THE HALIFAX FIELD NATURALIST

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HFN is incorporated under the Nova Scotia Societies Act and holds Registered Charity status with the Canada Revenue Agency. Tax-creditable receipts will be issued for individual and corporate gifts. **HFN** is an affiliate of Nature Canada and an organisational member of Nature Nova Scotia, the provincial umbrella association for naturalist groups. **Objectives** are 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, and to represent the interests of naturalists by encouraging the conservation of Nova Scotia's natural resources. **Meetings** are held, except for July and August, on the first Thursday of every month at 7:30 p.m. in the auditorium of the Nova Scotia Museum of Natural History, 1747 Summer Street, Halifax; they are open to the public. **Field Trips** are held at least once a month; it is appreciated if those travelling in someone else's car share the cost of the gas. **Participants** in HFN activities are responsible for their own safety. Everyone, member or not, is welcome to take part in field trips. **Memberships** are open to anyone interested in the natural history of Nova Scotia. Forms are available at any meeting of the society, or by writing to: Membership Secretary, Halifax Field Naturalists, c/o N.S. Museum of Natural History. Members receive **The Halifax Field Naturalist**, along with its included **Programme**, quarterly. Our membership year is from January 1st to December 31st, and new memberships received from September 1st to December 31st of any year are valid until the end of the following membership year.

Halifax Field Naturalists, c/o N.S. Museum of Natural History, 1747 Summer St., Hfx, N.S., B3H 3A6 **Email: hfninfo@yahoo.ca** **Website: halifaxfieldnaturalists.ca** **Facebook** – enter **Halifax Field Naturalists** *or* **HFN**.

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GRAPHICS All uncredited illustrations are by H. Derbyshire or from copyright-free sources. **Front Cover** - Long Lake Fall leaves, Rebecca Robertson; pp. 4&5 - Ospreys, Allesandro Troisi; **Back Cover** - Public Gardens Fall leaves, Roland Marek; **Fall 2018 Tide Table** - Canadian Hydrographic Service, Fisheries & Oceans Canada.

HFN NEWS AND ANNOUNCEMENTS

GLITTER LITTER

– Source: Carl Duivenvoorden's May 23rd, 2018 e-newsletter ***For a Healthier Planet & a Better Future***

HFN member Grace Beazley shares the following, challenging each of us to strive for a greener, more sustainable lifestyle:

AVOID USING GLITTER

Most of today's glitter is made of mylar, a type of plastic, and it's cut into very tiny pieces. This means that, once dispersed, it's really hard to clean up. And, through wind and rain action, much of it eventually ends up in the ocean, where it persists in the environment for a really long time or gets ingested by fish and other marine life.

So – what to do?

Make a personal choice just to avoid glitter, because prevention is always easier than cure.

Invite organisations you're associated with, particularly schools and daycares, to go 'glitter-free'.

If you absolutely can't live without the stuff, seek out non-plastic, biodegradable, eco-friendly glitter at **http://www.bbc.co.uk/newsbeat/article/42038411/the-eco-friendly-guide-to-glitter**.

This is a simple way you can help reduce the impacts of plastics in our environment!

CHARTING THE SEA OF NATURE WRITING AROUND US: THE HFN BOOK CLUB

– Brian Bartlett

All HFN members who like books about the natural world, and lively informal conversations about them, are encouraged to join our book club. We meet three times a year (usually in November, March, and May). You can count on friendly, enthusiastic sharing of responses to the books, highlighting of brief selected passages, and members' accounts of how the readings link to their own explorations of nature. The discussions are both educational and enjoyable. Drinks, desserts, and other foods are provided by the host. New members are always welcome.

Over the past six years our selections have varied much in their mixes of the scientific and the personal, the narrative and the descriptive, the tightly focussed and the far-reaching. Our readings have ranged from the American classics *A Sand County Almanac* by Aldo Leopold and *The Sea Around Us* by Rachel Carson to Nova Scotian books, including Harry Thurston's *A Place Between the Tides* and a compilation he edited *(The Sea's Voice: An Anthology of Atlantic Canadian Nature Writing);* from plant-centered books such as Robin Wall Kimmerer's *Gathering Moss: A Natural and Cultural History of Mosses* and Peter Wohlleben's *The Hidden Life of Trees* to bird-centered studies such as Bernd Heinrich's *Ravens in Winter* and Soren Bondrup-Nielsen's *A Sound Like Water Dripping: In Search of the Boreal Owl*; and from a book about encounters with rare animals and little-known human cultures, Australian writer Tim Flannery's *Throwim Way Leg*, to a disturbing yet eloquently written meditation on ecological change, J. B. MacKinnon's *The Once and Future World*.

Last winter we talked about Annie Dillard's *Pilgrim at Tinker Creek* from 1974, one of the most celebrated, tonally various, idiosyncratic books of nature writing from the past century – packed full of fascinating facts, fresh observations, rhapsodic moments, witty asides, revealing stories, and provocative questions. Our spring meeting was dedicated to a more recent book, David George Haskell's *The Forest Unseen: A Year's Watch in Nature*, one naturalist's vivid close-up exploration of a square metre of old growth forest in Tennessee.

Our next meeting will be held on Wednesday, November 21st at 7:00 p.m. The book for discussion is John Vaillant's *The Golden Spruce: A True Story of Myth, Madness and Greed*, a Governor General's Award winner for non-fiction, set in the Pacific Northwest, described by reviewers as 'a beautifully written account of cultural clash and environmental obsession', 'a gripping wilderness thriller and a sharply focussed summary of forest politics', and 'a work that will change how many people think about nature'.

For details, location, and answers to any questions you might have, contact Brian Bartlett at 902-420-0315, or **bbartlett6364@gmail.com**.

HFN NEWSLETTER ARCHIVES

As of 2009, an archive of our quarterly HFN newsletters has been posted on HFN's website by our webmaster David Patriquin. Presently, Issues #1 (November, 1975) to #153 (December, 2013 to February, 2014) have been archived there. Successive issues are added with each quarter; the next issue to be added will be #154, Spring 2014, and so on through the coming years.

These newsletters cannot only be viewed in their totality, but they are also a researchable resource for such topics you may want to look up such as 'Christmas Bird Counts', 'Bioblitzes', etc. On the "Archived Newsletters" page, go to 'Archived Newsletters', then to 'Click Here', and a page comes up with a box for entering your search subject. It also gives an example of the procedure to follow.

NEW AND RETURNING

Emma Bocking
Jeanette Fleming

SPECIAL ARTICLES

2018 NOVA SCOTIA OSPREY CAM

– Stephanie Robertson

On June 29th I received a website pointer from BNS's Ian Manning to 'Nova Scotia Osprey Cam'. I've been watching avidly every day since, whenever time and circumstances allow.

Another email from Ian and various correspondence on the site revealed that the eggs broke open (three eggs - but only two hatched) around June 3rd. My first viewing was around three weeks later then, when the nest contained two goodly-sized young and the unhatched egg with their mother almost always with them as they squawked and bumbled around on their heels so to speak, collapsing every once in a while in feathered heaps to rest while awaiting father with a fish.

One chick had fledged one or two days before the second. There was not much difference in size as they grew, but the seemingly younger one had wings which hung down lower than its siblings and a more prominent, visible 'white stripe' down its back in between them. As the birds grew, the 'wrists' of both young birds' wings became gradually higher and closer up to their necks and chests.

It was wonderful to be able to observe all the avian goings on during July, August, and September. Both parents would fly off and bring back fish, but the mother mostly stayed with the nest throughout July and the beginning of August, while the male did most of the fish hunting during that period.

The majority of prey were flatfish – grey on top, light underneath. Brought back very much alive and flapping, the mother would orient the father's catch with her feet so the head was to the front, next to her beak. It was quite an awkward and wing-flappping process for the female to get it from the curving claws of his foot into hers. He would always almost immediately fly off after this; only during earlier observations would he stay at night or during the day. She would always start by ripping pieces from the fish's mouth, holding it down with one foot all the while. Quite a lot of strength and energy seemed to be needed for this; she had to tug very hard, twisting her head strongly and vigorously all the while in order to accomplish the task. She always made sure she fed both chicks equally, with each one close on each side of her, beaks forward to receive the pieces, sometimes both in front. Absolutely all of the fish would disappear – bones, fins, tail, and all – with not one scrap left in the nest; when the young were satiated (they left her, ceased asking to be fed, and bumbled away) she herself would then finish it off. As time progressed, the male's presence became less and less, and mother started to go off hunting more and more, leaving the chicks on their own.

About two weeks into the observations, I was astonished to see an intensely orange, mackerel-shaped fish brought back, about nine or ten inches long! I observed about five to seven of these during the times I waswatching, and as they were all the same size and shape, I wondered what species they were and where they had come from – someone's ornamental fish pond?, an exotic escape or unwitting introduction?

The surroundings down below the nest revealed lush, long green grasses, two patches of non-tidal, visible water, a tall dead deciduous tree behind the nest, and a smaller live one down to the left. In September, I noticed lily pads in the upper patch of water, which also confirmed it to be fresh.

Sometime in mid to late August I began seeing mackerel brought back as well. Conversation with David Adler of the great fish store 'Off the Hook' on Charles Street revealed that the site was most probably somewhere near the shallower waters of the Minas Basin, where flatfish are easy to to dive for and also to pick up when at low tide they are left floundering on the mud flats.

The Osprey Cam looked north so that west was to the left of the picture, and east to the right. In the second week of September, long, sun-setting shadows revealed the camera on its long pole, the nest on its separate pole, and the dead tree behind the nest – three separate, tall shadows.

I also observed that the mother would protect her chicks from the sun when it was very hot and also from the heavier of the rains, with spread wings over each one, on either side of her. During the day, when satiated, the chicks would lay down on their stomachs with their heads on the edge of the nest, usually together. Also at night they would sleep this way, and the mother would sleep standing up, nodding off gradually with her head sinking lower and lower 'til it was almost to her feet.

All through the earliest observation periods, mother (and a few times father) would see to the sticks and twigs at the nest's edge, arranging and rearranging them, and bringing in new ones to ensure a certain height, I presume to keep the chicks safe. It was comical to see, as sometimes the size and shape of the sticks made them very awkward to manœver, the chicks getting lightly bonked on the head or body, or,

a few times, the crooked branches got caught under one of the young's wings or neck, creating the danger of flipping it out of the nest. Gradually, over time, the young joined in, occasionally poking about and trying to rearrange the branches and twigs which were already there.

I learned that Ospreys stre-e-tch. As time went on, one or other of the young when lying down would slowly stretch out one leg very, very lo-o-ong to one side, and leave it there, sometimes with an outstretched wing as well. It would snooze in this position, with eyes closed, indifferent as to how it might have disturbed its sibling.

In the beginning of September, the younger bird exhibited a unique behaviour which I never saw in the other. After they began to stand upright for longer periods, the younger would lean way over, body almost perpendicular, head way down and rump way up, opening up its wings to their full extent. Then, he would give him (or her) self a shake, stand up again, and shake itself, ruffling its feathers back into place. Both went through a phase of intense preening, when the shaking of their feathers afterwards produced a lot of small, white bits of down which wafted away into the air and sometimes back into the nest.

Other birds observed over my watching periods, which visited the dead tree behind, were a Northern Flicker, Chickadees, a waxwing (I couldn't tell which one), and a few warbler-like birds. There was for a time also a beautiful spider's nest on the Osprey's nest.

All through this period, the unhatched egg stayed in the same spot where it had come to rest – near the nest's right side. Then one day in September I noticed it had been broken; not long after that it gradually worked its way over the lip, and then disappeared.

In late August, after the young started to 'stand up' more and more (on very long legs), practice wing-flapping began, which slowly developed into a leg-stretching manoever with short hovering periods of a few seconds in the air over the nest. This intensified and became more frequent until the older one took its first flight, and then the younger about three or four days later. Sometimes they would disappear, sometimes they'd land on one of the dead tree's branches behind the nest. But they still came back quite often and were still using the nest every night, and mother was still feeding them.

Soon, more assertive feeding behaviour started. The older of the young would very aggressively push ahead to the returning mother with her catch, amongst much flapping and pushing around. At first, the younger would wait until the older had taken its fill, then he would get the rest. Later on, it became more assertive. During one dramatic struggle, it managed to grab hold of the older's fish, and both had their claws deeply in the fish's flesh. Much leg pulling (I thought they were going to become dislocated), wing flapping, and vocalising ended up with the young one getting the prize. It was after this I began to see what's known as 'mantling' behaviour, where the victor hunches over his fish, wings partially out, head down, calling out all the while, declaring its rights over 'its' property.

Now the mother began to be away for longer periods, but still came back at night. The young still came back to 'sleep' together, and then the mother less frequently, or very late. But soon, during the first week of September, they would be on the branches as well as the nest, and sometimes only one bird would be there.

Sometimes, as well, mother came back with a fish to an empty nest; she seemed bemused, looking all around with the twitching flatfish stuck to her foot and no one to give it to. She would start eating it herself, sometimes leaving part of it, sometimes leaving the whole, which one or other of the young would claim upon their return.

Sept. 22nd - 11:30 a.m.: A previous very windy night and a very windy morning. The nest's pole is poking up now by about six inches, the base of the nest sinking down having become more compressed, and the sticks are all slowly sliding down in front. The camera angle has changed; the upper piece of water is no longer visible, and the nest pole with its man-made supporting superstructure can now be seen – some metal pieces and two (what look like about four by six inch) lengths of wood, and metal strapping around the pole itself. One young was there eating a piece of fish.

Sept. 23rd - 7:00 a.m.: One young flew in, perched on top of exposed pole; lots of calling; it flew off again at 8:00 a.m. **3:30 p.m.:** one young flew back to nest; called for 15 minutes, body shifted to nest edge while calling and following something in the sky, and father flew in with a whole mackerel. The young grabbed it immediately and father flew off. The young 'mantled' for 15 minues, then flew off with the whole mackerel on one foot…

I will keep on watching this fascinating story until I no longer see any birds coming to this Osprey nest. If you would like to watch too, just google **Nova Scotia Osprey Cam**. Thank you Ian, for alerting me to the opportunity to watch so very closely and intimately all the nesting behaviours of this particlular Nova Scotia Osprey family.

HFN TALKS

N.S. GOLD MINES — 6 SEPT.

– Peter Webster

Historical Gold Mines of Nova Scotia Molly LeBlanc is an active member of the Halifax Field Naturalists and Chair of the HFN Programme Committee. She is nearing completion of her M.Sc. degree in Environmental Studies at Saint Mary's University, and in this presentation she shared her thesis research. Molly described her work for us studying the contamination left behind at these old gold mine sites.

The history of gold mining in Nova Scotia is not well known. But, beginning in 1858, Nova Scotia had three gold rushes. Although complete records are not available, Molly's research indicates that there were over 360 gold mines in Nova Scotia, from which over 1.2 million ounces of gold where extracted.

There are older remaining gold mines in Nova Scotia, and modern mines starting up. But Molly's research concerns historic mine sites which were in operation from the 1860s to the mid 1940s. Old mine sites often remain distressed barren areas having been contaminated for over 100 years with mercury and arsenic, highly poisonous heavy metals intrinsically involved in the historical mining process.

Gold mining involves digging out large amounts of rock. This rock is then mechanically crushed to a fine grain in a powerful stamp mill. Mercury is then mixed with the powdered ore, and the mercury and gold bond together. The resulting amalgam of mercury and gold is then heated ('cooked') in order to vaporise the mercury off, leaving only the pure gold to be collected.

Once the gold is extracted, the remaining crushed rock is left behind as 'mine tailings'. Over time, very large piles of these tailings were left behind, highly contaminated with mercury. Many tons of contaminated tailings remain at mine sites in Nova Scotia. Molly estimated that one ounce of mercury was used for every ounce of gold extracted. Although methods were used to reclaim all that mercury, at least 10 to 25% of it was likely left in the environment.

Arsenic, in the form of arsenopyrite, is a common, naturally occurring mineral in Nova Scotia, often at low levels. The gold mining process substantially concentrates this naturally occuring arsenic, so high levels of both arsenic and mercury were left at all the mine tailings sites.

Molly's research has considered three questions about the gold mining industry. 1) How contaminated are old mining sites? 2) Are the contaminants at these sites bioavailable (that is to say, are they entering into the food webs)? 3) Are these contaminants being transported beyond the site areas?

Mining operations required large quantities of water, so they were sited next to water courses. Therefore, impact and transport of contaminants in water systems is an important consideration as well.

There are a number of previous studies on mercury and arsenic contamination. Most look at small plants, and some have looked at contamination levels in fish. A study of the Seal Harbour mine tailings found contamination levels of 800 parts per million in shellfish, while the acceptable level is only 3.5 parts per million.

For her own research, Molly focused on five sites near Halifax, and two other sites elsewhere. Some of her sites are remote and some close to populated areas. Molly found these sites being used for ATV-ing, camping, and other human activity as well. A few sites *are* marked by health warning signs, but others are not marked in any way.

Molly's work in her test areas involved sampling plants, fish, insects, and other fresh water invertebrates in order to measure their arsenic and mercury levels.

Overall, her research found arsenic levels between four and ten times the allowed limits. Mercury levels were between three to hundreds of times over accepted levels. The Old Stamp Mill site in the Dartmouth area was the most highly contaminated, with arsenic levels in insects over 100 times above safe standards. This was the only site where contamination seems to have been high enough to reduce insect productivity in the area.

So, high levels of both arsenic and mercury are present in plants and insects in mine site areas, but arsenic is less bio-transportable than mercury, so more research is needed to understand the wider implications of this contamination.

Molly gave us a fascinating and thought-provoking look at this important environmental issue in Nova Scotia, and her research raises many questions about the long term risks of industrial pollution and the approaches to dealing with it.

HFN FIELD TRIPS

DRYSDALE BOG WALK

– Burkhard Plache

Date: Saturday, June 23rd
Place: Goodwood
Weather: Sunny to overcast; windy
Leader: Burkhard Plache
Participants: 15

Drysdale Bog is located in Goodwood, adjacent to the Halifax Western Commons Wilderness Park.

After meeting at the turn-off from Hwy 333 into the Halifax Exhibition Centre, we continued for some 500 metres along Hwy 333 until we reached the point where the Pipeline Road meets the highway. This old gravel road used to be a service road for the water pipeline that brought water from Big Indian Lake to Long Lake, which was until 1977 part of the water supply of Halifax.

The distance from the highway to the bog is approximately two kilomeetres. The old road runs through a forest of maybe 15-metre-high trees, mostly spruce and Red Maple, with a sometimes dense understory of Balsam Fir and a scattering of other trees, reaching the bog at its northern edge. The forest floor is often wet, with a handful of streams running near the road or under it; one stream has eroded the material covering the pipeline, exposing a two- to three-metre-long section. Initially, there is a ten- to twenty-metre-wide zone of trees and shrubs between it and the bog, then these get sparser, allowing a full view of the bog.

It is shaped roughly like a triangle, and the base side along the road is some 450 metres long. From there, it extends to its end point some 800 metres to the south. A rough estimate from the map gives an area of 40-45 hectares. However, there is also a bog section to the north of the road, adding another two to three acres. This northern part has more tree cover than the larger area to the south.

In preparation for the walk, Bogs & Fens: A Guide to the Peatland Plants of the Northeastern United States and Adjacent Canada by Ronald B. Davies (University Press of New England, 2016) was an important resource. Much of the following is drawn from that book.

The Drysdale Bog falls in the overall category of a wetland – land with the water level being close to the surface for a good part of the year. The waterlogged soil is generally anaerobic (oxygen depleted) which restricts the plant species that can grow there.

A subset of wetlands are peatlands. In those, the surface of the land is built up by peat moss, which creates acidic conditions. Peatlands can be further subdivided into fens and bogs. Fens receive at least some of their water from the surrounding area (streams, springs); bogs receive all of their water from precipitation. The difference in the water source has implications for the minerals available in a peatland – fens are supplied with minerals from the surrounding area while shallow bogs may receive some minerals from an underlying soil but are otherwise restricted to dust carried in by the wind.

This restriction in the mineral supply constrains the plants which can grow in a bog. One genus of plants that is well adapted to such conditions are the peat mosses *(Sphagnum* sp.), of which some 380 are known. Peat mosses are not only adapted to the bog's special conditions, they are also responsible for maintaining them, as their water storing capacity ensures that a bog stays wet throughout the year. Furthermore, Sphagnum continuously grows at the top, while the lower, older plant matter stays behind. But, due to the absence of oxygen and the high acidity of the substrate, this old plant matter does not decay. Thus, the peat moss accumulates, and as a consequence, peatlands can grow in height, with the old material accumulating into peat beds up to tens of metres in depth.

Drysdale Bog is just such a peatland, and the accumulated depth of it is higher in the centre than at the edges. This uneven pattern makes the bog convex. Interestingly, the top of the bog has some open water. While water typically flows downhill, in this case the water is held in place by the sphagnum moss, which serves as an absorbant sponge which prevents the water from percolating into lower parts of the bog.

Near its edge, we took a closer look at the plants. We observed plants in the Ericaceae family, which have a large presence in bogs, and Sedges which are also frequently found in such wet areas. However, with a few exceptions, it is hard to identify particular species.

At this point in time, seven participants were heading back, while the rest continued for approximately another one kilometre to Big Indian Lake. The trail there is initially fairly level before it descends to the lake. On the way, one of us spotted a Luna Moth resting on a Balsam Fir branch. We also heard an owl calling, most likely a Barred Owl. That sound-based identification was made more credible when a Barred Owl feather was found next to the trail.

On the way back, we had another stop at the bog, and a few of us ventured up to the open water at the top of it. Plant growth in that area is particularly sparse, with only sporadic, stunted Black Spruce and a few shrubs, all less than 20 cm high. Many Bakeapple plants and some 100 Dragon's Mouth Orchids in bloom were particularly noticeable there.

Over all, we had a truly marvellous afternoon, with many opportunities to share observations and learn about plants in general and bog vegetation in particular.

DRYSDALE BOG SPECIES

PLANTS

Those marked with a 'T' were seen only along the trail. Those unmarked were seen in the bog, and possibly elsewhere. The 'f' indicates species which were flowering.

Coniferous Trees

Balsam Fir	*Abies balsamea* T
Common Juniper	*Juniperus communis*
Tamarack	*Larix laricina*
Black Spruce	*Picea maritima*

Deciduous Trees

Red Maple	*Acer rubrum* T
Speckled Alder	*Alnus incana* T
Paper Birch	*Betula papyrifera* T
Grey Birch	*B. populifolia* T
Yellow Birch	*B. alleghaniensis* T
American Beech	*Fagus grandifolia* T
Wych Hazel	*Hamamelis virginiana* T
Willow	*Salix* sp. T
Red Oak	*Quercus rubra* T

Shrubs

Bog Rosemary	*Andromeda polifolia*
Leatherleaf	*Chamædaphne calyculata*
Bunchberry	*Cornus canadensis*
Black huckleberry	*Gaylussacia baccata* T
Lambkill/Sheep Laurel	*Kalmia angustifolia* T, f
Bog laurel	*Kalmia polifolia* f
Bayberry	*Morella pensylvanica* T, f
Sweet Gale	*Myrica gale*
Black Chokeberry	*Photinia melanocarpa*
	syn. *Aronia melanocarpa* f
Rhodora	*Rhododendron canadense* T
Labrador Tea	*Rhododendron groenlandicum* f
Bakeapple/Cloudberry	*Rubus chamaemorus*
Bristly Blackberry	*Rubus setosus* T
Lowbush Blueberry	*Vaccinium angustifolium* f
Large Cranberry	*Vaccinium macrocarpon* f
Partridgeberry	*Vaccinium vitis-idæa* f
Witherod/Wild Raisin	*Viburnum nudum* T

Herbaceous

Wild Sarsaparilla	*Aralia nudicaulis*
Dragon's-mouth	*Arethusa bulbosa* f
Clintonia Lily/Bluebead Lily	*Clintonia borealis* T f
Pink Lady's-slipper/Moccasin Flower	*Cypripedium acaule* T f
Narrow-leaved Sundew	*Drosera intermedia*
Round-leaved Sundew	*D. rotundifolia*
Bluets	*Houstonia caerulea* T f
Twinflower	*Linnaea borealis* T f
Wild Lily-of-the-valley	*Maianthemum canadense* T f
Common Cinquefoil	*Potentilla simplex* T
Purple Pitcher Plant	*Sarracenia purpurea* f
Meadow Rue	*Thalictrum pubescens* T
Starflower	*Trientalis borealis* T f
Lance-leaved Violet	*Viola lanceolata* f

Also

Cottongrass species and many sedge species

Ferns

Cinnamon Fern	*Osmunda cinnamomea* T
Interrupted Fern	*O. claytoniana* T
Sensitive Fern	*Onoclea sensibilis* T
Bracken	*Pteridium aquilinum* T

BIRDS

(Courtesy of Patricia Chalmers, birds were observed primarily by song. Very few were actually seen. However, the Palm Warbler was *seen by Bob McDonald.)*

Herring Gull	*Larus smithsonianus*
Barred Owl	*Strix varia*
Woodpecker sp.	
Common Raven	*Corvus corax*
American Crow	*Corvus brachyrhynchos*
Black-capped Chickadee	*Poecile atricapillus*
Brown Creeper	*Certhia americana*
Winter Wren	*Troglodytes hiemalis*

Golden-crowned Kinglet	*Regulus satrapa*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*
Black-and-white Warbler	*Mniotilta varia*
Palm Warbler	*Setophaga palmarum*
Black-throated Green Warbler	*Setophaga virens*
Junco hyemalis	*Dark-eyed Junco*
White-throated Sparrow	*Zonotrichia albicollis*
Song Sparrow	*Melospiza melodia*
Goldfinch	*Spinus tristisAmerican*
Red-eyed Vireo	*Vireo olivaceus*

Other taxa included a single Red Squirrel, a Coyote (scat was observed), and a number of bullfrogs.

BELL BROOK TRAIL

– Keith Vaughan

Date: Saturday, July 7th
Place: Dartmouth
Weather: Sunny
Leader: Ron Cosper
Participants: 13

A small but enthusiastic group of HFN members met with our guide Ron Cosper at the corner of Bell Brook crescent and Pebble Creek crescent at 1:00 p.m.

Bell Brook flows out of Bell Lake and continues into Morris Lake through a narrow strip of woodland, optimistically described as 'old growth forest'. However, the variety of trees along the trail would certainly support the designation of 'Acadian Forest' to these woods. Ron opted to take us up the section of trail in the direction of Bell Lake. The trail is not difficult but is obviously well used judging by the extent of tree root exposure; some care with footsteps was advisable in order to avoid tripping over them.

Linden trees were evident at the outset of the walk, and then we came to a grove of Beech trees, which were evidently not too healthy due to fungal growth in holes left by insects (not identified). Hobblebushes, *Viburnum lantanoides,* with ripening berries were plentiful, as were Moose Maple and Striped Maple. Some wild rose bushes were equally abundant with white and pink blossoms, and Raspberry and Blackberry bushes were in fruit. A single past-its-prime Pink Lady's Slipper was spotted, suggesting that a revisit of the trail might be productive in another season.

Other trees observed were Red Maple, Red Oak, Yellow Birch (identified by its saw-tooth edged leaves), White Birch, and Poplar. The underbrush was replete with rich displays of fern, identified later as Sensitive Fern.

After about one hour of walking, the trail was interrupted by a road – the other end of Bell Brook Crescent. One of the participants noticed a lovely Silk Lilac tree in flower by the roadside. After crossing this road, the walk was continued uphill (noticeably steeper). Ron pointed

out a Wych Hazel tree and he talked about the medicinal value of Wych hazel and also the use of forked Wych Hazel branches as divining rods. Near the top of the walk a grove of Ash trees was identified.

In all, this walk was much enjoyed by the participants, who agreed that more walks along trails in the Dartmouth network should be pursued in future.

A vote of thanks to Ron Cosper for leading leading this rewarding hike.

OLD FORESTS OF SANDY LAKE

– David Patriquin

Date: Saturday, July 14thth
Place: Sandy Lake, Bedford
Weather: Sunny, 20˚C
Leader: David Patriquin
Participants: 16

The extensive forests of the Jack Lake lands and around Sandy Lake are not well known to Haligonians. I knew little about them until mid-2017, when I was asked if I would do a flora survey of 'Sandy Lake and Environs' for the Sandy Lake Conservation Association as part their efforts to protect the ecological integrity of the area. I was hesitant to do so because of other commitments, but a single visit on June 14th convinced me that it had to be done. I had seen Gaspereau in the shallows of Sandy Lake, three-ft diameter Hemlocks and White Pines, and sweeps of mixed Acadian forest with magnificent Yellow Birch, Sugar and Red Maples, and Red Spruce in addition to the White Pines and Hemlock. I conducted field trips on 22 days over the period of June 14th to November 1st, 2017; a few were on water (paddling) but most were on land. I wanted to produce a general description of 'what's there', rather than simply a floral list – the latter is another, ongoing project. Also, HFN's Clarence Stevens was conducting bird and other fauna surveys in the area at the same time, along with his Snapping Turtles rescue activities.

In the process of my surveys, I found many patches of what I would call 'Old Growth', with large diameter trees, snags, fallen dead trees (coarse and woody debris), often with sub-canopies of Striped Maple and Wych Hazel. I selected three such patches, characterised by different dominant tree species, for a formal assessment of their 'Old Forest Scoring' according to NSDNR procedures given in Nova Scotia's Old Forest Policy, August 2012 Report for 2012-2014. Colin Gray, the 'Old Forest' coordinator at the Mersey Tobeatic Research Institute, collaborated in that exercise.

The main criteria for Old Growth status by NSDNR's scheme are: greater than 30% crown closure; greater than 50% of basal area in climax species typical of the landscape; and greater than 30% of the basal area more than 125 years old. There are other variables measured but those are the critical ones for scoring.

A few summary stats for my three chosen sites are given below:

White Pine site – White Pine dominant, with some Red Spruce and Eastern Hemlock; occasional Yellow Birch and Red Maple; average age of larger trees 130 years; oldest 134 years. DNR classification – Old Growth.

Hemlock Site – Eastern Hemlock dominant, with some Red Spruce, Yellow Birch, and Red Maple amongst the larger trees; average age of larger trees 124.7 years; oldest 136 years. DNR classification – borderline Old Growth/Mature Climax (which one depends on whether you count 124.7 as 125 for Old Growth, or as 80-125 for Mature Climax.

Mixed Site – hardwood dominant, with Yellow Birch, Sugar Maple, Red Spruce, some Red Maple, and Hemlock amongst the larger trees; average age of larger trees 104 years; oldest 141 years. DNR classification – Mature Climax.

On this HFN field trip, we visited each of these sites, passing through forests in other successional stages or with differing degrees of past harvesting as we moved between them.

Two features of these forests changed the way I think about our forests in general and likewise impressed the HFN group when they saw them and learned how they came about. The two features are 'The Acadian Forest Love Affair' and 'Pit and Mound Topography'.

The Acadian Forest Love Affair is my descriptor for a physically intimate association of Yellow Birch and Hemlock that is common in the forests of Sandy Lake and environs.

Not counted in the NSDNR scheme (but I think it should be), Pit and Mound Topography refers to the uneveness of forest floor that in areas at Sandy Lake occur like a series of waves across the landscapes. I first became familiar with pits and mounds through a talk given by Donna Crossland and a field trip led by Elena Ponaramenko at an MTRI Conference on old forests held at Debert in the fall of 2016. A pit and a mound structure forms when a large tree is uprooted. The area where the tree once stood, – or part of it – forms a pit, and, after it has largely decomposed, the uprooted base forms a mound. We tend not to notice them as anything other than 'the ups and downs of the forest floor' until they are pointed out for what they are. The mounds at Sandy Lake area can be as much as a metre high, five metres in length and one to two metres wide, with the pit area typically one to two metres in diameter.

The mounds are preferred habitat and 'ground' for establishment of tree seedlings; most of the big trees we see today are found on top of old mounds, including Yellow Birch and Hemlock. These 'breeding' mounds are not found in forests with long histories of harvesting of big trees, nor in clearcut forests, so the Sandy Lake sites provide special opportunities to observe them.

In some places, pit and mound structures occur in a repeated series, with their mounds' long axes oriented perpendicular to the direction of wind which blew the

trees down; walking across them in the direction of the wind is something akin to swimming or paddling through a set of swells in the ocean. These mounds were formed by blowdowns of very large trees, during very big storms, which I estimate occurred about 150 years ago at many sites.

Pits often develop as vernal (temporary) pools, providing habitat for amphibians and other organisms requiring water for part of their life cycle. As the trees grow old and the mounds erode, their roots are exposed. This creates cavities for wildlife between the roots and the trunk.

Read and view photos and videos about those phenomena on the website in which I report the results of my surveys at **www.sandylakebedford.ca**. Then go to the area to view them yourself if you haven't been there!

In early June of 2018, HFN signed on as one of the first members of the Sandy Lake Regional Park Coalition. The Coalition's proposed park is "two thousand acres of rich ecosystems that stretch between the Hammonds Plains Road and the Sackville River, encompassing the lands and rivers between Sandy Marsh and Jack Lakes and the Sackville River. It has been recognised for nearly five decades – provincially, municipally, locally, and in multiple reports and studies – to be a special landscape worth protecting. Community efforts plus some twists of fate have allowed these lands to remain largely in good condition, and other twists of fate have caused protective processes to fail." (Source – pamphlet produced by SLCA).

Currently, approximately 1,000 acres are owned by HRM, so the Coalition is campaigning to see that an additional 1,000 acres is acquired and then put together with the currently-owned lands as the Sandy Lake Regional Park. (Go to **www.sandylake.org** for more information)

This is an endeavor that is well worth our support.

THE BUTTERFLY WALK

– Susan Moxon and Clarence Stevens

Date: Saturday, August 11th
Place: Eastern Passage Boardwalk and area
Leader: Clarence Stevens
Participants: 15

It was a fabulous sunny day (no humidity!) when the 15 participants gathered at Fisherman's Cove for the Butterfly Walk. It turned out not only to be a butterfly walk with Clarence, but also a plant identification walk as well. (Fortunately, one of the participants had requested that some plants be identified.)

Clarence told us that when he was a small boy he would catch butterflies in order to identify them. He suggested that now however, we should use binoculars or a camera to identify them. Until you are more experienced, it is difficult to see the distinguishing features of a butterfly. The most common butterfly in metro is the Cabbage White – not to be confused with the Mustard White or the Clouded Sulphur. The Mustard White has green veins and the Clouded Sulphurs are pale yellow.

Butterflies are sun worshippers and the best time for viewing them is between 12:00 and 2:00 o'clock; the best place to find them is where there are lots of wildflowers.

However, not all butterflies feed on nectar. Some butterflies feed on sap from various trees while others feed on mineral soil. There is even a variety which feed on aphids.

There are ten common butterflies in Nova Scotia and 40 to 50 rare ones. Mount Uniacke is a good spot to view rare butterflies because those rarities like the sedges that grow there.

Near some Queen Ann's Lace,we saw our first Common Wood Nymph Butterfly. It is dark brown with two spots or eyes on each wing. In Nova Scotia, we have six species of butterflies with eyes (the number of 'eyes' can range from two to six); these 'wing eyes' make them appear larger to predators.

We would pass several more Common Wood Nymphs as we traversed the inside area of the boardwalk. We also passed by some Soapwort which Clarence said smells like sweet cotton candy and therefore attracts butterflies. Butterflies are short-lived (about two weeks) and usually die of old age. Later on our walk, we saw a dead Cabbage White which had most probably been hit by a car. Heavy rain will also kill butterflies.

There are some species which have several hatching times, and others which have only two hatching periods – early spring – and summer.

Butterflies have excellent eyesight therefore one should always move slowly to avoid startling them. Also one should not throw one's shadow over butterflies. We clamoured over the beach rocks so as not to shadow the wildflowers with their butterfly visitors. There were Pearly Everlasting, Evening Primrose, Beach Pea, Hawkweed, Knapweed, and Red Clover. Red Clover is a super plant for butterflies because of its very sweet nectar. It was also noted that Red Clover contains estrogen! Any place which has Red Clover, Knapweed, and Blackberry will undoubtedly have butterflies. We then spotted a Carolina Cricket. We were hoping to see a Northern Blue Butterfly as Nova Scotia is the southern range for them. They are an Arctic species which like Beach Pea, however we did not see any.

We also trampled through tall grasses in order to raise up any potential resting butterflies. While doing this, we came across larvae which would hatch into Ladybugs. Never destroy this type of larvae as Ladybugs eat aphids. Farmers and gardeners love Ladybugs!

We then returned to our cars and car-pooled down Shore Road to park near a sandy beach. Out on the water we saw Eider ducks, and there were Pink Touch-Me-Nots growing along the shore. The flowers are so named because the ripe seed pods burst when touched.

We next crossed the road and walked up a grassy lane. We spotted a Goldfinch – also known as a Wild Canary. Clarence pointed out Fireweed which grows up after a fire and also Purple Loosestrife which is invasive. We passed by some Jewelweed also known as Spotted Touch-me-not (excellent for hummingbirds). We saw Vetch and Goldenrod – which is pollinated by flies!

Coming out at Tallahassee School we heard a Catbird. Clarence made a squeaking noise and it flew up to a tree. This bird makes a catlike 'mew' thus its name. We spotted here a migrating Monarch Butterfly; Hartley Point is a flyover spot for them.

Next we saw a Hobomok Skipper. This small butterfly has slim triangular wings. The next sighting was a Clouded Sulphur, and we noted its wing's black edges. Clarence told us there were other Sulphur Butterflies, including the Orange, Pink-edged, and Yellow. When we looked back from where we were, we saw a Ringed Neck Pheasant!

We followed a fence line because there were undisturbed plants there ideal for butterflies. We passed Black-eyed Susan, White Sweet Clover, Bindweed, Wild Mint, a European Hawthorn, Spirea, Common St John's-wort, a grape vine, and an apple tree; Goldentops, once categorised as Goldenrod, were pointed out. Clarence told us that if you planted Black-eyed Susan seeds, they wouldn't come up until the second year so it's not a good idea to disturb them after planting.

There are 13 species of Skipper Butterflies in Nova Scotia – they are all small, orange butterflies, and the Arctic species is covered with white spots. As we headed black to our cars, a quick-moving Harvester, a Northern Pearly Eye, and an Eyed Brown were spotted.

It was a most enjoyable afternoon, and we thanked Clarence before heading for home. However, there were some participants who continued on to Hartley Point for more sightings. There, they identified five more species (three butterflies and two 'day-flying' moths).

When you go on a tour with Clarence, you soon realise what a wealth of knowledge and information he has to share; he is an amazing naturalist. Thank you,Clarence!

Below are listed all the butterflies and the two day-flying moths which were identified that lovely summer afternoon.

The butterflies include: Aphrodite Fritillary, Cabbage White, Clouded White, Clouded Sulphur, Common Wood Nymph, Eyed Brown, Harvester, Hobomok Skipper, Least Skipper, Monarch, Northern Pearly Eye, Northern Blue, Northern Crescent, and the Silver-bordered Fritillary. The day-flying moths were the Virginia Ctenucha and the Clover Looper.

MELMERBY WEEKEND

– Stephanie Robertson

Date: Sept. 8th, 9th, and 10th
Place: Melmerby Beach, Pictou County
Leaders: All participants
Participants: 11

Except for some very strong northeast winds, and a few drops of rain on Saturday, the weather cooperated beautifully for us. Grace and Richard Beazley had brought a long, neat, and ingeniously designed – both inside and out – small camping trailor. After everyone had chosen their respective sleeping places in either the front or back cottage, walks, swims, and then the first potluck supper took place. Many interesting stories were shared afterwards right up until everyone agreed to 'hit the sack'. Both nights were warm and humid, so for those rooms that had them, the ceiling fans were very welcome.

After breakfast on Saturday people chose their preferred activities, bioblitzing seaside plants from the water's edge up to the line of shrubs behind the dunes; swimming; fossil hunting at the other end of the beach; walking the whole beach; or birdwatching.

On Sunday there were more of the same activities until after lunch and early afternoon, when people packed up and left for home. One exciting observation on that morning – a Bald Eagle gliding leisurely in to perch on the the top of a 40-ft high spruce in amongst the area's cottages. According to the more frequent residents, he has been a regular and doesn't seem to mind the human to-and-fro-ing down below him; they seemed to think he was the same one which comes around every year. We all had very good views, and Bob McDonald managed an excellent photo with his camera.

Burkhard and Ingrid stayed later, Ingrid and I having one last swim (I discovered over this weekend that swimming was very good for my badly sprained ankle) in the refreshing Northumberland Strait waters.

All in all, once more a very enjoyable weekend in the uniquely sweet and invigorating Melmerby air.

MELMERBY SPECIES

Plants

White Spruce	*Picea glauca*
Northern Bayberry	*Myrica pensylvanica*
Sweet Gale	*Myrica gale*
Seabeach Sandwort	*Honckenya peploides*
Sea Lavender	*Limonium carolinianum*
Salt bush, Orach	*Atriplex* sp.
Samphire	*Salicornia* sp.
Common Saltwort	*Salsola kali*
Sea-blite	*Suaeda* sp.
Sea Rocket	*Cakile edentula*
Sea Milkwort	*Glaux maritima*
Raspberry	*Rubus* sp.
Roses	*Rosa rugosa, Rosa* sp.
Black Chokeberry	*Aronia melanocarpa*

Beach Pea	*Lathyrus japonica*
Vetch	*Vicia* sp.
Evening Primrose	*Oenothera biennis*
Seashore Plantain	*Plantago maritima*
Beach Wormwood	*Artemisia stelleriana*
Aster	various genera
Seaside Goldenrod	*Solidago sempervirens*
Rough-stem Goldenrod	*S. rugosa*
Canada Goldenrod	*S. canadensis*
Common Yarrow	*Achillea millefolium*
Common Cocklebur	*Xanthium strumarium*
Marram Grass	*Ammophila breviligulate*
American Dune Grass	*Elymus mollis*
Freshwater Cord Grass	*Spartina pectinata*
Salt-meadow Grass	*Spartina patens*
Cord Grass	*Spartina alterniflora*

Birds

Mourning Dove 2	*Zenaida macroura*
Ruby-throated Hummingbird 1	*Archilochus colubris*
Sanderling	*Calidris alba*
Semipalmated Sandpiper 2	*C. pusilla*
Greater Yellowlegs 2	*Tringa melanoleuca*
Lesser Yellowlegs 4	*T. flavipes*
Bonaparte's Gull 2	*Chroicocephalus philadelphia*
Ring-billed Gull 30	*Larus delawarensis*
Herring Gull 15	*L. argentatus*
Great Black-backed Gull 2	*L. marinus*
Common Tern 6	*Sterna hirundo*
Northern Gannet 8	*Morus bassanus*
Double-crested Cormorant 20	*Phalacrocorax auritus*
Great Blue Heron 3	*Ardea herodias*
Osprey 1	*Pandion haliætus*
Northern Harrier 1	*Circus cyaneus*
Bald Eagle 3	*Haliæetus leucocephalus*
Belted Kingfisher 1	*Megaceryle alcyon*
Yellow-bellied Sapsucker 1	*Sphyrapicus varius*
Pileated Woodpecker 1	*Hylatomus pileatus*
Northern Flicker 2	*Hylatomus pileatus*
American Kestrel 1	*Falco sparverius*
Red-eyed Vireo 2	*Vireo olivaceus*
Blue Jay 6	*Cyanocitta cristata*
American Crow 20	*Corvus brachyrhynchos*
Common Raven 2	*Corvus corax*
Black-capped Chickadee 4	*Poecile atricapillus*
American Robin 1	*Turdus migratorius*
Cedar Waxwing 1	*Bombycilla cedrorum*
Purple Finch 1	*Hæmorhous purpureus*
American Goldfinch 10	*Spinus tristis*
Savannah Sparrow 2	*Passerculus sandwichensis*
Song Sparrow 8	*Melospiza melodia*

NATURE NOTES

SEPTEMBER

Regine Maass saw **a small, yellow, Fourteen-spotted Ladybug**, *Propylea quatuordecimpunctata*, and a Ringneck Snake, *Diadophis punctatus*, about eight inches long. She also saw **a Grey Catbird**, *Dumetella carolinensis*, on her elderberries. And, in spite of the long cold spring, her fruits ripened five to six days earlier than she was used to, and she had bumper crops.

Judy Keating saw **a rainbow** on Hwy 103 on her way to the Halifax Field Naturalists meeting which had appeared after a sudden heavy rainfall. On the last weekend in August she saw **39 Monarch caterpillars**, *Danaus plexippus*, on her **Swamp Milkweed** plants, *Asclepias incarnata*.

David Patriquin reported finding the very rare **Blue Curls** plant, *Trichostema dichotomum*. Together with Charles Cron and Bob Kennedy, they had gone to a barren habitat near Shingle Lake, near Tangier Lake Wilderness Area, where the plant had been previously observed. Besides the patch at the known location, they found a second spot nearby. This is the only place in Nova Scotia where Blue Curls occur.

Shirley McIntyre attended a Blomidon Naturalists programme in King's County to visit **a Milkweed stand/ Monarch way station**. There was a display of all the life cycles of the Monarch Butterfly, *Danaus plexippus* – from egg, larva (caterpillar), pupa (chrysalis), to adult – and, the examples of each of these stages were live.

Jon Davies saw **a Crow** sitting on his house roof right above a wasp's nest. The Crow was catching the **wasps** 'on-the-fly' and then putting them down on the roof to pick at each one. He had never before seen a Crow catching insects on the fly; this one caught about five or six wasps while he watched. Peter Webster had a wasp's nest on his garage. He saw a Blue Jay attack and destroy it, devouring the wasps.

Dennis Hippern saw **a Golden Garden Spider**, *Argiope aurantia,* at his home in Dartmouth. The body was about 10 centimetres long.

Ingrid Plache reported observing **American Goldfinches**, *Carduelis tristis,* on a patch of **Black Knapweed**, *Centaurea nigra,* feeding on the seeds in her garden. Between one and four birds could regularly been seen on the plants on the second and third week of August.

Connie Mack had **a Whitetail Skimmer**, *Plathemis lydia,* land on the railing of her veranda.

Burkhard Plache reported seeing **a Black Bear cub**. It happened when he, Ingrid, and a friend were paddling on the Medway River some 10 km east of Kejimkujik. There was a grassy island in the river, which had many **Swamp Milkweed plants**. While they were checking those for **Monarch caterpillars** (there were only a few), he heard a splash on the other side of the island. A few seconds later, two small Bear cubs appeared out of the grass close to the tip of the friend's kayak. One tumbled into the river, and swam across to the other side; the other turned back, not to be seen again. The mother bear, who was likely responsible for the big splash, remained invisible.

Wendy McDonald was on Brier Island and saw **lots of Monarch Butterflies**. Brier Island may be on their path of migration.

Burkhard Plache mentioned seeing **Swamp Milkweed with Monarch caterpillars** and also **Buttonbush shrubs**, *Cephalanthus occidentalis,* with adult Monarchs on them at Molega Lake. He also spotted **Redroot**, *Lachnanthes caroliniana,* growing along the shore.

ALMANAC

This almanac is for the dates of events which are not found in our HFN 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.

Women at forty are the end of summer,
lakes swollen with warm water,
eel grass. They border fall
where they will have to say goodbye
to long evenings. Now, at the height of the year,
nights chill slightly, nights filled
with summer skies - the Big Dipper,
the Pleiades, bodies blazing.

– Carole Langille, from her poem "Women at forty" in In Cannon Cave (1997)

NATURAL EVENTS

22 Sept. Autumnal Equinox at 22:54 ADT: Fall begins in the Northern Hemisphere.
24 Sept. Full Moon. Moonrise at 19:21 ADT.
28/29 Sept. Fifteenth anniversary of Hurricane Juan.
30 Sept. Average date for first frost in Halifax (i.e. Environment Canada says there is only 1:10 chance we will have frost before this date). Look forward to 210 days of frosty weather.
24 Oct. Full Moon. Moonrise at 18:43 ADT.
4 Nov. Daylight Saving Time ends (clocks are set back one hour) and Atlantic Standard Time begins at 2:00 a.m.
23 Nov. Full Moon. Moonrise at 17:25 AST.
22 Nov. Daily minimum temperature goes below 0˚C.
5-14 Dec. Earliest Sunset of the year at 16:34 AST.
7 Dec. Daily average temperature goes below 0 C.
13/14 Dec. Geminid Meteor Shower.
14 Dec. -5 Jan. Audubon Christmas Bird Count Period.
21 Dec. Winter Solstice at 19:23 AST. Winter begins in the Northern Hemisphere; though the temperature drops, the days begin to lengthen.
22 Dec. Full Moon. Moonrise at 16:51 AST.
27-31 Dec. Latest Sunrise of the Year at 07:51 AST.

– Sources: Atmospheric Environment Service, Climate Normals 1951-80 Halifax (Shearwater A) N.S.; Blomidon Naturalists Society's 2018 Calendar; United States Naval Observatory Data Services.

SUNRISE AND SUNSET ON AUTUMN AND EARLY WINTER SATURDAYS FOR HALIFAX: 44 39 N, 063 36 W

1	**Sept.**	06:37	19:51	**6**	**Oct.**	07:18	18:46
8	**Sept.**	06:45	19:38	**13**	**Oct.**	07:27	18:33
15	**Sept.**	06:53	19:25	**20**	**Oct.**	07:36	18:22
22	**Sept.**	07:01	19:12	**27**	**Oct.**	07:45	18:10
29	**Sept.**	07:10	18:59				
3	**Nov.**	07:55	18:01	**1**	**Dec.**	07:31	16:36
10	**Nov.**	07:04	16:52	**8**	**Dec.**	07:39	16:34
17	**Nov.**	07:14	16:45	**15**	**Dec.**	07:44	16:35
24	**Nov.**	07:23	16:39	**22**	**Dec.**	07:49	16:38
				29	**Dec.**	07:51	16:42

ORGANISATIONAL EVENTS

Blomidon Naturalists Society: Indoor meetings are held on the 3rd Monday of the month, in Room BAC241 in the Beveridge Arts Centre, Acadia University, 7:30 p.m. Field trips usually depart from the Wolfville Waterfront, Front Street, Wolfville. For more information, go to **http://www.blomidonnaturalists.ca/**.

17 Sept. "Sable Island", with speaker Dan Kehler, Sable Island National Park Reserve.
13 Oct. "Mushroom Walk", with leaders Ken Harrison and Bill Shaw.
15 Oct. "Water and Wildlife in the Back Yard", with speaker Doug Hickman.

Burke-Gaffney Observatory: Public shows at the Burke-Gaffney Observatory at Saint Mary's University are held on the 2nd and 4th Friday of each month, except from June through September when they are held every Friday. Tours begin at 7:00 p.m. between November 1st and March 30th, and at either 9:00 p.m. or 10:00 p.m. (depending on when it gets dark) between April 1st and October 31st. For more information, 496-8257, or **http: //www.smu.ca/academics/departments/astronomy-physics-burke-gaffney-observatory.html#tours**.

Friends of McNab's Island: For more information, email **info@mcnabsisland.ca**, or visit **http://mcnabsisland.ca/contact or call Faye, 443-1749**.

14 Oct. "Fall Foliage Tour". **Rain date - 21 Oct.**

Nova Scotia Bird Society: Indoor meetings usually take place on the 4th Thursday of the month, September to April, at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information email the trip leader, or **fieldtripcoordinator@nsbirdsociety.ca**.

23 Jun. "Birding Stewiacke", with leader Barb McLaughlin, 902 639-2064, **bauld.mclau@ns.sympatico.ca**.

22 Sept. "Early Fall Migrants at Taylor Head Provincial Park", with leader Jim Cameron, 902-885-2970 or Warren Parsons, 902-772-2207.

27 Sept. "Recovering Species at Risk", with speaker Brad Toms, Mersey Tobeatic Research Institute.

28 Sept. "Brier Island Weekend", with leader Jamers Hirtle 902-693-2174, email jrhbirder@hotmail.com

17 Nov. "Annual General Meeting"

25 Nov. "Winter Birds at Taylor Head Provincial Park", with leader Jim Cameron, 902-885-2970 or Warren Parsons, 902-772-2207.

Nova Scotia Department of Natural Resources: Many outings which will take place in Provincial Parks are listed in the "Parks are for People" Programme, available at museums, parks, and tourist bureaus, and on the web at **http://www.novascotiaparks.ca/**.

Nova Scotia Museum of Natural History: For more information phone 424-6099, 424-7353, or go to **http://naturalhistory.novascotia.ca/**.

7/8 Jul. "Cat Fest" the 4th Annual Cat Fest celbrating all things 'cat' with tables, events, live cats, hands-on activities, vendors, amazing cat charities, and a Cat Show with purebred and domestic cats both days.

Nova Scotia Nature Trust: For questions or to register, please contact **events@nsnt.ca**, or 902-425-5263. Note that there are charges for these events. Go to **http://www.nsnt.ca**.

25 Oct. 21st Annual Dinner/Auction; theme - "Uncovering Nature's Secrets", with speaker Andrew Hebda, Curator of Zoology, Nova Scotia Museum.

Nova Scotia Wild Flora Society: Meets the fourth Monday of the month, September to May, at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information email **nswildflora@yahoo.ca** or go to **http://www.nswildflora.ca/**.

24 Sept. "The Acadian Forest Love Affair", with speaker David Patriquin.

13 Oct. Rain Date 14 Oct. "Drumlin and Morraine Forests on Jack Lake Lands" with leader David Patriquin.

22 Oct. "Three Unique Habitats: Albert Mines, Cape Breton, Shingle Lake" with speaker Bob Kennedy.

Nov. Date TBA. "Mosses at Point Pennant", with leader Anne Mills.

26 Nov. Topic TBA.

Nova Scotian Institute of Science: Meets the first Monday of the month, September to April, usually at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information http://nsis.chebucto.org/

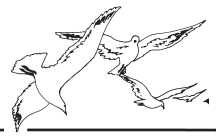
Royal Astronomical Society of Canada (Halifax Chapter): Meets the third Friday of each month (except July and August) in Room AT101 of the Atrium Building at Saint Mary's University, 8:00 p.m. For more information go to **http://halifax.rasc.ca/**.

10 Aug. -13 Aug. "Nova East 2018", Atlantic Canada's longest-running star party, held at Smiley's Provincial Park.

Young Naturalists' Club: A fun, free nature club for children seven to 12 years. Meetings take place every third Saturday of the month (excepting July and August), at the Museum of Natural History, 1747 Summer St., from 10:30 - 11:30 a.m. Field trips take place every fourth Sunday, at 1:00 p.m. For more information, Karen McKendry, 404-9902, **ynchalifax@yahoo.ca**; or, go to **http://nature1st.net/ync**.

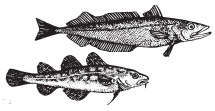
– compiled by Patricia L. Chalmers

HALIFAX TIDE TABLE



October-octobre

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0622	**0.6**	2.0	**16**	0041	**1.5**	4.9
	1152	**1.7**	5.6		0742	**0.8**	2.6
MO	1907	**0.4**	1.3	TU	1252	**1.6**	5.2
LU				MA	2004	**0.6**	2.0
2	0031	**1.6**	5.2	**17**	0139	**1.5**	4.9
	0729	**0.6**	2.0		0840	**0.8**	2.6
TU	1245	**1.7**	5.6	WE	1353	**1.5**	4.9
MA	2010	**0.4**	1.3	ME	2055	**0.6**	2.0
3	0133	**1.6**	5.2	**18**	0251	**1.5**	4.9
	0836	**0.6**	2.0		0935	**0.8**	2.6
WE	1349	**1.7**	5.6	TH	1505	**1.5**	4.9
ME	2113	**0.3**	1.0	JE	2145	**0.6**	2.0
4	0250	**1.6**	5.2	**19**	0403	**1.5**	4.9
	0941	**0.6**	2.0		1025	**0.7**	2.3
TH	1507	**1.7**	5.6	FR	1613	**1.5**	4.9
JE	2214	**0.3**	1.0	VE	2234	**0.5**	1.6
5	0412	**1.6**	5.2	**20**	0458	**1.6**	5.2
	1044	**0.5**	1.6		1111	**0.6**	2.0
FR	1626	**1.7**	5.6	SA	1707	**1.6**	5.2
VE	2314	**0.2**	0.7	SA	2320	**0.5**	1.6
6	0517	**1.7**	5.6	**21**	0540	**1.6**	5.2
	1146	**0.4**	1.3		1153	**0.6**	2.0
SA	1733	**1.8**	5.9	SU	1752	**1.6**	5.2
SA				DI			
7	0011	**0.2**	0.7	**22**	0004	**0.4**	1.3
	0611	**1.9**	6.2		0617	**1.7**	5.6
SU	1244	**0.3**	1.0	MO	1233	**0.4**	1.3
DI	1829	**1.9**	6.2	LU	1833	**1.7**	5.6
8	0104	**0.1**	0.3	**23**	0044	**0.3**	1.0
	0659	**1.9**	6.2		0652	**1.7**	5.6
MO	1337	**0.2**	0.7	TU	1313	**0.3**	1.0
LU	1920	**1.9**	6.2	MA	1913	**1.7**	5.6
9	0154	**0.1**	0.3	**24**	0123	**0.3**	1.0
	0744	**2.0**	6.6		0726	**1.8**	5.9
TU	1427	**0.1**	0.3	WE	1353	**0.2**	0.7
MA	2008	**1.9**	6.2	ME	1952	**1.7**	5.6
10	0241	**0.2**	0.7	**25**	0201	**0.3**	1.0
	0828	**2.0**	6.6		0801	**1.8**	5.9
WE	1515	**0.1**	0.3	TH	1434	**0.1**	0.3
ME	2055	**1.8**	5.9	JE	2032	**1.7**	5.6
11	0326	**0.2**	0.7	**26**	0241	**0.3**	1.0
	0910	**1.9**	6.2		0839	**1.9**	6.2
TH	1601	**0.2**	0.7	FR	1518	**0.1**	0.3
JE	2139	**1.8**	5.9	VE	2113	**1.7**	5.6
12	0411	**0.4**	1.3	**27**	0324	**0.4**	1.3
	0951	**1.9**	6.2		0919	**1.9**	6.2
FR	1646	**0.2**	0.7	SA	1604	**0.1**	0.3
VE	2223	**1.7**	5.6	SA	2156	**1.7**	5.6
13	0457	**0.5**	1.6	**28**	0413	**0.4**	1.3
	1033	**1.8**	5.9		1002	**1.8**	5.9
SA	1733	**0.3**	1.0	SU	1656	**0.2**	0.7
SA	2307	**1.7**	5.6	DI	2241	**1.7**	5.6
14	0548	**0.6**	2.0	**29**	0512	**0.5**	1.6
	1115	**1.7**	5.6		1048	**1.8**	5.9
SU	1822	**0.4**	1.3	MO	1754	**0.2**	0.7
DI	2352	**1.6**	5.2	LU	2330	**1.7**	5.6
15	0644	**0.7**	2.3	**30**	0620	**0.6**	2.0
	1201	**1.7**	5.6		1137	**1.8**	5.9
MO	1912	**0.5**	1.6	TU	1856	**0.3**	1.0
LU				MA			
				31	0024	**1.6**	5.2
					0728	**0.6**	2.0
				WE	1233	**1.7**	5.6
				ME	1958	**0.3**	1.0



November-novembre

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0126	**1.6**	5.2	**16**	0203	**1.6**	5.2
	0833	**0.6**	2.0		0848	**0.8**	2.6
TH	1339	**1.7**	5.6	FR	1413	**1.5**	4.9
JE	2059	**0.3**	1.0	VE	2049	**0.6**	2.0
2	0241	**1.6**	5.2	**17**	0309	**1.6**	5.2
	0936	**0.5**	1.6		0938	**0.7**	2.3
FR	1457	**1.6**	5.2	SA	1520	**1.5**	4.9
VE	2158	**0.3**	1.0	SA	2138	**0.6**	2.0
3	0357	**1.7**	5.6	**18**	0406	**1.6**	5.2
	1037	**0.4**	1.3		1026	**0.6**	2.0
SA	1616	**1.7**	5.6	SU	1621	**1.5**	4.9
SA	2256	**0.3**	1.0	DI	2228	**0.5**	1.6
4	0458	**1.8**	5.9	**19**	0453	**1.7**	5.6
	1136	**0.3**	1.0		1113	**0.5**	1.6
SU	1720	**1.7**	5.6	MO	1713	**1.5**	4.9
DI	2352	**0.3**	1.0	LU	2315	**0.5**	1.6
5	0548	**1.8**	5.9	**20**	0532	**1.7**	5.6
	1230	**0.2**	0.7		1158	**0.4**	1.3
MO	1814	**1.7**	5.6	TU	1759	**1.6**	5.2
LU				MA			
6	0045	**0.3**	1.0	**21**	0002	**0.4**	1.3
	0633	**1.9**	6.2		0610	**1.8**	5.9
TU	1321	**0.2**	0.7	WE	1243	**0.2**	0.7
MA	1903	**1.8**	5.9	ME	1843	**1.6**	5.2
7	0134	**0.3**	1.0	**22**	0047	**0.4**	1.3
	0717	**1.9**	6.2		0648	**1.8**	5.9
WE	1407	**0.1**	0.3	TH	1328	**0.1**	0.3
ME	1950	**1.8**	5.9	JE	1926	**1.7**	5.6
8	0220	**0.3**	1.0	**23**	0132	**0.4**	1.3
	0759	**1.9**	6.2		0729	**1.9**	6.2
TH	1451	**0.1**	0.3	FR	1413	**0.1**	0.3
JE	2035	**1.8**	5.9	VE	2010	**1.7**	5.6
9	0304	**0.4**	1.3	**24**	0218	**0.3**	1.0
	0841	**1.9**	6.2		0812	**1.9**	6.2
FR	1533	**0.2**	0.7	SA	1501	**0.0**	0.0
VE	2119	**1.8**	5.9	SA	2055	**1.7**	5.6
10	0346	**0.5**	1.6	**25**	0308	**0.4**	1.3
	0922	**1.8**	5.9		0858	**1.9**	6.2
SA	1614	**0.3**	1.0	SU	1551	**0.1**	0.3
SA	2202	**1.7**	5.6	DI	2143	**1.8**	5.9
11	0428	**0.6**	2.0	**26**	0404	**0.4**	1.3
	1004	**1.8**	5.9		0946	**1.9**	6.2
SU	1655	**0.4**	1.3	MO	1645	**0.1**	0.3
DI	2244	**1.7**	5.6	LU	2232	**1.8**	5.9
12	0513	**0.7**	2.3	**27**	0508	**0.5**	1.6
	1046	**1.7**	5.6		1036	**1.9**	6.2
MO	1737	**0.5**	1.6	TU	1743	**0.1**	0.3
LU	2327	**1.7**	5.6	MA	2323	**1.7**	5.6
13	0605	**0.8**	2.6	**28**	0615	**0.5**	1.6
	1130	**1.7**	5.6		1129	**1.8**	5.9
TU	1823	**0.5**	1.6	WE	1843	**0.2**	0.7
MA				ME			
14	0013	**1.6**	5.2	**29**	0018	**1.7**	5.6
	0700	**0.8**	2.6		0721	**0.5**	1.6
WE	1218	**1.6**	5.2	TH	1225	**1.7**	5.6
ME	1910	**0.6**	2.0	JE	1943	**0.2**	0.7
15	0103	**1.6**	5.2	**30**	0118	**1.7**	5.6
	0755	**0.8**	2.6		0824	**0.5**	1.6
TH	1311	**1.5**	4.9	FR	1330	**1.6**	5.2
JE	1959	**0.6**	2.0	VE	2042	**0.3**	1.0

December-décembre

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0225	**1.7**	5.6	**16**	0209	**1.6**	5.2
	0925	**0.4**	1.3		0850	**0.7**	2.3
SA	1443	**1.6**	5.2	SU	1420	**1.5**	4.9
SA	2140	**0.3**	1.0	DI	2047	**0.6**	2.0
2	0333	**1.7**	5.6	**17**	0304	**1.6**	5.2
	1024	**0.4**	1.3		0941	**0.6**	2.0
SU	1558	**1.6**	5.2	MO	1526	**1.4**	4.6
DI	2238	**0.3**	1.0	LU	2138	**0.5**	1.6
3	0432	**1.7**	5.6	**18**	0356	**1.6**	5.2
	1120	**0.3**	1.0		1032	**0.5**	1.6
MO	1703	**1.6**	5.2	TU	1628	**1.5**	4.9
LU	2334	**0.4**	1.3	MA	2231	**0.5**	1.6
4	0522	**1.8**	5.9	**19**	0443	**1.7**	5.6
	1213	**0.2**	0.7		1123	**0.4**	1.3
TU	1757	**1.6**	5.2	WE	1722	**1.5**	4.9
MA				ME	2323	**0.5**	1.6
5	0027	**0.4**	1.3	**20**	0528	**1.8**	5.9
	0608	**1.8**	5.9		1213	**0.2**	0.7
WE	1302	**0.2**	0.7	TH	1812	**1.6**	5.2
ME	1846	**1.7**	5.6	JE			
6	0117	**0.4**	1.3	**21**	0015	**0.4**	1.3
	0652	**1.8**	5.9		0615	**1.9**	6.2
TH	1347	**0.2**	0.7	FR	1303	**0.1**	0.3
JE	1932	**1.7**	5.6	VE	1900	**1.7**	5.6
7	0202	**0.4**	1.3	**22**	0107	**0.4**	1.3
	0734	**1.8**	5.9		0702	**2.0**	6.6
FR	1429	**0.2**	0.7	SA	1354	**0.0**	0.0
VE	2017	**1.7**	5.6	SA	1949	**1.7**	5.6
8	0244	**0.5**	1.6	**23**	0200	**0.4**	1.3
	0816	**1.8**	5.9		0752	**2.0**	6.6
SA	1508	**0.2**	0.7	SU	1444	**0.0**	0.0
SA	2100	**1.7**	5.6	DI	2039	**1.8**	5.9
9	0323	**0.6**	2.0	**24**	0256	**0.3**	1.0
	0858	**1.8**	5.9		0843	**2.0**	6.6
SU	1545	**0.3**	1.0	MO	1537	**0.0**	0.0
DI	2142	**1.7**	5.6	LU	2130	**1.8**	5.9
10	0401	**0.7**	2.3	**25**	0355	**0.4**	1.3
	0940	**1.8**	5.9		0935	**2.0**	6.6
MO	1622	**0.4**	1.3	TU	1631	**0.0**	0.0
LU	2222	**1.7**	5.6	MA	2222	**1.8**	5.9
11	0440	**0.7**	2.3	**26**	0458	**0.4**	1.3
	1022	**1.7**	5.6		1027	**1.9**	6.2
TU	1659	**0.4**	1.3	WE	1728	**0.0**	0.0
MA	2302	**1.7**	5.6	ME	2313	**1.8**	5.9
12	0523	**0.8**	2.6	**27**	0603	**0.4**	1.3
	1103	**1.7**	5.6		1120	**1.8**	5.9
WE	1738	**0.5**	1.6	TH	1826	**0.1**	0.3
ME	2343	**1.7**	5.6	JE			
13	0613	**0.8**	2.6	**28**	0005	**1.8**	5.9
	1146	**1.6**	5.2		0707	**0.4**	1.3
TH	1821	**0.6**	2.0	FR	1215	**1.7**	5.6
JE				VE	1924	**0.2**	0.7
14	0027	**1.6**	5.2	**29**	0059	**1.7**	5.6
	0706	**0.8**	2.6		0808	**0.4**	1.3
FR	1231	**1.5**	4.9	SA	1314	**1.6**	5.2
VE	1908	**0.6**	2.0	SA	2022	**0.3**	1.0
15	0115	**1.6**	5.2	**30**	0158	**1.7**	5.6
	0758	**0.8**	2.6		0907	**0.4**	1.3
SA	1321	**1.5**	4.9	SU	1420	**1.5**	4.9
SA	1957	**0.6**	2.0	DI	2120	**0.3**	1.0
				31	0259	**1.7**	5.6
					1005	**0.3**	1.0
				MO	1532	**1.5**	4.9
				LU	2217	**0.4**	1.3

ALL TIMES ARE AST

NEXT DEADLINE

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Send submissions to 'Newsletter', c/o NS Museum of Natural History, or by email to sdhaythorn@ns.sympatico.ca