

THE HALIFAX FIELD NATURALIST



No. 147
June to August 2012



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Return address: HFN, c/o NS Museum of Natural History, 1747 Summer Street, Halifax, NS, B3H 3A6

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FEES 2010/2011

Student	\$15.00 per year
Individual	\$20.00 per year
Family	\$25.00 per year
Supporting	\$30.00 per year
NNS (opt.)	\$5.00 per year

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GRAPHICS All uncredited illustrations are by H. Derbyshire or from copyright-free sources. **P. 8** - mosses, Rosie Vane-Wright; **Front Cover** - Blue Flags at Bon Portage Island, June 21st; **Back Cover** - young gull, Bon Portage Island, Allan Robertson, June 22nd.

EDITORIAL AND NATURE NOTES

FROM THE EDITOR

– *Stephanie Robertson*

Well, we Nova Scotians missed it. Unless there was a small patch of sun somewhere in the province at around 7:00 p.m., June 5th, (and for six hours onwards), no one saw the very rare transit of Venus across the Sun, which will not occur again until 2117. (At 8:00 p.m. Venus was by then fully in front of the Sun.)

Venusian transits occur in pairs eight years apart, but then, each of those paired transits is separated by roughly a century; so, no luck for us, and most probably, not even for our grandchildren. Only six transits have been recorded in historical records; the last one occurred in 2004, and before that, 1882.

Astronomers used this event to take measurements which will aid them in finding other earth-sized planets transiting other stars in the universe similar to our Sun. The measurements can be used also to calculate the distance between Venus and Earth. With this latest transit, Venus dimmed the Sun by less than one percent.

More locally, in the second week of June, we saw three or four beautiful Canadian Tiger Swallowtails flitting about at Whynacht's Point, and we also spotted another gleaning nectar from one of our rhododendron bushes in Halifax.

NATURE NOTES



APRIL

– *Bob McDonald*

Dennis Hippen had just returned from Clearwater, Florida, where the general consensus among members of the local Audubon Society was that there appeared to be little or no migration, or – that it was already over.

Several attendees (Heidi Verheil, Grace Beazley, Janet Dalton, and Stephanie Robertson) mentioned seeing **Coltsfoot in bloom**. (Note added by recorder – **Coltsfoot was in abundance** near the Waterfront campus of NSCC in Dartmouth after the HFN field trip on March 19th). Stan van Dyke noted that the **first Piping Plover** arrived in southwestern Nova Scotia in early March (a very early date!). Alice Morgan reported that **three Piping Plovers** had been observed on the N.S. Nature Trust property at Crow Neck Beach.

Ray Provencher reported seeing a flock of over **350 Cedar Waxwings** (migrating?) along the woodland trail near the Harriet Irving Gardens in Wolfville. Ray also recommended putting our hummingbird feeders out soon since migration is underway in southern U.S. Grace Beazley also reported seeing **Mayflowers in bud** on March 30th and **in full flower** at Labrador Castle on April 4th, and Dave Patriquin reported **Broom Crowberry in bloom** close to Halifax.

Burkhard Plache noted **two Otters** playing in Terrence Bay. Lesley Jane Butters reported seeing **two daytime-flying bats**, **violets in bloom**, and **Common Grackles** in Blomidon on April 1st. She also reported in great detail a phenomenon in the sky which she called **a parhelic circle** (you'll have to get her to explain this atmospheric phenomenon or you can find out yourself by typing 'parhelic circle' into your Search Engine as I did!). Also noted by LJB was **a Garter Snake** on McNabs Island on March 24th and two

very bright planets, **Mars and Jupiter**, in the night sky.

Stephanie Robertson saw a **Painted Turtle** in a pond at Point Pleasant Park (later determined to be an exotic Red Slider by herpetologist John Gilhen), and a **Pine Siskin** at her bird feeder. Peter Wells was able to photograph a **Red-bellied Woodpecker** at his feeder in February, and Ian McLaren reported that a **Bronzed Cowbird**, a very rare avian visitor, was being seen at a backyard feeder in Yarmouth.

MAY

– *Grace Beazley*

Bob and Wendy MacDonald made a visit recently to the Avon Peninsula, east of Windsor. It's an area bordered by three rivers. The karsts or limestone rock there has given rise to a unique set of flora and fauna. They saw **Hepatica in bloom**, which was *really* rare; Bob has never before seen more than six to eight plants in his life. Its status is S1, the most highly-endangered-species category. They also saw **early-blooming Leatherwort**.

Nancy Cunningham reported that she saw a **Bear** during mid-March in the Indian Point area of Mahone Bay.

Gareth Harding saw a **pair of Beavers** on Williams Lake. He also observed a **Painted Turtle and an Osprey**, all in the same area.

Lesley Jane Butters was in the process of weeding out **Cinquefoil** from the river near her house (near Kejimikujik National Park), when she heard an alarming sound like a derelict truck. She looked around and suddenly observed a swirl of water in her river by her house that churned up - and rose into a column of water 40 feet high! The whole episode lasted about 20 seconds, and the river then returned to normal, except that big waves were generated, and a kind of tidal wave washed up on shore. This was an inland **type of waterspout**. The whirlwind then passed on into the distant woods. The sky had been clear and blue and this phenomenon seemed to appear out of nowhere. It was early April and the weather had been warmer than usual.

JUNE

– *Lillian Risley*

Bob MacDonald walked Spider Lake Trail off Highway 107 Dartmouth/Waverley – he saw **White Pines, Yellow Birch, and 70+ Lady's Slippers!** Stephanie Robertson saw **Lady's Slippers** and her first **seal** of the season, swimming, at Point Pleasant Park.

From Illinois, Loring Prosser's hiking club hikes 365 days a year! He had been enjoying his visit to Nova Scotia. Judy Hayes went to the Ducks Unlimited site in Annapolis Royal and saw **Blue-backed and Yellow Warblers** and a family of **Canada Geese**.

Dennis Hopper saw a **Turkey Vulture** near Waverley Rd., Dartmouth. Marion Sensen has a frequent **Hummingbird** on her Wygelia. At Cabin Lake Keith Vaughan saw many spring flowers, including **Coltsfoot, Rhodora, and Sheep's Laurel**. Near his house in Bedford, Elliott Hayes has large numbers of **Lady's Slippers—at least 50** within a 10-foot space.

NEW AND RETURNING



Bernadette Renier



HFN TALKS

BUTTERFLY ATLAS 5 APRIL – David Patriquin

The Maritimes Butterfly Atlas, launched in 2010, is a five-year 'citizen science' project documenting butterfly occurrences in the Maritimes. Atlas Director John Klymko talked to us about the butterfly species in the Maritimes, the Atlas project itself, and the highlights of the results from 2010 and 2011. Factors favouring butterflies for citizen science include their relatively small numbers of species, and the easy recognition of butterflies as a group by non-experts. At the same time, in habitat conservation efforts (to some extent), butterflies can function as surrogates for taxons that are more difficult to document.

Seventy-seven species of butterflies have been recorded for Nova Scotia, including two Canadian endemics and two exotics. New Brunswick has a few more, and Prince Edward Island has fewer than Nova Scotia.

There are two major groups of butterflies – the skippers, and the true butterflies. Both have a bulb (or club) at the end of each antenna which is not seen in moths; skippers have the addition of a hook on that bulb. Skippers are stout-bodied, tending to be quite small and orange or brown in colour. There are 15 species in Nova Scotia. The Dreamy Duskywing Skipper starts to fly in May, often seen with its wings spread out basking in sun along paths and logging roads. The Arctic Skipper is a June flyer; it looks like a tiny fritillary butterfly, and the small Peck's Skipper is quite common in gardens. Later in the summer the Laurentian sub-species of the Common Branded Skipper (sometimes called the Laurentian skipper) will be seen on Echinacea.

The true butterflies exhibit more diversity in shape and size than the skippers, going from the large Monarchs and Tiger Swallowtails down to the small Bog Elfins. We saw photos of the Arctic Blue (with metallic markings on its wings), which is found on heathy headlands; the Pink-edged Sulphur which is found in dryish fields (especially those with blueberries) and also in bogs; and the Green Comma with green along its wing margins. You might see Green Commas on warm days in early spring, as they overwinter as adults in leaf litter and woodpiles, and may come into basements along with firewood. Mourning Cloaks and Tortoise Shells also overwinter as adults.

The Maritime Butterfly Atlas is similar in many ways to the Maritime Breeding Bird Atlas, but it is voucher-driven (the Bird Atlas is not), and a photo or specimen is required with each record; the specimens are housed at the Nova Scotia Museum of Natural History. The goals are to better assess the conservation status of butterflies in the Maritimes, to produce a robust baseline dataset, and to raise public awareness about butterfly diversity and conservation. Participants can collect (or just photograph) any butterfly anywhere in the Maritimes anytime during the five-year period. They do not have to identify the butterfly, but should provide a location as accurately as possible and submit a photograph or a specimen (or both). Collecting kits are available for a suggested \$20.00 donation. The kit includes a collecting net, a killing jar with chemical, forceps, a viewing envelope, specimen envelopes, voucher cards, and a manual – certainly a good deal! The same print materials are available via the website <http://accdc.com/butterfly->

[atlas/](http://accdc.com/butterfly-atlas/) where there are also profiles for all species found in the Maritimes so far. There are also found there priority square maps, a data entry portal, results to date, and more resources. Participants are encouraged to adopt their own priority square (10 x 10 km) and visit a variety of habitat types in the square (read more about this on the website).

Participation in The Atlas has been better than expected, with 2,700 records submitted in 2010 (1,000 were anticipated) and 3,500 in 2011. Amongst the highlights for Nova Scotia have been the discovery of the rare Dorcas Copper, and a range extension for the Saltmarsh Copper, a species endemic to eastern Canada. Previously it was known only from the Gulf of St. Lawrence area, but in 2011 it was found on the Atlantic side of Cape Breton. One species, the Mustard White, appears to be increasing in abundance in Nova Scotia.

The Butterfly Atlas will be vital to identifying and explaining such changes. For many years, HFNers enjoyed butterfly outings and talks with Peter and Linda Payzant. Participation in The Maritimes Butterfly Atlas provides a wonderful way to build on that tradition.

COYOTES IN N. S. 3 MAY – Gillian Webster

Dr. Fred Harrington, Professor Emeritus of animal behaviour at Mount Saint Vincent University, spoke about Coyotes in both historic and current contexts. He discussed their genetic make-up, which has nearly always included wolf DNA, and finally, Coyote behaviour as it occurs presently here in Nova Scotia.

Dr. Harrington presented a slide show which began with the origins of the Coyote, which goes back 800,000 years in North America. The Gray Wolf, which is Eurasian in origin, has been estimated to have arrived on the scene one million years ago. The two species met up 30,000 years ago in North America.

The first wolf bounty was established in the United States in 1630. It continued for 300 years, stretching from Connecticut and Massachusetts in the East, to Michigan and Wisconsin in the West. Over a period of 20 to 30 years, beginning in 1918, Wolves started moving from their more westerly habitats to the deciduous Eastern forests around the Great Lakes.

Only in the past 20 years have biologists recognised that the Great Lakes' Wolf has 15% Coyote ancestry and 85% wolf ancestry, and that this hybridisation probably started around 100 years ago. The mating relationship that causes it rests on the fact that male wolves will mate with female Coyotes, and that the latter find male wolves more attractive since they are larger and stronger than male Coyotes, providing a better chance in life for their resulting litters.

A great slaughter of wolves in Algonquin Park in 1964 resulted in a loss of 40% of its population. The consequence? – due to a lack of females, the males naturally turned to Coyotes for mating.

The Nova Scotia Coyote has DNA comprised of 84 percent Coyote and eight percent each of wolf and dog. This situation between Coyotes and wolves has existed for over 100 years now, although mating with domestic dogs has only taken place here since the 1960s. The main point

is, that for 100 years there was no sign of aggression and boldness in these animals. It is only recently that some Coyotes have acquired these traits. Dr. Harrington said some elements of their environment have changed, and the resulting Coyote behaviour is due to these changes.

In terms of behavioural ecology, Coyote packs consist of a family – a pair, male and female, whose offspring may live with them for up to three years. There are no cousins, aunts, uncles, etc. The pack is ‘constant’ in that the mated pair remain loyal and keep one territory to themselves and their offspring. They maintain their territory by scenting (a reminder of an individual wolf’s ‘here I am’ marking behaviour) and howling – but only a forceful kind of howling, only if it’s necessary to claim their ‘turf’. One behaviour often noticed is the presence of male, non-dispersing offspring, called ‘biders’, which remain with their mated parents, probably in hopes of inheriting the territory when the dominant male dies. Biders are non-breeding members of the family.

Recent collaring data has been showing the presence of transient Coyotes in the North Mountain area of Cape Breton. On the other hand, the same kind of data is showing that lone females can be found there as well. One female was tracked to a 50-square-kilometre range in Cape Breton, moving from Ingonish up to Neil’s Harbour. Is it possible that lone males and lone females scent each other out and finally form a mated pair and establish their own territory? A lone male was spotted in February 2012 near Neil’s Harbour. He spent February and March there, and this is consistent with the desire to find its own territory and mate.

One of the challenges facing new, young transients is finding territory to call their own. Most of Nova Scotia is already claimed by Coyote families. A territory has to be big enough for single males to start a family. 50-square-kilometres is the usual range. It has been estimated that in Nova Scotia there are, at any time, approximately 8,000 Coyotes, and that almost the whole province has already been divided into claimed territories. Starting out with two mated pairs, this would only take ten years!

As for eating patterns, Coyotes are ‘generalists’ and will eat anything. Their primary prey are Snowshoe Hare and White-tailed Deer. Nova Scotia Coyotes are quite small, ranging from 25 pounds for a female to 35 pounds for a male. However, some individuals are as large as 55 pounds. This is still small by wolf standards, which regularly weigh at least 75 pounds. Another of the Coyote’s favourite prey are spring fawns, but we don’t know how many fawns are taken annually, since there has been no data collected.

Deep snow and/or icy surfaces help Coyotes catch prey, and deep snow is found regularly in the winter in Cape Breton. A rainy winter such as our last one, on the mainland especially, also favours Coyotes, since wet weather exposes prey more readily. However, the balance of predator/prey is not so easily shown, even with wolves killing and eating moose. Data from past decades shows no easy correlation in population. Variables include vegetation, which is partly driven by weather.

Because litter sizes are large, and consist of between six and 12 pups, one might expect a huge number of Coyotes; but – 50-80% of pups die every year. Dispersal of most of the remaining pups happens as early as five months old, so pups can be seen on their own from September through till November. Life is difficult for lone Coyotes, even late in life,

if something happens to the pack.

Dr. Harrington gave the example of an older (six years) breeding female who left her pack, probably due to the death of her mate, and she led a nomadic life, including finding shelter underneath human habitations, until someone shot her. The slide of this old female sheltering under a porch of some kind was truly moving in its helplessness. She looked, in my opinion, like an old Labrador who was taking shelter from the rain.

Urban Coyote behaviour is becoming well documented in cities such as Chicago and Toronto. For example, one Chicago slide showed that collared individuals revealed packs to be living in four contiguous territories, all relatively sparsely populated by humans. Most of the Coyotes stayed in their own territory, but one pack was shown to cross a main highway regularly to reach the outermost, Eastern part. While most ate mice and rats, there were ‘disturbers’ whose diet included pets from people’s homes. In Toronto, it has been shown that Coyotes cache Canada Goose eggs which they cannot eat in one sitting. They dig a hole and let the eggs ferment there; this renders them edible for a long time.

One individual in Chicago had been tracked since 2000, and as a breeding female she had lived there for ten years, dying of natural causes when she was 12. This is considered a very old age, for Coyotes do not usually live beyond eight years at the most.

Coming to the present behaviour of Coyotes in Cape Breton National Park, one collared individual, called CH3, has been observed frequenting a relatively wide area in the outskirts of Cheticamp (population 4,000) close to the protected Park. The implication seems to be that the animal does not need to hunt in wilder areas of the Park when flat ground containing prey is readily at hand. Perhaps this is also because there are garbage foods there that would be more easily available. There is need for more study to find out what exactly is attracting CH3 to this area.

When Taylor Mitchell was killed on October 27, 2009, on the Skyline Trail of the Cape Breton National Park, not far from Cheticamp, it was only the second recorded fatality in all of recorded history. Parks Canada killed one of the two Coyotes that had attacked Ms. Mitchell, and biologists found that its autopsy showed a very obese animal. This might confirm the anecdotes of the ‘taming’ of wild Coyotes by people who deliberately hand feed them, or where this type of Coyote might roam local dumps for high calorie food, such as human ‘fast food’. A follow-up Coyote Workshop was held by Parks Canada in February, 2011. Visitor expectations were one topic regarding Coyotes – people want to see them, but the question is how to mitigate the behaviour of ‘problem’ Coyotes. GPS radio collars have been put on some of the Coyotes in Chicago, and Stan Gehrt studies the behaviour of Coyotes relative to campground presence. There is a growing use of sniffer dogs to track down Coyote scat; the scat reveals a wide variety of information – from diet to DNA, from pack structure to disease, from kills to reproduction.

Dr. Harrington discussed popular myths about the lone Coyotes that stand their ground when they are seen by the side of a road. Apparently, these animals actually have a destination in mind, and when a car pulls up to observe them, or an individual is seen by hikers, the animal stands still, waiting for the humans to pass on, so that it can continue on its way! That is, the animal wants to go where the



humans are blocking it, so it stays until they have moved on.

The province now has a four-part Coyote Management Programme. One of the challenges to its implementation is that culling the 'problem' Coyotes cannot be done where it is most needed, e.g. national parks or near human dwell-



FIELD TRIPS

A LIVING BUILDING

– Jenny Medill

Date: Monday, March 19th

Place: Centre for Built Environment, Dartmouth

Weather: Windy; clear

Interpreter: Peter Ford, Assistant Building Manager

Participants: 24

It was interesting to see so many participants out on a Monday morning, keen to learn about Nova Scotia Community College's 'Living Laboratory' as it is described in the detailed guide handed out at the start of our tour.

The Centre for the Built Environment at NSCC is committed to environmental stewardship and to the reduction of its environmental impact as a college. It's designed to balance the natural environment with the built environment in this unique learning space for Trades and Technology studies. Students learn how to change built environments for the future, and learn more sustainable building practices as well.

To satisfy the curiosity of the group, our tour began with the Design and Innovation area. Of particular interest was a 3D printer which takes designs from a CAD file or scanner and then creates three dimensional models with plastic powder and glue! These prototypes are used to test form, shape, and the tactile abilities of items such as a mobile phone for example. This system is also used for medical modelling, to aid in surgeries, and by the Mechanical Engineering, Industrial Engineering, and Architecture and Design departments.

We exited the building on its east side to examine the exterior 'Living Wall' installed in May 2010. It is 24 m x 3.7 m and consists of more than 7,000 plants of which seven are native Nova Scotia species, including Bunchberry, Winterberry, and ferns. All the plants were grown, tested, and planted by **the King's Tech students**. Plants are in 'baskets' and each has a waterline supply that provides moisture and nutrients from a collection and filtering system on the roof. It takes three or four days of maintenance per month. At the tail end of winter there was quite a large portion of the wall that had stayed green and only a small section that had died-back of some of the plants.

The 'Bioswale', a gently sloping nearby ditch lined with grasses and other plants, filters storm water as it settles into retention ponds and slowly seeps back into the water table. This prevents storm water from entering the city's sewer system. Also, on the Pleasant St. side of the building, there is experimental lighting run by solar and wind power; this provides enough electricity to run the light from dusk to dawn.

NSCC uses several types of renewable energy tech-

ings.

Finally, Dr. Harrington explained that there are three reasons for the yipping and howling that are often heard by humans – the Coyote is signalling its presence, it's recognising another pack member; or it's warning other Coyotes to stay away.

nologies, including different types of wind turbines, and solar photovoltaic and heat recovery units that students, staff, and partners can research, study, and practice with. Thirty-six geothermal wells, each 152 metres (500 ft) deep, provide the building's cooling and 50% of its heating needs. We could see the complexity of this as we passed through the Pump Room on our way to the green roof.

The Centre for Built Environment's green roof contains 743 square metres of plants including Purple Coneflowers, sedums, herbs, and Low-bush Blueberries. It is planted with five zones – potted plants; trays; sod; intensive growth; and extensive growth. The intensive zone has deeper soil and therefore sustains more intensive root systems. The green roof also provides insulation, thus reducing the heating and cooling needs of the building while reducing costs. It also reduces the impact of rainfall run-off.

We then went inside to see the internal living wall systems. The two living walls provide cooling, the soothing sound of trickling water, visual appeal, and reduced glare – all the while helping to clean and oxygenate the air. These walls are hydroponic, which means there is no soil. A mesh-like material is used to hold the plants in place and they are fed nutrients through the watering system. Fans located above the walls draw air through the roots and filter out any impurities. Maintenance on each wall takes about three days per week and includes washing leaves, treating the plants with an algae spray, and applying a biological control for insects once a week via the watering system.

The overall design of the building has the interior space providing the passageways while the classrooms themselves line the exterior walls therefore allowing for the best lighting and views. The large numbers of windows do require a routine cleaning to remove the harbour's constant salt spray that would otherwise permanently pit the glass. In the main entrance, the large 'Word Walls' capture the relationship between the natural and built environments. The Natural Environment Word Wall features handwritten text and natural elements engraved into the wall. The Built Environment Word Wall reflects what has been created over time through human efforts.

NSCC has been recognised for its achievements with a Level 4 rating from BOMA BEST (Building Owners and Managers Association of Canada/Building Environment Standards) – a national programme which provides standards for energy and environmental performance of existing buildings. The NSCC Waterfront Campus has received certification in Environmental Planning from the Audubon Cooperative Sanctuary Program and a Gold standard from the LEED (Leadership in Energy and Environmental Design) Green Building Rating System.



WATERFALLING IN COLCHESTER COUNTY

Date: Saturday, April 21st

Place: Seven waterfalls in Colchester County

Weather: Cloudy and cold, -10°C

Leader: Richard & Grace Beazley

Participants: 10



Introduction – Richard Beazley

36 waterfall enthusiasts spent a day travelling by car and on foot to view seven waterfalls in the Cobequid Mountains of Colchester County. We met and got organised at Victoria Park in Truro. The large group was divided into two groups of 18, one led by Grace and me, and the other led by Norris Whiston and Jim Medill. This arrangement worked very well, and overlapping visits at two of the waterfalls allowed the two smaller groups to intermingle over lunch and get together for a large group picture.

The fun really began at the community of North River, from which we travelled a loop in a counter-clockwise direction along Highways 311 and 256 and the Truro Road.

Following, the waterfalls we viewed are briefly described in order, each by a different person or persons.

Nutty Falls – Bobbie Wilson

The first stop of the day was at Nutty Falls on the North River. Not visible from the highway, it was just 30 m down a narrow path through the woods. This waterfall is located in a granite formation that runs for a considerable distance through this area of the province but is only a few kilometres wide. Situated in a shallow ravine that is covered with mostly Red and Black Spruce and some low-level Balsam Fir, the river flows through an opening in a granite ridge and then falls 4 m into a deep pool. The pool provides the locals with a lovely shaded swimming hole to cool off in during hot summer days. That day, however, at shortly after 9:00 a.m., it was far *too* cool for swimming!

MacKay's Mill Brook Falls – Matt Salisbury

By the time we reached our second destination – MacKay's Mill Brook Falls – the fog had lifted, the sun had come out, and it had morphed into a beautiful spring day. These falls are on Route 236, about 200 m north of the church parking lot in Earltown. Here, MacKay's Mill Brook passes under a bridge then tumbles over a basalt ledge of the 300 million-year-old Devonian Fountain Lake Group into a small, steep-sided glen shaded by Hemlocks and mixed hardwoods. Access was difficult, requiring a rope assist, but the ten-metre descent into the cool glen was worth it. Despite the dry spring weather, the entire face of the seven-metre high and 11-metre wide falls was white with rushing water. After climbing back into the sun, then gathering together back at the parking lot, we admired the silently turning windmills on Nutty Mountain to the west and a transient Bald Eagle and a Kestrel overhead. We then 'saddled up' and headed north to one of the most beautiful waterfalls in the province.

Drysdale Falls – Judy and Elliott Hayes

The location of this falls may be one of the most beautiful natural sites in Nova Scotia. We reached it after a pleasant ten-minute walk through an old-growth forest of Eastern Hemlock, Red Spruce, and White Pine, arriving at the top of the falls with its series of small pools and swiftly moving water visible below. This 20-metre high falls on Bailey's Brook plunges through a 350 million-year-old fault line into a large bowl. The roar of the water and the column of mist encour-

aged us to trek down a steep hill of gravel and tree roots to access the base. We enjoyed the sunny, gravelly shores of the river during our lunch break and, in exploring, found a delightful carpet of early Mayflowers/Trailing Arbutus. This is a magnificent area, one to be treasured and preserved. Drysdale Falls is located on private property and we are grateful to the owners for giving us permission to access the site.

Tatamagouche Mountain Falls – Iain Jack

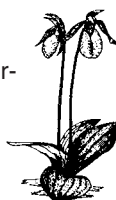
With permission of the property owners, we were able to visit Tatamagouche Mountain Falls. Making our way along a just-visible path across an old field that's being reclaimed by spruce and Hawthorn, we followed a 200-metre long path through a coniferous forest. Situated in a ravine enclosed by a stand of old-growth Hemlocks through which runs a quiet stream, is an impressive, vertical eight-metre high and two-metre wide waterfall. For those interested in geology, this site is in an Arisaig Group of rocks that includes basalt, tuff, siltstone, sandstone, shale, and conglomerate. For those more interested in botany, the site is habitat to a most striking colony of Polypody Fern, *Polypody virginianum*. The general north-east orientation of the falls, along with the high humidity created by its spray, promotes large, deep-green masses of this small evergreen fern, which clings to the vertical rock face. While it was too early in the season to see the whole diversity of plants to be found at this peaceful place, one could see that the site is also the happy home to a good number of evergreen Wood Ferns, *Dryopteris* spp. Inspired by the beauty of the surroundings, and with the generous span of a great fallen tree as a perch, we paused for a group photo before ascending out of the ravine. A bonus gift of this waterfall visit was the expansive, glimmering view of the Northumberland Strait, enjoyed on the way back to where we had parked.

Four mile Brook Falls – Jon Davies

Located about 150 metres off Highway 256 near Central New Annan, this medium-sized waterfall is not visible from the road, although a small riffle can be viewed upstream from the bridge over Four Mile Brook. Access is through the woods at the south end of the bridge. After scrambling down from the highway, and a short walk through mixed woods dominated by large old Hemlocks and a moss-covered forest floor, we arrived at the brook's edge and then the falls. Just below the waterfall are several small islands to which we 'rock-hopped' for a front-on view. The water drops smoothly over an even lip down and across a ridged basalt rock face, which is about eight metres high and sloped. The fall of the water over the ridges of the rock face produced a washboard effect, which in turn created a series of small splashes as the water tumbled down, throwing up a multitude of droplets that sparkled in the sunshine.

W. Branch North River Falls Tributary – Shirley McIntyre

Reaching this falls seemed like a long drive on a very bumpy gravel road; of course, driving on gravel always seems slow. I was amazed at the amount of snow still remaining in a ridge alongside the road. It seemed like more snow than we saw all winter here in Halifax. We finally reached the bridge above the falls, and had a rugged climb down to look at this waterfall from below its base. This tributary flows through a culvert under the road bridge, then drops two metres in a four-metre wide stream on its turbulent course to the West Branch of the North River some 40 metres below the falls. To me this was the least interesting of the falls we saw today. Surrounding forest



was mainly Red and Black Spruce and the geology is of the Arisaig group.

McCallum Falls - Anna Marie Kaiser & Rick Gilbert

Our final destination started with an enjoyable afternoon's walk to McCallum Falls on the West Branch of the North River in McCallum Settlement. The walk was short, taking us through a former clear-cut with evidence of a mixture of native flora that were reclaiming the area. Along the way, Bob and Wendy McDonald identified Yellowthread, two types of lichen, and other interesting greenery. The gentle approach soon dropped abruptly into a 60 metre deep ravine, the final 30 metres of which were very steep. We benefited from a rope to help with the steepest parts of the descent and ascent. McCallum Falls has two levels; the top one was narrow and fast flowing, and the lower of the two was wider and somewhat gentler. There is a tranquil pool at the bottom of the lower falls, which is overhung by hardwoods and softwoods. The remnants of winter clung to the western walls of the ravine in the form of miniature frozen waterfalls. People in the group seemed inclined to linger, enjoying the magical surroundings and memories of a great day. We felt privileged to have experienced special places in Colchester County with friends new and old who share our sense of value for the natural world.

We offer many thanks to Richard and Grace Beazley for organising and leading this field trip.

BIRDS OBSERVED - Bob and Wendy McDonald

Ring-necked Pheasant	<i>Phasianus colchicus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
American Kestrel	<i>Falco sparverius</i>
Rock Pigeon	<i>Columba livia</i>
Blue Jay	<i>Cyanocitta cristata</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven	<i>Corvus Corax</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
American Robin	<i>Turdus migratorius</i>
European Starling	<i>Sturnus vulgaris</i>
Common Grackle	<i>Quiscalus quiscula</i>
House Sparrow	<i>Passer domesticus</i>



FLORA OBSERVED - Norris Whiston

Turkey tail Shelf Mushroom	<i>Trametes versicolor</i>
Concentric Boulder Lichen	<i>Porpidia crustulata</i>
Common Tree-apron/Tree-skirt Moss	<i>Anomodon attenuatus</i>
Wavy Catherine/Red-crowned Crane Moss	<i>Atrichum cæstedianum</i>
Catherine's Moss/Common Smoothcap	<i>A. undulatum</i>
Green Silk Moss	<i>Brachythecium rutabulum</i>
Fire Moss/Red Roof Moss	<i>Ceratodon</i> sp.
Pipsissewa/Princes' Pine Moss	<i>Chimaphila umbellata</i>
Wavy Broom Moss/Wavy Dicranum	<i>Dicranum polysetum</i>
Stair Step Moss	<i>Hylocomium splendens</i>
Feather Flat Moss	<i>Neckera pennata</i>
Beaked Water Moss	<i>Platyhypnidium riparioides</i>
Schreber's Moss/Big Red Stem	<i>Pleurozium</i>
Common Haircap Moss/Great Goldilocks	<i>Polytrichum</i> sp.
Shaggy Moss/Electrified Cat tail Moss	<i>Rhytidiadelphus</i> sp.
Millipede Liverwort	<i>Frullania bolanderi</i>
Porella/False Selaginella	<i>Porella platyphylla</i>
Evergreen Wood Fern	<i>D. intermedia</i>
Crested Wood Fern/Narrow Swamp Fern	<i>Dryopteris cristata</i>
Rock Polypody Fern	<i>Polypodium virginianum</i>
Canadian Yew/Ground Hemlock	<i>Taxus canadensis</i>
Mayflower/Trailing Arbutus	<i>Epigaea repens</i>
Daphne	<i>Daphne mezereum</i>
Wild Lily-of-the-Valley	<i>Maianthemum canadense</i>



BLUFF TRAIL PADDLE

- Burkhard Plache

Date: Saturday, June 2nd

Place: Hubley Big Lake/Bluff Trail

Weather: Sunny; slightly breezy

Leader: Burkhard Plache

Participants: 9



A blue sky with a few white clouds in the distance greeted the nine participants of the combined paddle and hike field trip to the fourth loop of the Bluff Trail. Shortly after 10:00 a.m., four canoes and a kayak departed from the northern inflow into Hubley Big Lake.

Initially, a string of houses along the left shoreline were a constant reminder of civilisation's vicinity. However, within ten minutes, the narrow bay opened into the main body of the lake, and at this point we left the houses behind us.

In the distance, a Loon was diving, and ahead, the entrance into our destination of Paradise Cove was marked by a scattering of granite rocks. The slight morning breeze did not slow our progress, and after 40 minutes of paddling we had reached the portage to Upper Five Bridge Lake.

Leaving the boats at Paradise Cove, we set out on the portage trail. Starting in a fairly open hardwood forest, the trail soon led into open areas, sometimes bogs, but more often barrens, with scattered trees (Black or White Spruce, various birch, White Pine, Red Maple, and occasionally Trembling Aspen). Upon reaching the intersection with the Bluff Trail, we had our first view of Upper Five Bridge Lake and the surrounding area.

We walked the fourth loop of the Bluff Trail counter-clockwise, which initially led us to viewing distance of the lake. The barrens were open, with fine vistas all around. After some 30 minutes, we left the lake behind, eventually crossing its outflow at its lower end near Middle Five Bridge Lake. Continuing on the eastern section of the loop, we were now farther from the lake, rarely catching even a glimpse. The barrens also had a different appearance, with more scattered trees and only occasional copses. The north-eastern section of the loop runs through some wet and boggy sections. Here, we saw a track of a moose (8x11 cm), and some bear scat and a bear track.

The fourth loop trail offered an easy walk, with only moderate changes in elevation. The trail surface showed little wear and made the hike pleasantly enjoyable.

Returning to the boats after a six-hour hike, the group split up, with some participants preferring to finish the day with a leisurely evening paddle, while others chose to cool off in the lake before heading back.

FOURTH LOOP SPECIES

In Bloom

Goldthread	<i>Coptis trifolia</i>
Broom Crowberry	<i>Corema conradii</i>
Golden Heather	<i>Hudsonia ericoides</i>
Rhodora	<i>Rhododendron canadense</i>
Canada Blueberry	<i>Vaccinium myrtilloides</i>
Huckleberry	<i>Gaylussacia baccata</i>
Starflower	<i>Trientalis borealis</i>
Chokeberry	<i>Aronia</i> sp.
Bunchberry	<i>Cornus canadensis</i>
Wild Sarsaparilla (starting to bloom)	<i>Aralia nudicaulis</i>
Bluebead Lily/Corn Lily	<i>Clintonia borealis</i>
Pink Lady's-slipper	<i>Cypripedium acaule</i>



Not In Bloom

Labrador Tea	<i>Ledum grænländicum</i>
Teaberry	<i>Gaultheria procumbens</i>
Mayflower	<i>Epigaea repens</i>
Foxberry/Partridgeberry	<i>Vaccinium vitis-idaea</i>
Cotton Grass	<i>Eriophorum</i> sp.



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.

Finally the trail opens into a thimbleberry grove where we often see a resting toad. In one spot near here I saw a slug - I repeat, a slug - perform a leap from one leaf to another, leading me to wonder what we may not yet know of the secret lives of humble creatures.

– from the chapter “August” in *The 100-Mile Diet: A Year of Local Eating* (2007) by Alisa Smith and James B. MacMinnon

NATURAL EVENTS

- 20 Jun.** Summer Solstice at 20:09 ADT. Summer begins in the Northern hemisphere. The longest day of the year, with 15 hours and 34 minutes of daylight at Halifax.
- 22 Jun. to 29 Jun.** The latest evenings of the year: Sun sets at 21:04 ADT.
- 3 Jul.** Full Moon. Moonrise at 20:51 ADT.
- 21 Jul.** Canada’s ‘Parks Day’ – look for events at local parks.
- 2 Aug.** Full Moon. Moonrise at 20:36 ADT.
- 5 Aug. to 12 Aug.** Average dates of the hottest days of summer (average daily maximum is 22.5 C).
- 11 Aug. and 12 Aug.** Perseid Meteor showers peak.
- 13 Aug.** Average date for temperatures to start decreasing.
- 31 Aug.** Full Moon. Moonrise at 19:32 ADT.
- 22 Sept.** Autumnal Equinox at 11:49 ADT: Fall begins in the Northern Hemisphere.
- 28 Sept.** Ninth anniversary of Hurricane Juan.
- 30 Sept.** Full Moon. Moonrise at 18:53 ADT.
- 30 Sept.** Average date for first frost in Halifax (i.e. Environment Canada says that there is only a one in ten chance that we will have frost before this date). Look forward to 210 days of frosty weather.

– Sources: Atmospheric Environment Service, Climate Normals 1951-80 Halifax (Shearwater A) N.S.; United States Naval Observatory Data Services.

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



2 Jun.	5:32	20:54	7 Jul.	5:37	21:01
9 Jun.	5:29	20:59	14 Jul.	5:43	20:57
16 Jun.	5:28	21:02	21 Jul.	5:50	20:52
23 Jun.	5:30	21:04	28 Jul.	5:57	20:44
30 Jun.	5:33	21:03			
4 Aug.	6:05	20:35	1 Sept.	6:37	19:50
11 Aug.	6:13	20:25	8 Sept.	6:46	19:37
18 Aug.	6:21	20:14	15 Sept.	6:54	19:24
25 Aug.	6:29	20:03	22 Sept.	7:02	19:11
			29 Sept.	7:10	18:56

ORGANISATIONAL EVENTS

Blomidon Naturalists Society: Indoor meetings are held on the 3rd Monday of the month, in the auditorium of the K.C. Irving Centre, University Avenue, Wolfville. Field trips usually depart from the Wolfville Waterfront, Front Street, Wolfville. For more information, go to <http://www.blomidonnaturalists.ca/>.

- 23 Jun.** “New Birders’ Walk, Windsor, Hants Co.”, leader Patrick Kelly, 494-3294(w), 472-2322(h), patrick.kelly@dal.ca.
- 30 Jun.** “Showy Lady’s Slippers Smileys Park”, with leader Bernard Forsythe, 542-2427.
- 21 Jul.** “Plants of Wolfville Watershed Nature Preserve”, with leaders Reg and Ruth Newell, ruth.newell@acadiau.ca.
- 11 Aug.** “Moon Over the Water from The Lookoff on the North Mountain”.
- 11 Aug.** “The Maritimes Butterfly Atlas”, with leader Jim Edsall. **Pre-register** with Jim at jim.edsall@bellaliant.net.

Burke-Gaffney Observatory: Public shows at the Burke-Gaffney Observatory at Saint Mary's University are held on the 1st and 3rd Saturday of each month, except from June through September when they are held every Saturday. 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/academic/science/ap/>.

Friends of McNab's Island: Meets at the Maritime Museum of the Atlantic at 7:00 p.m. For more information contact Faye Power, 443-1749, or go to <http://www.mcnabsisland.ca/>.

TBA "McNab's Island Picnic".

8 Sept. Rain Date 15 Sept. "McNabs and Lawlor Islands Paddle and Cleanup", Dusan Soudek, 422-1045 (evenings), soudek@ns.sympatico.ca.

Nova Scotia Bird Society: Indoor meetings take place on the 4th Thursday of the month, September to May, at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information, Chris Pepper, 829-3478, cpepper@ymail.com; or email the trip leader; or go to <http://nsbs.chebucto.org/>.

22 Jun. - 24 Jun. "Tern Festival, West Pubnico"; contact 902-762-3380, musee.acadien@ns.sympatico.ca, or go to <http://www.museeacadien.ca>.

23 Jun. "New Birders' Walk, Windsor, Hants."; leader Patrick Kelly, 494-3294(w), 472-2322(h), patrick.kelly@dal.ca. **Pre-registration is required!**

7 Jul. "Abraham's Lake, Sheet Harbour area", leaders Jim Cameron, 885-2970, jim.cameron@ns.sympatico.ca, and Warren Parsons, 772-2207, rosalieeast@ns.sympatico.ca.

15 Jul. "New Birders' Walk, Taylor Head Prov. Park", leaders Jim Cameron, 885-2970, jim.cameron@ns.sympatico.ca, and Warren Parsons 772-2207, rosalieeast@ns.sympatico.ca.

4 Aug. "Taylor Head Provincial Park", leaders Jim Cameron, 885-2970, jim.cameron@ns.sympatico.ca, and Warren Parsons, 772-2207, rosalieeast@ns.sympatico.ca.

18 Aug. Storm date 19 Aug. "Pelagic Birds Boat Trip, Sambro", leader David Currie, 476-6616(c), 876-8745(h), David_currie@ns.sympatico.ca.

2 Sept. "Taylor Head Provincial Park", leaders Jim Cameron, 885-2970, jim.cameron@ns.sympatico.ca, and George Child.

Nova Scotia Nature Trust: Has trips to a number of its protected properties. For more information, 425-5263, or go to www.nsnt.ca.

28 Jun. "Conservation Showcase, Celebration and Appreciation Night and AGM", at the Nova Scotia Museum. **RSVP at Nicole@nsnt.ca.**

14 Jul. "Shelter Cove Paddle & Hike", near Tangier with Canoe Kayak Nova Scotia. **Register at Alice@nsnt.ca.**

28 Jul. "Cape Breton Celebration", at MacKenzie Cove. **Register at peter@nsnt.ca.**

11/12 Aug. "South Shore Plant & Bird Adventure", at Tusket & Crow Neck Beach. **Register at Cristi@nsnt.ca.**

8 Sept. "Conservation Announcement & Celebration with Acadia U.", at Shag Harbour. **RSVP at Nicole@nsnt.ca.**

Nova Scotia Department of Natural Resources: Many outings which take place in Provincial Parks are listed in the "Parks are for People" Programme. The most current information is on the web at <http://www.novascotiaparks.ca/>.

Nova Scotia Museum of Natural History: For more information, 424-7353; or go to <http://museum.gov.ns.ca/mnh/>.

Nova Scotia Wild Flora Society: Meets on the 4th Monday of the month, September to May, at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information, Heather Drope, 423-7032, or go to <http://www.nswildflora.ca/>.

25 Jun. "Moonwort at Conrad Beach".

Royal Astronomical Society of Canada (Halifax Chapter): Meets 3rd Friday of each month in Room L176 of the Loyola Academic Building at Saint Mary's University, 8:00 p.m. For more information, go to <http://halifax.rasc.ca/>.

17-19 Aug. "NOVA EAST 2012", Atlantic Canada's longest-running star party, will be held at Smileys Provincial Park near Brooklyn in Hants County. This year's guest speaker is David Levy.

Young Naturalists' Club: A fun, free nature club for children eight and older. Meetings take place every 3rd Saturday of the month, excepting July and August, Maritime Museum of the Atlantic, 1675 Lower Water St., at 10:00 a.m. Field trips take place every 4th Sunday, at 1:00 p.m. For more info, Robin Musselman, 455-5643, yncns@yahoo.ca or; or go to <http://nature1st.net/ync>.

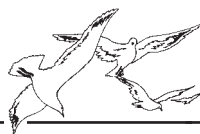
23 Jun. "Blue Beach, Annapolis Co.", a guided beach tour and museum visit to see and hear about 350 million-year old fossils. **!Pre-registration is necessary!**



– compiled by Patricia L. Chalmers



HALIFAX TIDE TABLE



July-juillet

August-août

September-septembre

Day	Time	Feet	Metres	jour	heure	pieds	mètres	Day	Time	Feet	Metres	jour	heure	pieds	mètres	Day	Time	Feet	Metres	jour	heure	pieds	mètres
1	0522	5.2	1.6	16	0005	1.3	0.4	1	0112	0.3	0.1	16	0054	1.0	0.3	1	0227	0.7	0.2	16	0141	0.3	0.1
SU	1142	1.3	0.4	MO	0613	4.9	1.5	WE	0707	5.9	1.8	TH	0704	5.2	1.6	SA	0815	6.2	1.9	SU	0745	6.2	1.9
DI	1732	6.2	1.9	LU	1215	2.0	0.6	ME	1333	1.3	0.4	TH	1304	1.6	0.5	SA	1451	1.0	0.3	SU	1410	0.7	0.2
				LU	1807	5.6	1.7		1915	6.2	1.9	JE	1904	5.9	1.8	SA	2031	6.2	1.9	DI	2003	5.9	1.8
2	0031	0.3	0.1	17	0047	1.0	0.3	2	0203	0.3	0.1	17	0135	0.7	0.2	2	0307	0.7	0.2	17	0224	0.3	0.1
MO	0623	5.6	1.7	MO	0656	5.2	1.6	TH	0756	6.2	1.9	FR	0742	5.6	1.7	SU	0855	6.2	1.9	MO	0825	6.2	1.9
LU	1245	1.3	0.4	TU	1255	2.0	0.6	TH	1425	1.0	0.3	FR	1347	1.3	0.4	SU	1532	1.0	0.3	MO	1458	0.3	0.1
	1831	6.6	2.0	MA	1849	5.6	1.7	JE	2005	6.2	1.9	VE	1945	5.9	1.8	DI	2113	5.9	1.8	LU	2048	5.9	1.8
3	0127	0.0	0.0	18	0127	1.0	0.3	3	0250	0.3	0.1	18	0214	0.3	0.1	3	0344	1.0	0.3	18	0309	0.3	0.1
TU	0720	5.9	1.8	WE	0735	5.2	1.6	FR	0842	6.2	1.9	SA	0819	5.9	1.8	MO	0933	6.2	1.9	TU	0908	6.6	2.0
MA	1344	1.0	0.3	WE	1333	2.0	0.6	FR	1515	1.0	0.3	SA	1431	1.0	0.3	LU	1612	1.3	0.4	TU	1548	0.3	0.1
	1927	6.6	2.0	ME	1929	5.9	1.8	VE	2052	6.2	1.9	SA	2026	6.2	1.9	LU	2154	5.9	1.8	MA	2134	5.9	1.8
4	0220	0.0	0.0	19	0206	0.7	0.2	4	0334	0.3	0.1	19	0254	0.3	0.1	4	0417	1.3	0.4	19	0358	0.7	0.2
WE	0813	6.2	1.9	MO	0813	5.6	1.7	SA	0925	6.2	1.9	MO	0857	5.9	1.8	TH	1010	5.9	1.8	WE	0952	6.2	1.9
ME	1441	1.0	0.3	TH	1412	1.6	0.5	SA	1602	1.3	0.4	SU	1517	1.0	0.3	TU	1651	1.3	0.4	WE	1642	0.3	0.1
	2020	6.6	2.0	JE	2009	5.9	1.8	SA	2137	6.2	1.9	DI	2108	5.9	1.8	MA	2234	5.6	1.7	ME	2221	5.9	1.8
5	0311	0.0	0.0	20	0244	0.7	0.2	5	0416	0.7	0.2	20	0334	0.3	0.1	5	0450	1.6	0.5	20	0454	1.0	0.3
TH	0903	6.2	1.9	FR	0850	5.6	1.7	SU	1005	6.2	1.9	MO	0936	6.2	1.9	WE	1048	5.9	1.8	TH	1038	6.2	1.9
JE	1536	1.3	0.4	FR	1453	1.6	0.5	DI	1649	1.3	0.4	MO	1605	0.7	0.2	WE	1732	1.6	0.5	TH	1740	0.3	0.1
	2110	6.6	2.0	VE	2049	5.9	1.8	DI	2220	5.9	1.8	LU	2151	5.9	1.8	ME	2314	5.2	1.6	JE	2310	5.6	1.7
6	0359	0.3	0.1	21	0322	0.7	0.2	6	0456	1.0	0.3	21	0418	0.7	0.2	6	0528	2.0	0.6	21	0558	1.3	0.4
FR	0951	6.2	1.9	MO	0927	5.9	1.8	MO	1045	6.2	1.9	TU	1016	6.2	1.9	TH	1127	5.6	1.7	FR	1126	5.9	1.8
VE	1630	1.3	0.4	SA	1537	1.3	0.4	LU	1735	1.6	0.5	MA	1657	0.7	0.2	TH	1816	1.6	0.5	FR	1842	0.7	0.2
	2159	6.2	1.9	SA	2128	5.9	1.8	LU	2302	5.6	1.7	MA	2236	5.9	1.8	JE	2355	4.9	1.5	VE			
7	0447	0.7	0.2	22	0401	0.7	0.2	7	0537	1.3	0.4	22	0508	0.7	0.2	7	0616	2.3	0.7	22	0002	5.2	1.6
SA	1035	6.2	1.9	MO	1004	5.9	1.8	TU	1125	5.9	1.8	WE	1059	5.9	1.8	FR	1208	5.2	1.6	SA	0706	1.6	0.5
SA	1724	1.3	0.4	SU	1624	1.3	0.4	WE	1823	1.6	0.5	ME	1754	1.0	0.3	FR	1905	2.0	0.6	SA	1219	5.6	1.7
	2245	5.9	1.8	DI	2209	5.9	1.8	MA	2345	5.2	1.6	ME	2323	5.6	1.7	VE				SA	1945	1.0	0.3
8	0535	1.0	0.3	23	0443	0.7	0.2	8	0619	1.6	0.5	23	0606	1.0	0.3	8	0040	4.9	1.5	23	0101	4.9	1.5
SU	1118	5.9	1.8	MO	1042	5.9	1.8	WE	1206	5.6	1.7	TH	1144	5.9	1.8	SA	0715	2.6	0.8	SU	0813	1.6	0.5
DI	1817	1.6	0.5	MO	1716	1.3	0.4	ME	1912	2.0	0.6	TH	1855	1.0	0.3	SA	1254	5.2	1.6	SU	1319	5.6	1.7
	2331	5.6	1.7	LU	2252	5.9	1.8					JE			SA	1957	2.0	0.6	DI	2048	1.0	0.3	
9	0622	1.3	0.4	24	0529	1.0	0.3	9	0030	4.9	1.5	24	0013	5.2	1.6	9	0135	4.6	1.4	24	0213	4.9	1.5
MO	1202	5.9	1.8	TU	1122	5.9	1.8	TH	0708	2.0	0.6	FR	0711	1.3	0.4	SU	0815	2.6	0.8	MO	0917	1.6	0.5
LU	1911	1.6	0.5	TU	1812	1.3	0.4	JE	1251	5.2	1.6	FR	1234	5.6	1.7	SU	1349	4.9	1.5	MO	1432	5.2	1.6
				MA	2338	5.6	1.7	JE	2002	2.0	0.6	VE	1958	1.0	0.3	DI	2050	2.0	0.6	LU	2149	1.0	0.3
10	0019	5.2	1.6	25	0621	1.3	0.4	10	0121	4.6	1.4	25	0111	4.9	1.5	10	0245	4.6	1.4	25	0339	4.9	1.5
TU	0711	1.6	0.5	WE	1206	5.9	1.8	FR	0802	2.3	0.7	SA	0817	1.6	0.5	MO	0912	2.6	0.8	TU	1019	1.6	0.5
MA	1247	5.6	1.7	WE	1911	1.3	0.4	VE	1342	5.2	1.6	SA	1333	5.6	1.7	LU	1456	4.9	1.5	TU	1555	5.2	1.6
	2003	1.6	0.5	ME				VE	2052	2.0	0.6	SA	2101	1.0	0.3	LU	2144	2.0	0.6	MA	2248	1.0	0.3
11	0109	4.9	1.5	26	0029	5.2	1.6	11	0222	4.6	1.4	26	0220	4.9	1.5	11	0403	4.9	1.5	26	0450	5.2	1.6
WE	0801	2.0	0.6	TH	0720	1.3	0.4	SA	0859	2.3	0.7	SU	0922	1.6	0.5	TU	1007	2.3	0.7	WE	1118	1.6	0.5
ME	1337	5.6	1.7	TH	1255	5.9	1.8	SA	1441	4.9	1.5	SU	1443	5.6	1.7	TU	1605	5.2	1.6	WE	1704	5.6	1.7
	2055	1.6	0.5	JE	2012	1.3	0.4	SA	2143	2.0	0.6	DI	2204	1.0	0.3	MA	2237	1.6	0.5	ME	2343	1.0	0.3
12	0207	4.6	1.4	27	0127	4.9	1.5	12	0337	4.6	1.4	27	0346	4.9	1.5	12	0502	4.9	1.5	27	0543	5.6	1.7
TH	0853	2.0	0.6	FR	0822	1.6	0.5	SU	0955	2.3	0.7	MO	1026	1.6	0.5	WE	1058	2.3	0.7	TH	1213	1.3	0.4
JE	1433	5.2	1.6	FR	1352	5.6	1.7	DI	1547	4.9	1.5	LU	1603	5.6	1.7	WE	1702	5.2	1.6	TH	1758	5.6	1.7
	2145	1.6	0.5	VE	2114	1.0	0.3	DI	2233	1.6	0.5	LU	2305	1.0	0.3	ME	2327	1.3	0.4	JE			
13	0315	4.6	1.4	28	0236	4.9	1.5	13	0447	4.6	1.4	28	0503	5.2	1.6	13	0547	5.2	1.6	28	0035	1.0	0.3
FR	0947	2.3	0.7	SA	0926	1.6	0.5	MO	1048	2.3	0.7	TU	1128	1.6	0.5	TH	1148	1.6	0.5	FR	0627	5.9	1.8
VE	1532	5.2	1.6	SA	1459	5.6	1.7	MO	1647	5.2	1.6	TU	1714	5.9	1.8	TH	1751	5.6	1.7	FR	1303	1.0	0.3
	2234	1.6	0.5	SA	2217	1.0	0.3	LU	2323	1.3	0.4	MA			MA				VE	1844	5.9	1.8	
14	0424	4.6	1.4	29	0355	4.9	1.5	14	0541	4.9	1.5	29	0003	0.7	0.2	14	0014	1.0	0.3	29	0122	1.0	0.3
SA	1041	2.3	0.7	SU	1031	1.6	0.5	TU	1136	2.3	0.7	WE	0602	5.6	1.7	FR	0627	5.6	1.7	SA	0707	5.9	1.8
SA	1630	5.2	1.6	SU	1612	5.9	1.8	MA	1738	5.6	1.7	WE	1226										



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