HALIFAX FIELD NATURALISTS' NEWSLETTER

September to November 1994

No. 76



Jeff Mason, Terence Bay School



Return address: Halifax Field Naturalists c/o Nova Scotia Museum of Natural History 1747 Summer Street Halifax, NS B3H 3A6

HALIFAX • FIELD • NATURALISTS

Objectives	To encourage a greater appreciation and understanding of Nova Scotia's natural history, both within the membership of HFN and in the public at large. To represent the interests of naturalists by encouraging the conservation of Nova Scotia's natural resources.								
Meetings	On the first Thursday of ever Summer Street, Halifax. Me	y month at 8:00 pm in the auditori eetings are open to the public.	um of the Nova Scotia Museum of Natural History, 1747						
Field Trips	Are held at least once a more of the gas. Everyone, mem	nth, and it is appreciated if tho nber or not, is welcome to take p	se travelling in someone else's car share the cost art in field trips.						
Membership	Is open to anyone interested society, or by writing to: Mer memberships starting from membership year is from Ja meetings, field trips, and spo	in the natural history of Nova So mbership Secretary, Halifax Field September 1 will be valid until th anuary 1 to December 31. Mer ecial programmes. The fees are Individual Family Supporting FNSN (opt.)	cotia. Memberships are available at any meeting of the d Naturalists, c/o NS Museum of Natural History. New ne end of the following membership year. The regular mbers receive the HFN Newsletter and notices of all e as follows: \$12.00 per year \$18.00 per year \$20.00 per year \$5.00 per year						
Executive 1994	President Secretary Treasurer Membership Secretary Past President	Roy John Cathy Strugnell Greg Crosby Shirley van Nostrand Colin Stewart							
Directors	Patricia Chalmers, Ursula G Cathy Strugnell	rigg, Bob McDonald, Bernice Mo	oores, John Newbery, Mary Primrose, Bonnie Saxton,						
Mailing Address	Halifax Field Naturalists c/o Nova Scotia Museum o 1747 Summer St., Halifax Nova Scotia B3H 3A6	f Natural History							
Committees	Programme	Roy John Charlotte Lundgren Jennifer MacKeigan Cathy Strugnell							
	Newsletter Editor	Ursula Grigg Patricia Chalmers							
	Conservation Issues	Colin Stewart							
	Membership	Shirley van Nostrand							
HFN is incorpor	ated under the Nova Scotia Sc	cieties Act and is a member org	anization of the Federation of Nova Scotia Naturalists						

HFN is incorporated under the Nova Scotia Societies Act and is a member organization of the Federation of Nova Scotia Naturalists and of the Canadian Nature Federation. It is registered for federal income tax purposes. Official receipts will be issued for individual and corporate gifts.

Illustrations This Issue (No. 75): p. 11 – tide table courtesy Dept. of Transport; other illustrations from copyright-free sources.

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HFN NEWS AND ANNOUNCEMENTS

EDITORIAL

Settling of the dust and ashes from the eruption of Mount Pinatubo may or may not have given us that lovely summer, but we made the most of it. The main event for Halifax Field Naturalists was the CNF Conference, which was well attended and enjoyed, and which, incidentally, ended up in the black. After all the hard work which many members exerted to make it so successful, it's not surprising that everyone vanished afterwards; it almost needed a field trip to find people before September! Reports on the Conference will appear in the next Newsletter. Perhaps there will also be some reports on what people did with the rest of their summer.

I visited the Czech Republic, hunting for microfossils. My party spent a week in Prague, where many of the towering buildings provided nesting sites for pairs of Kestrels. It was easy to pick these out; they were the roofs without clouds of pigeons around them. We subsequently saw hawks being flown by falconers, in the courtyard of a castle, where the small, bright and agile Kestrels stole the show.

Now that autumn is coming, I'm collecting tree seeds and tucking them into the corner of a flower bed, to see if they will germinate. It appears that some of the cultivated maples are sterile; their keys have nothing in them. Our city tree is a Black Locust, with a Mountain Ash growing in the lowest fork, presumably from a seed left there by a bird; both these trees grow easily from seed.

The club still has some Piping Plover T-shirts and sweatshirts, and a few Endangered Spaces shirts for sale; these are especially popular with youngsters, and Christmas is coming... Cathy Strugnell has the shirts (835-8289).

The discussion of a spring bear hunt for Nova Scotia has not ended with Department of Natural Resources's refusal to permit it next year. Opposition to the hunt is perceived in some circles as being more sentimental than reasonable, so the matter will come up again.



!! TIME TO RENEW !!

It's time to renew memberships; fees for 1995 have been raised a bit, to \$12 for individuals and \$18 for families, so as to continue to cover the Society's operating expenses.

Please send renewals to the Membership Secretary, Shirley van Nostrand, at the Nova Scotia Museum, or give them to her at the next meeting.





Mary Primrose has a few Canadian Nature Federation Calendars for 1995, for \$12.95 each. These are large wall calendars, with a colour photograph of a bird and a plant for each month. Call Mary at 423-5165 to reserve one.

A CHALLENGE: THE NEWSLETTER NEEDS

more people to tell us where they went, what they saw there, or what they know about some aspect of Natural History.

someone to tell us where our many illustrations should appear, and maybe make more when necesssary.

lf you can do it, tell Ursula Grigg, 455-8160, or Patricia Chalmers, 422-3970.



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SPECIAL REPORTS

Halifax Field Naturalists

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Receipts and Expenditures for the year ended December 31 1993 (unaudited)

	1993	1992
RECEIPTS		
MMemberships 1993 131 1994 to date 75 Interest Income: bank interest 36.84	1717.00 446.24	1831.00 497.00
Other Income (1A) Project Income (1B)	1105.00 436.00	807.40 3910.76
TOTAL INCOME	3704.24	7046.40
EXPENDITURES		
Meeting Expenses Newsletter 1120.98	60.59 2962.10	54.52 1880.61
Bank Charges	33.64	22.00
Memberships: Canadian Nature Federation (2Yrs) N.S. Trails Federation Federation of N.S. Naturalists(owing) Expenses for Fed. N.S. Naturalists Recreation Association of N.S. Bell & Grant - liability insurance Rec. Assoc. N.S. administration fee	70.00 330.00 55.00 75.00 20.00	35.00 50.00 245.00 17.60 55.00 130.00 20.00
Miscellaneaus: śêè)(2A) Projects see (2B)	2632.05 966.17	224.25 5390.86
Donations: Canadian Nature Federation Tobeatic Wilderness Committee Sponsor child Space Ship Earth Camp	150.00 50.00 135.50	0.00 0.00 0.00
	7539.55	8124.85

RECEIPTS over EXPENDITURES

-3835.31 -1078.45

loan for CNF conference 1000.00
income from sale of shirts
 and hasti-notes, both of which
 were expenses to purchase in 1993.



HALIFAX FIELD NATURALISTS

Schedules to the Financial Statement for the year ended 31 December 1993

Schedule 1A	1993	1992
Uther Income		
Lapel pins	100.00	0.00
Hast1-notes Diping Diaman Chini	79.00	4.00
Piping Plover Shirts	116.00	0.00
Donations -Govt. Grant 800.00	810.00	550.00
From Projects	0.00	253.40
Bus Field Trip	535.00	0.00
	1640.00	807.40
1B Project Income		
Endangered Spaces Show	0.00	49.98
Endangered Species Project	336.00	1616.78
Piping Plover Fund	100.00	819.00
Environment Canada Coloring Book	0.00	1200.00
In Memorian	0.00	225.00
	436.00	3910.76
2A Other Expenditures		
Loan for Cndn. Nature Fed. Conf. 1994	1000 00	
Bus Field Trip	539 24	
Purchase of Piping Ployer Shirts	867 17	
Purchase of Hasti-notes	225.34	
	2632.05	
2P Project Providence		
Endangered Creation		
Envangered Species	690.17	2841.50
Diping Diever Presburg (menning)	0.00	859.88
Figure Prover Brochure (reprint)	276.00	489.49
Environment Canada Coloring BOOK	0.00	1200.00
	966.17	5390 87
	966.17	5390.87

LEARNING TO SEE

One summer day, I discovered a boy in my garden. Hunting softballs? Stealing flowers? Trespassing? He said his name was Adam. I smiled. "Do you have any feathers in your garden?" he asked. How could I know? I was blind to feathers. I shook my head. Toads. Weeds. Caterpillars. These I had seen and recognised. Hopeful, Adam looked straight into my eyes. "My favourites are Blue Jay feathers," he said.

Since that day, I trip over feathers. They perch on blades of grass, float in puddles, Lie waiting for me on sidewalks and sandbanks -In every meadow. The world is full of feathers.

Linda Jeays, in Trail & Landscape, Vol 28, No 1, P18



TERENCE BAY SCHOOL

This is a report of a school trip that took place in October 1992. Mrs. Norma Henebury asked HFN for someone to lead a field trip to the sea shore for Grades 4-5 at Terence Bay School, and I agreed to do it.

We picked a day when tides would be reasonably low in the morning, and Mrs. Henebury suggested Wreck Cove as a suitable place. Terence Bay is a rather isolated community, founded by survivors of a long-ago shipwreck off Wreck Cove.

It turned out that Grades 4-5 had chosen the sea-shore as their topic for the term, and were sharing their information with other grades by means of murals in the school hall. The first thing to catch my eye in the classroom was a stack of library books; around the walls, individual assignments pictured, modelled and discussed star-fish, crabs, sea urchins and other organisms with accuracy and enthusiasm.

After we'd met, and talked a bit about tidal zones, we formed a crocodile and marched along the road to Wreck Cove in the breezy, sunny October weather. A number of parents accompanied us, there to ensure safety, but glad of an excuse to spend the lovely morning out of doors. (The weather broke the next day, leading into one of the longest, coldest winters in recent years.)

Most of the children pointed out their homes to me, and we met many of their families as everyone who saw us waved or stopped to speak. We passed the little convent, on the point of closing because there were not enough sisters to staff it, which had been the focus of the village since it was founded.

Wreck Cove has a rocky beach. We explored pools and the under sides of reefs; the children already had a good understanding of tidal zonation. We admired the practicalities of animal design and the beauty of seaweeds, and added to the children's collection of shells, crab claws and other discarded items - there was a rule that anything living could be examined but must be replaced undamaged.

Tidal cycles were discussed, and the ways in which plants and animals survive alternate immersion and exposure. We also discussed favourite ways of cooking mussels; while each of us knew at least one gourmet recipe, it seemed that

everyone serves them steamed, with butter!

When our time on the shore was up, Mrs. Henebury confirmed my belief that this was a magical morning: she stood at the top of the beach and raised her hand, and an empty school bus appeared from nowhere and took us back.

In the classroom again, we summarised what we had seen, and then I was presented with a beautifully decorated little basket containing a card of thanks printed for the school with students' drawings on it - and two surf clam shells with lighthouse scenes painted on them by a local artist. The big shell stands on my mantelpiece to remind me of a memorable morning, and I wear the small one as a pin on special occasions. The class also made me a book of their thank-you letters, and decorated it with their drawings and poems, including the poem which formed their 'mission statement.'

I hope the children enjoyed themselves; I did, and came away feeling that schools which do such a good job of introducing natural history and conservation deserve our praise and our support.

Ursula Grigg



Hurt No Tidal Thing sand dollor, nor storfish Nor blenny with scalyfin Nor barnicle or common whelk Nor beach hopper so light of leap. Nor dancing crab, nor Jellyfish flat Nor harmless worms that creep



SPECIAL ARTICLES

AN INADVERTENT BAT KILL

The house in which we live is equipped with a fireplace, which opens directly into an insulated metal chimney. The chimney has an inside diameter of eight inches, and a height of about 12 feet. At the top there is a steel cap mounted on struts, leaving about a three inch gap between the bottom of the cap and the top of the chimney. The fireplace is not used in the summer.

Around August 8, 1994, we began to hear noises coming from the fireplace. Our first guess was that they must be due to mice, because we have had Deer Mice in the house on and off over the last fifteen years. The noises consisted of various shrill squeaks coupled with sounds of small bodies moving around. The noises were present during daylight hours and after dark. A casual investigation persuaded us that the animals were located above the firebox, i.e. at the base of the chimney.

Our initial response consisted of hoping that the animals would move on, when they ran out of food, the young matured, the weather changed, or whatever. After about two weeks, the noises had not stopped. By this time we were wondering how mice could have entered this location, when the only entrance was via the chimney. The chimney is not only fairly high, but it has a bright mirror-like finish, making climbing the outside of it impossible. We began to consider the possibility that the animals were bats, rather than mice. If they were bats it seemed unlikely to us that they would be able to fly up the inside of the chimney to escape. The fact that the noises continued all night might be explained by the fact that the bats were trapped. A brief examination with a flashlight revealed what appeared to be bat feet and claws showing around the edge of the damper opening.

On the night of August 22, we resolved to try to release the animals, whatever they were. Holding a large plastic bag up to the "ceiling" of the fireplace, we opened the damper. About 30 bats fell into the bag. A few managed to escape, but they were easily caught before they left the fireplace, and these were placed in the bag as well. Some remained clinging to the damper; these were simply grabbed and deposited in the bag.

We took the bag outside and emptied it on the ground. About eight bats immediately flew off. The remainder consisted of 17 dead bats and three moribund ones. These last crawled slowly away and Batbox alternative, cutaway view (Newsletter has the plans)



immediately began lapping up water from the damp asphalt (it had recently rained). After half an hour or so, we moved these three from the ground to the sides of trees, on damp moss, where we hoped that they would be able to get a little more moisture. In the morning, one of these three was dead, and the other two had disappeared.

The following evening (August 24), we again checked the chimney, and there were two more bats present. We liberated these (they were active flyers), and then placed a large plastic bag over the top of the chimney to prevent any further entry by the bats.

The fact that two bats appeared after we first emptied the chimney implies that the chimney had been used as a roost by these two individuals before. This further implies that they must have been able to successfully leave the chimney until they fell to the bottom of the chimney that day. We assume that they must normally have roosted somewhere very near the top of the chimney, and that from time to time a bat would fall down, becoming trapped at the bottom. As long as this happened infrequently, sufficient numbers of mobile bats would remain to make this an active roost.

In retrospect, if we had investigated the noises earlier, we might have prevented the deaths of perhaps 20 of these fascinating and persecuted creatures. we suggest that owners of these insulated metal chimneys take steps to make them inaccessible to bats (by installing a layer of hardware cloth over the opening, for example). And, if you hear strange noises coming from your fireplace, don't hesitate to find out what's going on.

Linda and Peter Payzant

A GOOD REASON TO BE NOCTURNAL

At least once a year, I check the chimney flue to ensure it isn't blocked. On my chimney this is easy, since the flue has no bends. Opening the clean-out door at the base of the chimney, I hold a mirror at a 45 degree angle so I can see up to the sky above.

Chimneys get blocked, most commonly by pieces of the flue liner deteriorating and falling across the flue; less commonly by squirrels, or starlings building nests. Even a partially blocked flue allows dangerous gases to escape into the house.

This year, I was surprised to find that a piece of the tile had fallen, partially blocking the gases from escaping. Within days, I had contracted to have the top 3-4 feet of chimney rebuilt.

While standing in the laneway, looking in admiration at the workers skilfully laying new bricks to replace the broken portion they had removed, my attention was refocussed on three noisy crows.

A pair of crows had nested in a tall oak across the street and successfully raised one young. (Two other young crows were found dead at the base of the tree; cause unknown.) The three crows returned to this area frequently during the day, but spent hours away foraging for food. Several times a day they raised a noisy alarm. Often the cause was a cat; sometimes it was a 'stranger' - a crow trespassing or a hawk. Occasionally the intruder was a Great Horned Owl, in which case every crow within earshot soon came hurriedly to enjoy the fun of pestering the owl. (No doubt many a crow pays the price come nightfall.)

On this occasion the three crows were circling and climbing in pursuit of what I at first thought was a bird, but which resolved itself into a bat. Probably a Big Brown Bat.

The bat was fluttering furiously, trying to gain height, but within seconds the crows easily flew higher and one grabbed the bat's wing in its beak. The bat tore free and fell to earth, pursued by the three diving crows. All disappeared from my view behind trees. I have no doubt that the bat was despatched and eaten by one of the crows.

I had always supposed bats were active at night because their insect food was more plentiful then. Perhaps another reason is that their powers of flight are not equal to birds', and in daylight they become easy prey for any number of birds. Falcons and accipiters, birds of prey, would find them easy pickings. Opportunistic-feeding birds like crows and gulls wouldn't hesitate to catch such an easy meal. The bats' inability to compete with birds in flying may be the primary reason they are nocturnal and the reason they hide away in caves, attics and hollow trees during the hours of daylight. Who could blame them?

Jack Holiday, from Trail and Landscape, Vol 28, No 1, P12



A FRIEND OF MINE ONCE SAW...

Now here's what a friend of mine once saw... He was going home one moonlight night by a footpath through the woods when he heard a very strange noise a little distance ahead, a low whistling sound, very sharp, like the continuous twittering of a little bird with a voice like a bat, or a shrew, only softer, more musical. He went on very cautiously until he spied two hedgehogs standing in the path facing each other, with their noses almost or quite touching. He remained watching and listening to them for some moments, then tried to go a little nearer and they ran away...

"But no doubt," I said, "You've seen other queer things in hedgehogs and other little animals which I should like to hear."

Yes, he had, first and last, seen a good many queer things both by day and night, in woods and other places, he replied, and then continued: "But you see it's like this. We see something and say, "Now that's a very curious thing!" and then we forget all about it. You see, we don't lay no store by such things; we ain't scolards and don't know nothing about what's said in books. We see something and say, *That's* something we never saw before and never heard tell of, but maybe others have seen it, and you can find it in the books. So that's how 'tis, but if I hadn't forgotten them I could have told you a lot of queer things."

From: W. H. Hudson, A Shepherd's Life

ALMANAC

This almanac is for the dates of events which are not found in our programme: for field trips or lectures which members might like to attend, or natural happenings to watch for, such as eclipses, comets, average migration dates, expected blooming seasons, etc. Please suggest other suitable items.

"The hills all round, as seen from our celebrated platform [Dufferin Gate, Quebec Citadel], are of the most lovely autumn colours, and covered, as they are with red and orange trees, they really look like flames in the distance, or like gigantic flower-gardens; for our *trees* are quite as brilliant as your best *flowers*, and if you can imagine your conservatory magnified a million times, and spread over miles and miles of hill and dale, you will begin to understand how we do things in this Canada of ours."

Lady Dufferin, "My Canadian Journal", 1891.

Natural Events:	ana Shatia Rint Sociaty
1 Sept.	Consider the Passenger Pigeon. The last one died in captivity in a Cincinnati Zoo on this day in 1914
late Aug early Oct. September mid-Sept. mid-Sept -mid-Oct	most species of warblers leaving - waves of migrants may be seen the busiest month for most fall migrating birds Loons leave fresh-water lakes to winter on the sea
	breeding grounds, and store the winter
19 Sept.	Full Moon - this is the "Harvest Moon"
23 Sept.	Autumnal Equinox: fall begins
3 Oct. 🛶	Ruby-throated Hummingbirds depart
18 Oct	Snow Buntings arrive
18 Nov.	Penumbral Lunar Eclipse
19 Oct.	Full Moon - this is the "Hunters' Moon"
22 Oct	our provincial bird, the Osprey leaves
29/30 Oct.	Standard Time begins - turn clocks back one hour
early-mid Nov.	you know that winter must be coming when the Public Gardens
14 Dec	
14 Dec.	Geminid meteor shower
22 Dec.	Winter Solstice: winter begins
24/20 Dec.	annual nocturnal migration around the world by arctic reindeer

Sources: Blomidon Naturalists Society, <u>A Natural History of King's County</u>, 1992; Royal Astronomical Society, <u>Observer's Handbook</u>, 1994; Tufts' <u>Birds of Nova Scotia</u>, 1986; the personal observations of the compiler.

Sunrise and Sunset on late Summer and Autumn Saturdays:

3 Sept.	6:39	19:49	1 Oct. 7:12	18:55
10 Sept.	6:47	19:35	8 Oct. 7:21	18.42
17 Sept.	6:55	19:22	15 Oct. 7:29	18:30
24 Sept.	7:04	19:08	22 Oct. 7:39	18:18
		a de la companya de l	29 Oct. 7:48	18:08
5 Nov. 6:57	16:58		3 Dec. 7:33	16:35
12 Nov. 7:07	16:50		10 Dec. 7:40	16:34
19 Nov. 7:16	16:43		17 Dec. 7:46	16:35
26 Nov. 7:25	16:38		24 Dec. 7:50	16:38
			31 Dec. 7:51	16:43

courtesy of David Lane, Burke-Gaffney Observatory, St. Mary's University

Organizational events:

Blomidon Field Naturali 19 Sept.	sts: meets 7:30 p.m. Room 244 Beveridge, Acadia U. Life North of the North Pole, by Dr. Olga Kukal
24 Sept.	Wolfville Area Fall Birds with Jim Wolford - meet at the Robie Tufts Nature
17 Oct.	Coyote Update by Barry Sabean, Dept.of Natural Resources
Blomidon Field Naturalists: meets 7:30 p.m. Room 244 Beveridge, Acadia U. 19 Sept. Life North of the North Pole, by Dr. Olga Kukal 24 Sept. Wolfville Area Fall Birds with Jim Wolford - meet at the Robie Tufts Nature Centre at 10:00 a.m. 17 Oct. Coyote Update by Barry Sabean, Dept.of Natural Resources Friends of McNab's Island: For more info. call Cathy McCarthy at 434-2254 25 Sept. Beach Sweep 16 Oct. Fall Foliage Foray Mainland South Heritage Society: For more info. call Iris Shea 479-3505 All events meet at the parking lot of the William Spry Community Centre, Sussex Spryfield, at 1 p.m. for carpooling. 18 Sept. Working party at the Rockingstone - bring a garbage bag! Nova Scotia Bird Society: Phone the N.S.B.S. Bird Information Line at 852-CHAT (i.e. 2428) to hear news of w birds are around, provincewide, and any other Society news of note - field trips, meetings, of This line is usually updated at least twice a week. Their next meeting is 22 Sept., 8 p.m., at the N.S. Museum. Nova Scotia Museum of Natural History: 22 Oct. Mammoth versus mastodon, by Bob Grantham, 2-3 p.m. 29 Oct. Bats up close: myths and reality, with Fred Scott, 2 &3 p.m. 19 Nov. Dawning of the dinosaurs, by Harry Thurston 1-2 p.m. </td	
Mainland South Heritag All events mee Spryfield, at 1 p.m. for o 18 Sept. 25 Sept.	e Society: For more info. call Iris Shea 479-3505 t at the parking lot of the William Spry Community Centre, Sussex St., arpooling. Trail to Harry's Lake, Harrietsfield Working party at the Rockingstone - bring a garbage bag!
Nova Scotia Bird Societ Phone the N.S birds are around, provi This line is usually upda N. S. Museum.	y: .B.S. Bird Information Line at 852-CHAT (i.e. 2428) to hear news of what ncewide, and any other Society news of note - field trips, meetings, etc. ted at least twice a week. Their next meeting is 22 Sept., 8 p.m., at the
Nova Scotia Museum of 22 Oct. 29 Oct. 19 Nov.	Natural History: Mammoth versus mastodon, by Bob Grantham, 2-3 p.m. Bats up close: myths and reality, with Fred Scott, 2 &3 p.m. Dawning of the dinosaurs, by Harry Thurston 1-2 p.m.
Orchid Society: 22-23 Oct.	Fall show and sale at the Nova Scotia Museum
Wild Flora Society: mee 17 Sept.	ets 7:30 p.m. at the N.S. Museum Auditorium Bissett Lake Park, Cole Harbour - Flora with Bill Graham Meet at the N.S. Museum at 9:15, or at the Park at 10 a m
26 Sept. 1 or 8 Oct.?	Insects and our woodlands, by Eric Jorgensen Cole Harbour Natural History with Rose Mary Eaton - Meet at the N.S. Museum at 9:00, or at the Barn on Bissett Rd. at 10:00.
24 Oct. 28 Nov.	Spotting orchids from the road, by Heather Drope Natural history of Brier Island, by Marion Zinck

And a final note on the hunting seasons:

The Black Bear season is from 15 Sept. to 27 Oct., and from then through the bowhunters' deer season (24 Sept. - 15 Oct.), the Ring-necked Pheasant season (1 Oct.-15 Dec.), the Ruffed Grouse and other small game season (1 Oct.-31 Dec.), the Duck and Geese season (8 Oct. - 31 Dec.), the regular Deer season (28 Oct.-3 Dec.), and the Rabbit season (5 Dec. - 15 Feb.), there are hunters abroad: **Remember, it's hunting season, so dress to be seen in the woods!**

compiled by Patricia L. Chalmers

Indian Summer

Along the line of smoky hills The crimson forest stands, And all the day the blue-jay calls Throughout the autumn lands.

William Wilfred Campbell, 1889

TABLE DES MARÉES

HALIFAX HNA Z+4

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OCTOBER-OCTOBRE						NOVEMBER-NOVEMBRE							DECEMBER-DECEMBRE										
Day	Time	Ht./ft.	Ht./m	Jour	Heure	H./pi	H./m	Day	Time	Ht./ft.	Ht./m	Jour	Heure	H./pi	H./m	Day	Time	Ht./ft.	Ht./m	Jour	Heure	H./pi	H./m
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3 MO LU	0610 1225 1820	5.9 1.2 5.8	1.8 .4 1.8	18 TU MA	0115 0700 1340 1925	1.1 6.1 .9 5.8	.3 1.9 .3 1.8	3 TH JE	0115 0710 1350 1940	.8 6.8 .3 6.2	.2 2.1 .1 1.9	18 FR VE	0155 0740 1420 2020	1.6 6.0 	.5 1.8 .2 1.7	3 SA SA	0150 0740 1430 2020	.9 6.9 .0 6.3	.3 2.1 .0 1.9	18 SU DI	0155 0755 1425 2035	1.8 6.0 	.5 1.8 .2 1.7
4 TU MA	0045 0650 1320 1910	.6 6.3 .8 6.1	.2 1.9 .2 1.9	19 WE ME	0150 0735 1415 2005	1.2 6.1 .8 5.8	.4 1.9 .2 1.8	4 FR VE	0205 0755 1445 2030	.7 6.9 .1 6.3	.2 2.1 .0 1.9	19 SA SA	0225 0820 1450 2055	1.7 6.0 .8 5.6	.5 1.8 .2 1.7	4 SU DI	0245 0830 1520 2110	1.0 6.9 0.1 6.3	.3 2.1 .0 1.9	19 MO LU	0230 0835 1500 2110	1.7 5.9 .8 5.7	.5 1.8 .2 1.7
5 WE ME	0135 0735 1410 2000	.5 6.6 .5 6.2	.2 2.0 .2 1.9	20 TH JE	0220 0810 1445 2040	1.3 6.1 .8 5.7	.4 1.9 .2 1.7	5 SA SA	0255 0845 1535 2125	.8 6.8 .1 6.2	.2 2.1 .0 1.9	20 SU DI	0255 0855 1520 2135	1.7 5.8 .9 5.6	.5 1.8 .3 1.7	5 MO LU	0340 0920 1610 2205	1.1 6.7 .1 6.3	.3 2.0 .0 1.9	20 TU MA	0305 0910 1535 2150	1.8 5.9 .9 5.7	.5 1.8 .3 1.7
6 TH JE	0220 0820 1500 2045	.4 6.7 .3 6.2	.1 2.0 .1 1.9	21 FR VE	0250 0845 1515 2120	1.4 6.0 .8 5.6	.4 1.8 .2 1.7	6 SU DI	0350 0935 1630 2215	1.0 6.6 .2 6.1	.3 2.0 .1 1.9	21 MO LU	0325 0935 1555 2210	1.8 5.7 1.0 5.5	.5 1.7 .3 1.7	6 TU MA	0435 1015 1710 2255	1.3 6.5 .3 6.2	.4 2.0 .1 1.9	21 WE ME	0340 0950 1610 2225	1.8 5.8 1.0 5.8	.5 1.8 .3 1.8
7 FR VE	0310 0905 1550 2135	.5 6.7 .3 6.1	.2 2.0 .1 1.9	22 SA SA	0320 0925 1545 2155	1.6 5.8 .9 5.5	.5 1.8 .3 1.7	7 MO LU	0455 1030 1730 2310	1.3 6.4 .4 5.9	.4 2.0 .1 1.8	22 TU MA	0400 1010 1635 2250	2.0 5.6 1.2 5.5	.6 1.7 4 1.7	7 WE ME	0540 1105 1805 2345	1.5 6.1 .6 6.0	.5 1.9 .2 1.8	22 TH JE	0425 1025 1655 2305	2.0 5.7 1.1 5.8	.6 1.7 .3 1.8
8 SA SA	0405 0955 1645 2230	.8 6.5 .4 5.9	.2 2.0 .1 1.8	23 SU DI	0350 1000 1620 2235	1.8 5.6 1.1 5.3	.5 1.7 .3 1.6	8 TU MA	0600 1120 1835	1.5 6.0 .7	.5 1.8 .2	23 WE ME	0445 1050 1720 2325	2.1 5.5 1.3 5.4	.6 1.7 .4 1.6	8 TH JE	0645 1155 1905	1.7 5.8 .9	.5 1.8 .3	23 FR VE	0520 1105 1740 2345	2.1 5.6 1.3 5.8	.6 1.7 .4 1.8
9 SU DI	0505 1045 1750 2320	1.1 6.3 .6 5.6	.3 1.9 .2 1.7	24 MO LU	0425 1035 1700 2315	2.0 5.4 1.3 5.2	.6 1.6 .4 1.6	9 WE ME	0005 0710 1220 1935	5.7 1.7 5.7 .9	1.7 .5 1.7 .3	24 TH JE	0545 1130 1810	2.3 5.3 5.3	.7 1.6 .5	9 FR VE	0035 0745 1250 1955	5.9 1.7 5.4 1.2	1.8 .5 1.6 .4	24 SA SA	0620 1150 1835	2.1 5.4 1.4	.6 1.6 .4
10 MO LU	0615 1135 1855	1.4 5.9 .7	.4 1.8 .2	25 TU MA	0510 1115 1750 2355	2.2 5.3 1.5 5.1	.7 1.6 .5 1.6	10 TH JE	0105 0810 1320 2030	5.6 1.7 5.3 1.1	1.7 .5 1.6 .3	25 FR VE	0010 0650 1215 1905	5.4 2.3 5.2 1.5	1.6 .7 1.6 .5	10 SA SA	0130 0840 1350 2050	5.7 1.7 5.2 1.5	1.7 .5 1.6 .5	25 SU DI	0030 0725 1240 1930	5.8 2.0 5.3 1.5	1.8 .6 1.6 .5
11 TU MA	0020 0725 1235 2000	5.4 1.6 5.6 .9	1.6 .5 1.7 .3	26 WE ME	0610 1155 1850	2.3 5.1 1.6	.7 1.6 .5	11 FR VE	0210 0910 1430 2125	5.5 1.7 5.2 1.2	1.7 .5 1.6 .4	26 SA SA	0100 0750 1305 2000	5.5 2.2 5.1 1.6	1.7 .7 1.6 .5	11 SU DI	0230 0935 1500 2140	5.6 1.7 5.0 1.7	1.7 .5 1.5 .5	26 MO LU	0120 0825 1340 2030	5.8 1.9 5.1 1.6	1.8 .6 1.6 .5
12 WE ME	0125 0830 1340 2100	5.2 1.7 5.3 09	1.6 .5 1.6 .3	27 TH JE	0040 0720 1245 1945	5.0 2.4 5.0 1.6	1.5 .7 1.5 .5	12 SA SA	0320 1005 1540 2220	5.5 1.6 5.1 1.4	1.7 .5 1.6 .4	27 SU DI	0155 0850 1410 2055	5.5 2.0 5.0 1.5	1.7 .6 1.5 .5	12 MO LU	0330 1025 1605 2230	5.5 1.6 5.0 1.9	1.7 .5 1.5 .6	27 TU MA	0220 0925 1450 2130	5.8 1.7 5.0 1.6	1.8 .5 1.5 .5
13 TH JE	0240 0930 1455 2155	5.1 1.7 5.2 1.0	1.6 .5 1.6 .3	28 FR VE	0135 0820 1340 2040	5.0 2.3 5.0 1.6	1.5 .7 1.5 .5	13 SU DI	0420 1100 1645 2310	5.6 1.5 5.2 1.5	1.7 .5 1.6 .5	28 MO LU	0300 0950 1525 2155	5.7 6.1.8 6.5.1 6.1.5	1.7 .5 1.6 .5	13 TU MA	0420 1115 1705 2320	5.6 1.4 5.1 2.0	1.7 .4 1.6 .6	28 WE ME	0330 1030 1610 2235	5.9 0 1.3 0 5.2 0 1.6	1.8 .4 1.6 .5
14 FR VE	0400 1030 1610 2250	5.2 1.6 5.2 1.0	1.6 .5 1.6 .3	29 SA SA	0240 0915 1450 2135	5.1 2.1 5.0 1.4	1.6 .6 1.5 .4	14 MO LU	0505 1150 1735	5.8 1.3 5.4	1.8 .4 1.6	29 TU MA	0405 1050 1635 2255	6.0 1.4 5.3 1.4	1.8 .4 1.6 .4	14 WE ME	0510 1205 1755	5.7 1.2 5.2	1.7 .4 1.6	29 TH JE	0435 1135 1720 2345	6.2 .9 5.4 1.4	1.9 .3 1.6 .4
15 SA SA	0500 1125 1710 2345	5.5 1.4 5.4 1.0	1.7 .4 1.6 .3	30 SU DI	0345 1015 1600 2225	5.4 1.8 5.2 1.3	1.6 .5 1.6 .4	15 TU MA	0000 0550 1235 1820	1.6 5.9 1.1 5.5	.5 1.8 .3 1.7	30 WE ME	0500 1150 1735 2355	6.3 .9 5.6 1.2	1.9 .3 1.7 .4	15 TH JE	0010 0555 1245 1835	2.0 5.8 1.1 5.3	.6 1.8 .3 1.6	30 FR VE	0535 1235 1820	6.4 .5 5.7	2.0 .2 1.7
				31 MO LU	0440 1110 1700 2320	5.8 1.4 5.5 1.1	1.8 .4 1.7 .3													31 SA SA	0045 0630 1325 1915	1.2 6.7 .2 6.0	.4 2.0 .1 1.8

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Plant patterns in coal:

