THE HALIFAX FIELD NATURALIST

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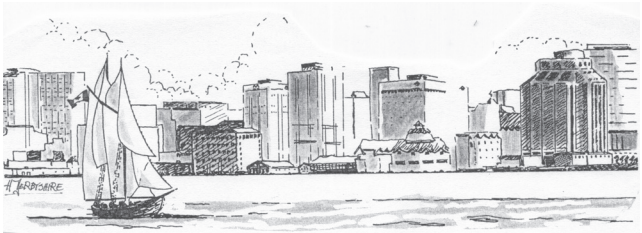
HFN is incorporated under the Nova Scotia Societies Act and holds Registered Charity status with the Canada Revenue Agency. Tax-creditable receipts will be issued for individual and corporate gifts. **HFN** is an affiliate of Nature Canada and an organisational member of Nature Nova Scotia, the provincial 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.



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FEES	2019
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HFN NEWS AND ANNOUNCEMENTS

SAVE A 'MISSING LINK'

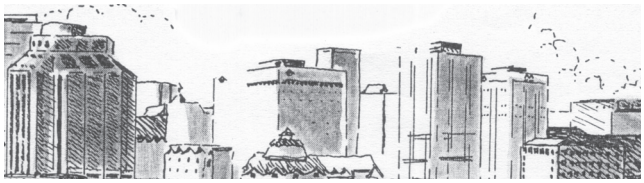
… in the Blue Mountain Wilderness Connector.

The Nova Scotia Nature Trust has announced an ambitious $2,000,000 campaign to protect a vital missing link in a beloved Halifax wilderness. The 232 hectare (575 acre) property they plan to protect is located within an area known as Blue Mountain/Birch Cove Lakes, a vast expanse of undeveloped wildlands between Hammonds Plains, Timberlea, and Halifax. As most of our readers know, this is one of the last large and intact areas of urban wildlands in Halifax Regional Municipality. They encompass a mosaic of extensive forests, bogs, and wetlands rich in biodiversity; rocky barrens and hills, sparkling rivers, and three pristine headwater lakes. Their diverse habitats support over 150 species of birds including Loons, Osprey, and woodpeckers, and many sensitive and at-risk species such as the Canada Warbler, the Olive-sided Flycatcher, and the Common Nighthawk.

This area is a popular destination for hikers, paddlers, birdwatchers, and anglers. Many individuals and organisations such as the Ecology Action Centre and the Canadian Parks and Wilderness Society have been fighting for decades to see Blue Mountain/Birch Cove Lakes set aside as protected wilderness. More recently, the Friends of Blue Mountain/Birch Cove Lakes, now with 400 members, has taken up the cause and is an active advocate for a regional wilderness park, with the apt slogan "Hear the Quiet!".

While the final boundaries and types of protected areas are still to be determined, Nova Scotia Nature Trust, community groups, HRM, and the Province all share the common vision of a large, protected urban wildland, bringing together multiple parcels of government-owned and private lands in some form of protection.

However, many of these parcels are not as yet protected, and face the increasing threat of urban development. To make a donation to help with this worthy cause, go to Nova Scotia Nature Trust's website, **nature@nsnt.ca**, where you can find the donation form and/or ask how to go about getting a form to fill out.



CITY NATURE CHALLENGE 2020!

The exciting and fun international City Nature Challenge (CNC) will be upon us before we know it. Once again, cities around the world will be competing to see who can make the most nature observations, find the most species, and engage the most participants. Last year only three Canadian cities took part (Richmond B.C.; Calgary, Alberta; and Halifax (HRM) and it was Halifax which came first out of the three – for number of observations, number of observers, number of species, and numbers of identifiers of those species. *(See Issue No. 175 for more information on the CNC and its beginnings. - ed.)*

As last year, this Nature Challenge takes place in two parts – **April 24th-27th** - taking pictures of wild plants and animals and uploading them to iNaturalist to share with assigned scientists for identification; and **April 28th-May 3rd** - identifying what was found.

This year again, thousands of people from across the globe will get outside to look for nature in their cities, and this time, the Annapolis Valley, Sydney, Saint John and Sackville (NB) will be joining Halifax in the competition. As of Dec. 16th, 250+ cities from around the world will participate including Calgary and Richmond (BC) again, along with newbies Surrey (BC) Ottawa, Toronto, and Charlottetown. This is a great opportunity for the Maritimes to highlight our biodiversity and community involvement and have fun in the process.

Why participate in the City Nature Challenge? There is nature all around us, even in our cities. Knowing what species are in our city and where they are helps us study and protect them, but the only way to do that is by all of us – scientists, land managers, and the interested and concerned community – working together to find and document our cities' flora and fauna. By participating in the City Nature Challenge, not only do you discover more about your city's plants and critters, but you can also make your city a better place – for you and its species.

Results will be announced on Monday, May 4th. Will Halifax win again? Take part, have fun, get out and about in nature, and help document our Nova Scotia cities' species.

NEW AND RETURNING

Zephyr Armsworthy
Janis Chapman
Sharayah Corcoran
Graeme Coxon
Jane & Don Flemming
Eben Fry & Julie Shanks
Barbara Haley
Ramona Hardy
Elizabeth Bolton & Taylor Hodgins
Nicole Jordan
Ruth Bishop & Marc Josselyn
Holly MacNevin
Joan McDougall
Kirby Morrill
Max M. Raissi
Dale Roddick
Daphne Themelis

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HFN TALKS

CALIFORNIA 2016 7 NOV.

– Stephanie Robertson

HFN member Keith Vaughan is a retired St. Mary's University Chemistry Professor, and member Marion Sensen is an is an Environmental Scientist with the Wood Group (formerly AMEC Foster Wheeler). Keith's specialty is organic chemistry, Marion's lichenology, and both share a very talented passion for photography.

In October 2016, they took an eighteen-day trip to expplore Northern and Central California as a follow up to their previous visit to Southern California and San Diego areas in March 2015. Their motive was to see the natural beauty of California's National Parks with their famous giant redwoods and magnificent scenery, and they certainly saw some very interesting terrain – deserts, mountains, foggy coasts, giant trees both living and petrified, saline lakes, and San Francisco's steep hills and 'Painted Ladies'.

They flew to San Francisco, rented a car, and drove south over the seven-mile long San Mateo Bridge to Sequoia National Park in the Sierra Nevada Mountains. This bridge is made up of a western 1.9-mile highrise section and an eastern trestle section. They stayed for three nights, afterwards spending one day in King's Canyon. The Sierras have three national Parks – Yosemite, Kings Canyon, and Sequoia.

Their first slide was of the San Mateo, and a second shot of a reservoir lake revealed its telltale, previously much higher level. California has been slowly drying up for several decades (Los Angeles takes all the water and there have been droughts) and here was a telling example.

Sequoia National Park ('Sequoia' is attributed to the name of a historic Indian Chief) boasted wonderful mountain scenery and beautiful trees which are the largest in the world. Following the Big Tree Trail there, they came upon a large, beautiful meadow in the middle of the forest surrounded by those magnificent giants.

Keith and Marion felt that some of the things done to 'up' the interest and awe were a little ridiculous. For instance there was a 'walk-though' tree. But – it wasn't natural – it had been specially cut so tourists could do just that. We had a chance, via one of Keith and Marion's wonderful shots, to look up, and then up some more into the tops of these lofty and breathtaking skyscrapers. The 'General Sherman' Sequoia there is the largest in the world – at an estimated 2,000 tons!

The next day they went to Three Rivers Park in the Sierra Nevada Mountains and there, at King River Gorge, they saw the 'General Grant' tree; globally, it is the world's third largest tree.

Then it was off to famous Yosemite National Park. Held up along the way by a road-block which necessitated backtracking via a much longer route to get there, and driving through a long, lighted tunnel, Keith took some very different, artistic motion shots.

Yosemite boasts the famous 188-metre Bridal Veil Falls (which couldn't be photographed until the next day, when there was no rain). They also saw El Capitan, the mountain made famous by Ansel Adams in his still popular and unforgettably dramatic black and white photography, and some of their own best pictures were taken there.

At the Merced River, a 145-mile long tributary of the San Joaquin River flowing from the Sierra Nevada, we saw some really beautiful scenery. It's a popular place for swimming, hiking, fishing, rafting, camping, and even gold-panning. Then they went to Yosemite National Park and took photographs from from Glacier Point Look-off of the famous 'Half Dome', a granite dome at the eastern end of Yosemite Valley, a well-known rock formation named for its distinct shape. One side is a sheer face while the other three sides are smooth and round, making it appear like a dome cut in half. This granite crest rises more than 4,700 ft above the valley floor. The hike to and up the dome was much too arduous to contemplate including in their itinerary; but some go there to do just that.

They found spectacular scenery in the Sierra Nevadas, and visited small Lee Vining (elevation 6,700 ft) on the southwest shore of saltwater Mono Lake in the Sierra's high desert. Its salinity is twice that of the oceans'. Since 1941, the Los Angeles Department of Water and Power has been diverting four of five Mono Lake's tributary streams 350 miles south to meet their growing water demands. By the 1970s the water had dropped low enough to signifigantly increase its salinity, and enough also to reveal some strange rock formations.

There are tall, strange 'tufa towers' along Mono's shoreline and they are a strong tourist attraction. Tufa is essentially common limestone formed when underwater springs rich in calcium mix with fresh water rich in carbonates; this makes calcium carbonate – limestone. The calcium carbonate then begins to precipitate around the inflowing springs, and over

the course of decades to centuries, 'tufa towers' grow (similar to cave stalagmites, but underwater), some to heights of over 30 feet. Now fully revealed because of water level drop, and also now subject to erosion over the years by weather, they are stunted evidence of the original water depth.

Because of Mono Lake's high salinity, there are no fish – but – plenty of brine shrimp! Over two million annual migratory birds use Mono Lake as a stopover and resting place on the way to South America and tropical oceans, where they feed on the abundance of shrimp, lay eggs, and hatch their young ones. Keith had some wonderful photographs of these – one was a beautiful Eared Grebe. Eared Grebes are almost entirely aquatic birds, swimming below the surface of the water to find food. It is estimated that Grebes spend as much as 15% of their time under water while at Mono Lake. They have numerous physical adaptations that make them excellent divers.

In the early 1900s, Los Angeles had sourced all its water from Owen's River and Owen's Lake. The latter was almost completely drained, from 250 km^2 to 70 km^2 and needless to say it killed all the agriculture in the area. With recent, better water management its waters have been slowly rising, but as of 2013, its area is still largest single source of dust pollution in the United States.

Thus, in the 1930's, Los Angeles switched to Mono Lake for its water needs. This too of course also caused signifigant water-drop, and even with later water remediation, it is still eight feet short of its original level because of droughts.

In this area Keith and Marion also took some stunning fall pictures of Aspens in full golden-leaved glory. Then, from close to the Nevada border, we were shown pictures of Bodie Ghost Town, established in 1986 because of its gold. By 1945 all the gold was gone and it was abandoned. Now the entire town is maintained as a museum, with everything in it still as it was left, even an ancient, rusting blue truck and one house left open for sightseeing.

Still in the Sierras, they went to beautiful Lake Tahoe, famous for both its beaches and ski resorts, and – it was Mark Twain's favourite lake.

Then it was up north again to Garberville and Humboldt Redwood State Park with its 'Avenue of the Giants', a scenic but national state highway running right through the Park, a former alignment of U.S. Route 101. Here Marion was photographed against a 'Living Chimney Tree', a Redwood with a large opening right up through its centre.

I was interested to discover that their were at least three distinct types of Sequoias in California, and Keith described their differences.

1) Giant Sequoia, *Sequoiadendron giganteum* – this is the most massive of the Sequoias and is also known as Giant Redwood, Sierra Redwood, Wellingtonia, or simply Big Tree, a nickname used by naturalist John Muir. It's the sole living species in the genus *Sequoiadendron,* and one of three species of coniferous trees known as redwoods, classified in the family Cupressaceae in the subfamily Sequoioideae, together with *Sequoia sempervirens* – the Coast Redwood, and *Metasequoia glyptostroboides* – the Dawn Redwood.

Giant Sequoia specimens are the most massive trees on Earth, and the common use of the name Sequoia usually refers to *Sequoiadendron giganteum.* It only occurs naturally in groves on the western slopes of the California Sierra Nevada Mountains.

The etymology of the genus name has been presumed—initially in The Yosemite Book (1868) by Josiah Whitney—to be in honor of Chief Sequoyah (1767–1843), the inventor of the Cherokee syllabary. However, a 2012 etymological study concluded that Austrian Stephen L. Endlicher is actually responsible for it. A linguist and botanist, Endlicher corresponded with experts in the Cherokee language, including Sequoyah, whom he admired. He also realised that coincidentally the genus could be described in Latin as 'sequi' (meaning to follow) because the number of seeds per cone fell into a mathematical sequence with the other four genera in the suborder. Endlicher thus coined the name Sequoia as both a description of the tree's genus and an honor to the indigenous man he admired.

2) Coast Redwood, *Sequoia sempervirens* – or Coastal Redwood. These trees are among the oldest living things on Earth – up to 1,200–1,800 years or more. They are also the tallest living trees, reaching up to 379 feet without the roots and up to 29.2 feet in diameter at breast height (dbh). Before commercial logging and clearing began by the 1850s, these massive trees occurred naturally in an estimated 2.1 million acres along much of coastal California (excluding southern California where rainfall is not sufficient) and the southwestern corner of coastal Oregon.

3) Dawn Redwood, *Metasequoia glyptostroboides* – this tree is a native of China and grows to about 200 feet, a deciduous conifer producing small, round, 1/2" to 1" cones. It has a neat pyramidal shape in youth, maturing into a more rounded crown. The bright green, feathery leaves turn orange-brown or reddish-brown in the fall. It is fast-growing and easily transplanted.

Keith and Marion next travelled south towards San Francisco through some foggy coastal scenery. There was an astonishing shot of an old, 970 ft long, 26 ft wide wooden trestle bridge in Mendocino County, still in use. Their coastal run also gave good shots of the tall dune grasses there.

The next day they were off to Sonoma and then Napa Valley– wine country! Beautiful, sunny and expansive vineyards with their soldierly rows of grapevines ran off into the distance. In Calistoga they visited Castello di Amorosa, a 13th-century

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castle-style winery offering guided tours and tastings of Italian-inspired wines. This beautiful area looked just like Tuscany, with its compact, slim cedars. Keith described a local woodpecker there, the Acorn Woodpecker, *Melanerpes formicivorus.* These insectivorous birds also love acorns and do a lot of damage to utility poles by excavating hundreds of holes in which they store one acorn each.

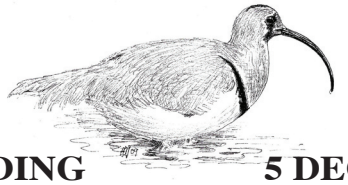
In Sonoma they visited the Sonoma Petrified Tree Museum. Its unearthed petrified trees, the largest in the world, date back to the Pliocene. 3.4 million years ago, an immense Mt. St. Helena (no, not Mt. Saint Helens) volcanic explosion buried these primeval Redwoods in deep ash layers. It took thousands of years for the trees to become turned to stone. They were discovered in 1870, when they were determined to be *Sequoia langsdorfii*. Many of these large, stoney remains – some upright stumps, some prone – are named. One is 'The Queen', already 2,000 years old when the volcano erupted, and another is called the Robert Louis Stevenson Tree.

By this point Keith and Marion were nearing the end of their rewarding trip. Twelve miles north of San Francisco, wandering through beautiful trails, they took some pleasing pictures in the 554-acre, towering Coastal Redwood forest of Muir Woods, a protected parcel of land in California's Golden Gate National Recreation Area. 240 acres of Muir Woods are old-growth Coast Redwood forests, one of only a few such stands remaining in the San Francisco Bay Area.

Making their way south they passed through Sausolito on the way to cross the Golden Gate Bridge to San Francisco. Alcatraz Island is about four miles distant out in the bay. They stopped in Chinatown and also visited Fisherman's Wharf.

The last shots were of the famous row of 'Painted Ladies' on a ubiquitous steep San Francisco Street near Alamo Square – Victorian and Edwardian houses repainted in three or more colours to enhance their architecture; a stunning sunset at Alcatraz; and a bristly Joshua Tree in bloom in Joshua Tree National Park, taken on their 2015 visit.

Thank you Marion and Keith, for such a wonderful presentation.



GLOBAL BIRDING 5 DEC.

– Mille MacCormack and Stephanie Robertson

As a child, Jason Dain fell in love with nature and its wildlife around the Ottawa riverbanks. He has been actively birding since 2016, when he obtained his first digital camera for taking wildlife and nature photos around his home in Upper Tantallon. His work as Global Product Manager with Trimble Navigation Ltd. requires him to travel extensively (he has been around the world 24 times), and this gave him a great opportunity to pursue his passion of watching and photographing birds, rather than spendng time in boardrooms, hotel rooms, or sightseeing while awaitng his return home or between his work activities.

Jason shared his tips and experiences by organising his presentation into sections, emphasizing that planning, preparation, and post-preparation were equally as important as having very good, well-maintained photography equipment, in order obtain satisfactory results.

INTRODUCTION

Jason showed us a map of the many areas where he has birded around the world. His travels have taken him to every continent except Antarctica and Asia (but where he hopes to go sometime in the future). As of December 5th, his World List comprises 1,210 species, and his Nova Scotia List 330. He has logged 950,000 air miles – 125,000 of those in 2019. His detailed, extensive list of lenses, camera bodies, and other photography gear was all Nikon. He has two cameras; one for close-ups, and one for distant shots.

Jason always shoots hand-held and 'RAW', a term used to describe the type of shot where a top-end camera records every single tiny pixel, and many more than usual; this is how he stores his pictures, and they take up many, many megabytes. By doing this, he can reduce them in size when needed, but always has the much finer, more accurate recording stored in his archives for more professional results. His work includes birds, other wildlife, landscapes, and astral (Milky Way) photos. And his shots are always hand held, never with a tripod, except for his astral work which requires many sequential shots one on top of the other. He showed a Moose, Pockwock Falls, and a stunningly beautiful astral shot taken at Peggy's Cove.

PLANNING

His travels are mostly always determined by his work, and as soon as he is informed of his next travel assignment, he begins planning for it immediately. Safety is his top priority, as well as having the proper documents, good medical and travel coverage, the required vaccinations, and local weather knowledge (and, there are different rules in each country for which medicines can be taken along). When he visits a country for the very first time, he gets much, much better results if he seeks out beforehand, in consultation with others, a local guide who is able to give him knowledgable and exclusive access to its birds and wildlife. He checks on their references, and agrees

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to the terms of the trip before they depart. For instance, in photographing the nocturnal Little Penguin, he needed to know that they were harmed by camera flash, and that red light was needed to shoot them safely. When he is already familiar with an area, he usually forays out on his own, but still talks with the locals to get more ideas from them as well. At this point we saw a Many-coloured Rush Tyrant and a swamp with cattails.

PREPARATION

Jason always wears old, comfortable, waterproof footwear and packs light. He never, ever packs batteries or camera gear in any checked luggage (which have to go through electronic scanners), and always protects them well; hard or metal carry-ons are a must. Lenses are packed in their special protective cases separately from the other gear. He also stressed the importance of insuring all equipment, as airlines are unfortunately known for some very rough luggage handling (remember the hit song "United Breaks Guitars").

THE TRIP

Don't pass up the opportunity to enjoy the food and culture, and the scenery and wildlife unique to each and every country. And always be discreet in public places. Leave valuables in a secure safe at the hotel.

Don't forget about safety, when you've finally started to photograph. For an important example, he showed us a sign which warned "Check Bird Hide for Snakes Before Entering"! Be prepared and watchful at all times, and be willing to learn from others. On an Australian beach, he admired a "No Dogs Allowed" sign, and wished Nova Scotia would have committed to do the same for the Piping Plover, of which there are now only 40 breeding pairs.

POST TRIP

Upon returning from assignment, Jason carefully inspects all his equipment, carrying out any necessary repairs immediately, and also ensures that all equipment is scrupulously clean before putting it away.

As soon as possible he processes and reviews his photos then backs them up to a local site as well as to iCloud; the software he uses for this is 'Light Room'.

PHOTOS/STORIES

Jason mused about the practice of prefixing many birds with the word 'common' after showing us Common Buzzard and Common Redshank photographed in Dublin, Ireland. Also in Ireland, in Kilarney, he photographed a little White-throated Dipper, so-called because of its repetitive head-bobbing actions while standing in shallow, swift-running brooks hunting for insects.

The following digital pictures illustrated not only the species he photographed, but also the far-flung places Jason has visited for his work and his birding photos.

In Missippi he shot a beautiful Yellow-crowned Night Heron, of which he has seen ten this fall. Watery cypress marshes are its habitat, and we saw areas of knobbly cypress 'knees' which resemble a little the same kinds of protuberances found in mangrove swamps. I have one of these cypress knees from Florida on my windowsill. We were shown a Black Vulture, also from Missippi; they are as numerous as crows there!

In Vancouver, while all others were photographing whales on a whale-watching boat trip, and puzzling over what Jason was doing, he managed to get a good shot of a Bald Eagle flying overhead.

In New York – a Black-crowned Night Heron and a Barn Owl. He was told there was a resident owl in a nesting box and waited and waited to get a good shot; we could just manage to see its eyebrows in the box's gloomy interior. However, he did manage a good picture of one in California.

There was a lovely Short-eared Owl taken at dusk in the Tantramar Marshes in New Brunswick (the lens for this was 10x magnification). Serendipitously, there were dozens of them circling around 50 feet away from his camera. They were there for the feast of dead and mangled mice in the hay fields just recently machine-harvested.

He captured a rarity in Newfoundland – a Three-toed Woodpecker. They are more common in the west than the east.

We saw the tall, unique, remnant sandstone stacks, (of which there are now only eight) in Twelve Apostles National Park, Australia. Another thing Jason does is to check out rehabilitation wildlife stations; we saw a dear six-inch Northern Pygmy Owl in one of these in Montana, then another taken in Kelowna, B.C. Shown also was a White-faced Ibis in Nevada, and a Canyon Wren in Arizona's Grand Canyon for which Jason drove for four hours to capture.

In Chile, he went to photograph Peruvian Pelicans but was told by a local that there would be none to see since there was a high-pressure system present then. Jason wondeed if this could be true, but that person, who had lived there all his life, was of course correct. The next day, the pressure dropped to a low, and there were many Pelicans to take pictures of. When the pressure is high, the birds take advantage of the updraughts and are only found at height. When it is low, they come down and can be seen.

One of Jason's 'dream birds' is the Great Grey Owl and he photographed a beautiful majestic one posing on a post in Alberta. We saw a Ferruginous Hawk from Montana in the hilly foothills of the prairies there, then were halfway round the world again with a Koala in Angelsea, Australia.

On one of his trips to South Africa, he extended his stay for two extra days in order to get shots of lions. While there he also got pictures of a Lilac-breasted Roller, and a Southern Yellow-billed Hornbill waiting for opportunities to grab at nearby pizzas. There was also a Red-billed Oxpecker which eats ticks.

When in Helsinki Finland Jason was made conscious of the importance of being aware of having to deal with his camera fogging up due to the great change of temperature from inside to outdoors and back again.

Lastly, a Reddish Egret in California. It was a hard subject to photograph, as it constantly moves around extremely rapidly. It is sometimes called "Too-much-coffee".

HFN FIELD TRIPS

MUSHROOM WALK

– Carol Klar,
editied by John Crabtree

Date: Wednesday, October 9th
Place: Kearney Lake
Weather: Sunny, 16˚C; cooler in the woods
Leaders: John Crabtree of the N.S. Mycological Society
Participants: 20

On a sunny and beautiful early Fall day, an enthusiastic group of mushroom hunters gathered near our cars in Kearney Lake's Maskwa Boat Club parking lot with one of the province's leading mushroom experts – John Crabtree. Among the crowd were botanists, both working and retired, others who drove in from Windsor, and many new HFN members who joined because of John's recent accompanying talk. For HFN, both last year and again this year, this subject has proved to be one of the best draws for bringing in new members. After welcoming our guests, and before introducing John, I held up our excellent quarterly newsletter and, turning the pages, expounded on the many interesting items to be found there, delighted to have our editor and with us today.

Amanita vaginata

After being introduced, John took the reigns and spoke briefly on mushrooms in general. He ended with asking who among us had attended the Sunday, October 6th Mycological Society event in Canning. Not a single hand was raised. I knew he wanted to know the answer to this because nearly 1,000 people expressed interest on HFN's Facebook page, with many having had to be turned away from our HFN Thursday, October 3rd Mushroom Talk at the Nova Scotia Museum.

Our foray then began with John leading us up into the forested hill of this northeastern edge of the Birch Cove Blue Mountain Wilderness Park lands. The floor was very uneven, open, and carpeted with many exposed roots. Its canopy was quite open as well, with very tall, mostly slim trees, and there seemed to be hardly a bird to be heard or seen. Despite no recent large amounts of rain, the earth and logs were damp enough to present us with several sightings of the small *Hygrocybe* spp. which tend to favour wet conditions.

As our walk progressed, participants would take short side trips and bring their finds back to John for identification. The first was a large Honey Mushroom, a member of the *Armillaria* complex. Some *Armillarias* are parasitic while others are less virulent. There are approximately a dozen species within the complex, with *Armillaria ostoyae* being the most common in Nova Scotia. *Armillaria* spp. form some of the largest living organisms in the world. This mushroom is edible – if cooked very well. John likes to do his in lots of butter.

John talked about the two recently reported dog-poisonings from eating wild mushrooms, one of which proved fatal. He was consulted and received photographs of the one which had not proved fatal, and John identified it as an Armillaria species; this identification was later confirmed. Apparently the dog did not know that *Armillaria* have to be thoroughly cooked before consuming. The other poisoning which did prove fatal had all the symptoms of *Amanita* poisoning which John received a report of after the dog had died.

The next – a very small and light-rusty-coloured specimen presented on a damp log – was *Pholiota,* a genus of small-to-medium-sized fleshy mushrooms in the family Strophariaceae, 'saprobes' which typically live on wood. Most of them are not edible. *Pholiota* is derived from the Greek word 'pholis', meaning 'scale', and one of its common names is Shaggy Scaly-cap. This genus has a widespread distribution, especially in temperate regions, and contains about 150 species.

Only a very few Pholiota are edible, and at this point, John gave us wise counsel. If eating wild mushrooms which you have gathered, save one or more, preferably in different stages of growth and store them in the fridge in case of an adverse reaction They can then be used to correctly determine the species.

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John explained that as mushrooms mature they undergo physical changes and for simplicity these transformations may best be described as baby, teen, and adult. If possible, and to aid in identification, samples should consist of each growth stage. Smell is also an important tool when attempting to identify a mushroom. For example – mushrooms may smell of apricots, shellfish, coconut, almond, anise, and many other familiar aromas. Gill spacing is also an important diagnostic tool in the mushroomer's arsenal. The spacing can best be described as tightly packed together, close but not crowded, well-spaced, and finally, far apart (distant). Gills play an important role in spore dispersal. The closer together the gills are, the more surface area they contain, and this will therefore increase the number of spores.

An *Amanita* was found, and not a common one. John hadn't seen any at all on our walk last year, so he was very surprised and intrigued by its discovery; he placed it in a small brown bag to take home for further examination and identification. Later, John identified it as an *Amanita rhopalopus,* a very uncommon *Amanita.*

All the intricate, beautiful, and extremely variable mushrooms we see above ground are only the reproductive structures of a far more extensive and below-ground organism – a highly intertwined mass of fine white threads called mycelium. Mycelium is the vegetative part of a fungus with the mushroom body being the fruit, in much the same way as an apple is the fruit of an apple tree.

Most fungi/mushrooms have a relationship with specific trees while others are not as fussy and will form symbiotic relationships with several different ones. However, maples do not form mycorrhizae with fungi so if your forest walk is dominated by maples while looking for mushrooms is your objective, you will sadly find very few of them.

Mycorrhizae play very important positive roles in plant nutrition, soil biology, and soil chemistry.

When mycelium envelop tree roots, it can spread in a radius of 60 to 80 feet around it, thereby increasing the soil area covered by the tree's root system. *Armillaria ostoyae* holds the record for the largest living organism in the world – bigger than a Blue Whale. Nicknamed the 'Humungous Fungus', it's mycelium covers 2,385 acres, almost 4 square miles, of the Malheur National Forest in Oregon.

Of course the Number One question on our minds when mushroom foraging is "Is it edible?" and John had highlighted this in our October 3rd talk "The Good, the Bad, and the Deadly" (with apologies to Clint Eastwood). John asked if there were any birders in our midst. I raised my hand. He asked "Is that the Number One question when you go birding?", bringing forth a round of laughter. We are not really sure if touching or tasting a very little of a mushroom is deadly, but John assured us one must swallow the mushroom for it to become so.

The next find was an *Aminita* in the sub-genus *vaginatae* with very definite striations on the edge of its cap margin, remnants of the 'universal veil' on top of the cap, and a volvus base. Instantly recognised by John as the edible Grisette, (but *not* recommended, as it may be easily confused with other, poisonous Amanitas), and with a wide distribution in North America, it is a complex species which includes other similar Aminitas. To confirm his identification he 'keyed it out' with his various field guides, and as expected for that species, it lacked the usual ring on its stem. One must dig two inches to find the volva at its base, and since this one showed the volva as a loose sack, John could classify it as an *Aminita Ceciliae.*

For the next hour and a half we were like school children gathering mushrooms for John to identify as he balanced his walking stick and his basket containing his many tools and field guides used to help in identifying the numerous species found. We grew in understanding as John patiently taught us about this phenomenal world hidden at our feet, and our fascination grew with each mushroom which was discovered and then explained to us.

More finds were a *Clitocybe* spp. and an *Aminita* with a 'sacate' volva. John explained that all Amanitas have a white spore print (spore prints are another key to identification of mushrooms) and all of them have 'free' gills (not attached to their stems). A *Clitocybae clavipes* was identified, and an unidentifiable *Polypore* sp. on a twig was spotted. Then, a *Piptoporus betulinus*, the Birch Bracket Mushroom. Historically, the velvety cut surface of this particular fungi was used as a strop for finishing fine edges on razors, and dried specimens made good tinder. This fungus, along with *Fomes fomentarius,* was carried by Ötzi the Iceman – the 5,000 year old mummy found in the Tyrol in 1991. Also, we found a Bolete which was being attacked by the *Hypomyces chrysospermu*s mold.

Here is a list of other mushrooms found:

A small, *Russula emetica*. One of the identifying characteristics of Russulas is that when you break the stalk in half it makes a sound like the snapping of chalk. As its species *emetica* implies, it induces vomiting.

A *Suillus* sp., in which pores are arranged radially (boletinoid); its cap was glutinous (sticky and slimy). Then, a dark yellow, deeply convex *Amanita* with lots of warts on its cap and remnants of the 'universal veil', *Amanita flavoconia* sp. Next, a tiny, tiny *Hygrocybe* spp. which was a rusty, almost seemingly transparent red.

A suspected *Paxillus involutus* was proffered and

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confirmed when its flesh stained itself a red-brown when scraped with a knife (another test); a Waxy-cap, *Hygrophorus* spp.; a hard, 'Horse's Hoof', (the name describes its shape and texture), which grows on the vertical sides of trees, *Fomes fomentarius*; then a bolete in the genus *Leccinum*. It's common name is Scaber Stalk and it is mycorrhizal with the birches.

A Russula; a *Suillus salmonicolor*; "Slippery Jill" *(Suillus luteus* is "Slippery Jack"); then groupings of tiny, pink slime molds, *Lycogala epidendrum*, on an old damp twig looking just like little blown-up-bubble-gum bubbles; *Pleurotus ostratus* or the Oyster Mushroom – very edible; then a *Hygrocybe nitida* followed by a *Russula sanguinea.*

Twenty-four species in all.

It is interesting to note that this year's walk took place at the same location, and – almost to the day – the same date. Mushrooms were found this year which were not seen last year. In John's experience, this is a very common phenomenon and it adds significantly to the mushroom trips. You never know what you will find when you venture into the woods and it undoubtedly adds to John's enthusiasm for what awaits him on his next visit.

Finally, at 1:00 p.m., as difficult as it was to leave this magical time in our day, I thanked John as I and a few others had to leave the group for other events. Followed by a round of applause from the crowd, half of us made our way back to the parking lot filled with a deep appreciation of all we had learned on this adventure, while John carried on with the other folks who were eager to discover even more.

We are most grateful to John who has already given us the heads up to do it again in 2020!

PURCELL'S COVE QUARRIES

– Mille McCormack

Date: Saturday, November 23rd
Place: Purcell's Cove
Weather: Cold!
Leader: Dr. Marcos Zentilli
Participants: 15

Retired professor of Dalhousie's Earth Sciences guided this walk through the historic Purcell's Cove Quarries, launching us off with an introductory talk in the Purcell's Cove Social Club. He explained the industrial and archeological significance of the quarries, and introduced us to the basic geological units to be seen along with the basics of quarrying techniques. After the two-hour guided tour of first visiting the granite quarries and later the King's slate quarry by Bluestone Road, he offered an illustrated, wrap-up lecture back at the Club.

Purcell's Cove Quarries are located near the Mi'kmaq site of Indian Cove in what was once Mackerel Cove. Quarrying began in 1749 with British settlement and the founding of Halifax.

King's Quarry (bluestone and slate) and Couglan's, Queen's, and Purcell's Cove Quarries (granite) were the sources of the building stone used in many Halifax historical structures such as the Prince of Wales Martello Tower (1797), Citadel Hill (1826), and St. Mary's Cathedral (1829).

Among the many artefacts we saw at the site were scattered granite which had been shaped into blocks, and here's how it had been done back then. A line of closely spaced shallow holes were drilled by hand with mallet and chisel, and then a wedge was inserted between two shims or 'feathers' in each hole. By hitting all the wedges one after the other, the stone broke along the defined line of holes. Experienced stonemasons knew the preferred paths to delineate, ones which would produce smooth, flat surfaces. We also saw pits, stone foundations, rusty steel cables, and large steel loops inserted into stones where cables would have been anchored for large poles and winches.

INDUSTRIAL RAILWAY

Most impressive was a 400-metre long elevated base made of fitted stone blocks. Upon this a trolley was lowered with cables along a trackway to bring the large, raw granite blocks from the upper backlands plateau down to the port by Indian Cove. The steam engines and rail cars had operated both in the uplands and by the shore since 1834, probably making them the site of the oldest industrial railway of the region.

BLUESTONE

Bluestone was mined at the King's Quarry in nearby Bluestone Road. The thick beds of dark gray slate from the Bluestone Formation were deposited as alternating layers of silt and sand at the bottom of a deep ocean between 500 and 400 million years ago, off the coast of Africa, on the margins of the ancient Iapetus Ocean. Some layers of sandstone and shale contain iron sulphides (the Cunard Formation) and they were less suitable for quarrying because once exposed to air sulfides will rust and consequently discolour buildings' walls.

GRANITE

About 400 million years ago the Iapetus Ocean closed due to plate tectonic motion, and the collision of its borders slowly folded their rocks creating very high mountains over time. The friction and heat generated by the collision melted the deepest rocks

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into liquid magma around 380 million years ago which rose up to the surface, and in doing so, was injected as liquid granite at temperatures of ca. 8,000˚C, baking the surrounding silt and sand sedimentary rocks, metamorphosing them into igneous rocks as they slowly cooled. This local granite body belongs to a huge mass called the South Mountain Batholith, which extends from Halifax to Yarmouth.

In Purcell's Cove there are two types of granite, the older of which is poor in quartz, while the younger is rich with white or translucent quartz, a black mica called biotite, and pinkish-white tabular crystals of potassium feldspar. The latter granite (called a monzogranite) was more suitable for quarrying because it has few imperfections and also has two easiest splitting planes, set at right angles, producing useful blocks which could be more easily carved to the desired shapes.

ICE AGES

Ages and ages of erosion had removed as much as eight km of bedrock (much of which had formed earlier) before the last important event took place about 10,000 years ago – the last ice age. The rock fragments which were trapped at the bottom of this miles-thick and very heavy, moving continental ice mass acted like a giant asp which scraped the bedrock smooth producing the surface we see today. On the softer slate this produced striations marking the ice's flow direction, while on the granite it produced elongated, curved ridges called 'whales' backs' which are typical of the Purcell's Cove Backlands. Although we didn't have time to visit it, upon their slow thawing over time, the glaciers left behind large boulders called 'erratics', one of which is referred to as 'the Rocking Stone' (thus Rocking Stone Road), and it is perched at the edge of the plateau a few hundred metres south of the quarries.

Our thanks go out to the Purcell's Cove Social Club; we are very grateful to this 'members-only' Club, which opened two hours earlier than usual to accommodate us, and to Club employees Cindy and Robert (chef) who not only made us feel welcome, but prepared coffee, tea, sandwiches, and chili for which they declined payment.

REFERENCES TO BROUSE:

An interesting booklet which explains the historic aspects of Purcell's Cove quarries is by Elsie (Purcell) Millington, entitled "Purcell's Cove, the little place that helped build Halifax City", Desktop Publishing Ltd., Victoria, B.C. (2000) – 87 pages.

For a 'Planning Thesis' by Cole Grabinsky (2016), go to **http://backlandscoalition.ca/wp-content/uploads/2016/01/ColeGrabinskyThesis2016.pdf**.

And for another 'Planning Thesis' by Rachael Groat (2016), go to **https://cdn.dal.ca/content/dam/dalhousie/pdf/faculty/architecture-planning/school-of-planning/pdfs/studentwork/GroatFinalThesis.pdf**.

NATURE NOTES

OCTOBER ***– S. Robertson, J. Dalton, B. Plache***

Rita Moore was driving on Beaverbank Road and saw a sign that read "Turtle Crossing". She wondered what turtles would be crossing there. Clarence Stevens who regularly rescues baby Snapping Turtles with his local Turtle Patrol, could not answer her question.

Raymond Provencher was at Charlotte Lane and saw **a Muskrat eating grass**. It then headed off to a nearby brook. David (apologies to David, we did not catch your last name) saw **a Blanding's Turtle** when he was in Ontario in September.

Near the Walton River Wilderness Area, Taylor Hodgkins saw **a Sandhill Crane flying with an Eagle**. Mark Doyle spotted **a Raven at Purcell's Pond**, and another participant reported they had seen **a Blue Jay, together with a Crow, attacking a cat**.

While free-diving at Peggy's Cove, Stephen Fry saw many tropical fish; two identified were **a Triggerfish**, and **a Seahorse** *(brought up north by Hurricane Dorian?- ed.).* At McCormack's Beach Carol Klar spotted **Black Skimmers**, **a Laughing Gull**, **a Marbled Godwit**, **Forester's Terns**, and **a Black-necked Stilt**.

In the last week of September, Burkhard Plache saw **a Blue Jay acting strangely** on the ground; when it flew up and away, it had **a snake dangling from its beak** longer than the length of the Blue Jay itself. Someone else saw **an Otter and a Beaver** in Shubie Park.

Clarence Stevens Sr. now has 416 bird sightings on his Bird Life List. On October 3rd, he spotted **a White-crowned Sparrow**. Shirley MacIntyre saw a large white bird similar to a Great Blue Heron. Others noted it was probably **an Egret**.

Judy Keating, who lives at Indian Harbour, saw a flock of **30 (immature or female) Red-breasted Mergansers**. Cathy McCarthy saw **a Great Blue Heron** at Red Bridge Pond near Lake MicMac. At 7:00 a.m at Martin Lake, near Lake Echo, Someone in the audience saw **a Mink swimming around**, checking out a rock wall.

Leslie Jane Butters was at Wolfville and saw **a Painted Lady Butterfly on an aster**. About a month ago she was swimming at Black Lake and saw **hundreds of large Dragonflies**. At the Keji Seaside Adjunct, she observed **a huge fin** moving repeatedly around in the water. It could have been **the Great White Shark** which was reported in the news later in the week to have been in that area about when she saw it.

Someone saw **an Otter and a Beaver** at Shubie Park. On October 2nd at Belcher's Marsh Shirley McIntyre noticed **a Great Egret** (brought here by Hurricane Dorian); also at Belcher's Marsh, Pat Leader saw **a Great Blue Heron**. At Point Pleasant Park,

also right after Hurricane Dorian, Gareth Harding observed **flocks of swallows feeding on flies** on the washed-up kelps and seaweeds. At Queensland Beach, Nadia Ivanova spotted **a Groundho**g – people were feeding it potato chips.

And lastly, Mary Kennedy requested people to send any pictures of their nature sightings to iNaturalist.

NOVEMBER ***– S. Robertson, J. Dalton***

Clarence Stevens reported that someone had found **a giant Conch shell** in the Bay of Fundy.

Grace and Richard Beazley were cycling in Keji recently and met a staff member, Alexia. She was born and still lives in Albany New, across the river from HFN member Lesley Jane Butters' summer cottage. She said she had **rescued a duckling** from the river this year (she called it 'Puddles').

Mille McCormack who lives on Kearney Lake Road reported on the **White-tailed Deer buck with a broken leg**, which she has observed for years in her area. She spotted it last fall, and much to her delight she saw it again in her neighbourhood this year. She estimates it to be around ten years old or more now.

Terry Boswell announced the Halifax/Dartmouth Christmas Bird Count event, to take place on December 15th. He and Fulton Lavender are looking for volunteers for this count. Clarence Stevens had said there were **three very young Deer** looking after one another without any adults in and around the Pleasant Hill Cemetery ever since July. They are still doing well. Stephanie Robertson noted that she and Allan had come across **three lone young deer** crossing Point Pleasant Drive to enter Point Pleasant Park.

Wendy McDonald reported **Wych Hazel in bloom**, while Ron Arsenault saw **Red Osier Dogwood in full bloom** at Africville's dump.

Shirley McIntyre has been observing **the very full blooms of this year's Canada Holly**, making up for the lack of many blooms last year. Clarence Stevens Sr. reported on his 2019 bird list – 290 species for Nova Scotia, and 263 for Halifax County. His Life List for Nova Scotia is 416.

Clarence Stevens Jr. stated that the **female Snapping Turtles** had done their egg laying later than usual this year. This means that there are still baby turtles to be helped to safety from their nests. Once the freezing weather comes, any unhatched young will perish.

DECEMBER ***– S. Robertson, J. Dalton***

Stephanie Robertson had been hearing what she thought were **Northern Red Cardinals** in her neighbourhood and wondered if it was normal for them still to be hanging around; the answer from audience birders was a resounding "Yes". On December 3rd near St. Mary's Bay (exit 5A on the 103), on old Bowater property, Jason Dain saw **a young Moose** (he measured the tracks).

Judy Keating spotted **a Great Blue Heron**, **a flock of Buffleheads**, and **a Pileated Woodpecker** at her home Indian Harbour. Marion Sensen advised that putting your real Christmas tree somewhere on your property after Christmas is good for birds in the winter; last year hers provided a favourite place for a Song Sparrow.

Lesley Jane Butters reported **a dearth of birds** this past Autumn in Albany New, mentioning especially **Ovenbirds, Ravens, and Crows**. She saw more than the usual amount of **berries** this year – **Mountain Ash, Autumn Olives, and Holly berries**, but – no birds to eat them. However on the last weekend of November she was happy to see **a Belted Kingfisher**. Both Judy Davies and Ron Arsenault reported seeing more birds than usual. The audience reiterated, with some reporting hardly any birds, while others were seeing more than the usual amount.

Bob McDonald noted **a Sharp-shinned Hawk being driven away by Crows**. Dennis Hippern saw **no Robins at all** this fall; Burkhard saw **five or six Robins** at Herring Cove. Wendy McDonald reported that her garden's **Wych Hazel was still in bloom**.

SOME LATE NOTES FROM SUMMER 2019
– Stephanie Robertson

This past summer, our family had some time to observe more closely some of the fauna along the road to Roy's Island. Spotted were **a House Sparrow**, **a Ruby-crowned Kinglet** (joy!), and a **Yellow Warbler**.

And, in our boathouse/garage two absolutely beautiful, fairly large moths – **a Rosy Maple Moth**, *Dryocampa rubicunda*, and **a Modest Sphinx**, *Pachysphinx modesta.*

Also, when we had returned to our cottage in July, three baby Racoons, tightly packed in a galvanised bucket, were relocated by their mother from underneath our back cottage. Later, from the same room, but high up on a pipe, three baby Robins successfully fledged from the nest which their mother had constructed there (we unintentionally had left door open and that's how the female got in. When the eggs were discovered by my grand daughter, we propped the door open permanently until after they fledged).

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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.

As long as my home is cozy-warm,
the weather I'll take on the chin;
For, after all, I'm Canadian
and bear winter with a grin.

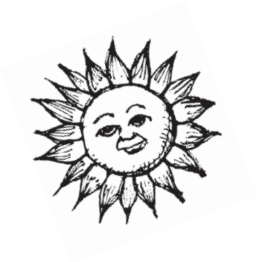
– Joan Adams Burchell, final verse of her poem "Canadian Winter".

NATURAL EVENTS

5 Dec. **-14 Dec.** Earliest sunset of the year at 16:34 AST.
7 Dec. Daily average temperature goes below 0˚C.
12 Dec. Full Moon. Moonrise at 17:05 AST.
13 Dec. **/14 Dec.** Geminid Meteor Shower.
14 Dec. **-5 Jan.** Audubon Christmas Bird Count Period.
22 Dec. Winter Solstice at 00:19 AST: Winter begins in the Northern Hemisphere: But though the temperature drops, the days begin to lengthen .
30 Dec. **-6 Jan.** Latest sunrise of the Year at 07:51 AST
10 Jan. Full Moon. Moonrise at 16:47 AST.
25 Jan. **-26 Jan.** Eagle Watch Weekend I in Sheffield Mills.
1 Feb. **-2 Feb.** Eagle Watch Weekend II in Sheffield Mills.
9 Feb. Full Moon. Moonrise at 18:03 AST.
19 Feb. Anniversary of "White Juan", the huge blizzard of 2004.
8 Mar. Daylight Saving Time begins.
9 Mar. Full Moon. Moonrise at 19:13 ADT.
20 Mar. Vernal Equinox at 00:49 ADT. Spring begins in the Northern Hemisphere.
7 Apr. Full Moon. Moonrise at 19:22 ADT.

– Sources: Atmospheric Environment Service, Climate Normals 1951-80 Halifax (Shearwater A) N.S.; Blomidon Naturalists Society's 2019 Calendar; www.timeanddate.com

SUNRISE AND SUNSET ON WINTER AND EARLY SPRING SATURDAYS FOR HALIFAX: 44 39 N, 063 35 W



7 Dec.	07:37	16:33	**4 Jan.**	07:51	16:47
14 Dec.	07:43	16:34	**11 Jan.**	07:49	16:54
21 Dec.	07:47	16:36	**18 Jan.**	07:46	17:03
28 Dec.	07:50	16:40	**25 Jan.**	07:40	17:12
1 Feb.	07:33	17:22	**7 Mar.**	06:40	18:10
8 Feb.	07:25	17:32	**14 Mar.**	06:27	18:19
15 Feb.	07:15	17:42	**22 Mar.**	07:14	19:28
22 Feb.	07:04	17:51	**28 Mar.**	07:01	19:37

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 St., Wolfville. For more information go to **http://www.blomidonnaturalists.ca/**.

21 Dec. Kingston Christmas Bird Count, Wayne Neily, **neilyornis@hotmail.com**, 902-765-2455.
29 Dec. West Hants Christmas Bird Count, Patrick Kelly, 902-472-2322, **patrick.kelly@dal.ca**)

Burke-Gaffney Observatory: Public shows at the Burke-Gaffney Observatory at Saint Mary's University are held about one weekend per month on the first clear evening of Friday, Saturday, or Sunday. **Tickets must be reserved online.** Got to **http://www.ap.smu.ca/pr/bgo-visit/public-open-houses**.

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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 phone Kate Steele, 476-2883, **fieldtripcoordinator@nsbirdsociety.ca** (this email address is being protected from spambots; you need JavaScript enabled to view it.), or email the trip leader.

23 Jan. "Wetlands in Nova Scotia", with speaker Emma Bocking of Ducks Unlimited.

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 or 424-7353, or go to **http://naturalhistory.novascotia.ca/**.

6 Dec. -26 Jan. "Giving Voice". A new exhibit inviting visitors to slow down, observe, and draw.

14 Dec. -12 Jan. "Holiday Village with LEGO", with many iconic NS buildings and a chance to make your own.

Nova Scotia Nature Trust: For questions or to register for their 'Connecting with Nature' events, please contact events@nsnt.ca, or phone 902-425-5263. There are charges for these events. For more info, go to **http://www.nsnt.ca**.

Feb. Date TBA. "Wentworth Valley Snowshoe Hike", Wallace River/Wentworth Falls; $15.00. **Registration required**.

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/**.

27 Jan. " Members Slide Night"

24 Feb. "Swedish Flora and the Linnaeus Museum in Uppsala", with speaker Bob Kennedy.

23 Mar. "Atlantic Pollinator Research", with speaker Alana Pindar.

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/**.

8 Jan. Tuesday, 7:00 p.m. "Dinosaur Research", new discoveries and new insights with 3D technology.

Royal Astronomical Society of Canada (Halifax Chapter): Meets the THE FIRST SATURDAY of the month in the AFTERNOON. The meeting will run from 1:00 p.m. to 4:00 p.m. 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/**.

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 to 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 http://yncns.ca/**.

25 Jan. 2:00-5:00 p.m., "Scavenger Hunt!" at the Nova Scotia Museum with geologist Matt Lewis.

– compiled by Patricia L. Chalmers




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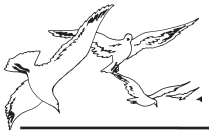
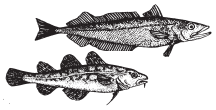
HALIFAX TIDE TABLE



January-janvier

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0644	**0.7**	2.3	**16**	0655	**0.4**	1.3
	1206	**1.6**	5.2		1207	**1.7**	5.6
WE	1841	**0.6**	2.0	TH	1910	**0.2**	0.7
ME				JE			
2	0043	**1.7**	5.6	**17**	0047	**1.8**	5.9
	0734	**0.7**	2.3		0756	**0.4**	1.3
TH	1253	**1.5**	4.9	FR	1305	**1.6**	5.2
JE	1924	**0.6**	2.0	VE	2009	**0.3**	1.0
3	0132	**1.6**	5.2	**18**	0142	**1.7**	5.6
	0824	**0.7**	2.3		0855	**0.3**	1.0
FR	1346	**1.4**	4.6	SA	1409	**1.5**	4.9
VE	2011	**0.6**	2.0	SA	2108	**0.4**	1.3
4	0224	**1.6**	5.2	**19**	0242	**1.7**	5.6
	0913	**0.7**	2.3		0954	**0.3**	1.0
SA	1447	**1.4**	4.6	SU	1522	**1.5**	4.9
SA	2101	**0.6**	2.0	DI	2209	**0.4**	1.3
5	0318	**1.6**	5.2	**20**	0346	**1.7**	5.6
	1001	**0.6**	2.0		1052	**0.3**	1.0
SU	1552	**1.4**	4.6	MO	1635	**1.5**	4.9
DI	2154	**0.6**	2.0	LU	2309	**0.5**	1.6
6	0409	**1.6**	5.2	**21**	0448	**1.7**	5.6
	1049	**0.5**	1.6		1149	**0.2**	0.7
MO	1652	**1.4**	4.6	TU	1738	**1.6**	5.2
LU	2247	**0.6**	2.0	MA			
7	0455	**1.7**	5.6	**22**	0007	**0.5**	1.6
	1138	**0.4**	1.3		0544	**1.7**	5.6
TU	1744	**1.5**	4.9	WE	1242	**0.2**	0.7
MA	2340	**0.6**	2.0	ME	1833	**1.6**	5.2
8	0540	**1.7**	5.6	**23**	0101	**0.5**	1.6
	1226	**0.3**	1.0		0636	**1.8**	5.9
WE	1831	**1.6**	5.2	TH	1331	**0.2**	0.7
ME				JE	1922	**1.7**	5.6
9	0030	**0.5**	1.6	**24**	0150	**0.5**	1.6
	0625	**1.8**	5.9		0724	**1.8**	5.9
TH	1314	**0.2**	0.7	FR	1415	**0.2**	0.7
JE	1916	**1.6**	5.2	VE	2008	**1.7**	5.6
10	0118	**0.5**	1.6	**25**	0234	**0.5**	1.6
	0712	**1.9**	6.2		0809	**1.8**	5.9
FR	1401	**0.1**	0.3	SA	1457	**0.2**	0.7
VE	2001	**1.7**	5.6	SA	2050	**1.8**	5.9
11	0207	**0.4**	1.3	**26**	0314	**0.6**	2.0
	0759	**1.9**	6.2		0852	**1.8**	5.9
SA	1448	**0.0**	0.0	SU	1534	**0.3**	1.0
SA	2047	**1.7**	5.6	DI	2130	**1.8**	5.9
12	0258	**0.4**	1.3	**27**	0351	**0.6**	2.0
	0847	**1.9**	6.2		0933	**1.8**	5.9
SU	1536	**0.0**	0.0	MO	1608	**0.3**	1.0
DI	2133	**1.8**	5.9	LU	2208	**1.8**	5.9
13	0352	**0.4**	1.3	**28**	0427	**0.6**	2.0
	0935	**1.9**	6.2		1013	**1.8**	5.9
MO	1626	**0.0**	0.0	TU	1639	**0.4**	1.3
LU	2221	**1.8**	5.9	MA	2245	**1.7**	5.6
14	0451	**0.4**	1.3	**29**	0505	**0.6**	2.0
	1024	**1.9**	6.2		1052	**1.7**	5.6
TU	1718	**0.1**	0.3	WE	1711	**0.5**	1.6
MA	2308	**1.8**	5.9	ME	2322	**1.7**	5.6
15	0553	**0.4**	1.3	**30**	0549	**0.7**	2.3
	1115	**1.8**	5.9		1131	**1.6**	5.2
WE	1813	**0.1**	0.3	TH	1746	**0.5**	1.6
ME	2357	**1.8**	5.9	JE	2359	**1.7**	5.6
				31	0636	**0.7**	2.3
					1211	**1.5**	4.9
				FR	1828	**0.6**	2.0
				VE			



February-février

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0040	**1.7**	5.6	**16**	0113	**1.7**	5.6
	0727	**0.7**	2.3		0836	**0.3**	1.0
SA	1256	**1.5**	4.9	SU	1346	**1.5**	4.9
SA	1917	**0.6**	2.0	DI	2053	**0.4**	1.3
2	0123	**1.6**	5.2	**17**	0212	**1.6**	5.2
	0819	**0.6**	2.0		0935	**0.3**	1.0
SU	1349	**1.4**	4.6	MO	1458	**1.4**	4.6
DI	2013	**0.7**	2.3	LU	2155	**0.5**	1.6
3	0213	**1.6**	5.2	**18**	0320	**1.6**	5.2
	0912	**0.6**	2.0		1033	**0.3**	1.0
MO	1454	**1.4**	4.6	TU	1619	**1.5**	4.9
LU	2111	**0.7**	2.3	MA	2256	**0.5**	1.6
4	0309	**1.6**	5.2	**19**	0431	**1.6**	5.2
	1006	**0.5**	1.6		1130	**0.3**	1.0
TU	1605	**1.4**	4.6	WE	1728	**1.5**	4.9
MA	2210	**0.7**	2.3	ME	2353	**0.5**	1.6
5	0408	**1.6**	5.2	**20**	0533	**1.7**	5.6
	1101	**0.4**	1.3		1223	**0.3**	1.0
WE	1708	**1.5**	4.9	TH	1821	**1.6**	5.2
ME	2307	**0.6**	2.0	JE			
6	0506	**1.7**	5.6	**21**	0045	**0.5**	1.6
	1155	**0.3**	1.0		0624	**1.7**	5.6
TH	1802	**1.5**	4.9	FR	1312	**0.3**	1.0
JE				VE	1906	**1.7**	5.6
7	0002	**0.5**	1.6	**22**	0132	**0.5**	1.6
	0559	**1.8**	5.9		0710	**1.8**	5.9
FR	1248	**0.2**	0.7	SA	1355	**0.3**	1.0
VE	1851	**1.6**	5.2	SA	1947	**1.7**	5.6
8	0055	**0.4**	1.3	**23**	0212	**0.5**	1.6
	0651	**1.9**	6.2		0752	**1.8**	5.9
SA	1338	**0.1**	0.3	SU	1432	**0.3**	1.0
SA	1939	**1.7**	5.6	DI	2026	**1.7**	5.6
9	0148	**0.4**	1.3	**24**	0246	**0.5**	1.6
	0742	**2.0**	6.6		0831	**1.8**	5.9
SU	1426	**0.0**	0.0	MO	1505	**0.3**	1.0
DI	2026	**1.8**	5.9	LU	2102	**1.7**	5.6
10	0242	**0.3**	1.0	**25**	0318	**0.5**	1.6
	0832	**2.0**	6.6		0910	**1.8**	5.9
MO	1514	**−0.1**	−0.3	TU	1533	**0.3**	1.0
LU	2114	**1.9**	6.2	MA	2136	**1.7**	5.6
11	0337	**0.2**	0.7	**26**	0349	**0.5**	1.6
	0921	**2.0**	6.6		0947	**1.7**	5.6
TU	1603	**−0.1**	−0.3	WE	1559	**0.4**	1.3
MA	2201	**1.9**	6.2	ME	2210	**1.7**	5.6
12	0435	**0.2**	0.7	**27**	0423	**0.5**	1.6
	1011	**1.9**	6.2		1023	**1.7**	5.6
WE	1655	**0.0**	0.0	TH	1627	**0.5**	1.6
ME	2247	**1.9**	6.2	JE	2243	**1.7**	5.6
13	0535	**0.2**	0.7	**28**	0501	**0.5**	1.6
	1101	**1.8**	5.9		1058	**1.6**	5.2
TH	1751	**0.1**	0.3	FR	1659	**0.5**	1.6
JE	2333	**1.9**	6.2	VE	2316	**1.7**	5.6
14	0636	**0.2**	0.7	**29**	0545	**0.6**	2.0
	1152	**1.7**	5.6		1135	**1.6**	5.2
FR	1850	**0.2**	0.7	SA	1741	**0.6**	2.0
VE				SA	2352	**1.7**	5.6
15	0021	**1.8**	5.9				
	0736	**0.3**	1.0				
SA	1246	**1.6**	5.2				
SA	1951	**0.3**	1.0				

ALL TIMES ARE AST

March-mars

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0636	**0.6**	2.0	**16**	0044	**1.7**	5.6
	1215	**1.5**	4.9		0812	**0.3**	1.0
SU	1834	**0.7**	2.3	MO	1324	**1.5**	4.9
DI				LU	2037	**0.5**	1.6
2	0031	**1.6**	5.2	**17**	0142	**1.6**	5.2
	0731	**0.6**	2.0		0912	**0.4**	1.3
MO	1303	**1.5**	4.9	TU	1436	**1.4**	4.6
LU	1936	**0.7**	2.3	MA	2139	**0.6**	2.0
3	0117	**1.6**	5.2	**18**	0254	**1.5**	4.9
	0829	**0.6**	2.0		1010	**0.4**	1.3
TU	1402	**1.4**	4.6	WE	1603	**1.5**	4.9
MA	2039	**0.7**	2.3	ME	2239	**0.6**	2.0
4	0214	**1.6**	5.2	**19**	0414	**1.5**	4.9
	0928	**0.5**	1.6		1106	**0.4**	1.3
WE	1517	**1.4**	4.6	TH	1712	**1.5**	4.9
ME	2140	**0.7**	2.3	JE	2335	**0.6**	2.0
5	0324	**1.6**	5.2	**20**	0518	**1.6**	5.2
	1027	**0.4**	1.3		1159	**0.4**	1.3
TH	1633	**1.5**	4.9	FR	1802	**1.6**	5.2
JE	2240	**0.6**	2.0	VE			
6	0434	**1.7**	5.6	**21**	0026	**0.5**	1.6
	1125	**0.3**	1.0		0608	**1.7**	5.6
FR	1733	**1.6**	5.2	SA	1247	**0.3**	1.0
VE	2338	**0.5**	1.6	SA	1843	**1.7**	5.6
7	0536	**1.8**	5.9	**22**	0109	**0.5**	1.6
	1219	**0.2**	0.7		0650	**1.7**	5.6
SA	1825	**1.7**	5.6	SU	1328	**0.3**	1.0
SA				DI	1921	**1.7**	5.6
8	0035	**0.4**	1.3	**23**	0146	**0.5**	1.6
	0631	**1.9**	6.2		0730	**1.7**	5.6
SU	1311	**0.1**	0.3	MO	1403	**0.3**	1.0
DI	1914	**1.8**	5.9	LU	1955	**1.7**	5.6
9	0131	**0.3**	1.0	**24**	0218	**0.4**	1.3
	0723	**2.0**	6.6		0808	**1.8**	5.9
MO	1359	**0.0**	0.0	TU	1432	**0.3**	1.0
LU	2001	**1.9**	6.2	MA	2028	**1.7**	5.6
10	0226	**0.2**	0.7	**25**	0247	**0.4**	1.3
	0814	**2.0**	6.6		0844	**1.7**	5.6
TU	1448	**−0.1**	−0.3	WE	1458	**0.4**	1.3
MA	2049	**2.0**	6.6	ME	2100	**1.7**	5.6
11	0321	**0.1**	0.3	**26**	0317	**0.4**	1.3
	0905	**1.9**	6.2		0920	**1.7**	5.6
WE	1538	**0.0**	0.0	TH	1523	**0.4**	1.3
ME	2135	**2.0**	6.6	JE	2132	**1.7**	5.6
12	0417	**0.1**	0.3	**27**	0349	**0.4**	1.3
	0955	**1.9**	6.2		0955	**1.7**	5.6
TH	1631	**0.0**	0.0	FR	1550	**0.5**	1.6
JE	2221	**2.0**	6.6	VE	2203	**1.7**	5.6
13	0514	**0.1**	0.3	**28**	0426	**0.4**	1.3
	1044	**1.8**	5.9		1030	**1.6**	5.2
FR	1728	**0.2**	0.7	SA	1624	**0.6**	2.0
VE	2307	**1.9**	6.2	SA	2236	**1.7**	5.6
14	0613	**0.2**	0.7	**29**	0508	**0.5**	1.6
	1134	**1.7**	5.6		1106	**1.6**	5.2
SA	1830	**0.3**	1.0	SU	1707	**0.6**	2.0
SA	2354	**1.8**	5.9	DI	2311	**1.7**	5.6
15	0713	**0.2**	0.7	**30**	0558	**0.5**	1.6
	1226	**1.6**	5.2		1145	**1.6**	5.2
SU	1933	**0.4**	1.3	MO	1804	**0.7**	2.3
DI				LU	2351	**1.7**	5.6
				1	0656	**0.5**	1.6
					1231	**1.5**	4.9
				J	1911	**0.8**	2.6
				A			

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