

# THE HALIFAX FIELD NATURALIST



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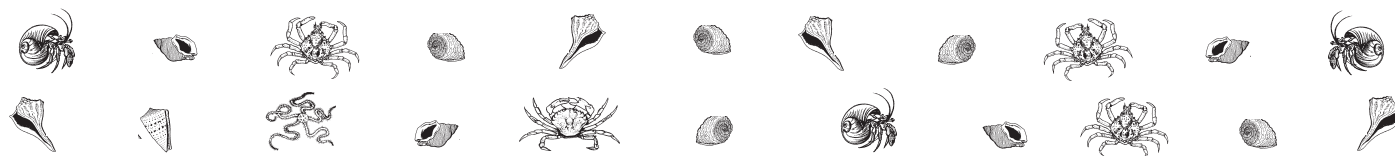
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**GRAPHICS** All uncredited illustrations are by H. Derbyshire or from copyright-free sources. **Front Cover** - Tamarack in winter, Bob McDonald; **p.3** - Ducks, John Dick; **Back Cover** - Pine trunks with snow, Will Smithy Jr.; **Tide Table** - Canadian Hydrographic Service, Fisheries & Oceans Canada.

# HFN NEWS AND ANNOUNCEMENTS

## N.S. ENDANGERED SPECIES

– Judy Keating

Nova Scotia's Office of the Registrar of Regulations publishes a listing of native Nova Scotia Species at Risk – those considered Endangered, Vulnerable, Threatened, Extinct, Extirpated, or of Special Concern. While the official and most current listing can be accessed from the Office of the Registrar of Regulations, there is an unofficial e-listing on their website. Because this is a great reference list to help us stay mindful of the status of our native species, we have put a link to this e-listing on our own HFN website, [www.halifaxfieldnaturalists.ca](http://www.halifaxfieldnaturalists.ca), under 'Links'.

The latest (April 12th, 2017) Species at Risk e-listing comprises 71 species at risk added from 2000 to 2017; 11 of those 71 being added in 2017 alone. Of these 11, those considered Endangered include the Bank Swallow *Riparia riparia*, the Gypsy Cuckoo Bumblebee *Bombus bohemicus*, the Monarch butterfly *Danaus plexippus*, the Tall Beakrush *Rhynchospora macrostachya*, and the Transverse Lady Beetle *Coccinella transversoguttata*. Those of Special Concern are the Evening Grosbeak *Coccothraustes vespertinus*, and the Yellow-banded Bumblebee *Bombus terricola*. Those considered Threatened include the Black Foam Lichen *Anzia colpodes*, the Eastern Water Fan *Peltigera hydrothyria*, Sable Island Sweat Bee *Lasioglossum sablense*, and the Wrinkled shingle lichen *Pannaria lurida*.

To view the complete Species at Risk e-listing, go to <http://www.novascotia.ca/just/regulations/rxaa-l.htm#species>, or to the 'Links' page of our HFN website. Additionally, if you want to learn more about the Species at Risk Working Group and the Endangered Species Act, go to <http://nslegislature.ca/legc/statutes/endspec.htm>.



## IN MEMORIAM – DEREK SYDNEY DAVIS



– Stephanie Robertson

Derek was the Nova Scotia Museum of Natural History's former Chief Curator of Science, and gave HFN one or two talks. Born in England on June 25th, 1938 to Jessie (Rolfe) and William Davis, Derek passed away on August 7th of this year and his Memorial Service took place at the Fairbanks Centre in Shubie Park this past October.

We first met Derek sometime in 1965, just after his marriage to my high school friend Marlene Milligan. Later on, we got to know him better upon moving to their Dartmouth neighbourhood where our children attended their first schools and played together. Losing touch during overseas work-related travels, our spheres coincided again when I took up teaching at the Museum of Natural History in the late seventies. Various Museum staff members were recruited for their excellent and thorough two-week training period, and Derek was one of several of them, sharing his expertise in, and passion for, molluscs, natural history, and ecology in general.



During the second World War, he was evacuated with his Mother and brother to Cookham on the River Thames, where he developed a lifelong interest in natural history. At age seven they returned to London where every week he crossed the city to the Natural History Museum. He became a member of their Junior Naturalists Club and later their Field Observers' Club, where he began his first field observations on the movement of snails on garden Chrysanthemums. He was introduced to tiny Alderney island in the Channel Islands where, at many summer camps, he practised running transects, sketching specimens, and the art of maintaining a card catalogue! He became a member and later, President, of the International Youth Federation for the Study and Conservation of Nature.

Derek went on to study geology and biology at Chelsea College, London. After graduating, he did pre- and post-commissioning studies of the Bradwell Nuclear Power Station and its impact on the Blackwater Estuary in Essex. It was there he met Marlene who was also working for the Central Electricity Research Laboratory. In 1965 they married and moved to Nova Scotia. Derek completed his PhD here at Dalhousie, and later became the Chief Curator of Science at the Nova Scotia Museum of Natural History.

Derek continually encouraged conservation and environmental education throughout his career. He wrote numerous scientific papers on Nova Scotia's land and fresh-water molluscs, and co-edited the important, two-volume Natural History of Nova Scotia. Influential teachers at his Grammar School in England had shown Derek how all human activity was influenced by geography, and this is the work to reference if you want to get a good idea of what you might find, before travelling wherever you go in Nova Scotia, and to see how local geology influences an area's soils, water, and flora and fauna.

Derek also taught Landscape Ecology at the Nova Scotia College of Art and Design; was a member of the Mollusc Group of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); a member of the NS Institute of Science, serving a term as its President; and an early supporter of the Ecology Action Centre and later a member of their Marine Issues Committee. He loved fishing boats, particularly Thames barges, and liked to build models of them. He was a member of the Model Ship Modelers Guild, and also constructed model soldiers, knights (I am honoured to have two of them), airplanes, and a couple of pretty nice doll houses!

Derek was loved and much admired by his family. He instilled a love and understanding of nature in his children and others as well. Nova Scotia naturalists can be thankful for Derek's valuable contributions to our body of knowledge about our province, and for the early influences that led Derek to become so interested and knowledgeable about the natural world.

## NEW AND RETURNING



Ann Hebb  
Beverley McNeil  
Norris Whiston  
Vivien Worden

# SPECIAL ARTICLES

## ACADIAN FOREST SUPPORT

— *Stephanie Robertson.*

It was Monday, Oct. 23rd, and a lovely evening for Lesley Jane and I to take a jaunt to the K.C. Irving Building at Acadia University to hear Gary Schneider present “Restoring the Acadian Forest; Engaging Community to Increase Diversity”.

Gary had been working as a treeplanter and a wood-worker in PEI, as well as running a bookstore and doing production print work, when, in 1991, concerned about deleterious forestry practices (clear-cutting, one-species plantations), he set out to see what he could do to change them. Importantly, he noted that it is *relatively* easy in PEI to work to influence forestry practices; there, it is agriculture which is almost impossible to change (it is the opposite in Nova Scotia!).

With neither money nor training, Gary managed to convince PEI's government to give him 2,000 acres of crown land to manage, and he began his restoration project in the fall of 1991. He started with a wildlife garden, a native plant nursery, three nature trails, and demonstrations of innovative windbreaks, forest restoration, and erosion control. By 1995, one-week-long summer nature camps were inaugurated with 20 children ages six to ten. Two years later, renovation work began on the old Macphail homestead barn, turning it into a Nature Centre which now houses a library, a classroom, a presentation room, as well as displays of PEI's Natural flora and fauna. Sir John Andrew Macphail was a physician, author, professor of medicine, and soldier. The Sir Andrew Macphail Foundation preserves his birthplace and its 140-acre property in Orwell as a museum, the Sir Andrew Macphail Homestead, and it is now the site of the Macphail Woods Ecological Forestry Project which aims to preserve the old-growth Acadian Forest covering much of the property.

In 2001 the Macphail Woods Project began planting the new school grounds with help from students, through a partnership with the West Royalty Home and School Association. In 2002 a native plant arboretum was expanded to include more specimens of PEI's native trees, shrubs, ferns, and wildflowers. This has proved to be a crucial area in its educational workshops, camps, and courses.

By 2005, the West Royalty school partnership had blossomed into the Acadian Forest Project, with efforts from staff, students, and Macphail Woods to create a 4-hectare Acadian Forest green space adjacent to the school. Students from every grade have since participated in creating this outdoor learning space – complete with a walking trail, an outdoor learning circle, fruiting shrubs, and wildlife habitat. Also in 2005, an agreement was reached with the Provincial Government to manage 800 hectares of public land (about 20-30 properties) in southeastern PEI. Under a 10-year lease agreement, these lands will be used to demonstrate sustainable forest management and restoration of native Acadian woodlands. In 2008 a bandsaw mill was purchased and their long-term vision included having a woodworking shop where talented Island craftspeople create high-quality wooden products from sustainably-harvested wood. In effect, these craftspeople would become part of their team of forest educators.

In 2011, some of the public land holdings were certified by the Forest Stewardship Council of Canada (FSC); this was the first public land on Prince Edward Island to be so certified. This endorsement helps to ensure that more sustainable practices are used when harvesting from the land, as well as add value and markets for the products coming out of these woods.

The Macphail Woods Project's nature camp has now graduated to a ‘Sharing a love of Nature Camp’, an eight-week long day-camp in July and August, with over 120 children from ages five to 15.

Gary has won a variety of awards, and is still closely involved in all aspects of this important work, from collecting seeds and planting shrubs and trees to fundraising. New plantings were partially done by direct seeding, i.e. Red Oaks, White Ash, and Wych Hazel. Poplar and Trembling Aspen, which are good trees for fancy woodwork, were also planted.

Gary illustrated his talk with striking nature photos. We were shown one of a huge, beautiful American Elm five feet in diameter, also an immense ‘nurse tree’ covered in moss and flowers. As we viewed a Hairy Woodpecker shot, Gary explained that they have a fluid-filled sac around their brain, so that their hammering activities don't give them concussions. Also, they have a nictitating membrane – a translucent and transparent third eyelid – which protects their eyes from flying debris while pecking. They are cavity nesters so need to have old and weakened trees remain in the forests for their nests. Little Saw-whet Owls and Barred Owls also need the cavities found in old and ugly trees for nesting. We saw three young Barred Owls peeking out of their tree cavity home. The Brown Creeper also needs old trees, it will only nest under loose bark flaps of Balsam Fir, so – “We must learn to love dead wood!”

Some of the plants we saw which have been planted and are now well-established in the Macphail Woods were Wych Hazel, Hobble Bush, Bog Birch, Swamp Milkweed (for Monarchs), Yellow Violets, Blue Bead Lily (*Clintonia*), Hairy Sweet Cicely, Zigzag Goldenrod, Baneberry or Doll's Eye, Dutchman's Breeches, and Trillium – which, surprisingly, Gary said was easy to grow.

PEI's original Acadian forest was almost completely covered in ancient Hemlock, Yellow Birch, Red Spruce, Beech, and White Pine. It sustained the needs of the Mi'kmaq, and then provided building timber, fuelwood, and a myriad of other products for European settlers. Over many hundreds of years, these forests had built up deep, fertile soils which enabled a rich agriculture. They also sheltered a wide diversity of flora and fauna.

Despite playing a central role in the development of PEI's economy and culture, the true value and potential of these unique ecosystems seems to have mostly been forgotten – until now. These new ‘Confederation Forests’ started by Gary will provide habitat for all species, as they did originally, and will make a place to live, learn, and enjoy for the islanders who are here now, and those still yet to come. Three cheers for Gary and all his successful and persistent work!





## MORAR TALES BATS IN THE BEDROOM!

– Gareth Harding.

We spent our last night at Morar on Saturday, July 7th of 2012 having spent the daylight hours doing the last major weeding and watering of the garden. After a relaxing evening of haddock and vegetables, with the background music changing suddenly from Randy Bachman's theme programs to Oscar Peterson's Saturday Night Blues, eyelids became very heavy reading the Globe & Mail. Bedtime! The bedroom was fortified against mosquitoes with screens on the skylight and one of the windows. The window was further sealed with a spare T-shirt to prevent the more ingenious individuals from entering between the sashes. With the light turned off and a light breeze flowing over my head, I rapidly fell into a deep sleep (Renée has to work at getting to sleep unless she has Peter Mansfield's voice available).

Suddenly, I was awakened by a very excited Renée. "There is *something* flying in the room!" It wasn't the usual deer mouse scampering around or nibbling on sunflower seeds, but a rapid fluttering, 'round and 'round. A bat – of course! I got to the light switch and sure enough, a Little Brown Bat was flying in tight circles around the bedroom. With a twinge of reticence I took the mosquito defenses down. The bat continued circling but would not go through the open windows, even with my herding attempts. I closed the bedroom door and went down to find items large enough to simulate my father's spider and bug trap – a glass and a stiff piece of paper. I returned – with a two-litre ice-cream container and a government clipboard.

The bat flew in circles around the room at all levels, taking rest breaks on various walls. It was a small brown creature, about two inches in diameter with black nose and face ridges. Each time I approached, it would scream obscenities and spring into flight. Renée had the sheets firmly pulled over her head throughout, so I faithfully described to her the rescue mission's progress. I was trying to save the poor little blighter, whereas Renée thought of it as protecting her from a hair attack! I soon realised my mission was futile. I turned off the light and stood in the dark and bat-breeze, thinking about my future course of action. After some minutes of flutterings and some close passes over my head, I decided to have another go at it. Much to my surprise, on turning on the light, we now had two bats flying in circles over Renée's sheeted form. I think a second bat had flown in one of the windows in response to the screeches of desperation from the first.

Well, I figured I would sit this one out and got back into bed. After a 10-minute interval of bats fluffing my few remaining head hairs, I got up and turned the lights on. A great feeling of relief came over me, for we only had one bat and it was hanging head down from the decorative red maple leaf stuck above the window frame by Flora McPherson well over 130 years ago. I assembled my bat trap and managed to catch a resolute but flummoxed bat by gently sliding the clipboard in between it and the ice cream container and the wall. Not without a stream of bat obscenities, mind you. I opened the ice cream container well outside the skylight and off it flew into to the night sky. I reassembled the screens, wished the bats well with a great sigh of relief, and returned to a peaceful slumber.

(No mosquitoes had taken advantage of the lapse in our defenses!)

## OUTER MONGOLIA AND THE PRZEWALSKI HORSES

– Patricia Leader

Because of its proximity to Sable Island, HFN has had several presentations about its unique horses, popularly known as Sable Island Ponies. This crescent-shaped island of some 48 km in length is deceptive, as below the coastal waters there are extended sandbars and spits which constantly change position and size with storms and tides. Hundreds of years of shipwrecks off its coasts have earned it the nickname 'graveyard of the Atlantic'.

HFN objectives are centred on Nova Scotia's natural history, but as many of our members are world travellers, HFN programmes often extend far beyond our own province, for instance Peter Wells' presentation about his trip to Nepal. Neither nature, nor naturalists, have ever been confined to man-made borders.

Our recent presentation by PhD student Sarah Medill (see p.8, ed.), who is studying Sable's feral horses, recalled to my mind a trip I took this past summer to Outer Mongolia's National Park, where I was able to see another unique group of horses, the Przewalskis ('shi-vawl-skees').

Like Sable Island, Mongolia it is not easy to get to nor is it an inexpensive adventure. It is about 9,682 km from Halifax, typically via Vancouver, Beijing, then into Ulaanbaatar, Outer Mongolia's capital.

### SABLE HORSES-PRZEWALSKI HORSES

Sable Island horses are domesticated horses which have become feral. They are thought to have descended chiefly from animals seized from the Acadians during their expulsion, released on the island in the late eighteenth century, and descended from several shipments of French horses, including Breton, Andalusian, and Norman breeds. For instance, Boston merchant Thomas Hancock purchased some Acadian horses and transported them to Sable Island in 1760, where they grazed the island as pasture. Later on, they were crossed with horses from New England (including Spanish Barbs).

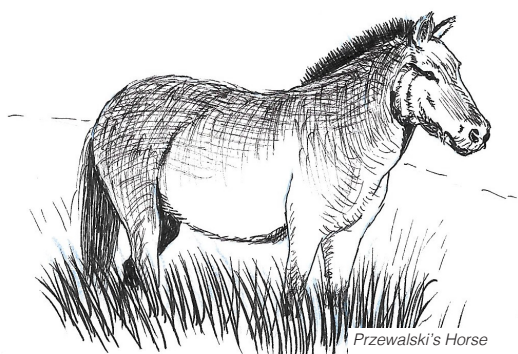
The Nova Scotia government established a lifesaving station on Sable in 1801, and workers trained some of the horses to haul supplies. Other breeding stock, including Morgan, Clydesdales, and other thoroughbreds, were sent to the island during the first half of the 19th century to improve the Sable horse population, thereby raising the price for which they could be sold on the mainland; during the 19th and early 20th centuries, the horses were periodically rounded up and either kept by islanders or transported to the mainland, where they were sold frequently for slaughter, primarily for dog food.

By the 1950s all this had placed them in danger of extinction. Then, in 1960, as part of the Canadian Shipping Act, the Canadian government declared the horses fully protected and no longer allowed to be rounded up and sold.

The Przewalski horses have been introduced to national parks in Outer Mongolia. Brought back from 'extinct' to 'endangered', they are the only truly wild horse known to exist today. Przewalskis are a rare and endangered subspecies of wild horse, *Equus ferus*, native to the steppes of central Asia. Once declared 'extinct' in the wild, with international cooperation by various agencies over time, they've been reintroduced to their native habitat in Mongolia at Khustain Nuruu National Park, Takhin Tal Nature Reserve, and Khomiin Tal. The taxonomic position is still

being debated, but some treat Przewalski's horse as a separate species, *Equus przewalskii*. Common names for it include Takhi, Asian wild horse, and Mongolian wild horse. The horse is named after the Russo-Polish geographer and explorer Mikołaj Przewalski. DNA sequencing studies to test whether or not the Przewalski horse is the primogenitor of domestic horse found that it is not. Importantly, among other very extensive DNA research, it has been found that Przewalskis have the highest diploid chromosome number among all equine species; Przewalskis have 66 chromosomes, compared with 64 in all other horse species.

Like Sable Island horses, most 'wild' horses today, such as the American Mustang or the Australian Brumby, are actually domestic horses turned feral, descended from animals which escaped and adapted to life in the wild. In contrast, the Przewalski's horse has never been domesticated and remains the only true wild horse extant. It is one of three known subspecies of *Equus ferus*, the other two being the domesticated horse, *Equus ferus caballus*, and the extinct Tarpan, *Equus ferus ferus*. As of 2011 there was an estimated free-ranging population of over 300 in the wild. Also, introduced in 1998, a growing population exists in the Chernobyl Exclusion Zone and these are protected from human interference.



## MONGOLIA

Despite living in an overloaded IT age, few people know little about Mongolia, so I've augmented this article with something of the country's 'flavour'. It is land-locked, about the size of Alaska, and sandwiched between China to the south, Russia to the north, and Kazakhstan to the west. Outer Mongolia lies north of Inner Mongolia which is still a part of China. When the Russians occupied it they did not convert it to state farms as is usual; much more wealth lay below ground. They also laid the foundations for the present-day education system, with a literacy rate above 90%! Like Halifax, the capital Ulaanbaatar has a range of universities and colleges.

In flight to Ulaanbaatar, I wondered how the so-called Mongolian hoards had managed in that wilderness. Different areas changed hands many times between them and the Chinese, which was the reason the Great Wall of China was begun. It was continually extended over many, many years and today is one of the world's key attractions. I imagined thousands of Chinese labouring over this marvellous defence system – one of the largest and best architectural efforts which can be seen even from space and which became a symbol of Chinese might and power. We might remind our would-be builder to the south that a wire fence has none of the attraction of ancient brick and ingenious design (nor was there a huge Chinese workforce waiting on the employment lines). For many, 'Genghis Khan', the

'Gobi Desert', and perhaps even 'marauding hoards' are readily associated with Mongolia. Ghengis was the tough, often cruel national hero who united the country in the 15th century.

Ulaanbaatur has an impressively large monument dedicated to Outer Mongolia's founder. Like so many countries, an impressive square became a must for former and present Communist regimes which wanted to show off their latest weaponry. Along with Ogedai and Kublai, Ghengis is still revered with legends and statues in Sükhbaatar Square (previously named after Ghengis). However, Damdin Sükhbaatar's equestrian statue now takes central position, chosen because his horse was said to have urinated on that spot and this was seen as a good omen. Sükhbaatar was the Founder of the Mongolian People's Party and the State of Mongolia, or Outer Mongolia, as distinct from China's Inner Mongolia. With a population of 3.2 million, Outer Mongolia is one of the world's lowest populated countries, with nearly half living in the modern capital of Ulaanbaatar, built around a once central and vast temple palace complex, now Sükhbaatar Square.

We stayed three days in Ulaanbaatar. The first day was the beginning of the great festival of Naadam ('games'). Only a few minutes from our hotel, the vast square was pleasant, with an expectant air. Early morning preparations were under way with red carpets being unfurled, flower beds spruced up, and sound systems retested. Children ran and played on the steps or had family portraits taken along with whole communities who had made the journey for the festivities. Tourists took selfies and were gently met by artists selling sketches of the Gobi Desert which we had not yet encountered. Both tourists and Mongolians in all their colourful and traditional finery waited patiently at the edge of the square. It was a photographer's paradise, with a great sense of comradeship. I never once felt out of place; it reminded me of the Olympics and other major world cultural festivals such as in Thimphu Tshechu, Bhutan, which I attended some years ago.

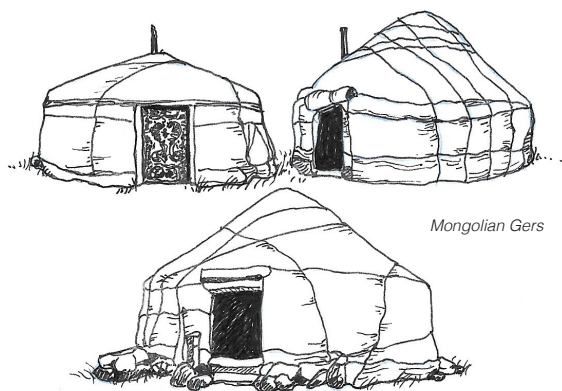
Naadam is celebrated in every village and boasts competitions in long-distance horse racing, archery, Mongolian wrestling, and 'sangaa', where sheep ankle bones are flung at opponents. Many restaurants provide sets of these whitened bones, all laid out in a miniature felt ger as a reminder of Mongolian heritage. The main festival in July is in Ulaanbaatar itself, bringing together the best competitors from all across Mongolia – along with masses of onlookers! The peoples' ancient nomadic traditions and long association with horses are entrenched within the Mongolian personality. Canadians escape to their cabins and cottages, the Russians to their dachas, but Mongolians enjoy travelling away from the countryside to erect their gers outside the larger cities and towns. On the second day, the major horse racing event was held outside the capital, a grueling 20-mile non-stop event run by animals which are considered the best from across the land, with jockeys as young as five years old! These horses and horsemen are the very best, coming from villages where they had trained hard all year, and indeed, Mongolians are known to be the world's top horse riders. The winning horse attracts a great deal of attention, with onlookers traditionally trying to touch the exhausted steed to draw upon its strength and power.

Early in the morning we joined an energetic stream of cars, vans, and trucks escaping the city to see the end of the race at its finish line. The outbound lane had two, even three lines of cars all trying to get as quickly to the country-



side as they could. Cars also drove along the verge, creating even another line of traffic. Excitement mounted; cars were crammed with whole families with kites and boxes of food for a fun day in the desert.

After returning to Ulaanbaatar to stay for two more days, and clutching the remains of a boxed breakfast, we boarded a 4:00 a.m. flight and crossed the Gobi Desert. As the sun rose, we looked down to see a great expanse of treeless, undulating land where absolutely no lights indicated neither human nor animal presence below. We were headed to Dungene Valley, where we were promised a short rest in our first tent, or ger, before our adventure into the Gobi.



There were some seven different ger camping areas in Hustai National Park which is comprised of some 50,000 hectares and is within the Central Asian Steppes, 100 km from Ulaanbaatar. Protected since 1991, it is self-sustaining, being financed by its own income and resources without state subsidies. As such, it was registered in UNESCO's 2002 'Man and the Biosphere' programme. It has developed a range of ecotourism initiatives and attractions in order to finance the park's conservation programmes, and chief among those programmes is the protection of the Przewalski Horses. The park boasts 450 vascular plant species, some of which have medicinal qualities, 55 mammals, 223 birds, two amphibians, four reptiles, 15 fishes, and over 500 insects. Bird-lovers are especially delighted to see Black Storks, Steppe Eagles, Saker Falcons, and cranes.

In the greater area of the park there are Neolithic tombs, some 4,000 years old. But for the casual tourist the main attractions are the seven delightful accommodation areas where one is housed in a typical Mongolian round ger made of wood and felt, with wooden poles and lattice-work. At the centre of the roof is a robust wooden ring, or 'shangyarak', over which the inner cover of felt and the outer cover of canvas is suspended. This ring, often passed from one generation to another, is the kingpin of the ger's construction, and is also symbolic of the Buddhist religion. Several middle-east countries use this symbol on their national flag.

Gers can be easily transported on the backs of horses, camels, and even yaks, and can be assembled and erected like a large tent in about two hours. Since Greek times, when the tent was first noted, it has been an ideal and comfortable home for a nomadic life style. A similar structure is used in Russia but there it is known by the more familiar term yurt. Mongolian gers (from the Turkish) have traditional decorations such as the ancient Sanskrit swastika and other symbols representing strength – the five elements, the powerful lion, the tiger, and the noses and horns

of other animals. In the west, the ger also comes in more modern and robust materials designed for the Canadian climate. A modern ger was introduced to Kejimikujik National Park some years ago, and it can be found in national parks across Canada where it attracts campers requiring a softer camping experience! Larger versions are also popular for events such as weddings; a few manufacturers are even found in our own province.

Each ger in our camp had at least two single beds, and small tables and chairs with a simple stove in the centre to provide heat. The campsites employ students who, on the rare wet or cool evening, bring firewood and quickly get a fire started. In one 'eco-camp' where water conservation was uppermost, students delivered baskets of hot face-cloths for the morning and evening wash.

Inside the ger the woodwork of the frame and the wooden door is painted with various patterns; this helped me to recognise my own tent early in the dawn! On hot days, the roof and sides of the ger are lifted to allow more air to circulate; ropes which lift the roof can be also used for clotheslines. It's a great time for the local but shy rodents who like to scurry inside to see what tidbits their visitors may have left! Gers are arranged in rows somewhat like an army camp and they are served by nearby toilets and hot showers. A larger ger or sometimes a brick building houses the restaurant facilities. Some even have outdoor patios. We were often up at 5:00 a.m. when the sun streaming between the gers made for great photos. Always the food was of good quality with many meat dishes, salads, and fruit. I was always amazed at the variety, everything being trucked arduously across the desert. Because of its proximity to the Przewalski horses, (often known as the 'P-horses' for brevity), Hustai Park camp had larger gers set up with displays and DVDs about them.

After supper, we went to visit the horses, travelling by van to the horse congregation areas. By that time, after travelling from Ulaanbaatar, we had all got used to travelling in the desert where the road is merely a series of tracks and endless bumps and ruts. Long periods of desert travel were alleviated by seeing wandering animal herds of goats, sheep, cattle, the two-humped camel, Buddhist shrines, and at tourists' spots such as the Flaming Cliffs, 'pop-up-stalls' with woollen, model animals and geo-stones from the desert. Even the usual motion sickness experienced on these bumpy rides had long vanished. A typical travelling day lasted from ten to twelve hours in the heat. But, on this evening our visit to the horses took a mere forty minutes.

We arrived near the edge of some hills and were delighted to see a variety of animals on the skyline. Finally the horses arrived and we were told to keep at a certain distance while photographing from the river. With quite a few tourists along the road I thought there would be some international incidents, as some people crept closer and closer to the animals and blocked others' camera views. However, as the sun set, everybody managed to get some good photographs, and to enjoy the horses' antics and to ask questions from the knowledgeable park rangers. Unlike our Sable Island horses, each horse is identical in colour – tan, with dark tails, no forelocks, and dark, upright, short and stubby manes. Their herd behaviour is similar to Sable horses; they travel in family groups while the bachelors enjoy their freedom until it's time to settle down.

*(To be continued in the Spring 2018 issue- ed.)*

# HFN TALKS



## LIFE ON SABLE ISLAND 5 OCT. – Peter Webster

Sarah Medill is a PHD biology researcher studying the Sable Island horse population, and is also now a Parks Canada Operations Coordinator of Sable Island National Park. These special horses are an iconic species of Sable Island, and they are something of an Atlantic Canada icon as well.

Sarah provided us with a fascinating and engaging account of her research work, and of day to day life on the famously remote and windswept island far off Nova Scotia's east coast.

She told us about her long-standing interest in horses, ever since her childhood growing up on the prairies. Her work on the Sable Island herds began with her PhD research project for the University of Saskatchewan from 2012 to 2015, and in 2016 she began working for Parks Canada when the island became a national park.

The first horses on Sable may have been introduced to the island as early as 1750. There were attempts at farming on the island, and also life boat stations, both of which would have used horses. Sarah suggested that the last introductions of horses would likely have been around 1935. DNA testing shows that Sable horses have a diverse background, some of which includes Hackney, Belgian, and Arabian breeds. As a long-standing, isolated population, they are now effectively their own breed, and they've been 'unmanaged' since 1960 and protected under the Shipping Act since 1961.

Sarah is able to study the population's ecology with more ease because of their isolated, 'closed' situation, and the University of Saskatchewan has carried out annual surveys there since 2008. Using photo IDs, individuals can be identified by natural markings, and GPS locations and behavior can be tracked over time.

Populations have fluctuated from 385 in 2008 to 550 in 2016, and it is roughly a 50/50 male to female ratio. The horses live in harem groups or bands, with one stallion and several females. Males who are not with a harem of females live in bachelor groups; females within harem groups also have their own hierarchy.

Behaviors like nursing, fighting, and movement of mares from one band to another are observed and documented. Also, the morphometric body measurements of the horses are recorded; these measurements indicate overall body condition, how well-fed the horses are,

and whether they are suffering from any health issues. Population densities on different parts of the island, changes in band sizes, and foal survival rates are being tracked as well.

Sarah uses hair samples to measure testosterone and other hormone levels in the horses. For instance, some of these findings allow her to measure relative stress levels in mares. Pregnant mares, and mares with foals, exhibit greater than normal stress. But other behavioral factors also cause stress. Mares who have recently joined a new band show greater stress, likely because they may come in conflict with other females in the group.

Since stallions must be aggressive both to defend their bands and to fight for dominance, it is understandable that dominant stallions with harems turn out to have higher testosterone levels than members of bachelor groups.

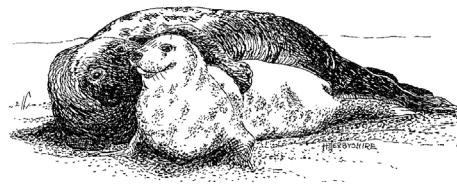
Along with weather conditions, the relative abundance of Marram Grass and other food sources influence population, location, and distribution on the island. Winter conditions in particular also have a major impact on the horse population; extremely harsh winter conditions do result in a higher die-off.

Research on Sable Island plant chemistry shows that a great deal of the nutrients in island plants come from marine sources, i.e. dung from Sable's large seal colonies is important to sustaining its plant populations.

Sarah told us a little about her life on Sable, with its small group of Parks staff, meteorologists, and researchers, and about the difficulties of operating vehicles and equipment in the soft sand, rough terrain, and harsh weather. She recounted the challenges of getting both supplies and people on and off the island on make-shift sandy air strips (air service is now possible to the island); or by sea through the rough surf to the beach (there are visits by small expedition cruise ships and occasional private vessels). Weather is unpredictable, so flying often involves waiting days for a 'weather window'. As there is no wharf on the island, beach landings are necessary; these can be very often difficult and dangerous.

Environmental monitoring is also one of Sarah's roles. Major dune erosion changes can be brought about very rapidly by hurricane force storms and storm surges. They can be impressive to witness, and are very damaging to dune systems, which are always changing.

Parks Canada is still developing a management plan for the island. Planning will include public consultation as a plan is being developed; it is scheduled to be finished by 2019.





## LITTLE BROWN BATS 2 NOV.

– Stephanie Robertson

**What They do in The Shadows: The Life of Little Brown Bats in Newfoundland.** Cody R. Fouts and Nicole Besler gave us a wonderful presentation on their research into the Little Brown Bat, *Myotis lucifugus*.

Cody is a Master's of Applied Science candidate at Saint Mary's University, and received his BSc in Wildlife Biology from Murray State University in Kentucky. Originally from Indiana, Cody has been working with bats for three years. His love for bats began on a field outing as an undergraduate, when his mammalogy professor had captured some of them. Cody has additionally worked with grassland birds, salamanders, and freshwater mus-

sels. Nicole is a Master's student at Saint Mary's University. Alberta born, she received her BSc in Zoology from the University of Calgary and has been involved in bat research since 2014. She has worked with a variety of animals, from fish to grizzly bears, but none peaked her interest the way bats did. The mystery of bats and how they function leaves a lot of biological questions unanswered, and this got Nicole into starting her Master's degree on bats.

Both Cody and Nicole shared some of their findings about these dear little creatures.

**General Ecology** Cody showed a photo of a Little Brown Bat taken in Salmonier National Park, one hour from St. John's, Nfld. These small, winged mammals are mobile and opportunistic insectivores. They can live up to 40 years(!), so – they have the time (and observed ability), to 'learn'; they learn from each other and have been observed teaching their offspring as well. We watched a fascinating video of a bat in flight performing various swoops and contortions in order to catch insects on the wing. When a direct catch fails, they will use both their tails and their wings to 'hit' the insects, directing them towards their mouths. They exhibit a 'central-place' foraging behaviour (they leave from, and return to, a central place for their nocturnal hunting).

Little Brown Bats are highly social in maternity systems, especially in the summer. The whole bat colony helps to raise the young. In the fall they 'swarm' together in large numbers to mate, the females storing the male's sperm until the following spring; only one offspring per female is the result at the end of gestation.

**Diet** Little Brown Bats have been observed eating midges, gnats, mayflies, caddisflies, etc. – in fact a wide range of insects. They were once very abundant in North America but recently have been very hard hit by White Nose Syndrome, *Geomyces destructans*, a disease suspected to have come into North America from Asia. This disease is so fatal that Little Brown Bats are now declared endangered in all of Canada (except for Newfoundland). Their diets were studied to see if they are opportunistic feeders (they are), which would help them to survive better. Conducting stable isotope analysis on bat faeces and bat hair samples, which he collected from the bats at Salmonier Nature Park in Newfoundland, Cody used the carbon and nitrogen signatures of their invertebrate prey to determine the

how much each prey item contributes to the overall diet of individuals. The stable isotopes were  $\delta^{13}\text{C}$  (carbon) and  $\delta^{15}\text{N}$  (nitrogen); the carbon isotope measures energy flow in the eating/digesting/nourishing process of food ingested, the nitrogen isotope reveals the sources of bats' food choices when foraging.

Little Brown Bats are doing better in Newfoundland (and perhaps in Labrador, but not many are studying them there, so it's hard to say for certain) because those populations there have not been infected with White-nose Syndrome. Also, there likely were more bats in Nova Scotia than Newfoundland prior to the introduction of White-nose Syndrome and its resulting 99% mortality rate, and Newfoundland likely has fewer insect species and sheer numbers of bats than in Nova Scotia. This is due to many reasons, including the diversity of forested, barren, and grassland habitat types found in Nova Scotia. Newfoundland does not have the same types of forests, barrens, or grasslands that afford the insect diversity.

Reproductive individuals display the least amount of opportunistic feeding compared to the other groups. This is likely due to the energetic and nutritional cost of being pregnant and reproducing (similar to women having odd cravings throughout pregnancy).

Why does the study of bat diets matter? In order to support and inform bat recovery, it's important to have data on nutrition cycles. Bats are voracious predators; they need to consume their own weight in insects every day. They save the agriculture industry billions of dollars per year in the United States, and future bat management must preserve and expand bats' prey base.

Little Brown Bats hibernate throughout the winter. Hibernation is a form of torpor, which is a thermoregulatory strategy that saves bats energy. There are three types of thermoregulation. 1) Homeothermy – a certain body temperature is always maintained. This requires a lot of energy, e.g. to stay at a species-specific life-sustaining temperature throughout very cold winters. 2) Poikilothermy – body temperature varies with ambient temperature. In other words, there is an inability to maintain a constant core temperature independent of ambient temperature (most reptiles); this is irreversible without change of locale, e.g. to a cooler or warmer place. 3) Heterothermy – an 'in-between' strategy involving a reversible, survivable drop in body temperature. Bats and ground squirrels employ hibernation in winter and daily torpor in the summer. Torpor in summers allow bats to save energy during times of inactivity and cool temperatures.

Reproductive female bats in Newfoundland can lower their body temperature down to 4°C but do not maintain those body temperatures for long periods of time. The extent to which body temperature drops and for how long is different among individuals. The problem with torpor is that it can delay pregnancy and weaning; pregnant and lactating females therefore have to use it much less. Windy conditions make the cold feel colder and may force bats to increase their use of torpor.

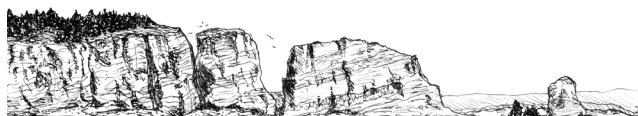
The potential effect of wind on torpor use is why protected roosts are important for females, such as bat



boxes or caves. The development of safe, heated bat boxes is being researched. Bat boxes are useful in gardens, placed at least 3 m off the ground with no obstructions at the opening. It is best to avoid excluding bats from cabins and homes from June to September when there are babies.

The main threat to bats now is the previously-mentioned White Nose Syndrome. This disease disrupts hibernation, decreases reproduction, and causes high mortality rates. Bat boxes may help surviving bats to reproduce and can be purchased on the internet, and instructions for making them can be found there as well.

Little Brown Bats are preyed upon by many roost predators. Weasels, raccoons, rats, mice, many species of snakes, and domestic cats readily take roosting little brown bats for prey. During flight, hawks and owls also kill and eat Little Brown Bats. Also, martens and fishers have been observed feeding on hibernating Little Brown Bats. Placing bat boxes high up and on a structure that cannot be climbed by other animals will help protect bats from potential predators.



## UNTAMED ATLANTIC CANADA

7 DEC.  
– Burkhard Plache

Scott Leslie, well known writer and photographer, was the presenter at our final meeting of the year. He used photos and excerpts from his book *Untamed Atlantic Canada* to explore examples of biological diversity in eastern Canada.

Scott has been active in observing and conserving nature for more than 25 years. He was involved in establishing the Tobeatic Wilderness area, and is to this day concerned about developments in that region. To the public he is known from a number of nature books and his contributions to the *Saltscapes* magazine.

Scott started his presentation with a slideshow of the photos from his book, accompanied by a reading from the introduction. We were treated to an overview of the richness of the Maritimes (8,000 identified and named species) and the diversity of its ecological regions, from the open ocean to coastal regions and inland regions such as the Tobeatic wilderness area. The state of such natural treasures is, however, at risk, as seen in the decline of individual animals by approximately 50% since 1970. Such a decline is certainly not sustainable, and will inadvertently lead to the loss of more and more species in the near future.

Following this introductory reading, Scott answered a number of questions from the audience, mainly inquiring about the patience required and techniques used to capture close-up photos of wildlife. While patience is certainly a prerequisite, there is also the need to know the species – for instance shorebirds are generally less easily spooked than ducks, and thus easier to photograph than the latter. Furthermore, a well constructed, floating blind, carefully navigated, will generate ample opportunity for close-up photography.

The second section featured the fjord of Bonne Bay, which is surrounded by Newfoundland's Gros Morne National Park. Here, the deep water of the fjord is separated

from the open ocean by a ledge, limiting the water that can be exchanged. Therefore the deep waters of the fjord stay at a frigid -1°C (seawater freezes at -2°C), providing habitat for species generally found in arctic waters further north. As an accomplished diver, Scott is able to explore the upper layer of the fjord, collecting photos of life hidden below the water's surface. Amazingly, the colours and shapes of the life forms in these cold conditions call coral reef communities to mind.

The importance of insect pollinators, again fascinatingly captured in photos, was the topic of the final section. This chapter focuses on the world of small animals, often overlooked, which display an amazing beauty to the patient observer. Scott pointed out that their small size is in no way an indication of their importance. Quite the opposite – without bees, pollination of many plants does not occur, and no fruit and seeds are produced. Beside the bee's impact on cultivated crops, they contribute equally to the propagation of wild plants. The close-up photos accompanying this part of the book showcase the beauty and diversity of these amazing animals.

Before wrapping up, and in response to a previous announcement regarding the state of forestry practices in the province, Scott suggested a brief addition to his presentation – selection of aerial photos illustrating clearcutting in Annapolis County and in Cape Breton. Those photos provided a view of the otherwise hidden scope of industrial harvesting of forests, where immense swaths of land are cleared of tree cover in a single operation. However, other intriguing details emerged as well. In one cutting operation, scattered trees were left standing, for purposes we were not able to fathom. In another photo, showing another area a few years after clearcutting, many uprooted solitary trees were seen; obviously, and probably unsurprisingly, trees which grew up surrounded by their peers and protected from the winds, will not survive this sudden exposure. We also marvelled at sporadic clumps of trees which were also left standing, likely a requirement in clearcutting operations. People in the audience expressed their incredulity that such groups of trees could be considered suitable for providing cover for animals travelling through an area otherwise devoid of cover.

After such downbeat photos, the evening ended on a high note with the annual Christmas Holiday social. During this time, Scott made himself available to answer more questions, both regarding his photography and about nature and its state, as he has so ample opportunity to observe.

I want to end with a sincere thank you to Scott for his clear words alerting us to the challenges which the natural environment is facing, and for his wonderful presentation highlighting the beauty around us.





# HFN FIELD TRIPS

## McINTOSH RUN TRAIL

– Burkhard Plache

**Date:** Saturday, October 14th  
**Place:** Herring Cove Backlands  
**Weather:** Overcast  
**Leader:** Kaarin Rae  
**Participants:** 15



The McIntosh Run Watershed Association (worked for many years to obtain permission to build a single-track trail system in the public lands surrounding the McIntosh Run. With the permits in place, and many volunteers eager to help, the first trail section was opened just a few weeks before our walk took place. Overall, volunteers spent about 2,000 hours building this section!

The finished section is near the village of Herring Cove, and the access point is from Norawarren Drive. We met at the trail-head on a small parcel of public park land. A display board informs hikers about the trail system, and includes a map showing the currently opened and the planned trail. Furthermore, the trail is well marked, with small maps and directional markers at all intersections.

Kaarin Tae, president of the MRWA, led the field trip. She is one of the trail builders, and is familiar with both the background of the organisation and the ongoing trail work. She first showed us the officially open two loops, which are rated as easy, and then led us into a section that is under construction. We saw examples of the different stages of trail building; after the approximate routing has been outlined, the exact location of the trail is determined. If there are already existing, suitable paths, they will be utilised. However, steep sections must be avoided, because they quickly develop into water conduits after rain, damaging the trail and making it unuseable. Similarly, existing trails sometimes cross sensitive areas like wetlands or little streams. In such cases, the trail needs either rerouting or – if that is not possible – construction of a stone foundation (for short sections) or a boardwalk to minimise damage. For boardwalks, rough-cut hemlock boards are ideal, because they provide more traction than other types of wood.

A single track trail, which is narrow by definition, requires trimming of branches and cutting back of some undergrowth to provide view lines for the trail users. The surface of the trail needs to stand up for many years to reduce future maintenance. The most durable surface material, natural rock, is present in a few barren areas or ridges, and is utilised where feasible. Elsewhere, the trail surface requires more substantial work: after the organic top layer is removed by grubbing, the exposed mineral surface is levelled and the big rocks are moved to the side or buried into holes in the trail and then covered with finer material. If larger quantities of such construction material are needed, 'borrow-pits' are dug off trail. Thus, the trail is built using mainly material from its vicinity. After a few years the trail surface will be covered with multiple layers of leaves and other vegetation, and will appear natural.

The section of the trail which has only been partially completed leads down to Western Pine Island Pond which is part of the McIntosh Run. That trail follows an existing track which has been used by local people for many years. The only part requiring major work was a steep scramble over a

ledge. To make the trail more generally accessible, MRWA built a switch-back around that section, which we used to get down to the pond. Currently, Pine Island, the hill across the pond on the eastern side of the McIntosh Run, is not connected to the trails on the western side. Future plans include a bridge connecting both sides. There is also another opportunity to explore that area. Starting by canoe from Powers Pond in Herring Cove, a series of paddle sections and portages lead up into Western Pine Island Pond.

The view point over Western Pine Island Pond was our point of return, and we were back at the trailhead after approximately two hours. A number of participants expressed their intent to return at another time, to explore an area previously used mainly by only a few local people.

A huge thank you to Kaarin for showing us around, explaining aspects of trail building, and sharing her enthusiasm for the project. Another thank you goes to the MRWA for working diligently for many years, establishing a trail system, and for preserving this land for low-impact recreational use.

## WINDHORSE FARM

– Laura Ferguson

**Date:** Saturday, Nov. 4th  
**Place:** New Germany, Lunenburg County  
**Weather:** A warm and sunny fall day  
**Leader:** Jim Drescher  
**Participants:** 30+

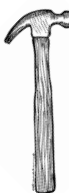


It was a lovely autumn day for a tour of Windhorse Farm, led by Jim Drescher, the owner of this sustainable permaculture and forestry farm in New Germany. We had a fantastic turnout, with just over 30 participants!

The highlight was certainly the walk into the Acadian forest, which we learned is more respectfully called Forest Wapane'kati, in recognition of its Mi'kmaq heritage. Jim explained the theory behind sustainable forestry, stressing that a productive forest for harvesting lumber is a healthy forest, in which biodiversity and ecosystem function is preserved. He explained that when trees are clear-cut, and then more trees are planted as a means of continuing the forest, the lumber is usually not of peak quality as the new trees have suffered losses in biodiversity from previous clear cuts.

We also learned that a sustainable farm only removes the parts of a felled tree that will be used for lumber; anything remaining is left in the forest to preserve the nutrients within the forest nutrient cycles. Furthermore, sustainable forestry allows dead trees to remain in the forest, as they also contribute to biodiversity, and thus forest health, by serving as habitat and nutrient sources for different animals. Windhorse Farm uses natural forest roads as opposed to logging roads, in order to reduce disturbance to the forest. Also, the logs are hauled out by powerful horses, not machines.

Finally, Jim explained that their method of sustainable forestry is no less productive than clear-cutting. Jim's perspective on sustainable forestry was inspiring, and certainly of interest to everyone who is concerned about clear-cutting in Nova Scotia. A huge thank-you goes out to Jim for his insight and perspective, and thanks to everyone who participated!



## NATURE NOTES

– Janet Dalton and Stephanie Robertson

### OCTOBER

Christine Wysnyk saw a **Silver Fox** close by while walking the Duncan Cove Trail. A dog picked up the scent, and the Fox then veered off into a private property. She also saw a **Mink** in Mahone Bay (Thursday, October 5th).

Stephanie Robertson and her granddaughter went on a 'Snapping Turtle rescue' led by Clarence Stevens Jr. In a Middle Sackville nest they found 37 empty shells, and rescued six babies; in a nest along Hwy 101 they discovered 61 empty shells and rescued 12 babies. Mike Bradfield and his grandson had gone on the same mission the weekend before (Sept. 27). The found nosne to rescue, but did get to view one which had been rescued previously.

Lesley Jane reported seeing a **plethora of Painted Lady butterflies** amongst dense plantings of **asters**. Interestingly, they were alighting only on the purple-pink blooms, not the solid pink ones. Also, on the afternoon of the October HFN monthly meeting, she saw a **Ribbon Snake** in Albany New.

Marilyn Bowlby spotted a **Deer with three fawns** on a Dartmouth Volksmarch Club hike.

At a Keji lake, Gareth Harding saw one dragonfly on top of another, the latter being underwater. Upon rescuing it he discovered the upper dragonfly was eating the lower one! Regine Maass was having her septic system cleaned out when during the digging, 2 1/2 feet down, not only an earthworm but also a **Red Salamander, with eggs**, were found!

Ray Provencher saw a **pair of Pileated Woodpeckers** in August. On the Jitney walking Trail in Pictou Shirley McIntyre saw **many red dragonflies**; Ron Arsenault identified them as **Meadowhawks**. Art Haliburton saw **Short-tailed Weasels**, *Mustela erminea*, in Prospect, also **lots of Bald Eagles**.

### NOVEMBER

On October 30th, Lesley Jane Butters found some very interesting marine animals at the Waegwoltic Club. The maintenance crew were pulling up the floating docks for the winter when she noticed strange jelly-like creatures hanging from their undersides. Out of some of their tips, she observed what looked like Praying Mantises occasionally emerging. She had brought some samples of them in a container of salt water; they were orange and yellow and shaped like the teats of a cow's udder. Peter Wells declared them to be invertebrate **Club Tunicates (*Styela clava*)**, and Kelly Snare added the fact that they were an invasive species!

In September in Parrsboro, John Brownlie witnessed a massive **Painted Lady Butterfly migration** temporarily thwarted by circling winds which prevented them from getting over the Blomidon Cliffs (he humourously and graphically demonstrated what was happening to them at the front of the auditorium - thank you John!). David Patriquin also saw very many in his garden in Halifax, and Carol Klar saw hundreds in the Public Gardens. Ron Arsenault said thousands had come east from Ontario; he saw about 500 of them at Clarke Head island in the Minas Basin.

Pat Leader counted **50 flowers still blooming** and also saw **blueberries in flower** as well! Later, she also reported that her friend's fields in the Annapolis Valley had produced **five crops of hay this year**, a very unusual number for Nova Scotia.

Stephanie Robertson reported that her Concorde Grapes at Whynacht's Point were particularly sweet this fall.

Burkhard Plache brought to the meeting for identification two types of fruit from street trees in Halifax. One was identified as a walnut (in the centre of the green, quince-looking fruit), and the other one Burkhard thought to be a Bitternut Hickory.

During Thanksgiving Weekend, Keith Vaughan and Marion Sensen had taken a trip to the Gaspé Peninsula. On its northern shore, late in the day, they saw large flocks of white birds - **Snow Geese!** They were repeatedly rising up in flocks, then settling down again. There were at least five or six flocks, about 100 birds in each.

Sharon Russell reported that in the city garden at the intersection of Quinn Street and Chebucto Road, there were a plethora of **ripe strawberries**, along with **strawberry flowers** as well. Ron Arsenault also saw **wild strawberries** in bloom – in Parrsboro.

John Collins asked, with the weather changing and becoming warmer, how is this affecting the **Monarch Butterfly migration**; where can they be found and photographed? He didn't think they'd yet migrated to Mexico because of our warm fall. John Brownlie said there were many at Point Pelee National Park. Judy Keating had planted three milkweed plants in her garden for the **Monarchs** this year. She saw seven late caterpillars, but didn't catch any of those spinning their cocoons; she had a chrysalis on a mint plant; after emerging, its wings did not seem to be able to fully open, so she took it to Hope for Wildlife (it improved there). She saw another one in her garden a week later. The conclusion was that these Monarchs were later than usual to emerge. Ron Arsenault said that in general, a lot more were reported this year, and in September, he saw about 300 all at once on Brier Island; they'd been identified by entomologist Jeff Ogden. Usually, there have been only 15 to 20 seen there. Peter Webster said the best place to spot Monarchs this year was on North Mountain in the valley (taking exit 10 off the 101), just before the turn-off to the theatre near the Blomidon Look-off. The comparative attractiveness of Rose Milkweed versus wild Swamp Milkweed for them was discussed. Lesley pointed out that the Tobeatic Institute gives milkweed seeds out, and David Patriquin noted that the Irving Plant Centre at Acadia University does as well.

### DECEMBER

Christine Wysnyk saw **another Silver Fox** in East Chester while walking the Rails to Trails pathway there. Amanda Spencer reported to Clarence that she'd seen a **small Longarm Octopus (*Macrotritopus defilippi*)** at Hartlen Point in November. It was about three inches in diameter (when mature they reach six inches); its photo is on HFN's Facebook site.

Patricia Chalmers reported the presence of a **Great Horned Owl** in her neighbourhood for awhile, near Quinpool Road and Beech Street, which was being continually mobbed by smaller birds. Dennis Hippert reported on the **small brown winter moths** that are now flitting about. Clarence Stevens Sr. saw **two Snowy Owls** at Oak Island. In Petite Riviere at his cottage he saw **two Barred Owls** very close-up; their presence attracted a lot of other birds!

Peter Webster reported a confirmed case of **Lyme disease** picked up from the Purcell's Cove Backlands area. Pat Leader reported that a friend of hers in Sackville is still feeding a **female hummingbird**. Judy Keating saw **14 Buffleheads** and a **pair of Mergansers** two weeks ago at Frost Fish Cove.

In mid-November Karen McKendry observed a Red Squirrel repeatedly peeling birch bark, stuffing the peelings in its cheeks, going off, then coming back to repeat his task. Nesting activity?

Close to Carroll's Corner (Musquodobit Valley area) Ron Arsenault spotted **Seaside Buckthorn**, the first report of a non-cultivated specimen. It has orange berries and looks like a Russian Olive. Lesley Jane Butters reported that **Beavers** have clear-cut her property in Albany New; she asked for any safe 'removal' ideas'.





# 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.

"December is thirteen months long,  
July's one afternoon;"

– Alden Nowlan, from his poem "Canadian Love Song" in *The Things Which Are* (1962)

## NATURAL EVENTS

- 14 Dec. -5 Jan.** Audubon Christmas Bird Count Period.
- 21 Dec.** Winter Solstice at 12:28 AST; the shortest day. Winter begins in the N. Hemisphere; the temperature drops, but the days begin to lengthen.
- 27 Dec. -8 Jan.** Latest Sunrise of the Year at 07:51 AST.
- 1 Jan.** Full Moon. Moonrise at 16:39 AST.
- 27/28 Jan.** Eagle Watch Weekend I in Sheffield Mills.
- 31 Jan.** Full Moon. Moonrise at 17:43 AST.
- 3/4 Feb.** Eagle Watch Weekend II in Sheffield Mills.
- 19 Feb.** Anniversary of 'White Juan', the huge blizzard of 2004.
- 1 Mar.** Full Moon. Moonrise at 17:44 AST.
- 11 Mar.** Daylight Saving Time begins.
- 20 Mar.** Vernal Equinox at 13:15 AST. Spring begins in the Northern Hemisphere.
- 31 Mar.** Full Moon. Moonrise at 19:55 ADT.

– Sources: Atmospheric Environment Service, Climate Normals 1951-80 Halifax (Shearwater A) N.S.; Blomidon Naturalists Society's 2017 Calendar; United States Naval Observatory Data Services.

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



<b>2 Dec.</b>	07:38	16:34	<b>6 Jan.</b>	07:51	16:44
<b>9 Dec.</b>	07:41	16:34	<b>13 Jan.</b>	07:49	16:31
<b>16 Dec.</b>	07:45	16:35	<b>20 Jan.</b>	07:45	17:20
<b>23 Dec.</b>	07:49	16:38	<b>27 Jan.</b>	07:39	17:09
<b>30 Dec.</b>	07:51	16:43			
<b>3 Feb.</b>	07:31	17:26	<b>3 Mar.</b>	06:48	18:05
<b>10 Feb.</b>	07:22	17:36	<b>10 Mar.</b>	06:36	18:14
<b>17 Feb.</b>	07:12	17:46	<b>17 Mar.</b>	07:23	19:23
<b>24 Feb.</b>	07:00	17:55	<b>24 Mar.</b>	07:10	19:32
			<b>31 Mar.</b>	06:57	19:41

## 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/>.

**30 Dec.** West Hants Christmas Bird Count.

**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 go to <http://www.smu.ca/academics/departments/astronomy-physics-burke-gaffney-observatory.html#tours>.

**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, or email [field-tripcoordinator@nsbirdsociety.ca](mailto:field-tripcoordinator@nsbirdsociety.ca). This email address is being protected from spambots. You need JavaScript enabled to view it. Or, email the trip leader, or go to <http://www.nsbirdsociety.ca/>.

**13 Jan.** "New Birders Walk: Living in the Dead of Winter in Point Pleasant Park", with leader Sue Abbott, [nsplovers@gmail.com](mailto:nsplovers@gmail.com).

**27 Jan.** "Downtown Dartmouth: Birding the Sawmill River from Lake Banook to Dartmouth Cove".

**22 Feb.** "Landbirds at Risk", with speaker Cindy Staicer.

**22 Mar.** "Sparrow ID Workshop/Ipswich Sparrow Project", with speakers Sydney Bliss and Dr. Andrew Horn.

**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/>.

**29 Nov.** "Mission to the Gully", a new, permanent exhibit.

**13 Jan.** "Body Worlds Rx: the amazing biology and physiology of human health and the dramatic effects of disease." A new, visiting exhibit.

**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](mailto:nswildflora@yahoo.ca) or go to <http://www.nswildflora.ca/>.

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

**8 Jan.** "150 Years of Canadian Dinosaurs and Other Major Fossil Discoveries", with Dr. Tim Fedak, Fundy Geological Museum. This lecture takes place at the Halifax Central Library, at 7:00 p.m.

**5 Feb.** "Stop Taking So Many Photos! How Taking Photos Can Impair Memory", with Dr. Angie Birt, MSVU Psychology Dept.

**5 Mar.** "The Rise of Mountains & Climate Changes in the Canadian Arctic Archipelago" with Prof. Marcos Zentilli, Dalhousie Earth Sciences Dept.

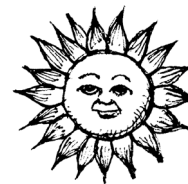
**9 Apr.** "Aquatic Invasive Species in Nova Scotia: Are they Spreading Disease to our Native Species?" with Dr. Sarah Stewart-Clark, Dalhousie Faculty of Agriculture. This lecture at the NSMNH starts at 7:00 p.m.

**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/>.

**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](mailto:ynchalifax@yahoo.ca); or go to <http://nature1st.net/ync>.

**17 Dec.** Halifax Christmas Bird Count for Kids, 9:30 a.m. - 11:30 a.m.

— compiled by Patricia L. Chalmers





# HALIFAX TIDE TABLE



## January-janvier

## February-février

## March-mars

Day	Time	Metres	Feet	jour	heure	mètres	pieds	Day	Time	Metres	Feet	jour	heure	mètres	pieds	Day	Time	Metres	Feet	jour	heure	mètres	pieds
<b>1</b>	0047	<b>0.3</b>	1.0	<b>16</b>	0143	<b>0.6</b>	2.0	<b>1</b>	0234	<b>0.3</b>	1.0	<b>16</b>	0220	<b>0.5</b>	1.6	<b>1</b>	0126	<b>0.3</b>	1.0	<b>16</b>	0115	<b>0.5</b>	1.6
MO	0640	<b>2.0</b>	6.6		0725	<b>1.7</b>	5.6		0817	<b>2.0</b>	6.6		0819	<b>1.8</b>	5.9		0711	<b>2.0</b>	6.6		0715	<b>1.8</b>	5.9
LU	1334	<b>0.0</b>	0.0	TU	1406	<b>0.3</b>	1.0	TH	1505	<b>0.0</b>	0.0	FR	1446	<b>0.2</b>	0.7	TH	1355	<b>0.0</b>	0.0	FR	1338	<b>0.2</b>	0.7
	1927	<b>1.8</b>	5.9	MA	2009	<b>1.7</b>	5.6	JE	2059	<b>2.0</b>	6.6	VE	2053	<b>1.7</b>	5.6	JE	1949	<b>1.9</b>	6.2	VE	1944	<b>1.7</b>	5.6
<b>2</b>	0146	<b>0.3</b>	1.0	<b>17</b>	0215	<b>0.6</b>	2.0	<b>2</b>	0331	<b>0.3</b>	1.0	<b>17</b>	0256	<b>0.4</b>	1.3	<b>2</b>	0220	<b>0.2</b>	0.7	<b>17</b>	0154	<b>0.4</b>	1.3
	0736	<b>2.1</b>	6.9		0804	<b>1.8</b>	5.9		0909	<b>2.0</b>	6.6		0856	<b>1.8</b>	5.9		0802	<b>2.0</b>	6.6		0753	<b>1.8</b>	5.9
TU	1429	<b>-0.1</b>	-0.3	WE	1440	<b>0.3</b>	1.0	FR	1556	<b>0.0</b>	0.0	SA	1521	<b>0.2</b>	0.7	FR	1444	<b>0.0</b>	0.0	SA	1415	<b>0.2</b>	0.7
MA	2022	<b>1.9</b>	6.2	ME	2046	<b>1.7</b>	5.6	VE	2147	<b>2.0</b>	6.6	SA	2127	<b>1.7</b>	5.6	VE	2036	<b>2.0</b>	6.6	SA	2019	<b>1.8</b>	5.9
<b>3</b>	0246	<b>0.3</b>	1.0	<b>18</b>	0247	<b>0.6</b>	2.0	<b>3</b>	0427	<b>0.3</b>	1.0	<b>18</b>	0336	<b>0.4</b>	1.3	<b>3</b>	0313	<b>0.2</b>	0.7	<b>18</b>	0233	<b>0.3</b>	1.0
	0830	<b>2.1</b>	6.9		0842	<b>1.8</b>	5.9		0958	<b>1.9</b>	6.2		0933	<b>1.8</b>	5.9		0851	<b>1.9</b>	6.2		0831	<b>1.8</b>	5.9
WE	1523	<b>-0.1</b>	-0.3	TH	1513	<b>0.3</b>	1.0	SA	1647	<b>0.1</b>	0.3	SU	1557	<b>0.2</b>	0.7	SA	1531	<b>0.1</b>	0.3	SU	1451	<b>0.2</b>	0.7
ME	2116	<b>1.9</b>	6.2	JE	2121	<b>1.7</b>	5.6	SA	2233	<b>1.9</b>	6.2	DI	2202	<b>1.7</b>	5.6	SA	2121	<b>2.0</b>	6.6	DI	2054	<b>1.8</b>	5.9
<b>4</b>	0347	<b>0.3</b>	1.0	<b>19</b>	0321	<b>0.6</b>	2.0	<b>4</b>	0523	<b>0.3</b>	1.0	<b>19</b>	0419	<b>0.4</b>	1.3	<b>4</b>	0403	<b>0.2</b>	0.7	<b>19</b>	0314	<b>0.3</b>	1.0
	0924	<b>2.0</b>	6.6		0920	<b>1.8</b>	5.9		1046	<b>1.8</b>	5.9		1011	<b>1.7</b>	5.6		0937	<b>1.9</b>	6.2		0910	<b>1.8</b>	5.9
TH	1618	<b>0.0</b>	0.0	FR	1548	<b>0.3</b>	1.0	SU	1738	<b>0.2</b>	0.7	MO	1636	<b>0.3</b>	1.0	SU	1617	<b>0.2</b>	0.7	MO	1529	<b>0.2</b>	0.7
JE	2208	<b>1.9</b>	6.2	VE	2156	<b>1.7</b>	5.6	DI	2318	<b>1.9</b>	6.2	LU	2237	<b>1.8</b>	5.9	DI	2203	<b>1.9</b>	6.2	LU	2130	<b>1.8</b>	5.9
<b>5</b>	0448	<b>0.3</b>	1.0	<b>20</b>	0359	<b>0.6</b>	2.0	<b>5</b>	0619	<b>0.4</b>	1.3	<b>20</b>	0507	<b>0.4</b>	1.3	<b>5</b>	0452	<b>0.3</b>	1.0	<b>20</b>	0359	<b>0.2</b>	0.7
	1016	<b>1.9</b>	6.2		0956	<b>1.8</b>	5.9		1133	<b>1.7</b>	5.6		1050	<b>1.7</b>	5.6		1022	<b>1.8</b>	5.9		0950	<b>1.7</b>	5.6
FR	1713	<b>0.0</b>	0.0	SA	1625	<b>0.3</b>	1.0	MO	1830	<b>0.3</b>	1.0	TU	1719	<b>0.3</b>	1.0	MO	1703	<b>0.3</b>	1.0	TU	1610	<b>0.3</b>	1.0
VE	2258	<b>1.9</b>	6.2	SA	2232	<b>1.7</b>	5.6	LU				MA	2315	<b>1.7</b>	5.6	LU	2244	<b>1.9</b>	6.2	MA	2208	<b>1.8</b>	5.9
<b>6</b>	0550	<b>0.4</b>	1.3	<b>21</b>	0443	<b>0.6</b>	2.0	<b>6</b>	0002	<b>1.8</b>	5.9	<b>21</b>	0559	<b>0.4</b>	1.3	<b>6</b>	0542	<b>0.3</b>	1.0	<b>21</b>	0447	<b>0.3</b>	1.0
	1107	<b>1.8</b>	5.9		1033	<b>1.7</b>	5.6		0714	<b>0.4</b>	1.3		1133	<b>1.7</b>	5.6		1106	<b>1.7</b>	5.6		1032	<b>1.7</b>	5.6
SA	1808	<b>0.1</b>	0.3	SU	1704	<b>0.3</b>	1.0	TU	1220	<b>1.6</b>	5.2	WE	1810	<b>0.4</b>	1.3	TU	1750	<b>0.4</b>	1.3	WE	1657	<b>0.3</b>	1.0
SA	2347	<b>1.8</b>	5.9	DI	2308	<b>1.7</b>	5.6	MA	1922	<b>0.4</b>	1.3	ME	2357	<b>1.7</b>	5.6	MA	2326	<b>1.8</b>	5.9	ME	2249	<b>1.8</b>	5.9
<b>7</b>	0650	<b>0.4</b>	1.3	<b>22</b>	0532	<b>0.6</b>	2.0	<b>7</b>	0048	<b>1.7</b>	5.6	<b>22</b>	0658	<b>0.4</b>	1.3	<b>7</b>	0633	<b>0.4</b>	1.3	<b>22</b>	0541	<b>0.3</b>	1.0
	1158	<b>1.7</b>	5.6		1112	<b>1.7</b>	5.6		0809	<b>0.5</b>	1.6		1221	<b>1.6</b>	5.2		1150	<b>1.6</b>	5.2		1117	<b>1.7</b>	5.6
SU	1904	<b>0.3</b>	1.0	MO	1748	<b>0.4</b>	1.3	WE	1312	<b>1.5</b>	4.9	TH	1908	<b>0.5</b>	1.6	WE	1840	<b>0.5</b>	1.6	TH	1754	<b>0.4</b>	1.3
DI				LU	2346	<b>1.7</b>	5.6	ME	2016	<b>0.5</b>	1.6	JE				ME				JE	2333	<b>1.8</b>	5.9
<b>8</b>	0036	<b>1.8</b>	5.9	<b>23</b>	0626	<b>0.6</b>	2.0	<b>8</b>	0140	<b>1.6</b>	5.2	<b>23</b>	0044	<b>1.7</b>	5.6	<b>8</b>	0009	<b>1.7</b>	5.6	<b>23</b>	0641	<b>0.3</b>	1.0
	0748	<b>0.4</b>	1.3		1154	<b>1.6</b>	5.2		0902	<b>0.5</b>	1.6		0758	<b>0.4</b>	1.3		0725	<b>0.5</b>	1.6		1206	<b>1.6</b>	5.2
MO	1251	<b>1.6</b>	5.2	TU	1836	<b>0.4</b>	1.3	TH	1412	<b>1.4</b>	4.6	FR	1317	<b>1.6</b>	5.2	TH	1238	<b>1.5</b>	4.9	FR	1859	<b>0.5</b>	1.6
LU	1959	<b>0.4</b>	1.3	MA				JE	2111	<b>0.6</b>	2.0	VE	2011	<b>0.5</b>	1.6	JE	1935	<b>0.6</b>	2.0	VE			
<b>9</b>	0128	<b>1.7</b>	5.6	<b>24</b>	0027	<b>1.7</b>	5.6	<b>9</b>	0239	<b>1.6</b>	5.2	<b>24</b>	0140	<b>1.7</b>	5.6	<b>9</b>	0057	<b>1.6</b>	5.2	<b>24</b>	0022	<b>1.7</b>	5.6
	0845	<b>0.4</b>	1.3		0723	<b>0.5</b>	1.6		0955	<b>0.5</b>	1.6		0901	<b>0.4</b>	1.3		0817	<b>0.5</b>	1.6		0744	<b>0.3</b>	1.0
TU	1349	<b>1.5</b>	4.9	WE	1243	<b>1.6</b>	5.2	FR	1523	<b>1.4</b>	4.6	SA	1424	<b>1.5</b>	4.9	FR	1332	<b>1.4</b>	4.6	SA	1302	<b>1.6</b>	5.2
MA	2053	<b>0.4</b>	1.3	ME	1929	<b>0.5</b>	1.6	VE	2208	<b>0.6</b>	2.0	SA	2115	<b>0.5</b>	1.6	VE	2032	<b>0.7</b>	2.3	SA	2007	<b>0.6</b>	2.0
<b>10</b>	0225	<b>1.6</b>	5.2	<b>25</b>	0114	<b>1.7</b>	5.6	<b>10</b>	0344	<b>1.6</b>	5.2	<b>25</b>	0247	<b>1.7</b>	5.6	<b>10</b>	0153	<b>1.6</b>	5.2	<b>25</b>	0120	<b>1.7</b>	5.6
	0939	<b>0.4</b>	1.3		0820	<b>0.5</b>	1.6		1046	<b>0.5</b>	1.6		1003	<b>0.3</b>	1.0		0909	<b>0.6</b>	2.0		0847	<b>0.3</b>	1.0
WE	1455	<b>1.4</b>	4.6	TH	1340	<b>1.5</b>	4.9	SA	1635	<b>1.4</b>	4.6	SU	1543	<b>1.5</b>	4.9	SA	1440	<b>1.4</b>	4.6	SU	1411	<b>1.5</b>	4.9
ME	2148	<b>0.5</b>	1.6	JE	2026	<b>0.5</b>	1.6	SA	2302	<b>0.6</b>	2.0	DI	2220	<b>0.5</b>	1.6	SA	2129	<b>0.7</b>	2.3	DI	2112	<b>0.6</b>	2.0
<b>11</b>	0325	<b>1.6</b>	5.2	<b>26</b>	0210	<b>1.7</b>	5.6	<b>11</b>	0445	<b>1.6</b>	5.2	<b>26</b>	0402	<b>1.8</b>	5.9	<b>11</b>	0300	<b>1.5</b>	4.9	<b>26</b>	0231	<b>1.7</b>	5.6
	1032	<b>0.4</b>	1.3		0920	<b>0.4</b>	1.3		1135	<b>0.4</b>	1.3		1106	<b>0.2</b>	0.7		1000	<b>0.6</b>	2.0		0949	<b>0.3</b>	1.0
TH	1604	<b>1.4</b>	4.6	FR	1448	<b>1.5</b>	4.9	SU	1734	<b>1.5</b>	4.9	MO	1700	<b>1.6</b>	5.2	SU	1558	<b>1.4</b>	4.6	MO	1534	<b>1.6</b>	5.2
JE	2243	<b>0.5</b>	1.6	VE	2126	<b>0.5</b>	1.6	DI	2352	<b>0.6</b>	2.0	LU	2325	<b>0.4</b>	1.3	DI	2224	<b>0.7</b>	2.3	LU	2217	<b>0.5</b>	1.6
<b>12</b>	0424	<b>1.6</b>	5.2	<b>27</b>	0313	<b>1.8</b>	5.9	<b>12</b>	0537	<b>1.6</b>	5.2	<b>27</b>	0513	<b>1.9</b>	6.2	<b>12</b>	0410	<b>1.5</b>	4.9	<b>27</b>	0351	<b>1.7</b>	5.6
	1122	<b>0.4</b>	1.3		1020	<b>0.3</b>	1.0		1219	<b>0.4</b>	1.3		1206	<b>0.2</b>	0.7		1050	<b>0.5</b>	1.6		1051	<b>0.3</b>	1.0
FR	1707	<b>1.5</b>	4.9	SA	1603	<b>1.6</b>	5.2	MO	1822	<b>1.6</b>	5.2	TU	1803	<b>1.7</b>	5.6	MO	1703	<b>1.5</b>	4.9	TU	1651	<b>1.7</b>	5.6
VE	2336	<b>0.6</b>	2.0	SA	2229	<b>0.5</b>	1.6	LU				MA				LU	2314	<b>0.7</b>	2.3	MA	2320	<b>0.4</b>	1.3
<b>13</b>	0516	<b>1.6</b>	5.2	<b>28</b>	0420	<b>1.8</b>	5.9	<b>13</b>	0035	<b>0.6</b>	2.0	<b>28</b>	0027	<b>0.4</b>	1.3	<b>13</b>	0508	<b>1.6</b>	5.2	<b>28</b>	0505	<b>1.8</b>	5.9
	1209	<b>0.4</b>	1.3		1122	<b>0.2</b>	0.7		0622	<b>1.7</b>	5.6		0615	<b>1.9</b>	6.2		1137	<b>0.5</b>	1.6		1149	<b>0.2</b>	0.7
SA	1759	<b>1.5</b>	4.9	SU	1713	<b>1.6</b>	5.2	TU	1259	<b>0.3</b>	1.0	WE	1302	<b>0.1</b>	0.3	TU	1752	<b>1.6</b>	5.2	WE	1750	<b>1.8</b>	5.9
SA				DI	2333	<b>0.4</b>	1.3	MA	1904	<b>1.6</b>	5.2	ME	1858	<b>1.9</b>	6.2	MA	2358	<b>0.6</b>	2.0	ME			
<b>14</b>	0025	<b>0.6</b>	2.0	<b>29</b>	0525	<b>1.9</b>	6.2	<b>14</b>	0111	<b>0.6</b>	2.0	<b>14</b>	0554	<b>1.6</b>	5.2	<b>14</b>	0554	<b>1.6</b>	5.2	<b>29</b>	0019	<b>0.3</b>	1.0
	0602	<b>1.7</b>	5.6		1221	<b>0.1</b>	0.3		0703	<b>1.7</b>	5.6		1221	<b>0.4</b>	1.3		1221	<b>0.4</b>	1.3		0605	<b>1.8</b>	5.9
SU	1252	<b>0.3</b>	1.0	MO	1816	<b>1.7</b>	5.6	WE	1337	<b>0.3</b>	1.0	WE	1833	<b>1.6</b>	5.2	TH	1244	<b>0.2</b>	0.7	TH	1244	<b>0.2</b>	0.7
DI	1847	<b>1.6</b>	5.2	LU</																			





### **NEXT DEADLINE**

**21st of February for the March 2018 Issue**

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