



Blomidon Naturalists Society

Fall 2002 – Volume 29 Number 3

Blomidon Naturalists Society

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)

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Cover illustration by Stephen Petersen

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Contributions to the BNS newsletter are always welcome. Members are encouraged to share unusual or pleasurable nature stories through the pages of the BNS newsletter. If you have a particular area of interest, relevant articles and stories are always welcome. Send them to Mike McCall by mail, RR 3, Centreville, NS B0P 1J0; by e-mail, <mikemccall@ns.sympatico.ca>; or by fax, 902 678-1812.

Upcoming newsletter deadlines

Winter, January 5, 2003; Spring, March 27, 2003

Summer, June 26, 2003

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Editor's Notes

Young actors, musicians (this is quite a stretch in most cases), and TV personalities seem to feel that if they've got 25 years under their belts the world wants to read about their lives in their own words. Hence a slew of biographies that, one suspects, are remaindered, then pulped about a month after they hit the bookstores. BNS at 25 years, however, has acquired more wisdom and experience than post-adolescent performers. In this issue a not-so-wet-behind-the-ears Roy Bishop, while not writing about BNS0 per se, tells us how an early project undertaken by BNS members – *A Natural History of Kings County* – came into being. I'm sure you will enjoy Roy's sketch, and those of you relatively new to BNS will be more informed about the society's history.

Still hewing to the subject of history, Marian Munro and Andrew Hebda of the Nova Scotia Museum of Natural History are collecting photos and biographical and anecdotal information on deceased (historical) Nova Scotia naturalists. Wolfville and BNS seem to have a solid corner on this market – Earl Godfrey and Robie Tufts come to mind immediately. BNS will be working on this in the next year or so, but would be greatly assisted by any of you who are able to contribute your memories and photographs, which will be returned in original condition after they've been copied.

We need a volunteer to help us with our advertising. It is not an onerous task but one that needs doing. Lorna Hart has indicated that she is ready to move on to other things, but is very kindly hanging in with us until a replacement comes forward. Those of you who have always longed to get into the glamorous world of adbiz are invited to seize this once-in-a-lifetime opportunity. Call me (Mike McCall) at 678-6273 to learn more.

And, finally, with this issue we welcome two not-yet-historical and very much alive naturalists to our pages: Pat and Barb Giffin. They have kindly accepted an invitation to prepare the "Birds" column. Please send your bird news and sightings to them by e-mail <barpat@ns.sympatico.ca>, by mail to PO Box 159, Kingston, NS B0P 1R0, or by phone at 765-8688.

Mike McCall

Blomidon Naturalists Society

Fall 2002

Meetings

Unless otherwise noted, all meetings are held at 7:30 p.m. in the Beveridge Arts Centre, Room 244, Acadia University. The arts centre is across Main Street from the Atlantic Theatre Festival parking lot, just west of downtown Wolfville.

Monday, October 21, 2002 – BNS Annual General Meeting, followed by a presentation by Dr. Peter Bagnell of **Friends of the Cornwallis River** on the work they have done and their plans for continuing activity.

Monday, November 18, 2002 – Roy Bishop will present **Hawaiian Skies**, chronicling a week he spent with four other astronomers at 13,796 feet – atop Mauna Kea, the highest mountain in the Pacific. In his talk, Roy looks at both celestial and terrestrial features of Hawaii. [Note: this meeting will be in Beveridge, Room 234.]

Monday, December 16, 2002 – Gordon Fader, a marine geologist with the Bedford Institute of Oceanography will give a talk on **undersea geology** and the techniques used to search and map the ocean bottom.

Monday, January 20, 2003 – Ron Buckley will heat things up with the latest news on **global warming**.

Field Trips

Unless otherwise indicated, all field trips begin at the Robie Tufts Nature Centre (RTNC) on Wolfville's Front Street (look for the weird chimney in the NS Liquor Commission parking lot). Additional field trips may be announced at BNS meetings.

At press time, no field trips had been scheduled. Leaders of any field trips will make every effort to notify members by public announcement and via the BNS website.

—BNS FIELD TRIP REPORT—
Kingsport Mudflats, August 17, 2002
by Jim Wolford

On this joint field trip with the Halifax Field Naturalists 15 people showed up, mostly from HFN, on an extremely hot, sunny day.

Where Wellington Dyke crosses the Canard River we saw that the north bank of the river was bright green-gold in the bright sunlight. I'm sure that the colour was from a very dense surface layer of photosynthesizing diatoms, which are extremely important "plants" (actually single-celled algae in glass shells) in this mud flat-salt marsh complex.

We also stopped briefly at the Canning aboiteau, the water-control structure on the Habitant River. We could also see, just downstream, an older aboiteau dam containing lots of stems of small trees.

We walked south from Kingsport wharf (after I pointed out Marram grass on a sand dune) through the small saltmarsh to the wet, newly exposed upper intertidal mud. We could see a wide band of wall-to-wall mud snails, a feature I use to show that this intertidal mud has an incredible amount of life. These snails are partly scavengers and partly consumers of diatoms at low tide. We saw that the surface of the mud was covered with small "bumps" of material; each bump is indigestible ingested material (castings) that sub-surface segmented worms have pushed to the surface.

In the salt marsh there were lots of small Periwinkles and mud snails on the mud surface below the cord grasses. (A month later on a different field trip, this salt marsh surface was covered with thousands of tiny Green Crab youngsters.)

Beyond the salt marsh we could see a few dozen sandpipers (probably Semipalmated) foraging on the mud, and there were lots of gulls at the water's edge.

We then did a beach walk on the north side of the wharf, first to the east down to the water, then north to the sandstone outcrops, then back to the wharf. We soon found shells of slipper-limpets, and in the lowest intertidal zone we found living slipper shells attached to rocks; they were often in “sexy stacks,” with a large female on the bottom, a smaller male on top. These are weird snails that behave like clams; that is, they are sessile (non-motile) filter feeders.

Other shells found on our walk were from Soft-shelled Clam, Surf Clam (or Bar Clam), Pandora Clam, False Angel Wing, Razor Clam, Blue Mussel, fragmented moon snails, and carapaces or upper shells of three kinds of crab: Rock, Lady, and Green. We saw what appeared to be crab carcasses, most of which were shed crabs skins from crabs that had moulted to permit growth.

My shovel showed that the middle intertidal mud contained oodles of skinny, long, reddish-brown segmented worms called *Heteromastus*, along with their surface castings (bumps of sediment). Bamboo Worms, another kind of segmented polychaete worm, were plentiful, but we saw no Blood Worms (a.k.a. bait worms). We did see one long, flat nemertean or ribbon worm.

Hermit crabs (in snail shells), juvenile Sand Shrimps, and rope-like castings of sub-surface worms were visible in tide pools. Several pairs of the hermit crabs were “embracing”; that is, their front legs were locked together. I wondered if one of each pair was shopping for a larger snail shell for its future growth. In fact, we did see one hermit crab with no snail shell at all (had it been evicted? or had it moulted before it had a bigger shell in which to move?). Other kinds of crustaceans (like true crabs) embrace as a pre-copulation position in which the male waits for the female to moult into sexual receptivity.

Rock Barnacles were covering everything that was hard, including rocks and blue mussels. Seaweeds are not abundant, because of lack of attachment substrates, but we did see two kinds of rockweed (*Ascophyllum* and *Fucus*), green sea lettuce (*Ulva*) and filamentous *Enteromorpha*, whitish Laver or nori (*Porphyra*), reddish sea oak (*Phycodrys*), Dulse (*Palmaria*), and one large blade of kelp (*Laminaria*). Other “plants” seen, besides salt-marsh cord grass (*Spartina*), were a couple of large areas of

coloured mud surface with blue-green bacteria (genus not known to me) and a few brownish, bushy clumps of colonial diatoms.

Seaweed-like, flat, dead skeletons of a colonial bryozoan called *Flustra* (from subtidal areas) were covered with egg capsules of mud snails. Similarly plant-like were numerous whitish colonies of hydroids, or hydrozoans, attached to rocks and to the mud surface; there are several common species of these tiny predators upon small swimming critters. Hanging underneath a large sandstone outcrop was an identifiable hydroid, *Obelia* (now called *Laomedea*); most of us studied the complex life cycle of *Obelia* in introductory biology (the sessile, asexual, colonial polyps alternate with tiny sexual medusas or jellyfish). Another recognizable hydroid was *Pennaria* – we saw a few dead colonies from subtidal areas.

Associated with, or hidden under, rockweeds on rocks were living Dogwinkle snails, which are major predators on both barnacles and Blue Mussels, but we didn't see any of their egg capsules.

At the low tide line we were able to find only a few holes of Razor Clams. I dug up a couple of them, and we found a baby, which re-burrowed while we watched. If the tide had been a good low one, we would have seen thousands of the large, closely-spaced holes of the clams. Razor Clams are one of the favourite foods of the burrowing moon snails, of which we found only eroded partial shells (common); and there were no moon snail sand-collars, within which their eggs are laid.

On a large outcrop of sandstone were lots of Blue Mussels and zillions of barnacles. A curious (and gutsy) member of our group tasted the water of a shallow tidal pool and exclaimed, "Wow! It's very salty!" I pointed out that intertidal critters necessarily have to be tolerant of extremes of salinity/freshness, hot/cold temperatures, etc., when they are exposed by the tides for short or long periods at all times of the year. Tidal pools are great for watching submerged barnacles feeding by rhythmically throwing out their jointed, "hairy" legs for filter-feeding on organic particles.

At the foot of the sandstone cliff north of the cottages was an eroded hole containing a raven nest.

On our walk back to the wharf, a small salt-marsh area yielded lots of small, stunted, too-crowded Soft-shelled Clams (think of fried clams). In the upper intertidal zone, I was surprised to find in the sandy mud a dense bed of very large mud shrimp (*Corophium*) with their deep, U-shaped burrows. Somehow during our long walk we had not noticed any other beds of these very important critters, the main food of Semipalmated Sandpipers (as well as fish and other predators).

Two good guides to local seashore life are Merritt Gibson's out-of-print *Summer Nature Notes for Nova Scotians: Seashores* (Hantsport: Lancelot Press, 1987), which is being revised and printed as *Seashores of the Maritimes* (available, one hopes, in October or November 2002), and Dr. Chris Harvey-Clark's *Eastern Tidepool and Reef* (Surry, BC: Hancock House, 1997).

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A Very Strange Plant by J. Pickwell

Twenty-five or thirty years ago, I was walking back from Cape Split with Jim Wolford. “What would be a good field of nature for an amateur to study?” I asked. “Ferns would be good – not too many species,” said Jim. This is how my interest began.

The standard field guide at that time was Boughton Cobb’s *A Field Guide to the Ferns* (Peterson Field Guide Series). It is an excellent work. I soon added mosses to the ferns. After retirement, I felt the need for exercise, so each morning I took a route from the water tower above New Minas across through the woods to the White Rock road. My most frequent fern sightings were of the genus *Dryopteris*, with which, I had become quite familiar. The world of ferns, and in particular *Dryopteris*, was changing, thanks to recent discoveries such as chromosome squashes and other new technologies, But I kept finding the odd plant that I did not recognize. Through the newer literature I also became aware that some species in this genus would hybridize under the right conditions.

Dryopteris contains both species and fertile hybrids. The fertile hybrids result when a hybrid, by a not-too-well-understood process, doubles its number of chromosomes, probably at meiosis or mitosis. This then acts much like a species, and reproduces by spores. Some plants that look strange or different are the result of environmental causes. I learned that the only way to tell a hybrid was to examine the spores under a microscope. The spores of a species, or a fertile hybrid, look like little rough-edged beans, whereas the sterile hybrids look as if someone had chopped them into little pieces. When they go through the process called meiosis in the formation of spores, chromosomes pair up. When it involves chromosomes of two different species, as in a hybrid, the chromosomes cannot pair properly. These are known as *aborted* spores; they cannot form properly and have this chopped up appearance. After a while I began to find some of the hybrids mentioned in the literature. The first one that I became certain of was the hybrid between *D. cristata* and *D. marginalis* (*D. X slossonae*). I sent a pressing of this plant to Dr. D.M. Britton of Guelph University, the co-author of *Ferns of Canada*. He was kind enough to confirm my findings and to send me more literature on

Dryopteris. This literature included what I began to call “Montgomery’s list,” which contained all the known *Dryopteris* hybrids and the frequency with which they have been found. It turned out that, according to this list, *D. X slossonae* was classed as “not common.” I had found it in swampy ground, next to some rocky outcrops – the same habitats of the parent species of this hybrid. At the same time I was also studying other genera and subsequently found this hybrid in two other places in the general area between the highway 101 and the White Rock road. Two of those groups of *D. X slossonae* have since been destroyed by logging.

My next hybrid, according to the Montgomery list, was the most common of all *Dryopteris* hybrids. This was between *D. carthusiana* and *D. intermedia* (*D. X triploidea*). According to the list this is the most common but by no means the easiest to find, since to the untrained eye the parents very closely resemble each other, making the hybrid very difficult to identify. And though I looked at a lot of unusual looking plants, I found no more I could confirm. Part of the reason was that I could only test spores when they were ripe at the time of dehiscence – that is, when the plants shed spores from the sporangia (spore cases), normally in July and August for most *Dryopteris* plants. At the same time, I was studying variations in *D. marginalis*. According to some literature sent to me by Dr. Britton, named varieties were once considered to belong to this species. The problem was that the more specimens I looked at, the more these varieties tended to blend into one another.

It was while doing this study that I came across a group of *D. marginalis* growing fairly close together, but with no other fern plants growing nearby. However, one plant stood out from the rest and I at once recognized the possibility of two parent plants in this handsome specimen.

D. intermedia and *D. marginalis* stood out clearly. I had to watch this plant for a while for dehiscence to occur. After that I was able to check spores and confirm my belief. I did send a sample frond to Dr. Britton for his confirmation. Later I found another specimen a good deal closer to Highway 101. Once again this plant was with a group of *D. marginalis*. *D. intermedia* was a good many metres away. While exploring woods not far from Martock, I found another specimen, once again with a group of *D. marginalis*, and again *D. intermedia*, again some distance away. I found my fourth plant in the Kentville Ravine in a similar situation.

This seemed very strange because I had looked for this hybrid in places where the two parent species grow close together (and there are lots of them) without finding it. I have come up with an explanation that seems reasonable, but would be hard to test.

When a fern sheds its spores, they land on the ground and form what is called a prothallus, a very small heart-shaped, leaf-like structure, which puts down small rhizoids (like little roots). Now spores are very light, almost like dust, and can travel quite a distance on the wind. On the underside of the prothallus two structures develop: the archegonium, which produces an egg, and the antheridium, which produces sperm. When the antheridia is ripe it releases its sperm. When the archegonium is ripe it gives off a chemical that attracts sperm, which then fertilize the egg in the archegonium. It is thought that the antheridium ripens ahead of the archegonium, to avoid self-fertilization. When the sperms are released they swim away toward the chemical attraction given off by a nearby archegonium. Now the sperm is attracted to its own species, and goes toward that. When there are lots of archegonia of both species it heads for its own species, so there is no problem. But if a spore of another species should land some distance away, among archegonia of a different, but closely related species, it will not be able to find the attraction from its own species, and so goes to the next nearest.

I have put this theory to Dr. Montgomery, who agrees this could be the answer, but sees no way to prove it. I can also see a few problems, both in my observations and in theory. *D. intermedia* and *D. marginalis* are both pure species. But how do things work when one plant is a fertile hybrid? The answer, I hope, will one day be found, but for now it is just something I continue to wonder about.

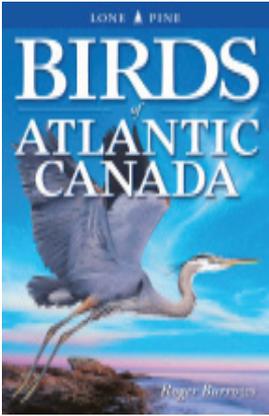
D. X boottii, the hybrid between *D. cristata* and *D. intermedia*, is not hard to find in most wet habitat; it almost seems more common than *D. cristata*. The problem is that *D. X boottii* and *D. X uliginosa* are very difficult to tell apart. *D. X uliginosa* is the cross between *D. cristata* and *D. carthusiana*. *D. intermedia* is a species, whereas *D. carthusiana* is a fertile hybrid, as is *D. cristata*. *D. carthusiana* also carries one chromosome of *D. intermedia*. These two plants can look very much alike to the untrained eye.

While investigating these *Dryopteris* hybrid ferns, I had been looking at one very strange plant indeed. It was growing in a ditch in the shade of a large pine tree, and there were what looked like four clones. They were very misshapen and quite small. Looking at them I immediately theorized that they could be a hybrid between *D. campyloptera* and *D. marginalis*.

But there were a number of problems. First, according to Montgomery's list only three such hybrids had ever been found, and I was reluctant to believe that I had made such a rare find. Second, though there were lots of *D. marginalis* close by, the closest *D. campyloptera* I could find was about half a mile away. Though there are a few *D. campyloptera* in this area they are not plentiful. I took a frond home to study but was frustrated as I could not put aside my original view. Also, the plants did not produce any sporangia. Finally, after months of watching I took one plant into cultivation. That same fall, 1994, loggers moved in to the area, so I removed two more plants to cultivation, leaving the one remaining plant, which did not survive the loggers. The following year the plants in cultivation did produce spores.

By now I was much more sure of my theory. I sent a pressing, to Dr. James D. Montgomery of Ecology III Inc. of Berwick, Pennsylvania – a pressing that I believe is still in his herbarium. He wrote back confirming my theory. Most of the other fronds that year were very deformed, so it was not until the next year that I was able to collect a good pressing to take to Ruth Newell at the herbarium at Acadia. This particular hybrid plant has the habit of multiplying vegetatively from the rhizome. By the following spring I had seven plants, so I took two of the strongest clones of this plant, and transplanted them to the Kentville Ravine, which runs alongside the research station. Since this land is owned by the federal government, I thought they had a good chance of survival. These two plants showed signs, at first, of dividing again. In the spring of 2001 they did not look as if they had wintered very well. But my cultivated plants had done very well indeed. It would be nice to transplant some of the remaining cultivated plants to the safekeeping of the new botanical gardens at Acadia, along with specimens of the other hybrids I now have in cultivation.

—BOOK REVIEW—
by Angus MacLean



Birds of Atlantic Canada
by Roger Burrows
hardcover, 336 pages
Lone Pine Publishing (2002)
ISBN: 1-55105-353-5

Lone Pine Publishing is known for its local and regional field guides, especially for western Canada. This book covers the four Atlantic provinces and the Gaspé peninsula to Rivière du Loup. It is somewhat larger than the National Geographic Society guide and thus does not fit into your back pocket, but it is typical of the newer field guides such as the *Sibley Guide to Birds* and Risling's Sparrow guides. It covers 281 species, illustrated in either breeding or non-breeding plumage. The illustrations are by Gary Ross and Ted Nordhagen, and they have quite dissimilar styles. One is the clean, sharply edged paintings commonly found in guides; the other is a fuzzy, artistic rendering, which some will find pleasing but I find less accurate.

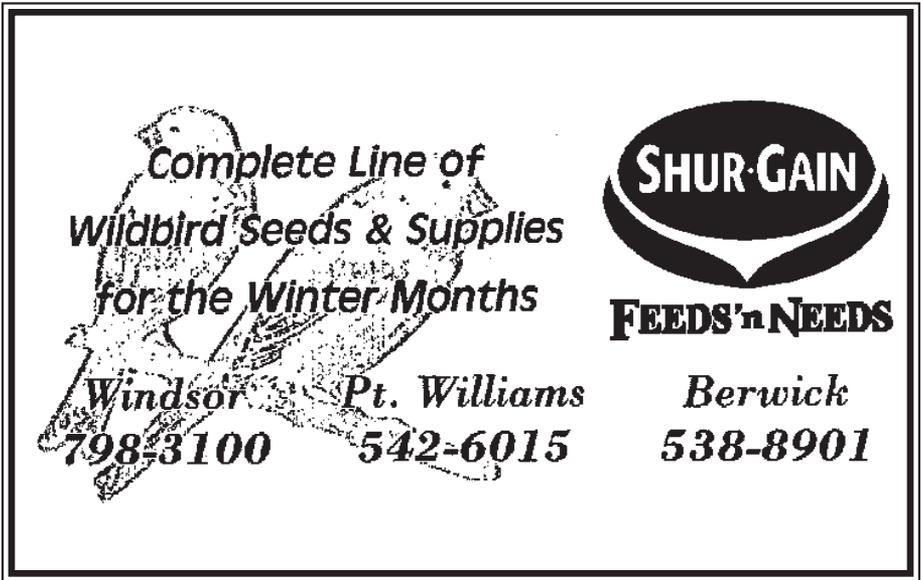
The book is well written and includes colour-coded markings to find the bird groups easily; discussions of 41 of the many accidentals recorded in this vast area; a short glossary; references; checklist; index of scientific names; and, separately, common names. The description for each species also includes interesting notes. Take the Whimbrel (*Numenius phaeopus*) for example: "Numenius is from the Greek for 'new moon' and it refers to the curved shape of this bird's bill."

Most of the illustrations are acceptable, but I do take issue with several in particular: the Ruby-crowned Kinglets are much too yellow; the field marks for Bicknell's Thrush mentions "buff breast heavily spotted with brown," but the illustration does not show this; and the Common Grackles are depicted as much too mauve and pink. The underwing white crescent, a critical field mark for the Red-shouldered Hawk, is mentioned but not

depicted.

The main problem with this publication is the competition, which includes the Peterson, NGS, Kaufmann, Golden Guide, and National Audubon Society Guides. The first three depict more plumage variations, and all five contain more species. Thus, for the field birder one of the aforementioned guides may be a better choice. However, for average backyard birdwatchers, a guide concentrating on the regularly occurring regional birds could be very useful. I am sure many of them would enjoy this book, perhaps as a Christmas present.

This book can be found in most of the area bookstores, priced at \$26.95.



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Summer of Rare Delights

by Judy and Gordon Tufts

One could call it a truly memorable summer for the Tufts on Wolfville Ridge, the summer of 2002. It may well have begun in early June when Judy stopped briefly at Sandra and Bernard Forsythe's house on the Ridge Road, only one kilometre east of our house. While she was talking to Bernard a male Scarlet Tanager made a spectacular entrance, singing from the top of a nearby tree, allowing us a few good looks before he was off and away. It is always a thrill to see this species in the Valley at any time. Little did we think that it would turn up again so soon around our own property.

One late-June afternoon Gordon returned to the house from walking his dogs in the clear-cut area behind our property to say that he thought he had seen a red bird with some black on it among the new growth back there, possibly a Scarlet Tanager. The following day at dusk, through an open window Judy caught a few strains of the unmistakable sweet song of a Scarlet Tanager coming from the back garden. We did not give it much thought. Over the past seventeen years we have been so lucky and privileged to have seen or heard them during seven different springs.

A week later in early July, another colourful and unexpected avian visitor turned up in the clear-cut area – a male Eastern Towhee (formerly the Rufous-sided Towhee). Gordon caught glimpses of it among the young saplings of pin cherry, maples, oaks, alders, etc. The next day while searching for the towhee not only did we locate that handsome fellow – a species that has become a summer rarity in this province – but a male Scarlet Tanager serenaded us from a nearby mature oak for 15 to 20 minutes. We now had two unusual birds almost on our doorstep! Imagine our delight the next day when the tanager took up singing daily in the garden or in the woods on the west side of the house, proclaiming this was *his* territory. Sometimes he would start singing before dawn for an hour or so – what a way to begin our day! Judy found herself waking early just to hear those wonderful “chip-burr” phrases.

At the time we did not realize the significance of this heightened song.

Also, we had been assuming that there was only *one* male tanager in the area and that it was the same male seen and heard singing in both areas. In mid-July it turned out by chance that Judy, then Bernard, independently had very close encounters with the male in the clear-cut and had noted physical colour variances on that bird: a lighter patch (brownish grey) on its left wing and yellow-orange instead of bright red on its upper left breast, indicating an immature male bird, quite different from the “scarlet” adult male seen hanging around in our back garden. Wow – now there were *two* male Scarlet Tanagers in the area. About the same time came more great news. On July 14 Judy spotted a female tanager collecting fruit from a young Serviceberry (Indian Pear) shrub in our garden, with the attentive male right behind her, probably also gathering berries. (We found out that tanagers will feed berries – if there is a nearby supply – as well as insects to their nestlings.)

After that, it was tracking the male, the thrill of watching the male offer food to the female in the woods to the west of our house, then the female with the food – usually a large insect – always departing by a circuitous route to her nest. This new attention made them even more secretive about their nest location. It took a full week of vigilance before Gordon finally found the nest in those woods less than 2 m (70 ft) from the house! This indeed was a very exciting moment, especially as this is only the second nest record for Nova Scotia (Richard Stern found the first one in Palmeters Woods, Kentville, in 1988). We watched both adults separately bringing food to their young over the next few days but never saw the nestlings. As the youngsters developed in the nest so the adults adjusted their position on the lip of the nest to feed the youngsters, almost hanging off the edge towards the end. Barely a week later they were gone. In hindsight, the pair of tanagers were quietly raising their family right under our noses and we were not even aware of it until shortly before the young fledged. The early enthusiastic daily singing? Possibly in celebration – the female would already be sitting on eggs.



The location of the nest, 35–40 ft high in a mature hemlock, 12–15 ft out from the trunk on a forked horizontal branch, made it too difficult for us to reach, and we never did see the nestlings. In spite of the difficult lighting conditions where the nest was located, Richard Stern took some excellent digital photos, from the ground below the nest, of the female and of the male separately feeding young at the nest. It was fortunate that Richard took these photos then, for within a few days the nest was empty. The male stayed around for a couple of days, singing softly, and then he too departed.

After the birds had left we hired an arborist to carefully remove the branch with nest to verify what we hoped had happened. This action, plus the interior of the nest itself, was recorded on film. We now know the nest showed every indication of being successful: no disturbance, flattened interior sides of the nest indicating large nestlings, three fecal sacs left behind by the sudden departure of the young birds. We were very happy about the outcome.

Our other rare visitors in the clear-cut? By the third week of July both the male Eastern Towhee and the immature male Scarlet Tanager had left the area.

Finally, considering the number of times we have seen a male Scarlet Tanager in the past few years around here – a male “came calling” briefly in May 2001 – and how easily we might have missed this nesting, we are now beginning to wonder if this species may have nested on Wolfville Ridge over those years without our being aware of it. Back in June 1986 a male did linger for three weeks in the woods behind us – before the clear-cutting began – giving one food for thought.

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—BNS HISTORY—
Beginnings of *A Natural History of Kings County*
by Roy Bishop

All members of the Blomidon Naturalists Society should be familiar with *A Natural History of Kings County*, the book published by our society on December 10, 1992. In the introduction to the book mention is made of funding from the federal government that enabled BNS to employ six students to undertake its preparation.

In June this year I had occasion to houseclean the files from this work of more than 20 years ago. I would like to document, for posterity, more about the early history of *A Natural History of Kings County* – more than was appropriate to include in the introduction of the book itself.

I do not recall who first proposed the idea of a naturalist's guide to Kings County, but the work began early in 1980. I was then the BNS treasurer and Peter Austin-Smith was president. Peter and I (as sponsors, since the BNS was not yet an incorporated society) applied to the government department Employment and Immigration Canada for a grant under the Summer Youth Employment Program. We were awarded \$8,194, which enabled us to employ four students from May 26 to September 5, 1980, for the project "Naturalist Guide to Kings County," or, as we named it, BNS Project '80.

We hired Lynn Dixson (now Lynn Coldwell), Dale Frail (now a radio astronomer in New Mexico), Ann Odell, and Debbie Williams (the last two of whom I have not been in contact with for many years). Lynn was project manager (incidentally, Lynn designed the BNS logo about that time). During August an additional student, Donald Finck, was hired.

Peter and I supervised this team. It was a learning experience for all of us, and the four students did a tremendous amount of work. They searched through library records, consulted with staff in the science departments at Acadia, carried out many interviews, contacted natural history organizations and government departments concerned with the environment, spent many days exploring areas of Kings County to

document possible field trips to include in the proposed book, examined ways of organizing the book, and prepared successive drafts of several possible chapters for the book.

After BNS Project '80 ended, in the autumn of that year Peter and I again applied for further support to carry the work toward actual publication. This time the federal program involved was Canada Community Services, and with a grant of \$7,692 we hired three people: Lynn Dixson, again as manager, Elizabeth Gibson as typist, and Twila Robar as illustrator. BNS Project '81 ran from January through April 1981. During this period some of the material from the first project was reorganized from subject to habitat format, new drafts were reviewed by several members of the society, and nearly 200 illustrations were prepared.

In the 11-month period of the two projects much had been done. However, funding had again run out and Peter and I had become increasingly busy with our other duties. Also, it seemed as if a period of reflection was needed to better evaluate what had been accomplished. A few years later, the task was taken up again under the leadership of Peter, Sherman Bleakney, Larry Bogan, and Merritt Gibson. Building on the foundation prepared by Lynn Dixson, Dale Frail, Elizabeth Gibson, Ann Odell, Twila Robar, and Debbie Williams, this committee, with the assistance of many others, brought *A Natural History of Kings County* to completion in 1992.



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—REPORT—

FNSN Activities

**by Larry Bogan, BNS representative
Federation of Nova Scotia Naturalists**

On September 22 the FNSN board of directors held its latest meeting in Wolfville. This group consists of the representatives from ten naturalist groups in Nova Scotia, five members of the executive, and a representative-at-large. Besides myself, there are two other BNS members on the board (Jean Gibson is treasurer and Doug Linzey is secretary). A typical meeting goes from 10 a.m. to 3 or 4 p.m., stopping only for a brief lunch break. There is considerable news to exchange and business to transact, since we discuss naturalist activities and conservation concerns from all over Nova Scotia. Although it is a long day, it is fascinating and interesting.

FNSN had its 2002 annual general meeting in Halifax at the beginning of June. This meeting allows members of all representative clubs to get together once a year not only to transact business but to enjoy field trips and talks on natural history as well. If you have never attended, you should next year – it's a grand time. Next year it will be at a different location. One of the resolutions passed this last AGM was a policy on ATV activity in the province (available for reading on the FNSN website <www.chebucto.ns.ca/Environment/FNSN/>). FNSN is going to encourage Nova Scotia municipalities to pass bylaws controlling the activities of off-road vehicles where they do damage. Many ATV users are lobbying the provincial government to travel in our wilderness areas, where that activity is not allowed. FNSN is supporting other conservation organizations, such as the Canadian Parks and Wilderness Society (CPAWS), in opposing such a change.

Recently FNSN and other Nova Scotia conservation organizations withdrew as participants in the Nova Forest Alliance (NFA) because of that group's lack of real conservation concern in its forest policies. The NFA is supposed to be a coalition of forestry, woodlot owners, and conservation organizations. Only if the NFA will genuinely consider conservation as a policy will the groups return. Meanwhile, FNSN has

observer status at NFA meetings. Information on the NFA is available at <www.novaforestalliance.com>.

In our discussions, I get to hear of the experiences, efforts, and successes around the province. For example, Mary Macaulay described her effort to stop clearcutting and herbicide spraying of crown land at Angevine Lake in Cumberland County. She was able to stop the cutting when she found scarce Black Ash among the old black spruce. When DNR planned to spray an already-cut-over area she found that there was a rare dragonfly living there, and it also was the second of only two sites in the province in which a rare orchid grew. How many other similar sites have been destroyed because of a headstrong effort to cut the forests for profit without considering the whole of the ecosystem?

Past president Martin Willison, who is now president of the Nova Scotia chapter of the Canadian Parks and Wilderness Society (CPAWS), told us of that organization's conservation efforts in protecting valuable marine areas housing deep-sea corals and productive gas-seep areas. CPAWS is equally active on land trying to stop mining next to wilderness areas (one is the Black Bull quartz/kaolin mine next to the Tobetic reserve). For more information see the CPAWS web page <www.chebucto.ns.ca/environment/cpaws/main.htm>.

Both CPAWS and FNSN will participate in a conference on the Acadian forests of eastern North America this month. Our representative, Mary Macaulay, will be heading up a new committee on Maritime forests and is calling for volunteers for this committee from member FNSN societies. If you are interested in helping to preserve the health and diversity of our native forest ecology, please contact Mary (<nstn4219@ca.inter.net> or 902 879-1056) or me (<bogan@glinx.com> or 902 678-0446).

Space does not permit my reporting on many other discussions. They included a natural history education curriculum in Nova Scotia, El Paso pipeline impacts in Shelburne County, and arrangements for a meeting of all the Canadian Nature Federation-associated clubs in Atlantic Canada in the near future.

Summer Birds

by Barbara and Pat Giffin

On June 25, 2002, Mike McCall advised that we had been chosen from a long list of candidates – the much-coveted role of BNS Newsletter bird reporters was ours at last! Please forward your sightings and any bird-related topics to <barpat@ns.sympatico.ca>.



Merritt Gibson wrote on June 28: “I would be interested in knowing about any reports you have of redstarts. I have yet to see my first redstart this year.” We told him of three pairs sighted along the Annapolis River south of Aylesford and searched the Internet unsuccessfully for scientific data on population trends.

This reminded us of a recent call from a retired farmer near Bridgetown who wondered about the absence of Bobolinks. Years ago, when he was actively farming, he was delighted to see hundreds of them and would alter the path of his haying rather than disturb the birds. He hasn’t seen more than one or two in recent years and suggested that the practice of taking off more than one crop of hay with much larger farm machinery may have left the Bobolinks without nesting space.

On June 28 Richard Stern photographed the Eastern Bluebirds at Nelson Yohnke’s property in West Torbrook; the photos may be seen on Richard’s website <photos.yahoo.com/rb_stern>. In nestboxes constructed and placed by Nelson, two pairs of Eastern Bluebirds nested successfully, producing two offspring each. For approximately a month a solitary male bluebird sang and waited unsuccessfully for a partner at Barbara Thompson’s property just outside of Kingston.

Although Jim Wolford and Pat were busy moving on June 28, Jim still found time to report: “In the Hortonville cemetery at the top of Old Post

Road turned up not just two Northern Mockingbirds, but four and possibly five! This is undoubtedly a family of well-fledged youngsters. At least one of them showed streaks on the breast characteristic of juveniles.”

Judy Tufts taped the Eastern Towhee’s voice Jun 30, but didn’t have a confirmed sighting until Jul 6, when Gordon saw it and a male Scarlet Tanager on their property. This qualifies them to keep their licence plates for one more season. Both species were still present Jul 14; Judy and Harold witnessed the tanager mate-feeding, after which the female departed for what everyone hopes was a nest.

Sheila Hulford reported 53 species at her feeders in Tremont and various locations in Kings and Annapolis Counties from June through September, among which were Northern Parula, Blue-headed Vireo, Chimney Swift, Bald Eagle, Turkey Vulture, and Common Nighthawk.

Al Mutch saw an American Bittern fly across the road near Pictou; it reminded him of seeing them very often on PEI, and he wonders why they seem scarce in Nova Scotia. If we consider the statistics provided by the *Atlas of Breeding Birds of the Maritime Provinces*, we realize that although we may have three times the population of American Bitterns, they are spread over an area that is ten times larger than that of PEI. Al is also concerned about the Eastern Starlings that have taken over his feeders. Any suggestions? He remembers the starlings in Europe being noisier than those in Nova Scotia. No doubt the Nova Scotia residents are “quiet Canadian starlings!” At Campobello he saw 50,000 Herring and Great Black-backed Gulls feeding on krill. He also saw a Bald Eagle, a Palm Warbler, and a House Finch in St. Andrews.

Richard and Liz Stern spent the week of Jul 15 at Aylesford Lake, where they saw Common Loon families, including chicks riding on their parents’ backs. They hope this means that loons are able to survive large numbers of powerboats and personal watercraft. Richard wrote, “Plenty of common woodland birds (warblers, Golden-crowned Kinglets, thrushes, etc.) – nothing unexpected, but several fledged young being fed by parents.”

At high tide at Evangeline Beach early Jul 18, Judy saw a flight of 1,500–2,000 peeps around the northern tip of Boot Island. At Windsor Causeway she spotted five Great Blue Herons, more peeps, Black-bellied Plovers,

and Willets (families). Moving on to Avonport, 200 peeps were led by Semipalmated Plovers, a Great Blue Heron was present, and a Killdeer was sounding. Judy pointed out that all this was a good indication of the beginning of migration. Ian and Christine Ross in Kentville had two pairs of Rose-breasted Grosbeaks with fledging offspring at their feeders. They were also treated to the sight of a hawk flying across Highway 12 carrying a snake.

In late July and early August John Belbin saw at least one Common Nighthawk near his home in Kingston. He wrote, “I allowed my asparagus to go to seed and develop into a feathery bush; it has become a major small bird attracter. I have had up to a dozen yellow warblers at one time feeding madly – on Tuesday they were all there, along with several robins and a dozen assorted sparrows.” He also had a regular flock of American Goldfinches, Downy and Hairy Woodpeckers with offspring, plus a very tame Yellow-bellied Sapsucker. A Blackburnian Warbler and a Red-tailed Hawk visited twice each day, and a Broad-winged Hawk passed overhead twice during one week. Close by was an American Kestrel, which caused all the other species to vocalize long after the kestrel was gone. John has noticed more than the usual number of White-breasted Nuthatches this year; we also noticed an increase in their numbers at our home in Kingston. John also had a large, noisy population of Northern Flickers, and he saw Grey Catbirds each day with Cedar Waxwings feasting on the available berries. John wrote, “An Eastern Kingbird has become so bold that it sits in the bush in front of our picture window and peers in while waiting for the insects that are attracted to the hummingbird feeder. The hummers have obviously bred successfully – there are now running fights for the feeder going on all day long and you can see four or five at one time.”



At Port George there were male and female Common Eider, 12 Double-

crested Cormorants, and scoter (sp). The Common Nighthawks that were regularly seen during July had all departed by Aug 5. Earlier this year John had Chimney Swifts in his household chimney in Kingston. At Trout Lake, one chick remains from all of the breeding Common Loons, large numbers of Ruby-throated Hummingbirds were vigorously defending the territory around the available feeders, and a pair of Cliff Swallows were seen giving two juveniles flight training. John has photos of their ball-shaped nest, which was located under the eaves of a garage. Many Hermit Thrushes around the lake continue to be very vocal. In Kingston, there were Black and White Warblers while there were as many Grey Catbirds as American Robins during the day; toward evening a Great Blue Heron and a Barred Owl dropped in for a visit. On Aug 23 only three Chimney Swifts were sighted at the chimney in Middleton.

At Ken-Wo Sep 2, Al Mutch watched four Merlins, two of which were juveniles begging for food. The Merlins have been there for years and may be responsible for the disappearance of many of the smaller birds. The Merlins are often attacked by Blue Jays and crows, which eventually give up and let the Merlins have their airspace.

John Belbin reported ten Common Eiders at Port George Sep 3, with only one male still in breeding plumage; the remainders were females and juveniles. In Kingston were a pair of Olive-sided Flycatchers and a noisy Belted Kingfisher. Great Blue Herons were sighted at four locations in the Kingston/Wilmot area. At least one overflies John's home each evening to spend the night in a nearby brook. John wrote, "Tuesday a gorgeous Pileated Woodpecker worked its way down the tree right next to me, yaffled, and then worked its way back up." A dozen White-throated Sparrows held their ground but became very vocal when approached.

Judy Tufts visited Saxon Pond Sep 9 and saw three Pied-billed Grebes along with Mallards and Black Ducks. At Canard Pond there were only a few Green-winged Teal, but she counted 16 Blue-winged Teal. Judy wrote, "One immature Northern Harrier was seen hunting over the Canard fields north of Port Williams. A Peregrine is still being observed hunting over the Grand Pre fields by Mary Pratt."

Sep 10 Jim Wolford and Pat noticed that Piercey's had removed its brick chimney in Halifax. This means the loss of more habitat for Chimney

Swifts. When our tax dollars are spent on historical sites around Nova Scotia we might encourage the comptroller to maintain obsolete components, like chimneys, that would provide habitat for swifts and other species. Jim and Pat saw a Pileated Woodpecker fly over the 101 between Falmouth and Hantsport.

Sep 17 Jim reported that Ed Reekie had a hummingbird taking advantage of the Nicotiana flowers. Judy also did the rounds Sep 17. In Wolfville Harbour there were 20 Greater Yellowlegs and four Short-billed Dowitchers; at Grand Pre, six Green-winged Teal, an immature Red-tailed Hawk, and 120 Black Ducks; at Evangeline Beach, 250 peeps and four Sanderlings; a Northern Harrier on the dykelands near Long Island; at the east end of the island, 300+ Least Sandpipers, 150+ Semipalmated Sandpipers, 20+ White-rumped Sandpipers, 100+ Sanderlings, and four Dunlins that were finally flushed by a Merlin that was unable to make a catch. At the Middle Dyke Road Ducks Unlimited pond were 12 Hooded Mergansers, two Greater Yellowlegs, and two Double-crested Cormorants.

Sep 18 Jean Timpa reported that the healthy Solitary Sandpiper, which had originally been reported by Neil, was at the Willow Park pool.

Sep 20 Judy Tufts was speaking with the Thextons, who saw a Great Egret in the west end of the Canard pond. Judy also reported on the status of the Purple Martin colony at DNR, Oxford: nine nests in the Electric Wooden House, 11 in the Wooden House, and four in the Aluminum House. The guesstimated productivity was 72 offspring from 24 nests (data from Mark F. Elderkin, species at risk biologist, DNR, Kentville).

Throughout the summer Brenda and Bill Thexton fed cracked corn to a family of ten Ring-necked Pheasants, two adults and eight juveniles. Two Great Blue Herons, two Belted Kingfishers, and 10–12 Mallards were daily visitors at Dianne Thorpe's backyard pond.

Sep 19 Jim Wolford was at Palmeters, where he saw a Solitary Sandpiper and a male Pileated Woodpecker; he also heard a Northern Flicker and saw several Myrtle/Yellow-rumped Warblers and a possible Bay-breasted Warbler. The next day he saw Greater Yellowlegs at the New Minas Ducks Unlimited pond, three Lesser Yellowlegs, ten Hooded Mergansers in

brown plumage (Sibley shows these as “adult non-breeding”), and two adult Bald Eagles. At Port Williams sewage ponds a juvenile Northern Harrier had the place to itself. The same day at Wolfville Harbour Judy Tufts saw 26 Yellowlegs, mostly Greater, and two Short-billed Dowitchers; at Harris’ Pond, two Pied-billed Grebes and an American Kestrel; at the Canning aboiteau, nine Blue-winged Teal; at Saxon Street Pond, a Pied-billed Grebe, ten Blue-winged Teal, and an immature female Belted Kingfisher. Three Hooded Mergansers were at the Ducks Unlimited pond on Middle Dyke Road, while at the Canard pond there were 40–45 teal (sp.).

Sep 23 Barbara and I saw 11 female Wood Ducks at the Ducks Unlimited site near the Margaretsville Elementary School. There were approximately 50 Common Eiders at Port George, but the treat of the day was four male Eastern Bluebirds on the hydro lines near Spa Springs. They were having no trouble finding food on a very warm day. A Merlin was having lunch on Marshall Road, north of the 101 at Kingston.



Eastern Annapolis Valley Weather – Summer 2002

by Larry Bogan, Cambridge Station, NS

	Mean temperature (deg.C)	Rainfall (mm)	Evaporation (mm)	Bright sunshine (h)
June (41 yr. average)	14.6 (16.1)	46 (68)	106	187 (211)
July (41 yr. average)	19.4 (19.3)	58 (69)	161	244 (233)
August (41 yr. average)	20.1 (18.7)	59 (89)	153	260 (217)
Season (41 yr. average)	18.1 (18.1)	163 (226)	419	691 (661)

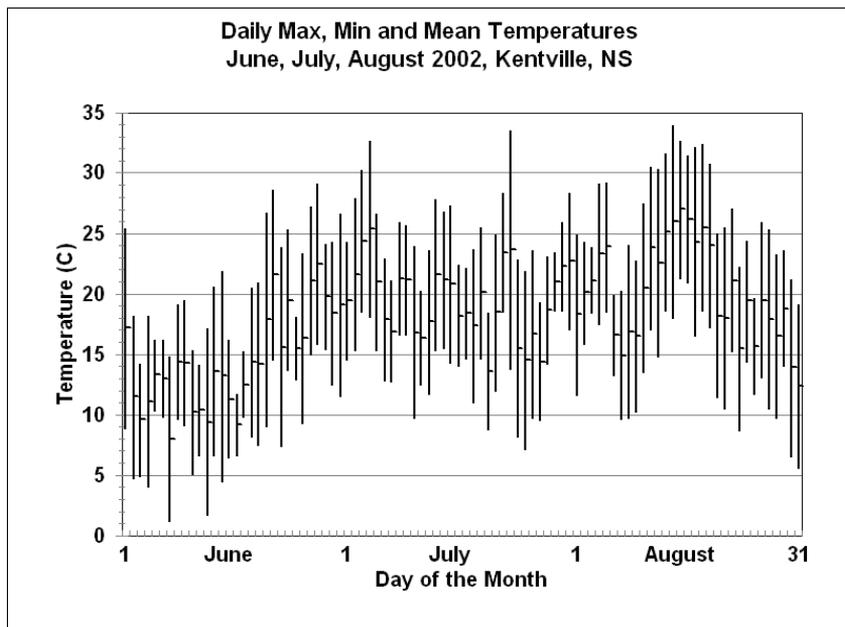
Source: Food & Horticultural Research Centre, Kentville, NS.

Do you remember the cool June we had this year? If you are a gardener, you might. Many gardens were hit with a killing frost on the night of June 7. You can see on the temperature graph (following page) that the mean daily temperatures were 10–15°C until June 21. After that we had pretty even mean temperatures of around 20°C for nearly two months. Only in mid-August did we get that week of hot days that averaged 25°C or more. In that period we had nine successive days of 30°C highs (in the Annapolis Valley). The temperature had hit 30°C on only three days the previous summer. August was the warmest month of the summer of 2002, whereas July is usually the warmest. The season as a whole was average because the cool June compensated for the hot August.

Rainfall distribution was better this summer than last. We had a little rain almost every week of the summer except during that hot spell in August. In each of July and August most of the rainfall occurred in one day: 71 percent of July rain fell on the 19th, 53 percent of August’s on the 6th. Overall, we received less than three-quarters of the rainfall we are used to for the three-month period. All three months were about equally below normal rainfall levels. August was the “driest” because it was warmest

and had higher evaporation. Every year we have a water deficit because rainfall is always less than the evaporation of water from the surfaces. This year rainfall was able to make up for less than 40 percent of the evaporation.

If you live in other parts of Nova Scotia, the rainfall picture could be entirely different. In the summer a good share of the rain occurs during thundershowers, with which the Valley is not as blessed as other parts of the province. So often, I watch large cumulonimbus clouds build in the distance, but not over our dry garden.



There is not much to say about the sunshine this summer. We had a little more than usual during the period, June being the greyer month and August the sunniest.

As I write this in September, we are getting more rain in one week than some months of the summer, but those statistics will appear in the next newsletter.

What's In The Sky?

by Roy Bishop

New Moon: October 6, November 4, December 4

Full Moon: October 21 (hunter's moon), November 19, December 19

Winter begins on Saturday, December 21, at 21:14 (AST)

A Time Advance and a Time Delay

With the cooler weather the Milky Way sinks in the southwest, leaving the southern part of the sky to the dim stars of autumn. As autumn progresses, however, the bright stars of winter rise earlier each evening in the east. We orbit the Sun once per year, so specific stars rise $(24 \text{ hours} \times 60 \text{ minutes/hour})/365 \text{ days} = 4 \text{ minutes}$ earlier each successive night, or about two hours earlier per month. For example, the spectacular winter constellation Orion rises near midnight in mid-October and about 7 p.m. in mid-December. (Perceptive readers will note that this is a five-hour shift, not a four-hour shift, in two months. The extra hour is due to the change to standard time in late October.)

The harbinger of the winter night sky is the small, spectacular star cluster known as the Pleiades, or Seven Sisters. To the unaided eye this cluster resembles a tiny dipper-shaped figure. Use binoculars to better experience its beauty. The stars of the Pleiades lie approximately 210 light-years from Earth.

Since light takes time to travel from objects to our eyes, our visual world lies in the past. You see the stars of the Pleiades as they were 210 years ago, the Sun as it was eight minutes ago, the Moon as it was about one second ago, the Parrsboro shore (as viewed from Wolfville) as it was a ten-thousandth of a second ago, the page you are reading a billionth of a second ago.

Fortunately, the speed of signals along nerve fibres is slow enough that in our everyday world we do not notice that light requires time to travel. Long-distance telephone conversations can be carried on as if the signal were instantaneous. If we were wired with copper, gold, and silicon like a computer instead of with nerve axons, our senses would operate

much faster and the travel time of light in our everyday world would be obvious.

Three Planets and a Christmas Star

The giant planets Saturn and Jupiter dominate the late evening and morning skies this autumn. Saturn rises first, followed about four hours later by brighter Jupiter. Both planets are well placed very high in our skies during the coming winter, permitting good telescopic views of these huge worlds. Saturn is in opposition to the Sun on December 17, Jupiter on February 2. At these times Jupiter and Saturn are closest to Earth, brightest, and are in the sky all night long.

Venus vaults into the pre-dawn sky during November and will be a brilliant beacon in the morning sky throughout December. It will be the “star of the east” during the Christmas season, and will be obvious to early-morning commuters heading from the Valley into Halifax. However, many people probably will not know it is Venus; for them it will be an unidentified flying object (UFO). Venus is the most common cause of UFO reports.

Throughout December a reddish “star” will lie nearby to the right of Venus. This is Mars. On the mornings of December 1 and 30 the waning crescent Moon adds its magic to this celestial gathering. For a beautiful view on these two mornings use binoculars; but look by 7 a.m. at the latest.

A Last Look at Lots of Leonids

The annual Leonid meteor shower peaks on the night of November 18/19. The best time to look will be between midnight and dawn on Tuesday morning. (Incidentally, your BNS calendar contains an error on the bottom of its November page: “Wednesday morning, November 19” should be “Tuesday morning, November 19.”)

In mid-November in each of the years 1998, 1999, 2000, and 2001, Earth encountered unusually large concentrations of debris ejected from the parent comet of the Leonids, Comet Temple-Tuttle. Spectacular showers were seen from Nova Scotia in 1998 and 2001 in particular. This year, 2002, will be the last such unusual encounter for at least 30 years, and thus your last opportunity for a long time to see what will possibly be a strong meteor shower. Unfortunately, the Moon is full on November 19

and its light will hide the fainter meteors, but the Leonids often display bright fireballs.

Another meteor shower, the Geminids, peaks in the early morning hours of Saturday, December 14. By 2:30 a.m. the Moon will have set, leaving a dark sky. Although the Geminid shower will not be as strong as the Leonids, it is a reliable shower, comparable to the Perseids in August. All that is needed is a clear sky, a dark viewing site, a nap the previous evening, warm clothing, a blanket, a comfortable lawn chair, and a thermos of hot chocolate.

Leonid meteors strike Earth's atmosphere at a speed of 71 kilometres per second. At this speed, the kinetic energy of a pebble of comet debris is 600 times greater than the explosive energy of the same mass of TNT. This is why a small pea-sized clump of comet dust produces such a bright streak across the sky as it enters the atmosphere. Geminid meteors travel slower, at "only" 35 kilometres per second, but this still gives them nearly 150 times the energy of TNT.

A Subtle Eclipse and a Distant Eclipse

Less than a day after the peak of the Leonid meteor shower, on the evening of November 19, there is a penumbral eclipse of the Moon. All that will be seen is a slight dimming of the northern portion of the Moon. This will be most noticeable between 9:30 and 10:00 p.m. If you were standing on that part of the Moon and looking back at Earth, you would see Earth partly covering the Sun, a partial solar eclipse.

There is a total eclipse of the Sun two weeks later on December 4, but it is not visible from North America. The path of totality crosses southern Africa, the Indian Ocean, and parts of southern Australia. Several eclipse tours, by plane and by ship, are taking thousands of people to view this spectacle.

Blomidon Naturalists Society

2002 Membership Fees and Publications Prices

Each member of the Blomidon Naturalists Society receives four issues of the BNS newsletter annually. Because BNS is a registered charity, the society issues receipts for all donations. The membership fee itself is not tax deductible. Members may also join the Federation of Nova Scotia Naturalists through BNS and will receive FNSN News, the federation's newsletter. FNSN membership is not tax deductible.

Please send cheques or money orders in payment of membership fees and for publication purchases to

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_____	2002 BNS calendar (\$12 + post.)	13.50	\$ _____
_____	<i>Natural History of Kings County</i> (\$15 + post.)	17.00	\$ _____
_____	Annotated checklist of Kings County birds	6.00	\$ _____
_____	Blomidon Naturalist crest	5.00	\$ _____
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Membership fees are due January 1 of the current year

Sources of Local Natural History
(compiled by Blomidon Naturalists Society)

Information	Source	Office	Home
Rocks & Fossils	Geology Dept. Acadia U.	542-2201	
Fish	NS Dept. of Natural Resources	679-6091	
Flora – General	Ruth Newell	585-1355	542-2095
Fungi	Darryl Grund	585-1252	542-9214
	Nancy Nickerson	679-5333	542-9332
Lichens	Karen Casselman	424-7370	633-2837
Seaweeds	Darryl Grund	585-1252	542-9214
Mosses & Ferns	John Pickwell		681-8281
Birds – General	Bernard Forsythe		542-2427
	Richard Stern	678-4742	678-1975
	Gordon & Judy Tufts		542-7800
	Jim Wolford	585-1684	542-7650
	Jean Timpa		542-5678
Hawks & Owls	Bernard Forsythe		542-2427
Falcons & Eagles	Peter Austin-Smith		542-2109
Mammals	Tom Herman	585-1469	678-0383
Amphibians & Reptiles	Sherman Bleakney		542-3604
	Jim Wolford	585-1684	542-7650
Seashore & Marine Life	Sherman Bleakney		542-3604
	Jim Wolford	585-1684	542-7650
	Michael Brylinsky	585-1509	582-7954
Indian Prehistory & Archeology	Ellis Gertridge		542-2816
	James Legge		542-3530
Astronomy	Roy Bishop		542-3992
	Sherman Williams	542-3598	542-5104
	Larry Bogan		678-0446

