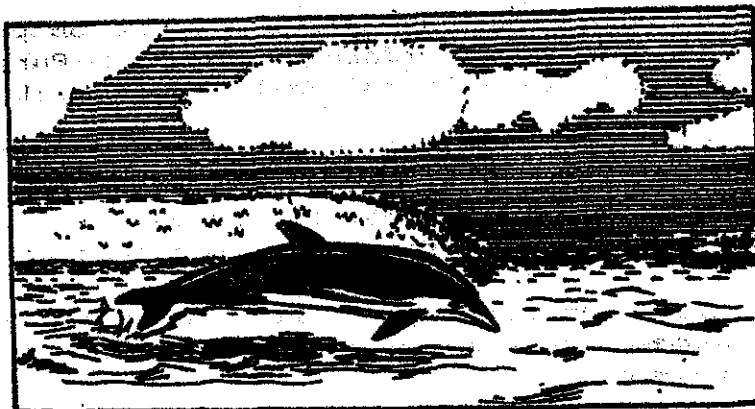


BLOMIDON NATURALISTS' SOCIETY NEWSLETTER

VOLUME 11
NUMBER 3
SEPTEMBER, 1984



The BNS Newsletter is published on equinoxes and solstices.

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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, waters, air and stars."

From the BNS Constitution

AUTUMN-EARLY WINTER PROGRAMMES

1. OCTOBER MEETING: Monday, October 15 at 7:30 p.m. Beveridge Arts Centre, Room 244. Annual general meeting and speaker, Mr. Hubert Sherman of Wolfville, a National Film Board film maker will show his film "Sami Herders" which deals with the Laplanders and the migration of the reindeer. He is likely to show another film possibly related to Maritime natural history.

2. Caves and Bats, Sunday, October 21, Hays's Cave, South Maitland, Hants Co., led by Fred Scott of the Nova Scotia Museum. Meet at the small store at South Maitland at 10 a.m. or leave from the Acadia gym parking lot at 8 a.m. Bring rubber boots or old shoes as a stream has to be waded, very warm clothes with lots of layers, powerful flashlights (and bring extra lights) hand-hats or any kind of hats and a lunch. N.S. Museum trips to Hays's Cave will also be led by Mr. Scott on Saturday, Oct. 6 and Oct. 13. Numbers are limited so preregister and receive details by phoning 429-4610 after Sept. 29. The National Museum in Ottawa will also be sponsoring a bat exhibit for approximately three months this fall at the Nova Scotia Museum beginning around Sept. 22.

3. NOVEMBER MEETING: November 19, at 7:30 p.m., Beveridge Arts Centre, Room 244. Sea Birds presented by Richard Brown of the Bedford Institute of Oceanography, will describe the lives of seabirds with accompanying slides. Mr. Brown is the author of "Voyage of the Iceberg" and has travelled extensively in the Arctic.

4. DECEMBER MEETING, Monday, December 18, 7:30 p.m. Beveridge Arts Centre, Rm. 244. "Whales" by Dr. Paul Brodie, Bedford Institute of Oceanography.

5. Annual Christmas Bird Count- for the Wolfville area, Sunday, December 16 (alternate Sunday, December 23 if weather is super dreadful- it never has been!) You do not need to be an expert birder, as those of us who can identify, need qualified company to keep our morale up during adverse weather conditions (often!), extra eyes, secretaries to record sightings, and boosters or our sagging spirits when we don't see a bird well enough to "call" it or see any bird at all! If you feel you can help some or all of a day, call the project co-ordinator Peter Smith at Acadia University, 542-2201 Ext. 354 for assignment to a territory and companions. More information on this will be available at the Members Night meeting as well.

6. JANUARY MEETING: January 21 at 7:30 p.m. Beveridge Arts Centre, Rm. 244. John Cohrs and Don Purchase on Birdwatching in Point Pelee National Park in Ontario (Lake Erie). Illustrated.

7. FEBRUARY MEETING, Monday, February 18, 7:30 p.m. Beveridge Arts Centre, Rm. 244. "Cacti" BNS member John Pickwell will give us an illustrated talk on his fascinating hobby of raising Cacti and his trip to the American desert.

All our meetings and field trips are open to the general public and we encourage you to bring friends and neighbors to our events.

ACKNOWLEDGEMENTS

Our thanks for all their time, talent and cheerful patience with our questions to: Jim Wolford, Richard Stern, Ralph Connor and the Nova Scotia Bird Society, Richard Rogers, Sherman Bleakney, Roy Bishop, Ken Harrison; to Rachel Erskine and Brenda Thexton for sumptuous refreshments, and to all contributors to another Newsletter, now into the eleventh volume! Keep up the good work!

AN INVITATION TO ALL BNS MEMBERS!

BNS members and friends are cordially invited to attend the opening of "Legend and Lore", an exhibition of Karen Casselman's weaving and dyeing, at the Carriage House Gallery, 402 Main Street, Wolfville, Sunday October 28 from 2-4 p.m.-----

HELP!? TYPIST NEEDED!

One of those important tasks as part of the production of the BNS Newsletter is typing. After Jean has collected and edited the contributions, and other items for the Newsletter she hands them over to me. I then usually put them in an order that I want, add instructions and then pass them on to a typist. The typist types on paper all of the Newsletter, then gives it back to me. I then put in spaces and drawings by cutting and pasting. This master is then put on a Gestafax and copied onto stencils. I then 'run it off', collate and staple it together. It is then passed to Lana and Brenda for addressing, 'stamping', and mailing. The Post Office does the rest.

For the last three issues I have been typing the Newsletter and I have been finding that I really do not have the time to add this task to my production duties. Could one or two or you volunteer to do some typing for us four times a year. Please contact myself or Jean Timpa to become part of our team.

Larry Bogan, 678-8446

BLOMIDON NATURALISTS' SOCIETY ANNUAL MEMBERSHIP

It is that time of the year when we must all renew our memberships to keep the Society running and the Newsletter coming.

Send or give your 1984-85 dues of \$5/person (\$1 for persons 16 years old or younger) to:

Dr. Norman McGuinness
c/o School of Business
Acadia University
Wolfville, N.S. B0P 1G0

See him at the October meeting or give it to some other member of the executive of the BNS.

FIELD TRIP REPORTS

THE BIRD ISLANDS

by Jim Wolford
Wolfville, N.S.

On June 23, 1984, four of us from the BNS went to Big Bras d'Or Cape Breton, for this annual Nova Scotia Bird Society outing. The other three "elected" me to write this up for the BNS.

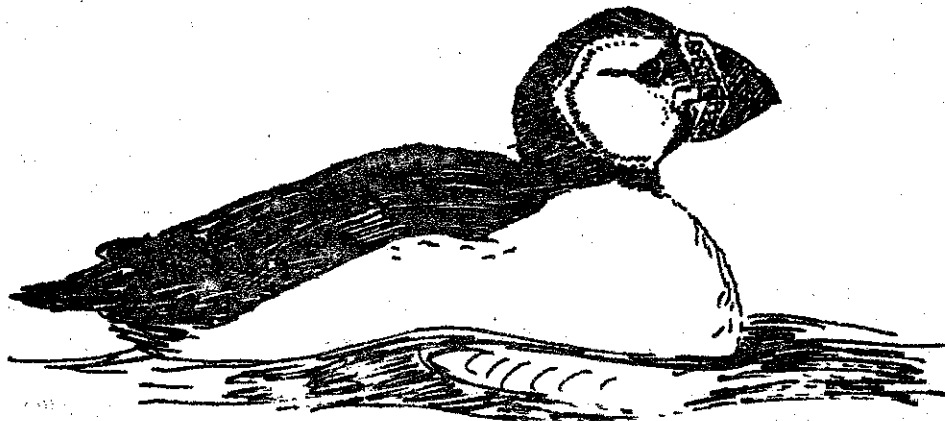
At the Mountain View Campground there is a comfortable tour boat that makes the 2-1/2 hour trip twice a day, and the fee of \$10 includes a lunch at the campground after the trip.

The two islands are visible from shore, and the boat slowly goes around them, with the very experienced captain making occasional announcements about what is visible. The islands are very well named, i.e., they are teeming with nesting seabirds. Therefore, we highly recommend this tour whenever you may get up in that area (in the summer).

Probably everyone's favorite bird there is the puffin, which along with razorbill is abundant on the cliffs at nesting crevices, as well as in the surrounding water. Another abundant member of the auk family is the black guillemot. Sharing the cliffs and tops of the islands are good numbers of kittiwacks, great cormorants, black-backed gulls, herring gulls, a few double-crested cormorants, bank swallows, starlings, and ravens.

We also saw 5 large seals, probably gray seals, which are apparently regular there.

On that rainy and cold weekend, the weather co-operated just long enough to make this an unforgettably enjoyable experience, and I just might do it again next year.



Silver Lake at Lakeville, Kings County
July 8, 1984

by Jim Wolford

About 15 people participated in this outing for freshwater life, with Tom Herman and Kelvin Conrad kindly providing expertise on the insects, especially the dragonflies and damselflies.

Most of our observations were along the shore, by eye or via dip-nets and insect nets, and several people also utilized canoes (which are the best way to observe turtles, bullfrogs, etc.).

Painted turtles were abundant (8 basking on one log), and a few bullfrogs and green frogs were seen and heard; a few people saw large metamorphosing bullfrog tadpoles (changing to bullfroglets), and a red-spotted newt plus nine-spined sticklebacks were caught.

Damselflies and dragonflies were abundant and varied, and we saw many pairs "in tandem" as well as in copulation. Tom and Kelvin caught some and showed us the external sexual features. One captured dragonfly was extruding eggs.

The flowers of water-lilies, holly (winterberry), and dogbane added some color to our afternoon.

An interesting highlight was provided by two fellows who borrowed my canoe and then proceeded to pick water-lilies and turtles from the water as they leisurely toured the small lake.

Mud Lake (Quaking Sphagnum Bog)

July 15, 1984

by Jim Wolford
Wolfville

The 18 participants had a sunny, muggy, hot day for this excursion near Black River Lake. The deer flies and horse flies were very abundant and nasty. I "killed" five with one slap!

Along the forest trail we encountered a variety of fungi (including some beautiful amethyst-colored coral fungi), oak-apple galls that had been opened, fir cones that had been cut down by squirrels and adult pickerel frogs.

In the bog itself, amphibians seen were newly metamorphosed wood frogs and green frogs (adult greens were calling) and one very tiny transforming spring peeper. The bog was very colorful with clumps of yellow bladderwort flowers and, in the water, both white and yellow water-lilies. Other plants in bloom included white fringed orchids, rose pogonia, Calopogon orchids (and spotted coral-root in the woods); pitcher-plant and sundew; and small bog huckleberry and bog cranberry.

I also tried to show, in the water inside the pitcher-plants' leaves, the larvae of three kinds of flies that are dependent on this plant: a mosquito (non-biting as adults), a midge, and a flesh fly.

Early Shorebirds at Grand Pre'

(combined BNS and Halifax Field Naturalists outing)

July 29, 1984

by Jim Wolford
Wolfville

About 40 people in an 11-car caravan were on hand for this sunny, hot day. First we examined the open fields of the Grand Pre' dykelands for shorebirds roosting at high tide. There we saw a few hundred black-bellied plovers and dowitchers and semipalmated sandpipers, plus lesser numbers of semipalmated plovers, least sandpipers, ruddy turnstones, and Hudsonian godwits. Most of the dowitchers (presumably short-billed dowitchers?) showed orangy-peach color on their bellies, and that fooled some of us into thinking they were red knots.

Then along east Evangeline Beach after high tide, there were perhaps 5000 semipalmated sandpipers, more of what we had seen in the fields, and 5 sanderlings, 2 willets, 1 white-rumped sandpiper, and 1 red knot. In the water were 30 common eiders and a few flying "D.C.'s" (double-created cormorants).

At least 3 hummingbirds were seen, plus a marsh hawk (harrier), bobolinks, a road-killed small skunk, etc. Also very common were sulfur butterflies and hungry "greenheads" (salt-marsh deer flies).

P.S. On August 4 the Nova Scotia Bird Society had an outing for shorebirds at Evangeline Beach but the tide had ebbed so far that the waders were too distant. On the dykelands we saw lots of bank and barn swallows, 2 harriers, a short-eared owl, a kingfisher, and sharp-tailed sparrows. And at the Wolfville sewage ponds were ring-billed gulls, spotted sandpipers, least sandpipers, and semipalmated sandpipers.

Evening Birds in August

Richard B. Stern
Kentville, N.S.

A small group met on a dull evening, 1 August, for a trip advertised as "woodland birds". However, preliminary exploration the previous evening revealed very few birds in the woods. Soon, luckily, the tide was high so we went off to Porter's Point to look at shorebirds. There were huge flocks of "semis" and lots of black-bellied plovers and pink-breasted dowitchers* and "semi" plovers too, providing a spectacular high-tide sight. We then went on to Canard Pond, where we

would watch least and semi- sandpipers and solitary sandpipers at leisure. We did then get into some woodland, or at least some treed areas- near Kentville. One was a small marshy pool near the dykes, and the other was the area between Palmeter's Nursing Home and the Federal Wildlife Sanctuary. Bird activity was scarce, but a few warblers, a catbird, and a downey woodpecker showed themselves. The trip ended at dusk. (*Not a new species, but short- billed dowitchers partially in their pink- breasted breeding plumage!)

BNS BUG WALK
12 August, 1984

Richard Rogers
Wolfville, N.S.

The forecast was for shower activity, and they were right, but that didn't dampen the spirits of this group of 'buggers'. Approximately a dozen adults and young people gathered at the Acadia gym parking lot at 1:30 PM with raincoats, rubber boots, and field guides. Some even had binoculars! for observing insects at a distance, I suppose.

After a few minutes of socializing it was decided that the urge to go bugging outweighed any reservations about shower activity, so Dick Rogers led the group into the wilds of Lower Wolfville to seek out any six- legged creatures that may dwell there.

Success was not long coming for there were some apple maggot flies caught on a yellow sticky trap in an unsprayed apple tree at the starting point of the walk. Nearby, aphids were extremely numerous on a willow tree. When disturbed they pumped out honeydew like a dripping faucet. Across the ditch and across the field another trap also had an apple maggot fly-- this one still alive! A net and a tapping trap were available for the group to use and these were "swung" into action at this point. It was easy to come up with numerous insects using these tools. For example: grasshoppers, crickets, treehoppers, earwigs, solitary bees, plant bugs and spiders. As the walk moved on it was noticed that many birds frequented the area and the binoculars came in handy after all. At the half-way point a black- berry patch with big, ripe berries enticed everyone to indulge themselves for a few minutes. We soon



CLEAR-WING MOTH



resumed our quest, however; another trap was close- by. A short distance further Jim Wolford spotted, on a leaf, what was believed to be yellow jacket wasp. After careful examination it was discovered to be a moth that mimics both the resting posture, wing beat, and coloration of the wasp. Needless to say, we were ecstatic, and after it got away by taking flight an all out search was conducted to locate another one for the purpose of collection and identification. Eventually, three more were located; one by itself and the others in intimate contact. After the walk, they were identified as moths belonging to the Family Sesiidae (Microlepidoptera), or clear-winged moths in other words (the larvae of this group bore plant parts- just like politicians do people). Jim has the specimens preserved if anyone is interested in seeing them.

As luck would have it, as soon as we got as far away from our vehicles as we planned to go, the clouds opened up and it poured rain for several minutes- just long enough to soak those of us not wearing rain gear.

All the same, the outing was considered interesting and enjoyable. When we arrived back, I think birders were still birders and buggers still buggers, but the experience brought us all closer to being more well rounded naturalists.

KINGSFORT SALT MARSH TRIP

19 August 1984

by Sherman Bleakney
Wolfville

Four loaded cars, containing sober occupants, arrived at the marsh about 2 p.m. and weren't allowed to leave until 5 p.m. They received a 13 page correspondence course and a long lecture but finally plunged into the marsh grass where strange, wondrous and numerous critters were revealed unto them: a sweet-smelling, shell-less, heartless snail; a large mud-dwelling mussel anchored to grass roots; beach fleas and fish lice; the deservedly-named mud snails; the red skins of green crabs; a green slug that has one foot in the plant kingdom; but none of the stinging, insect-eating sea anemones (although now present in the same pond as of Sept. 17); and shrimps and crabs and fish and eels. Fortunately, there were very few distractions on this important trip, but I did overhear whispered asides about a brown moth on a sea lilac, a heavily furred hawk and some yellow shanked mudpipers flew over; and one poor fellow must have got stuck in the mud, for all he could do was point to heaven and yell what sounded to me like G.B.H. (godawful brown habitat). But the rest of us had a pleasant afternoon, and the weather was lovely.

SHOREBIRDS AT GRAND PRE'

September 9, 1984

by Jim Wolford
Wolfville, N.S.

We had an another 11-car caravan but only about 20 people on another sunny, warm day. Again we first checked dykeland fields and then the east end of Evangaline Beach near Boot Island. Shorebirds seen and very approximate numbers were about 200: 20 red knots, 15 semipalmated sandpipers, 10 least sandpipers, 6 dowitchers, 4 dunlins, 4 whimbrels, and 3 Hudsonian godwits.

Also there were about 50 common eider (molting males), lots of grasshoppers and mosquitoes, several black swallowtail butterflies, etc.

TRIVIAL TIDBITS

of Local Natural History (no.3)

compiled by Jim Wolford
Wolfville

I invite all of you to make contributions to be considered for this column, or to write a paragraph or so as a separate article for the Newsletter. For the former, give me the information (date, place, event) either at a BNS meeting or a field trip or by phone (542-2201, Ext.391 or 334; or 542-7650). For the latter, contact me or Jean Timpa (542-5678). Consult the BNS Newsletter of March 1984 for what sorts of events this column might include.

****June 29, 1984**

- a yearling (?) black bear at Sackville (KC- see her article this issue)

****July 1**

- the Kingsport salt-marsh willet nest reported earlier (MG) was found to have a very close neighbor, a gray partridge on 17 eggs! These two nests were only 35.3 cm (14 inches) apart! Both the willet and partridge were often approachable. Both nests eventually hatched all the eggs successfully (BLF, MT, JW).

- Merritt Gibson's hummingbird nest contained 2 large fledglings.

-on Bon Portage Island, an Acadia University Biology team discovered 18 nests of the black-crowned night-heron.

****July 3**

- BLF found a cicada in a low shrub (no calls heard by me until July 17).

****July 5**

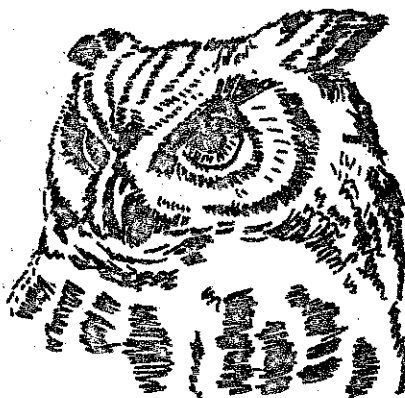
- at Coldbrook, 2 fireflies with terminal light-organs seen. In my experience, nearly all fireflies locally are ones that can not flash (JW).

- oodles of blotch-mines of the elm leaf-miner, which is a sawfly, in Wolfville (JW).

****July 9**

- one monarch butterfly seen at Cape Split (JW); another was on Brier Island Sept.2 (JW).

- **July 13**
- at Port Williams sewage ponds, a hen shoveler with a brood of 4 ducklings, about 2 weeks old. (JW et.al.).
- **July 14**
- a mink seen near Clarksville, Hants Co. (BBT).
- **July 19**
- at least 3 large adult predaceous diving beetles in "The Duck Pond" of Wolfville's Willow Pond (ST).
- **July 20**
- 2 separate sightings of single skunks at Cheverie this month (KC)
- **July 21**
- a questionmark butterfly laid 9 eggs in a clump on an elm leaf in Wolfville (JT).
- **July 23**
- an adult pigeon horntail (a large sawfly) in Wolfville (RM).
- **July 28**
- at Hardwood Lake, many alders show leaves skeletonized by groups of larvae of alder flea beetles (adult beetles present on Aug.22) (JW).
- **Aug. 1**
- a late, living adult "Junebug" (June beetle) in Wolfville (JW).
- **Aug. 8**
- crickets calling in Wolfville (JW).
- **Aug. 10**
- 2 large yellow land snails found with their shell-openings sealed (estivating? related to our hot, dry summer? They revived when they were moistened) (JW).
- **Aug. 12**
- clear-winged moths that closely resemble yellowjacket wasps (a clear case of mimicry, to falsely advertise harmfulness) (in Wolfville, DR, BNS).
- **Aug. 13**
- a begging young cowbird was fed by a black-capped chickadee (cavity-nesters are generally not often parasitized) (BLF).
- **Aug. 19**
- along New Ross Road and on Tancook Island, webs of fall webworms (caterpillars) fairly common on shrubs (JW).
- also on Tancook Island, and noted in many other parts of N.S., including our area, extremely heavy cone-crop on spruce trees (and pines and firs?) (JW et al.)-- Also there have been, not surprisingly, scattered reports of both white-winged and red crossbills.
- living ribbed mussels found in Kingsport salt-marsh (JSB, BNS).
- hooded warbler seen at Allenville, Cumberland Co. (ME).
- **Aug. 20**
- a giant ichneumon wasp flying around a large maple trunk in Wolfville (SB).
- **Aug. 23**
- willow flycatchers singing along Parrsboro shore (ME).
- **Aug. 24**
- caterpillars of black swallowtail on parsnip in garden at Blomidon (AW).
- **Aug. 25**
- 100+ Canada geese on sand-bar of Shubenacadie River at Shubenacadie (BBT).
- **late Aug.**
- on Brier Island, a Baird's sandpiper, stilt sandpiper, blue-gray gnatcatcher, and Kentucky warbler (ES).
- **Aug. 27**
- a scarlet tanager at Berwick (MG) and another in Wolfville Sept. 14 (CKC, ES).
- **Aug. 29**
- and ocean pout (a fish) stranded by an extreme low tide at Lower Blomidon in the kelp bed there (JSB, JW).
- **late Aug.**
- still 6 short-eared owls at Grand Pre' and harriers still common (so voles still abundant?) (BLF).
- **Aug. 31**
- a netted stinkhorn fungus popped up overnight near Melanson, more than a month earlier than last year (AA).
- in early evening, 20+ herring gulls feeding on flying insects (pausing in flight to catch them) for about a half-hour, near Lunenburg (CC).
- **Sept. 1,2**
- on Brier Island, a buff-breasted sandpiper etc. (ES et al.), dozens of nighthawks migrating in evening (BLF), a lark sparrow (MT, JW), and a yellow-headed blackbird (ES).
- ES and others saw 113 species of birds on Sept.1.



****Sept. 3,4**

- huge giant puffballs found in a pear orchard at Port Williams by Doug Gates (largest was 17-1/2 pounds!); 6 more (up to 10 lbs.) near Morden Sept. 13 (KH); smaller specimens near Lumsden Dam in early Sept. (JSB).

****Sept. 7-9**

- black swallowtails common at Grand Pre' (BBT, JT, BNS).

****Sept. 8**

- near Fort Williams, a very probable golden eagle seen (JW).

****Sept. 9**

- at Silver Lake, Lakeville), a very large painted turtle had a shell- length of 18 cm. (over 7 inches) (a N.S. record?) (BF).

****Sept. 11**

- an upland sandpiper at Grand Pre' (BBT), also seen Sept. 14 (BLF).

****Sept. 14**

-near Wolfville sewage ponds, Gordon Tufts spotted an immature yellow- crowned heron, later seen well by BLF, BBT, LC, et al., and still present Sept. 25 (RS).

****Sept. 15**

- just after midnight, a black bear sitting on the edge of a road at Aylesford Lake (BC).

****Sept. 16**

- 2 young black bears (yearlings?) on Ridge Road west of Wolfville, seen and photographed all day long by many people.

****Sept. 18**

- 4 shovelers at Wolfville sewage ponds (BBT, JT, JW, MT).

****Sept. 19**

- 2 harbor porpoises near mouth of Cornwallis River (MT, JW).

****Sept. 22**

- a road-killed red fox that was all black except for the white tail- tip ("silver fox" without the grizzliness) west of New Ross (JW).

- a Baird's sandpiper at Crescent Beach (NSBS).

- a ruff (a European shorebird) identified on Brier Island (CKC, MG, GJT), and a prairie warbler (ES).

- a bobcat seen near Sherbrooke Village, Guysborough Co.

(BC).

****Sept. 23**

- a few miles offshore from Brier Island, about 150 dolphins (white- sided?), 6 sooty shearwaters, 1 Manx shearwater, 1 pomarine jaeger, 10 puffins, 3000 red phalaropes, 6 red- necked phalaropes, 100 kittiwakes, and gannets (ES et al. on a pelagic trip in a fishing boat).

- 5 deer together near Aylesford (MT, JW).

- a storm- petrel and a red- throated loon seen off Evangaline Beach (BLF).

****Sept. 25**

- a carabid beetle (ground beetle) with a "sweet tooth", i.e., was feeding at night on some sugary wrappings (garbage), and these beetles are suppose to be carnivorous (O.K.)!

Contributors: Albert Atwell (AA), Sherman Bleakney (JSB), Sherman Boates (SB), Curtis Chipman (CC), Cyril Coldwell (CKC), Karen Casselman (KC), Bruce Cohoon (BC), Lana Churchill (LC), Mark Elderkin (ME), Brainard Fitzgerald (BF), Bernard Forsythe (BLF), Merritt Gibson (MG), Ken Harrison (KH), Ondrej Krepinsky (OK), Rod McFarlane (RM), Dick Rogers (DR), Nova Bird Society (NSBS), Richard Stern (RS), Brenda and Bill Thexton (BBT), Judy and Gordon Tufts (GJT), Jean Timpa (JT), Sean Timpa (ST), Miriam Tams (MT), Anne Woolaver (AW), Jim Wolford (JW).

Thank you all!

P.S. Keep those reports coming in (written notes preferred), especially events involving non- birds!

A HIGHWAY HIGHLIGHT

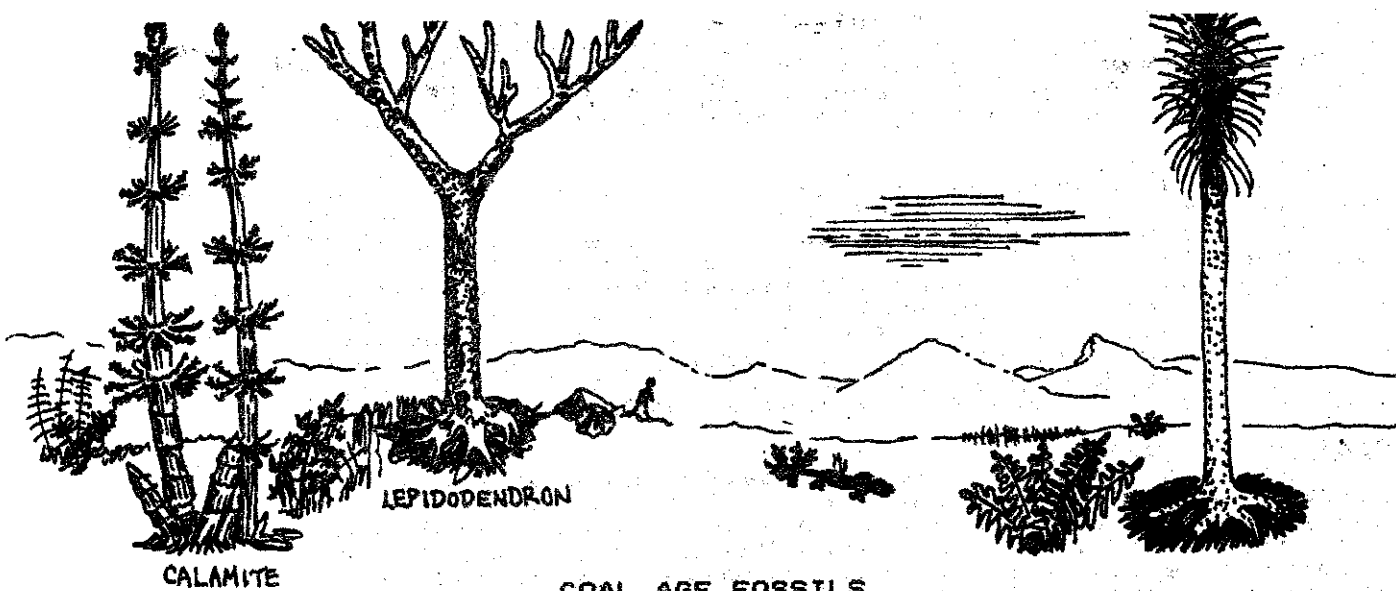
by Karen Casselman,

Cheverie, N.S.

June 29, 1984, 2:30 p.m.-- On this busy holiday weekend, I was driving home from Halifax on 101 (not even the "old Road") when I was what I thought was a 'black lab' with no tail, about to cross the road. I said to Tanya, "Look, that dog is going to risk being hit if it crosses." Only it was no dog, but a bear.

This was in Middle Sackville, where you can see the back of a subdivision right across from the small lake. Sure enough, the bear didn't even stop to look but charged across the highway, while those of us who were near it slammed on the brakes. It ran from the woods by the lake toward the subdivision!

I've guessed it to be last year's cub from photos we've seen and comparing its size to pictures in magazines. It finally disappeared, running uphill toward someone's backyard. Not once did the animal break its stride--- indeed, we figure it ran as fast as a black lab (with or without a tail!)



(Ed. This article is copied from an issue of "info" published by the Nova Scotia Museum. There are many interesting articles on natural history in the series.)

"Coal Age" is a nickname for a part of the Earth's history called the Carboniferous Period. This period dates from about 280 to 350 million years ago. During the last part of the Carboniferous (280 to 310 million years ago), most of the great coal deposits of eastern North America were formed.

At that time much of Nova Scotia was a warm land of rich flood plains and wide river deltas. Along the rivers and in swamps were dense growths of trees and leafy ferns. Giant insects buzzed about. Amphibians both large and small crawled and swam in the Coal Age, but there were no birds. Dinosaurs would not evolve for another 100 million years.

For you to find a fossil today, the ancient plant or animal must have been quickly buried and preserved after death. The fossil-bearing rock that then formed must not have been altered over the millions of years, and must now lie near the surface of the Earth. At Joggins, N.S., Coal Age streams carrying sediment from the Cobequid Mountains occasionally flooded the swamps and forests, burying trees and plants in mud and sand. This build-up of thousands of feet of sediment kept pace with the sinking of the Earth's crust so the floodplain stayed about the same height above sea level. Pressure from that thick layer of sediment turned the mud and buried plants to stone. Millions of years later this fossil-bearing sedimentary rock was lifted up and tilted to expose the fossil tree stumps that have made Joggins world famous.

Sedimentary rocks on both sides of the Bay of Fundy are constantly eroded by the sea and the weather to expose fossils once hidden from view. Look for fossils on beaches, in the crumbling cliffs and along stream banks.

Coal is formed from dead plants. Peat...that is, layers of plants growing on the dead bodies of their predecessors, is an early stage of coal formation. If peat becomes buried under thousands of feet of more peat and sediment, heat and pressure will turn the peat into coal. Plants may be fossilized as casts or molds in the rock, or as thin layers of carbon. The coal and shale of Cape Breton is rich in fossils, including some ferns found nowhere else in North America. Search for them in the coal dumps and mine tailings. Remember that permission is required from the mine.

Coal Age Trees

Some Coal Age trees were probably over 30 m high. Lycopods, or Scale Trees had scaly-looking bark that is often found fossilized. Their roots, with small round hole where the rootlets were once attached are also common fossils, called Stigmara. Lepidodendron and Sigilaria are two types of Scale Trees.

Calamites trees were straight and not tall, perhaps 10 m. They seem to have grown in dense stands, like bamboo. Calamites trunks are in segments; where two segments join, a circle of small branches grew. Parallel lines on the segments running up and down the tree make this an easy fossil to identify.

There are no Calamites or Scale Trees today, but smaller relative have survived: the little horsetail Equisetum (also called scouring rush) is a Calamite descendent, and club mosses are modern day Lycopods.

At Joggins, periodic floods brought sand and mud that would cover the bottom of a tree and kill it. The dead top was likely blown down by wind. Then coarse sediment continued to pile up around the tree, eventually pouring in to fill the stump and be buried. Slowly the thin layer of bark was changed to coal, and the sand inside formed a sandstone fossil cast.

The beds at Joggins are tilted now. In some recent years more than 30 tree stumps have been visible in the cliffs; the erosion is so severe that any particular fossil tree is rarely visible for more than two years.

(Joggins is a protected site! It is against the law to remove any material from the cliffs. With a Permit from the Nova Scotia Museum you may collect fossils on the beach. Fossils in the cliffs may have just appeared, and must be left for examination by paleontologists who frequently visit the site.

Smaller Plants

The undergrowth of the coal swamps seems to have been mostly fern-like plants called Seed Ferns. Seed Fern leaves look very much like the leaves of modern ferns. The Museum collection also contains fossilized fiddleheads, the young stage of ferns.

Many species of ferns flourished during the Coal Age, and the fossil beds of Cape Breton have produced some unusual and especially well preserved fern fossils. For a detailed listing of Coal Age land plants, see the book Upper Carboniferous Fossil Flora of Nova Scotia, by E.L. Zedrow and K. McCanlish, published by the Nova Scotia Museum, 1980.

Coal Age Animals

Fossils found at Joggins provided some of the first evidence of early insects. One of these indicated that the coal swamps were home to giant dragonflies. Fossil fish scales are commonly found, along the Minas Basin. Small amphibians and primitive reptiles are found, although rarely, fossilized inside the tree stumps at Joggins. But the most interesting type of animal fossil evidence in Nova Scotia is trackways. A trackway is a set of footprints showing part of the path of an ancient creature. At Joggins, trackways of a large many-legged Arthropod have been found. It may have looked like a giant (50 cm) sowbug. You can view cast of these trackways at Mount Allison University, Sackville, N.B.

As early as 1841 geologist William Logan identified fossil vertebrate footprints in the beach sandstone at Horton Bluff, N.S. At that time fishes were the only vertebrates thought to have lived in the Coal Age, so Logan's vertebrate footprints were not widely accepted. Later, Sir John William Dawson and others discovered many trackways along the Minas Basin. In 1979 the Museum's attention was drawn to a set of exceptionally large fossil footprints near Horton Bluff. In the late summer of 1979 a team from the Museum cast this spectacular trackway in fiberglass to provide a permanent record.

There are 27 footprints along this 20 m trackway, spaced about 1 m apart. Each footprint is about 1/3 m long. There seem to be 2 toes on the front feet and 4 on the hind feet, some with claws. The fossil tracks are deep with raised edges, so either the animal was heavy or the mud very soft when it waddled by 350 million years ago. We can't say for sure what it looked like, because no bones of an amphibian large enough to have made those tracks have yet been found in Canada. We can speculate that it was something like a crocodile in appearance.

There are no huge dinosaur skeletons from the fossil-bearing rocks of Nova Scotia. Whole skeletons of any type or size are rare here. But these Horton Bluff footprints were made by a large, highly evolved animal that lived 100 million years before the dinosaurs. That makes them very important, and something of a mystery.

THE SOUNDS OF AURORA BOREALIS

by Larry Bogan

Cambridge Station

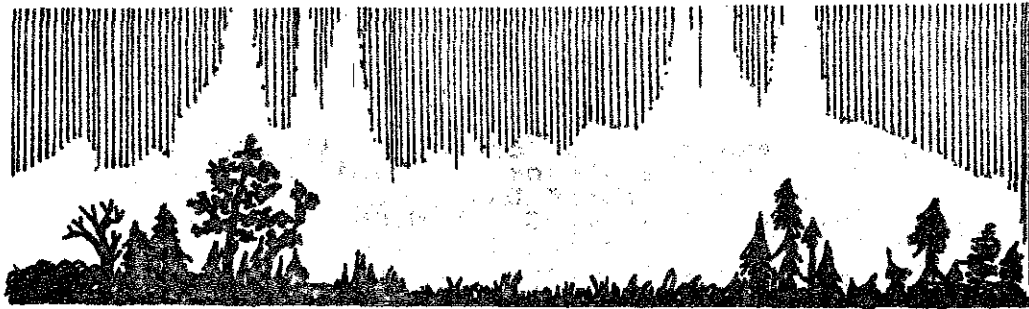
Have you ever heard the aurora? No, not the aircraft that fly over almost everyday, but the northern lights. I never have, and almost everyone I know never has.

The northern lights occur in the atmosphere at least 100 km up and as far as 1000 km above the surface of the Earth. I think we all have seen them; they can be just a warm glow of the sky along the northern horizon to a dramatic display of colored streamers and flickering lights high above our heads. If this activity in the upper atmosphere did make noises then it would take some time to reach the observer on the ground. The speed of sound at sea level is .34 kilometers per second and varies with the altitude; however it averages about .3 km/s. This dictates that there should be at least a five and a half minute delay between seeing a change in the aurora and hearing its sound (if there is any).

How do those that have heard the northern lights describe their sound? According to a collection of descriptions the observers generally say they hear a hissing, swishing, rustling or crackling noise that is in step with the variation of the lights. Robert Burns writes:

"The cauld blue north was streaming forth
Her lights, wi' hissing eerie din."

A description from a 1923 issue of "The Journal of the Royal Astronomical Society of Canada" reads "At first, there was no



sound. But as the auroral light got nearer, we heard a subdued swishing sound, which grew more distinct as it approached and was loudest when the ribbon or belt of light was right overhead."

Although scientists can not describe the exact mechanism for the production of auroras, they do know that it involves (1) the magnetic fields of the earth, (2) charged particles from the sun filling regions of that magnetic field, and (3) the interaction of those particles with the molecules of gas in our atmosphere. During periods of greater sunspot activity there are more auroras seen.

In addition to magnetic fields, there are also electric fields associated with northern lights. The following is from an article by Terence Dickinson on auroras:

"At 6 a.m. on Tuesday, March 2, 1982, current-monitoring devices on power lines leading to the mining town of Buchans, Nfld., registered unusual surges of current. In seconds, the fluctuations escalated to overload-levels, setting off the circuit breaker with a deafening blast. At that instant, the lights went out in Buchans."

"Newfoundland and Labrador Hydro solved the problem before most Buchans' 1700 residents rose from bed, but no equipment failures were found and there had been no hint of a storm, at least not on Earth. Eventually, investigators confirmed that the potential electrical surge had come from the sky-- a geomagnetic storm known to laymen as northern lights, or aurora borealis."

It is the electric fields that are most likely the explanation of the sounds associated with the auroras. As illustrated in the above story, the fields can be of considerable size. Have you ever walked under the high "tension" lines of the N.S.P.C. and heard the sizzling or hiss coming from the lines? This is corona discharge and results from the large electric field near the wires that essentially pull electric current from the wires (sparks). Presumably it's the current (corona discharge) that causes the noise.

If the electric fields near the ground get large enough they could cause corona discharge from objects with points or small dimensions. In "Majestic Lights" a book on auroras published by the American Geophysical Union, physicist Robert Eather points out the following:

"Intense auroras are known to produce strong electric fields at ground level, and peaks as high as 10,000 volts per metre have been reported in association with very bright auroras. Though the details of how these voltages arise are not clear, electrical discharges will occur from points where sharp voltage gradients exist. Such points may be trees or bushes, and the effect is increased at surface irregularities, such as a mountain. These discharges will give a rustling or hissing sound. Under completely still conditions, voltages could build up high enough to cause minute sparks, and this would produce a crackling sound."

Sounds associated with the auroras are not heard by most observers for several reasons. Firstly, it must be very quiet, and secondly there must be the corona discharge. The latter does not take place if the humidity is high, if there are no appropriate objects nearby, or if the electric fields are not large enough.

Oh, yes, you probably, know the person who I know has heard the northern lights, our editor, Jean Timpa. She is the one who first told me about the phenomenon and gave me a copy of "Flames In the Sky" by Terence Dickenson (Readers Digest, October 1983) from which I constructed parts of this article. Ask her about them; she will be delighted to tell you!

"CONSERVATION" is a seasonal publication of the Nova Scotia Department of Lands and Forests that is available free of charge by writing to A.P. "Tony" Duke, Editor, N.S. Conservation, P.O. Box 68, Truro, N.S. B2N 5B8. It is dedicated "to the understanding and wise use of Nova Scotia's wildlife and forest resources. The following article is from the Summer 1984 issue of "Conservation".

THE AMHERST MARSH

By Ross Hall

Wildlife biologist

Cumberland and Colchester

What ranks as one of the most significant wildlife habitat developments in Nova Scotia quietly occurred at Amherst in 1983. A wildlife wetland nearly six miles in size was flooded. The project follows several years of land purchase and land consolidation by the Nova Scotia Department of Lands and Forests and follows dyking and water control engineering work by Ducks Unlimited Canada. Fertile marine silt promises to make the marsh one of the most productive habitats for waterfowl and other water associated wildlife in the Maritimes.

The Town of Amherst, overlooks a huge marsh dykeland that stretches eastward and inland from the Bay of Fundy. There is a balance between agriculture and wildlife/recreation land use here. Marshland that is closer to the sea has a deeper marine soil and is better drained than marsh further inland. The better drained lands are used for sod and hay production and pasture. The wildlife area is situated at the easterly end of this marshland on poorer drained lands where wildlife now has priority.

Before European settlement and dyking, the Amherst Marsh was a high salt marsh. Incoming brown tide waters became less turbulent as the water flowed over the land and as the water slowed, thin coatings of marine silt were deposited. Soil depth built up quickly along river banks and over land closer to the sea, where depths of marine soil are often 30 to 50 feet deep. The tide carried less silt to the further inland area.

The Acadians settled here in the 1670's because their explorers had found a land of rich soil and pasturage. They began a Dutch-learned technique of building dykes. The British defeated the French at Fort Beausejour and after 1755, settlers from New England and later Yorkshire, England, continued the dyking of the marshlands.

In the 1800's the dyked marshlands became the equivalent of modern day oil fields. Hay from the marshes fed horses as far away as New England, Halifax and Saint John. The thriving hay economy encouraged attempt to develop the 'back' and poorly drained areas. So the whole marsh is crisscrossed by drainage ditches. Most ditches were hand dug and are a reminder of the tremendous toil that men of that time endured. Portions of marshland were sold or subdivided among generations of sons and grandsons.

Then the boom ended. Throughout the early 20th century, cars and tractors replaced the horses. It was no longer worth the struggle to farm the poorer drained land so drainage ditches became plugged and hay barns fell into disrepair and were lost to fires that burned over the marsh. After 1920, many marsh owners died intestate, neglecting to will divided parcels of marshland to children that had use for it.

Lands and Forests and Ducks Unlimited biologists have long recognized the great wildlife potential of the inland marshes and the 'abandoned' hayland. Beginning in 1973, Lands and Forests, began a slow process to consolidate the ownership of this land. Marsh owners or heirs were identified, prices negotiated, and the legal documentation of land purchases completed.

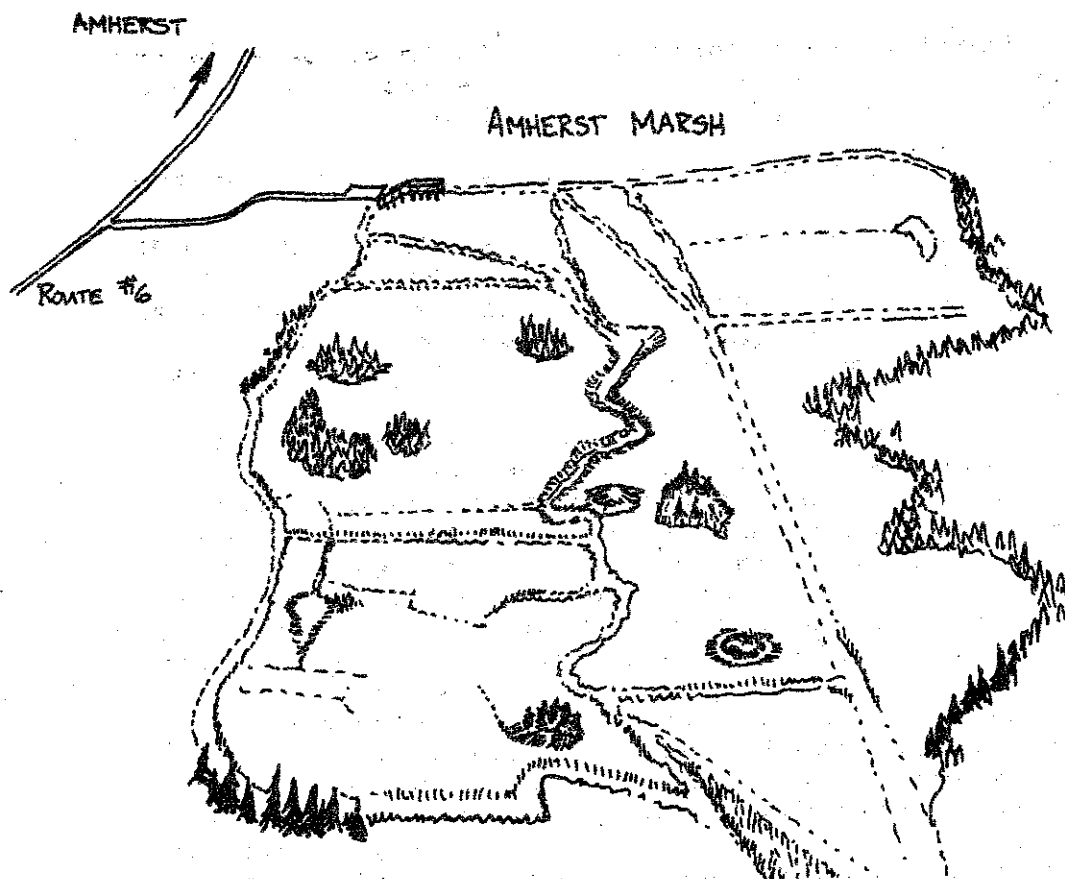
With the land assembled in the early 1980's, DU began the engineering work of changing the once seasonally flooded marshland to marsh with stabilized water level. Level ditches were dug, dykes built, and cement water control structure and fishway constructed. The water control structure became functional on December 24, 1982. The marsh is 3,780 acres in size, has 18.0 miles of shoreline and 4.5 miles of dyke.

The ambitious Amherst Marsh project could not have proceeded without the engineering expertise and financial support of Ducks Unlimited Canada. The total cost of Ducks Unlimited engineering work was \$340,000. The cost of the water control structure was \$125,000. The marsh is for public use and Ducks Unlimited attaches no strings to its spending.

Marshes with a controlled water level are much more productive for wildlife than other classes of freshwater wetlands. The young of water dependent animal are not subject to the extremes of seasonal flooding or drought, and aquatic plants and insects can become established. Aquatic insects are a protein rich food, the main food of fast growing ducklings and several other marsh birds.

Water levels can also be manipulated to provide an optimum 50:50 ratio of emergent vegetation (cover), to water surface. Dyked compartments within a marsh can be drained on a ten year cycle to replenish marsh fertility. Draining aerates the soil and allows perennial plants to decay and release locked-up nutrients.

An example of an animal that thrives in a managed marsh is the muskrat. Muskrats must live where the water is deep enough for growth of aquatic vegetation. In the fall muskrats build lodges by heaping mounds of plant material and mud and then



burrowing into the mound. The lodges are necessary for protection from enemies and shelter from the weather. When the marsh freezes over, the muskrats continue their life in a dark and ice-cold watery environment, foraging from their lodges to feed on submerged plants.

The Amherst Marsh project and the work of Ducks Unlimited is much broader than to simply provide a place for "good hunting". The marsh means breeding habitat, not just for waterfowl but for many species of non-game wildlife. Rails, bitterns, black terns, osprey and grebes are only a few of numerous wildlife species that benefit. Good breeding habitat ensures that species, especially those with unique habitat requirements, will continue to exist. Hunters and trappers will use the marsh only a short time of the year. Year-round the marsh is available for non-consumptive forms of outdoor recreation.

An exciting recreational opportunity now exists for people to tour the Amherst Marsh in a canoe or small boat and see wildlife close at hand. The expanse of marsh and the totally different environment gives people the feeling of being in "another world". For the serious naturalist, there are numerous species of birds, animals, aquatic invertebrates that await identification.

It is difficult to travel on the marsh without feeling its history. There is almost a ghostly sensation as one thinks of the early presence of Micmacs and farmers. Travel up the marsh, and follow the 'narrows' and 'warm run' into Long Lake. On the northwest side of the lake visit the raised bed of Ship Railway that was the almost completed dream of the 19th century engineer, Ketchum, to transport vessels between the Bay of Fundy and the Northumberland Strait.

The Department of Lands and Forests encourages people to visit the Amherst Marsh. A small boat or canoe is the best way for access into the marsh. It is also possible to walk along the dykes. In time perhaps, private individuals (recreational guides), will take the initiatives to provide boats and offer nature oriented tours of the marsh. In the future, perhaps, the Department of Lands and Forests will have funds to provide interpretive facilities and camp/ picnic landings at points on the marsh.

The Nova Scotia Department of Lands and Forests and Ducks Unlimited Canada are proud of the Amherst Marsh Project. I am sure that the men (people) in Amherst's past would approve.

SUMMER WEATHER- 1984

by Larry Bogan
Cambridge Station

The weather is a popular topic of conversation, and well it should be because it affects our mood, food production, and so many other aspects of our daily lives. Usually, in those discussions, we try to compare the present conditions to those in the past years. In reference to this past summer I would use the phrase "warmer, drier, and sunnier than average" in any conversation. However, I prefer to know the true facts by comparing the weather records for the summer with "30 year averages".

I have gathered those records in the table below with the "normal" values in parentheses. This data is from the weather station at the Agriculture Centre in Kentville.

MONTH	AVE. TEMP C	10C HEAT DAYS	RAIN mm	HOURS OF SUN
May	11.6 (10.4)	79 (55)	86 (75)	193 (202)
June	16.2 (15.9)	189 (178)	74 (71)	211 (217)
July	21.1 (19.2)	344 (284)	43 (70)	193 (202)
August	21.0 (18.4)	340 (262)	144 (98)	212 (225)
SUMMER	17.5 (16.0)	952 (778)	347 (314)	810 (846)

The first thing you will notice, is that I was wrong in describing the summer as sunnier and drier than average! Actually it was about normal in those categories although slightly wetter and less sunny than normal. I must have been thinking of the period of late July and early August when we had a period of very warm and dry weather. During the period from July 8 to August 11 only 26 mm of rain fell, approximately 1/3 the normal amount. July was dry, but thunderstorms late in August brought the total rain fall back to normal.

It is the number of heat-days above 10 C that are dramatically different from the norm. We had almost 1/4 more than we should expect. That is why my melons and tomatoes ripened much sooner this year. Some years they were not ripe when the first frost hit in September. The average temperature was 1.5 C (2.7 F) above normal for the summer. Note that every month of the summer was warmer than its corresponding average month. We did not have just one hot spell that affected the average.

I also had good results with melons last year and when I looked at the summer 1983 weather records they showed that it was warmer than average also (11% more heat-days by September). 1982 was average, 1981 was warmer, but 1980 was below average, while 1979 was 10% above average. So for the last six years we have had above average warmth in the summer for growing.

The numbers tell us that overall those years were 10% warmer than the previous 30 years. Are we in a warming spell? Well, we shall have to wait and see, but it appears that we are. The more important question is: can we use this as encouragement to start raising more warmer-climate crops? I am encouraged to try, but one should expect some cooler summers in the near future just because the past two have been so warm. The weather is one thing one learns not to trust too much.

(Note: A 10C Degree-day is the number of degrees above 10C (50 F) that the average temperature was for one day. The number of 10C Degree-days for a month is just the sum of all the values for every day of the month.)

BNS NEWSLETTER DEADLINE - DECEMBER 21

PLEASE DON'T GET CAUGHT IN THE CHRISTMAS RUSH! GIVE BNS A PRESENT, TOO, BY CONTRIBUTING NOW AT LEAST A LITTLE SOMETHING TO TRIVIA #4 OR SOMETHING LONGER, IF AT ALL POSSIBLE. YOUR "MUSINGS" ARE NEEDED IF THE NEWSLETTER IS TO CONTINUE.

