JGT, JW), and seven were near Sheffield Mills in late April (MB). At Methal's Reservoir on May 26, a hooded merganser was trying unsuccessfully to get into a nest box occupied by a wood duck incubating ten eggs (BLF).



A male Eurasian green-winged teal was at Canard Pond, Apr 7 (JW). A brood of newly hatched mallards was at Port Williams, May 31 (JW). Pintails were seen from Mar 18 to May 2 (JGT), and MG got one on his "yard-list", Apr 6. Blue-winged teal were seen as early as Apr 12 (JGT).

A pair of northern shovelers were near Starr's Point, Apr 7 (GF, JGT). A male gadwall was at Port Williams, May 31 (JW). American wigeon were reported only on Mar 27 (JGT) and May 13 (JW).

Reports of ring-necked ducks began Apr 11 (JGT). Five greater scaup were at Grand Pre, Apr 1 (GF, JGT) and 30 off Lunenburg Co., Apr 18 (JGT).

Up to four king eiders were with many hundreds of common eiders in large rafts off Chebucto Head, Apr 3-6 (RBA, FL, BSA, JGT, RS, MG, BLF, HF, JW). A pair of harlequin ducks was off Tribune Head, all winter to Apr 4 (JGT et al).

A male oldsquaw was at the Port Williams sewage ponds, Mar 27-31 (GF, JGT). A female bufflehead was at Canning, Apr 17 (JGT).

Four male hooded mergansers were at the mouth of the Cornwallis River, Mar 18 (MP, JGT). At Methal's Reservoir on May 11, a common merganser was incubating 12 of her own eggs and two of a hooded merganser; the downy ducklings left the box May 26. Ask BLF what a sight that was!

Turkey vulture sightings were rumoured in early April in Avonport (JWA) and west of Wolfville (fide PA). Two immature bald eagles put on an acrobatic show together (learning courtship?) at the Lookoff, Mar 31 (RB, JW).

On Apr 22, a bald eagle nest was found in Greenwich (BLF) and another near Melanson (NSBS, CKC). Both nest sites are in wooded areas immediately adjacent to active farms and main highways. The Melanson site is very near an active gravel pit. Each of these nests now contains two young (BLF, PM, CKC, PA, GA).

A northern goshawk was seen near bird-feeders on Wolfville Ridge in late winter (DJ) and a nest at Newtonville held three eggs, Apr 28 (BLF).

A broad-winged hawk was at Greenwich, May 9 (JW). On May 5, at Gaspereau, a red-tailed hawk nest held two very young nestlings (BLF). The past winter was a good one for rough-legged hawks, with lots of mice at Canard and Grand Pre.

Four American kestrels were seen in Colchester Co., Apr 7 (GT). At KenWo Golf Club, New Minas, a male merlin brought a small bird to a female on a nest. And I saw a merlin at Greenwich, May 28.

Gray partridge were reported as follows: five at Newport Station in February (LL); perhaps ten at Windsor in March (SS); six at Hillaton, Mar 13 (BBT); and two near Wellington Dyke, Mar 27 (JGT).

Sora rails were heard near Windsor (two), Falmouth and Sunken Lake, May 20-21 (BLF, JW, BS).

Rachel Erskine thoughtfully phoned to alert us about a lapwing from Europe at Pointe de Bute, N.B., in late May. After Feb 24-25 at Wallbrook, the next killdeer reported was Mar 15 at CFB Cornwallis (GP). A "nest" held four eggs on Wolfville Ridge, Apr 17 (JGT).

A greater yellowlegs was at Canning, Apr 17 (JGT). A marbled godwit was near Tatamagouche, May 28 (RH). Up to 100 least sandpipers were seen locally, May 13-20 (BLF, JW).

An adult American woodcock and four small downy young were seen at Baxter's Harbour, May 25 (SW, BNS).

Up to four Iceland gulls were reported in late winter at three sewage pond sites (Wolfville, Port Williams, and Windsor) (GP, JGT, JW); one was still at Wolfville, May 17 (JW). The only local glaucous gull reported was at Wolfville, Apr 28 (JW).

A least tern spent May 13 at New Minas and was seen by many (GF, HF, BLF, RS, BBT, JW).

CKC reported an unidentified hawk that took at least three mourning doves from his feeder in January. Through spring there seemed to be a few calling mourning doves in many localities of Kings Co. (JW).

The Gaspereau great horned owl occupied CKC's nest platform Feb 17 and fledged two young (from three eggs) (BLF). Another pair of great horned owls nested in a witch's-broom on Glenmont Mountain (BLF).

BLF reports 13 nest boxes occupied by barred owls (a local record). At Hell's Gate, a female that wouldn't leave the nest allowed him to read her leg-band; she's at least eight years old.

Back on Dec 14, a long-eared owl was found dead at Avonport (RHA). On Dec 1, BLF discovered 15 short-eared owls east of Wolfville. Small numbers of short-eared owls were seen over the winter at Port Williams, Canard, and Grand Pre (GF, MP, BBT, JW). Three were at Wellington Dyke, Apr 17 (JGT). Short-ears were active on bright afternoons, Mar 17 (GF) and Mar 31 (four birds - JW). A very "tame" and hungry saw-whet owl was seen near Greenfield, Jan 29 (JGT, BLF).

See the chimney swift news elsewhere in this Newsletter. Sightings of ruby-throated hummingbirds began May 8 at Avonport (EU), then two more May 10 (EBM, JT). Very incongruous in Kentville on May 19 was a hummingbird foraging on japonica flowers during a snow storm (TH).

Red-bellied woodpeckers were at Truro in Dec-Jan (CAE) and at Wilmot in Jan-Feb (RBA, JGT). An immature red-headed woodpecker first seen at Falmouth, Dec 8 (PK, JMc) was captured, Dec 16 (NSLF) and later released at Gaspereau by CKC.

At Methal's Reservoir, in a stump standing in water, a nest of black-backed woodpeckers contained noisy young on May 26; only half a metre away in another cavity, tree swallows were very aggressive toward the adult male woodpecker (BLF).



The 1990-91 winter saw several northern flickers attempting to overwinter (eight on Wolfville Christmas Bird Count); at least one survived until at least Mar 17 at Avonport (EU).

A yellow-bellied flycatcher was near Greenfield, May 25 (BLF). Tree swallows arrived early on Apr 13 (JGT); they also laid eggs early and one nest held seven eggs, May 26 at Methal's Reservoir (BLF).

Our President had some excitement in his Kentville yard Jan 8-9, when 1500-2000 American crows roosted there overnight (TH). On Mar 5, crows were picking small silver fish from ice-pans in the Kennetcook River at Mosherville (SAC). Crows were nest-building, Mar 29 in Port Williams (MT).

Cyril Coldwell reports a band return for an American crow that was found injured in Newfoundland, July 10, 1990; it had been banded Jan 16, 1979, on Bon Portage Island by Acadia Biology.



On Apr 1, at Gaspereau, a common raven nest already held five nestlings about 2-3 days old (BLF).

A spectacular sighting on Bon Portage Island on May 17 was of a tufted titmouse (PCS).

On Apr 6 at Clementsvale, an overwintered male red-breasted nuthatch was excavating a nest-cavity while the female watched and displayed (GP). I have five reports of brown creepers, two of them at suet feeders (JGT, JSB).

An unmated male eastern bluebird was defending a nest-box, May 26-Jun 2 at Methal's Reservoir (BLF). A Townsend's solitaire was at Tribune Head Apr 3 (RBA).

The only large flock of overwintering American robins was seen in Wolfville, Jan 29 (WJH). A varied thrush was at White's Lake near Halifax, Jan 20 (BLF, RS, JGT). Winter reports of northern mockingbirds were from Wolfville, Dartmouth, Canning, and Portuguese Cove; one was singing May 19 in Wolfville and was imitating cardinals and other birds (BBT) (also see the article, Mozart's Starling).

There were five reports of up to 200 Bohemian waxwings; the last sighting was on Apr 8 (JGT). There were lots of cedar waxwings overwintering, mainly in Wolfville (200 on Feb 24 - GT). Tragically, something frightened a flock of 35 into a window at Acadia University on Feb 21; 33 were killed (PP).

This was a very good year for wintering northern shrikes in Kings Co. (from Oct 21 to Apr 17). Possibly a loggerhead shrike was at Scots Bay in late February (MTh).

At Port Williams, European starlings had fledged young, Apr 17 (MT). A warbling vireo singing in Wolfville, May 28-Jun 2 is presumably the same male as was there last year.

A worm-eating warbler was near Chebucto Head, Apr 23-24

(RBA, JGT). Single orange-crowned warblers were in Wolfville, Dec 2 ("mobbing" a sharp-shinned hawk! - GF) and at Port Williams, Dec 25- Jan 15 (BLF, GF, JGT).

Two magnolia warblers were early at Canard Pond, May 9 (BET). On Apr 27, a male yellow-rumped warbler was chased repeatedly by a male goldfinch at Canning.

Rowena Coldwell found a banded black-throated green warbler killed by a cat, May 27, at Gaspereau; it had been banded Oct 7, 1989, on Bon Portage Island by Acadia Biology (CKC).

A female hooded warbler was near Portugeuse Cove, Apr 28 (JGT). A Wilson's warbler was seen in Canning, May 19 (MG), and, on the same day, a Canada warbler was found dead (after freezing temperatures) on Harbour Island, Eastern Shore (NSLF, JW).

Merritt Gibson got another Canning "yard-list" addition Apr 27 - a lovely male scarlet tanager. Another was on Wolfville Ridge, May 24 (BLF).

A female cardinal was in Wolfville, Nov 26-Jan 2 (MS et al). Then Wolfville seemed to be invaded, May 16-19, by at least two, and perhaps more, singing cardinals (DTh, GT, JT, JW).

Early reports of rose-breasted grosbeaks were received for Apr 23-24 at Falmouth (JMc), Windsor (fide HG), and near Chebucto Head (a female) (JGT); later reports began May 12 (EU).

Nova Scotia was invaded by numbers of blue grosbeaks and indigo buntings, beginning Apr 23 near Chebucto Head. At least seven blue grosbeaks were reported up to Apr 28, including birds at Kentville (NN), Falmouth (JMc) and North Mountain (RO). I heard of at least 17 indigo buntings, in many locations, up to May 19.

American tree sparrows were last seen Apr 30 (EU). A vesper sparrow was seen, May 2, near Kingston (JGT). Fox sparrow reports spanned Mar 22 (JGT) to Apr 7 (GF). Migrant song sparrows were detected, Mar 21, on Bon Portage Island (PCS).

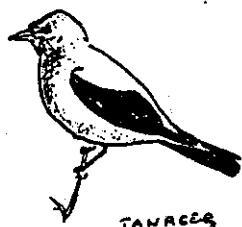
Swamp sparrows were reported only for Dec 30 (GF) and Apr 7 (JGT), both at Port Williams. Again this year, on May 26, a Lincoln's sparrow was singing in the floating bog at Methal's Reservoir (BLF). A white-crowned sparrow was at Port Williams, May 14-16 (BLF, JMo).

A dark-eyed junco was seen eating an earthworm in Blomidon Park, Apr 14 (MT). Migrant dark-eyed juncos were seen at Clementsvalle, Apr 1 (GP).

The earliest bubbling bobolink was on May 8 at Black River (BLF). At least 20 red-winged blackbirds were at White Rock, Jan 26. Probably migrant red-wings were reported from Mar 18 (GF) on and the first migrant female noted was May 11 (MT).

A male yellow-headed blackbird was at Wilmot in mid-January (Pat MacDonald), and a female yellow-head was at White Rock in a big flock of cowbirds, redwings and grackles, Jan 20-26 (RRN et al).

Rusty blackbirds were reported for Apr 30 and early May in Hants Co. (JGT, KLC). A few common grackles overwintered at Gaspereau and White Rock; arrivals



at Gaspereau and White Rock; arrivals began with 14 in Wolfville, Mar 18 (GT). On Apr 1 at Greenwich, there were two recognizable partial-albino grackles (GF); another one showing a bit of white was in Canning, Apr 7 (JW).

Northern orioles remained in Wolfville, to Dec 26, and Port Williams, to Jan 8 (JGT). The earliest spring arrivals were then on May 9 (JS) and May 10 (HF).

Up to five house finches were in Port Williams until Jan 26, then one male at scattered dates until Apr 10 (GF, MT); others were at Greenwich until Feb 1 (GF), Wolfville Mar 9-12 (EEE), and Avonport Mar 29 (EU).

The only reported common redpoll was on Wolfville Ridge, Jan 12 (JGT). Up to five pine siskins were on Wolfville Ridge through the winter, then 11 to 16, May 1-4 (JGT). Goldfinches were abundant at feeders in many locations for the whole winter (up to 200 at JGT's).

There were not large numbers of evening grosbeaks around this winter but selected feeders served up to 65 of them (JGT, EU, BBY, GA).

Finally, in late April in Wolfville, Joy Cooper had a mystery-bird at her finch feeder for a few days: about the size of a goldfinch or bigger, head black, upper breast a light greenish-blue (like faded jeans) graded into grayish underparts, a shy visitor - any ideas?

Thanks to all contributors, especially those who contributed in writing.

It would be very helpful if all contributors used pieces of paper of the same size. Please use sheets of standard eight and one-half inch by eleven inch paper, divided into eight equal rectangles (roughly two by three inches). Then put one observation/species per piece. Tell what, when, where, who observed, and perhaps why; add any other pertinent information. Thanks.

Contributors

GA	George Alliston	EEE	Ev & Ed Eagles
PA	Peter Austin-Smith	GF	George Forsyth
RBA	Rare Bird Alert	HF	Harold Forsyth
CB	Colin Bell	BLF	Sandra & Bernard Forsythe
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MB	Mike Brylinsky	EG	Ellis Gertridge
RB	Roy Bishop	HG	Helen Gibson
JSB	Sherman Bleakney	JG	Jamie Gibson
JC	John Connelly	MG	Merritt Gibson
CBC	CBC Radio	RH	Ross Hall
CKC	Cyril Coldwell	TH	Tom Herman
KLC	Karen Casselman	WJH	Winnie and John Horton
SAC	Sheila Connell	RHa	Richard Haliburton
JCo	Joy Cooper	MHu	Matt Hughes
GD	Graham Daborn	DJ	Dave Jones
MD	Mike Dadswell	PK	Peggy Kochanoff
CAE	C. Allan Eddy		

FL	Fulton Lavender	JS	Jack Scott
LL	Lillian LaPierre	MS	Maynard Stevens
JM	Jake MacDonald	RS	Richard Stern
TM	Terry Murphy	SS	Sandra Shearer
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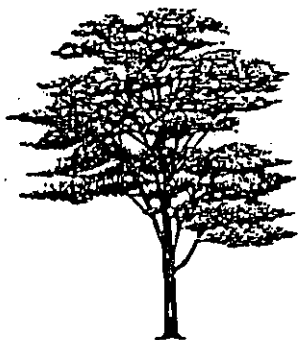
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Flora - Trees	Merritt Gibson	542-2201	582-7569
Flora - Fungi	Darryl Grund	542-2201	542-9214
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	Bernard Forsythe		542-2427
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	Roy Bishop	542-2201	542-3530
	Larry Bogan	542-2201	542-3992
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