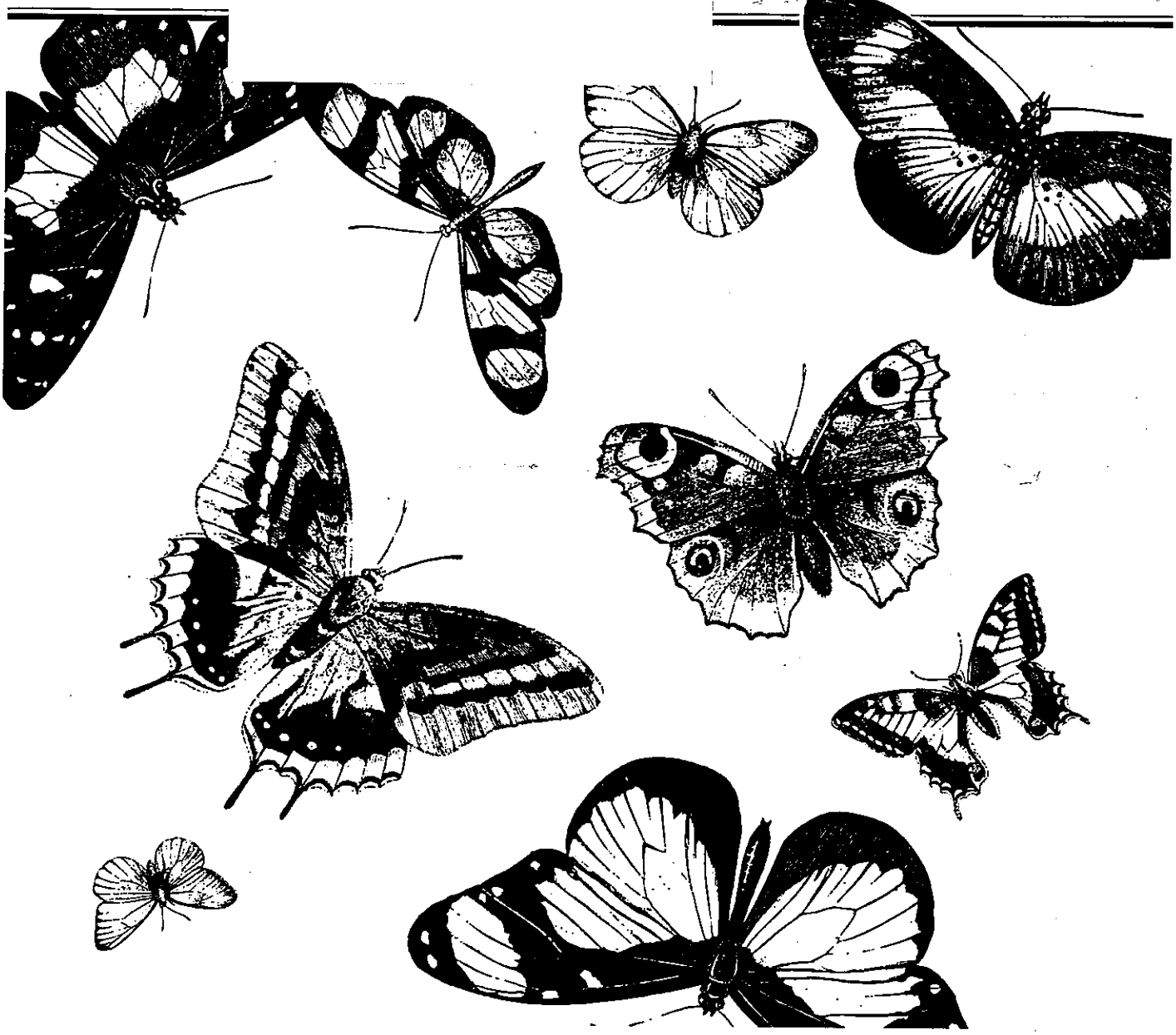
THE HALIFAX FIELD NATURALIST

No. 95
June to August 1999



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

HFN is incorporated under the Nova Scotia Societies Act and holds Registered Charity status with Revenue Canada. Tax-creditable receipts will be issued for individual and corporate gifts. It is an affiliate of the Canadian Nature Federation and an organisational member of the Federation of Nova Scotia Naturalists, the provincial umbrella association for naturalist groups in Nova Scotia.

OBJECTIVES are to encourage a greater appreciation and understanding of Nova Scotia's natural history, both within the membership of HFN and in the public at large. To represent the interests of naturalists by encouraging the conservation of Nova Scotia's natural resources.

MEETINGS are held, except for July and August, on the first Thursday of every month at 7:30 p.m. in the auditorium of the Nova Scotia Museum of Natural History, 1747 Summer Street, Halifax. Meetings are open to the public.

FIELD TRIPS are held at least once a month, and it is appreciated if those travelling in someone else's car share the cost of the gas. All participants in HFN activities are responsible for their own safety. Everyone, member or not, is welcome to take part in field trips.

HFN POST Halifax Field Naturalists
c/o Nova Scotia Museum of Natural History, 1747 Summer St., Halifax, Nova Scotia, B3H 3A6
EMAIL hfnexec@chebucto.ns.ca
WEBSITE http://chebucto.ns.ca/Recreation/FieldNaturalists/fieldnat.html

FNSN POST Federation of Nova Scotia Naturalists
c/o Nova Scotia Museum of Natural History, 1747 Summer St., Halifax, Nova Scotia, B3H 3A6
EMAIL nstn0308@fox.nstn.ca (Doug Linzey, FNSN Newsletter Editor)

MEMBERSHIP is open to anyone interested in the natural history of Nova Scotia. Memberships are available at any meeting of the society, or by writing to: Membership Secretary, Halifax Field Naturalists, c/o NS Museum of Natural History. New memberships starting from 1 September will be valid until the end of the following membership year. The regular membership year is from 1 January to 31 December. Members receive the HFN Newsletter and notices of all meetings, field trips, and special programmes. The fees are as follows:

Individual	$15.00 per year
Family	$20.00 per year
Supporting	$25.00 per year
FNSN (opt.)	$ 5.00 per year

EXECUTIVE 1999-2000

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Vice-President	Bernice Moores	422-5292
Treasurer	Tony MacKay	462-1179
Secretary	Linda Payzant	861-1607
Past President	Peter Payzant	422-6326

DIRECTORS Harry Beach, Bob MacDonald, Linda MacKay, Shirley McIntyre, Bernice Moores, Marie Moverley, Stephanie Robertson, Colin Stewart

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HFN NEWS AND ANNOUNCEMENTS

EDITORIAL

Life's a sauna! It must be one of the sunniest summers on record; a fine time to go out and enjoy flowers, birds and insects.

HFN has widened its scope recently, and we know much more about the living neighbours in this marvellous province with so many different habitats. Birds and insect numbers are said to be higher this year, probably because of the warm spring.

There are things we can do enjoyably to contribute to our hobby — atlassing frogs for example, or counting butterflies. Natural history has always depended on amateurs for distribution records and other observations.

Communities have also depended on naturalists to know how to protect their wild places; to say the right word in season to the right councillor or landowner. This Newsletter suggests ways to do all these things.

But mostly we can simply look, listen and enjoy.

— Ursula Grigg

HFN PROGRAMME VOLUNTEERS

HFN's Programme Committee still needs a volunteer or two. This is one of the more rewarding activites within HFN — a chance to make new friends with similar interests, and to plan trips for the club that you yourself would like to see happen.

Call Marie Moverley, 420-9488, or any of the Executive listed on page 2.

McNABS VOLUNTEERS

On Sunday, 17 October (rain date Sunday, 24 October), Friends of McNabs would like volunteers for their Fall Foliage trip to McNabs Island.

They're looking for nature trip leaders with a good working knowledge of plants and birds.

This is a wonderful trip and will give you a chance to see how our glorious 1999 spring and summer have enhanced all things natural on the island!

Contact Cathy McCarthy, 434-2254.

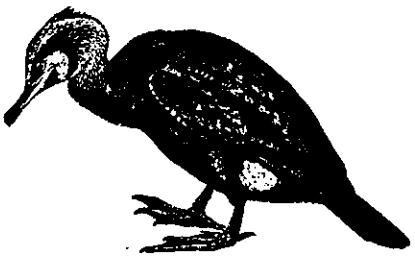
HERP ATLAS

It's not to late to add to the Nova Scotia Herpetofaunal Atlas; for Atlasser's Guide and reporting cards, call the N.S. Museum of Natural History, 424-3563 or go to <http://landscape.acadiau.ca/herpatlas>.

R.A.T.E. HRM POLL

A recent poll taken for the Halifax Regional Municipality showed that nearly 80% of residents polled would support a bylaw regulating the use of garden pesticides. Some of the respondents said they thought risks to health outweighed benefits, or that too many chemicals were being used in the Municipality.

For more information, RATE's website is <http-//www.chebucto.ns.ca/Environment/RATE>.



THE CORMORANT

The common cormorant or shag
Lays eggs inside a paper bag.
The reason, as you know, no doubt,
It is to keep the lightning out.
But what these unobservant birds
Have failed to notice is that herds
Of wandering bears devouring buns
Will steal the bags to hold the crumbs.

— Anonymous

NEW AND RETURNING MEMBERS

Jackie Melanson
Karen Potter

HFN TALKS

N.S. NATURE TRUST 1 APRIL

Bonnie Sutherland, Executive Director of Nova Scotia Nature Trust, came to tell us about the Trust's work and its considerable success. The Trust provides mechanisms by which ecologically significant private land can be protected from development in the future.

The talk was illustrated by excellent slides of parts of rural Nova Scotia, usually with owners who are proud to be showing off their own favourite places, and are discussing how the beauty may be protected in the future.

From the conservation point of view, this helps to fulfill the Province's local and international obligation to preserve some of each natural region, with its typical topography and biodiversity. It also means there will continue to be wild places for naturalists to enjoy! In fact, naturalists can help by identifying areas which might be protected.

The Trust, a non-government organisation, operates from a modest office using diplomacy, donations and volunteers; they find the work congenial, and enjoy making new friends and visiting remote areas of the Province.

— Ursula Grigg

ROCKS EVERY DAY 6 MAY

Linda Ham walked us through a day in our lives showing us all the uses of rocks — from the ingredients of toothpaste through the titanium dioxide which makes the filling of Oreo cookies so white, the luminous paint on the alarm clocks we set to wake ourselves up next morning, to the tiny gold components in electronic equipment. It seems there are mined materials in practically everything we use; in fact Linda had two tables full of indispensable artifacts, all requiring minerals or something found in the earth for their production. Of course items made from hydrocarbons (nearly all plastics, for example) were prominent, and so were ceramics, reminding us of the recent finds of kaolin (china clay) in Nova Scotia.

If some of us wondered if peat moss was really a mineral, and remembered days when simpler recipes produced excellent foods, and when extreme whiteness suggested 'adulteration' to the prudent housewife, we didn't say so! This was a most enjoyable talk!

— Ursula Grigg

INSECTS OF N. S. 3 JUNE

Jeff Ogden, Entomologist with the Department of Natural Resources, has never found a stream, pool, or puddle he didn't like, and has jumped or fallen into most of them.

Like us, insects function in air and can move from pool to pool without having to swim. However many insects have juveniles which are confined to water, and there are interesting strategies for getting them into it to start their development — and out of it, to assume adult life.

Jeff keeps the Department's insect collection, and brought some dramatic specimens to show us. He talked mostly about aquatic insects, which means fresh water species, for there are few in marine waters. He had containers of living specimens, though less than he started with, for most of these animals are predatory.

The most dramatic were the handsome large Dytiscid beetle (*Dytiscus* sp.), olive brown above with a yellow border, and the sinister Water Scorpion (a bug, *Ranatra fusca*). The beetle, a very strong flyer, can give a nasty bite if handled. The scorpion, which dissolves the flesh of its prey by injecting digestive fluid and then sucking it up with straw-like mouthparts, can also inflict considerable damage. Jeff told us he had once allowed a scorpion to attach to his finger and had a wound which took some time to heal!

One of his aquaria contained some tadpoles for insect food; another had two handsome pet toads, which of course are predators of insects. While being exhibited, the male toad uttered rusty croaks.

— Ursula Grigg

SPECIAL REPORTS

FEDERATION OF NOVA SCOTIA NATURALISTS AGM, 28-30 MAY

This wonderful weekend was hosted by Les Amis du Plein Air, at Cheticamp, Cape Breton Island. More than 70 naturalists gathered to enjoy their hospitality. The weather will be remembered as perfect.

A couple of local people who object to the conservation of more land attended on the first evening, but left satisfied that we were no threat. They were probably invited to join the party!

A thought-provoking event; not everyone benefits from local lands being conserved.

Registration and a leisurely reception, with music, took place in the Bookstore. The rest of the meeting was held in the NDA school auditorium, with meals in the Seniors' Hall, next door.

Personal Highlights

— seeing Bald Eagles several times a day!

— seeing warblers everywhere, especially Magnolia Warblers.

Four Memorable Talks; One Amazing Demonstration

Terry Power, specialising in wetlands for the Department of Natural Resources, described the different types of wetland and emphasised their importance to biodiversity. He is updating the provincial register of wetlands to include roadside pools (a large component). The register is used when applications are made for access, for example pipelines, and local feelings are being considered; some small pools appear negligible but are cherished local destinations. Terry pointed out some gaps in the N.S. Environmental Protection Act.

Jean Timmons, who leads nature tours, described the fine line between eco-tourism and eco-terrorism, using slides to show people getting in moose's faces, and the appearance of ground either too much trodden or too much groomed for heavy tourist use. It is a moot point whether Pollett's Cove, one of the last places without a trail through it, should be opened up. In his opinion, only some places should be available for tours, and visits should be booked to regulate numbers. Tour leaders are sometimes uninformed, and do damage unintentionally; local guides are best — they know their area, while outside firms coming in do not know the area nor always provide local job opportunities.

Randy Lauff described the search for nesting Boreal Owls and for certain rare plants on the Cape Breton Highlands. It was an uncomfortable venture; the researchers were wet, bug-bitten, or lost for a lot of the time. However, they achieved their goals, and one day when lost, stumbled upon a Northern Hawk Owl behaving suspiciously; they located three pairs and the nests of two.

A founding member of Les Amis described its history, with input from other members in the audience! It's a successful group that was really founded on friendship, and a desire to get something going in a bad economy. They built the bookshop and information pavilion at the entrance to the Cape Breton Highlands National Park, and helped with the camp ground, using money from book and equipment sales, which made a profit from the start. Other National Parks now have Friends of their own.

Jim Wolford produced a tape of frog calls, representing all the Nova Scotia frogs, and our one toad. He set a tape player on top of a car behind the Church on Saturday evening, while parishioners came and went to pre-Sunday rites. We all stood in a circle around the ribbitting car, and a very odd coven we appeared!

Field trips

Whale-watching on Saturday afternoon was cancelled because of fog; David Lawley took us to Cheticamp Island, where seabirds were nesting on the outer cliffs. There is a fresh-water pond on top with Muskrats and Black Duck, but also evidence of predation. The duck eggs and some gull eggs were broken; there were Short-eared Owl pellets containing vole bones; and bones of wading birds probably killed by hawks. A pleasant nature trail has been laid out, giving fine views from the cliffs.

The same night, Randy Lauff led about 30 of us into the forest to listen for owls. Two pairs of Barred Owls were heard calling, but understandably far away; toads trilled by the Cheticamp River. The trail was dappled with light from a full moon, a beautiful walk.

The whale cruise took place on Sunday; we spent an hour or so with a party of Minke Whales on lobster fishing grounds near a cliff with nesting seabirds. We did not get close to the 8 to 9 metre whales — they came to us, especially one of two calves, whose guardian kept trying to get him (?probably) away from the boat. We had good views of the characteristic pale patches on their flippers — no two whales are alike.

There were early morning walks to see birds and plants, and some hikes on Saturday and Sunday afternoons.

The AGM

This was held on Saturday afternoon. HFN representative Doug Linzey was unable to attend, so I acted in his place. As FNSN has been quiescent for the past year, time was spent on reviving it, using a memorandum from HFN's Board as a working document.

Briefly, our Board had proposed that the FNSN executive (in which we had confidence) should meet regularly four times a year, replace itself duly using a Nominating Committee, and that their Newsletter should appear quarterly also, keeping members informed of their meetings, activities, and names of representatives. Finally, FNSN should maintain and use an e-mail list for communication between executive members. HFN also proposed that member clubs should reciprocate, helping out when needed and communicating their own activities. Other clubs, especially Blomidon and Mainland East, supported this position.

This was accepted; an FNSN Board meeting was planned for 19 June, and has taken place; a Newsletter is expected in July, and the e-mail list is established. A new secretary is being sought, and a treasurer, as the present incumbent has no book-keeping training. HFN is helping to find a treasurer and is also distributing FNSN mail. Doug Linzey is still HFN representative, and the FNSN Newsletter editor.

Activities

FNSN is concerned about the destructive activities of All Terrain Vehicles. Marc Brennan, a naturalist in Pictou County, is heading an urgent move to have them restrained. The matter was brought to the Legislature, but is now in abeyance because of the election. The success of this effort can be followed on NatureNS.

FNSN is still sponsoring the N.S. Herptile Atlas. Samantha Eaton, organiser and liaison person, was present throughout the weekend, handing out literature and making contacts.

FNSN is also involved in the Important Bird Areas

project, through which places which are essential to nesting and migrant species will be selected and proposed for careful management.

Several clubs reported on their conservation activities, and the Canadian Nature Federation has also reported to FNSN, and wants reports from member clubs.

Martin Willison proposed a change in the way FNSN operates. Seeing the success of projects managed by summer students, he proposed that one could be hired to look for funding from which the salary might come, and to manage some projects in which FNSN might wish to take part.

These were the most important matters; there will be more information in the FNSN newsletter.

— Ursula Grigg

FNSN AGM Species List

Great Cormorant	*Phalacrocorax carbo*
Double-crested Cormorant	*P. auritus*
Herring Gull	*Larus argentatus*
Greater Black-backed Gull	*L. marinus*
Black-legged Kittiwake	*Rissa tridactyla*
Black Guillemot	*Cepphus grylle*
Barred Owl	*Strix varia*
Short-eared Owl	*Asio flammeus*
Bicknell's Thrush	*Catharus bicknelli*
Minke Whale	*Balaenoptera acutorostrata*

CONSERVATION

During the past year, HFN has not undertaken much conservation, though Colin Stewart is still working in that field. Most of us would prefer simply to enjoy our natural surroundings, and just by doing so we help to keep them available. However, while the need for natural public spaces is now acknowledged, too little is known about how to manage them. This has led to Crystal Crescent Beach being rented out to a film company, and unnecessary cutting of underbrush in Cole Harbour Heritage Park; there is still no coherent land-use policy in the Municipality or the Province.

Excessive grooming of trails was discussed at the FNSN AGM recently. While washrooms, drinking water and trails are essential, blacktop is not and even boardwalks can be overdone. Aggressive clearing of tangles and brush simply removes habitat for small birds, insects, butterflies, and a lot of flowers.

Fortunately, Elizabeth Keizer has spoken to Chris Trider, in charge of HRM's parks, and has asked for the plans for Cole Harbour. Doris Butters has offered to join the Board for that Park. The renting of Crystal Crescent Beach has prompted both FNSN and us to try and get the plans for that area, which is of interest to Martin Willison because it is part of the local trail linking our Special Places.

There is also concern about the use of off-road vehicles in these places — something else FNSN is involved with. Anyone who knows of damage being done to wild places, and who does not have access to NatureNS, is asked to report it to their MLA, Councillor, or to HFN (at <hfnexec.@chebucto.ns.ca>, or to me at 902-455-8160).

Colin says work on access to McNab's Island will begin this year. He will represent HFN on the advisory committee.

— Ursula Grigg

SPECIAL ARTICLES

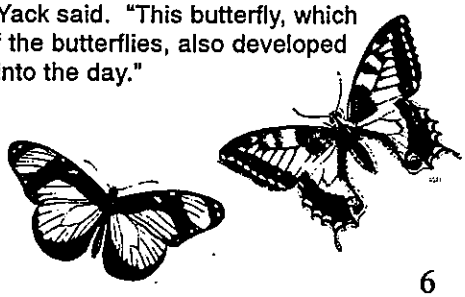
EAR FOUND ON BUTTERFLY

An Ottawa biologist has identified the first butterfly in the world known to have an ear. Jayne Yack, a postdoctoral fellow from Cornell University working at Ottawa's Carleton University on a Canadian scholarship, has proven the Hedylidae family of butterflies can hear — specifically to detect the sounds of predatory bats.

What's more, Hedylidae are the only butterflies to fly at night and are considered 'ancient' because they never evolved for daytime flying when all other butterflies switched millions of years ago, primarily to avoid bats.

It could be that the Hedylidae are the ancestors to all modern-day butterflies, mused Yack.

"There are many moths that have ears, and this isn't the first time a bat detector has been found — but it's the first time in butterflies," Yack said. "This butterfly, which could be the ancestor of the butterflies, also developed an ear and didn't move into the day."



Other butterflies don't have ears because they don't really need them, she explained. Fossil records show that butterflies, which evolved from moths, became daytime flyers at roughly the same time bats developed large ears and the ability to use echoes to locate their prey, she said. Moths, too, developed ears about this time.

The ear of the butterfly, which resembles a miniscule rabbit ear, is located along the inset of the wing. The ear funnels sound to a membrane, similar to the human eardrum, backed by an air chamber. When the membrane vibrates, it sends signals to the butterfly's tiny brain. As the butterfly flaps its wings, the ear acts like sonar, able to detect sound from above or below.

Yack discovered the ear almost by accident. For centuries the butterfly was mistakenly thought to be a moth; but years ago it was reclassified as a lepidoptera by a taxonomist who thought it had a structure that looked like an ear, though he couldn't be sure, said Yack. She made a trip to Agricultural Canada and signed out a Hedylids, which she deconstructed. "I brought it and looked under the microscope, and I went 'wow!', because I'm trained to see ears."

— Derek McNaughton,
for the Southam News, Ottawa

FIELD TRIPS

COLE HARBOUR HERITAGE PARK

Date: Saturday, 17 April
Place: Cole Harbour
Weather: Sunny and warm
Interpreter: Elizabeth Corser
Participants: 21

We once again visited the Cole Harbour Heritage Park on Bissett Road. Elizabeth Corser, our guide for this walk, has worked with one purpose for the past two decades to get this property recognised as a park so that it can be preserved for future generations. This has finally happened and the Provincial Park signs are now up.

This part of the park was originally acquired by a Mr. Bissett in 1781 as a grant. Known as the Poors Farm property, it was a residence of the County Home from 1886 until 1929, when the home burned to the ground. In the 1980s, with the help of Ira Settle, the Province of Nova Scotia bought it from the county for $1.00 and joined it to the area around Rainbow Haven, which already belonged to the Provincial Crown.

Many in our group were taken aback by the tremendous change in this property since we were last there. This led to telephone conversations with Chris Trider of the Department of Natural Resources who is in charge of this park; with Jim Vance, President of Cole Harbour Trails; and with Jim Tudor of Trans Canada Trails, to voice our concerns. They told us that the volunteers, who are the Volksmarch group, were instructed to clear away the underbrush. We applaud these volunteers. It is not our intention to denigrate their dedication and hard work. However, we feel that it is extremely important that all those involved be made aware that many birds, insects, and small creatures need this underbrush to provide them with food and shelter. This is an exceptional site for birds alone. It also has many, many other natural interests; many people use this park for just this reason. It would be very sad if the birds and other creatures died or were chased away.

Chris Trider said that the foot paths will be kept to around six-foot wide and low-keyed. A path nine feet wide will be made into a biking trail along the periphery. They are clearing a swath fifteen feet wide to accommodate this nine-foot trail. It appears that most if not all of the dead trees will be removed because they are considered a risk of personal injury to those using the paths. Every naturalist knows that dead trees are a bountiful feast for birds and other creatures. Right now there is funding for about three kilometres along the salt marsh trail; this includes rebuilding the four bridges across the marsh. This restructuring, which they hope will be completed by Fall, will reconnect the Cole Harbour end of the park to Lawrencetown.

The second project will take them along the periphery of Bissett road to the abandoned rail line. Eventually Cole Harbour Park will be connected to the Forest Hills area across the #7 highway to Lake Charles, and to the Dartmouth waterfront and Shubie Park. In time, these trails will all connect and become part of the 15,000 kilometre Trans Canada Trail, the only Park that will be on it. More information on the Trans Canada Trail may be found at <http://www/trailtc.ns.ca>.

At least one of the bridges will be made wide enough to accommodate a truck, with a turning area on the other side. Natural Resources considers this necessary in order to repair a part of the bank that has been washed out. Perhaps this repair could be made differently, so that the area opened to ATVs (which are not allowed in the park) and similar traffic which can be so destructive to nature.

Of concern also is the 50-foot right-of-way approved by the Deputy Minister for the Province to allow Nova Scotia Power company to bury a high power transmission line through this property. Nova Scotia Power refused to pinpoint exactly where they intend to put this line. It could be situated anywhere in the park, even to being buried under the footpaths! Chris Trider has kindly agreed to stop the clearing of this area until we have an opportunity to study the plans and to give feedback on this issue. Our member, Doris Butters, has volunteered to attend the monthly Directors' meetings of the Cole Harbour Parks and Trails in order that we have further input into this matter. Despite our concerns, we are very pleased to offer our sincere congratulations to Chris Trider, Elizabeth Corser, and anyone else involved for their tireless work over the years that has resulted in this wonderful piece of land being declared a Park.

— Elizabeth Kelzer

ANNUAL CANOE PICNIC

Date: Saturday, 24 April
Place: Elderbank
Weather: Cold; cloudy with occasional thick flurries
Interpreter: David Bessonnette
Participants: 36

No need for the shorter paddles this year; Elderbank's usually canoe-friendly wharf was drowned under the swollen Musquodoboit River! Very muddy and slippery riverside canoe launchings meant very muddy canoe bottoms from our footgear; bags were stored gingerly around these deposits, but in the end the mud spread to everything as we shifted positions during the trip and got out lunch goodies and warmer clothing.

The first sighting was a Groundhog; up it came out of its riverbank hole to waddle along for quite a distance — so we all had good views. And it had good views of us as well, sitting up on its haunches wondering what this long gaggle of objects was doing going down the river. I was surprised by the strong reddish cast to its coat; soil stains?, natural variation?

Further on some of the party had the good luck to see an Osprey come down to get a Wood Duck. The hawk rose into the air with it but then dropped its prey in surprise because of our convoy; it hesitated, hovering over the stunned duck, but chose safety over risk and flew away. After a few moments of flopping around, disoriented, the duck recovered and also flew off — probably safely back to its mate and nestlings.

There were many more mussel-shell middens along the banks this year; the Muskrats, Raccoons, and other water-side mammals were feeding well.

A first for me, and others — a sighting of a Little Blue Heron with its dark slate blue back, dark maroon-brown head and neck, and dark legs. It kept on flying up lazily from the south bank of the river to our left to evade the oncoming canoes; it did this five or six times before finally flying up and away out of sight over the riverside trees.

Time for lunch at the usual pull-out. Two good fires were lit; we welcomed hotdogs, opened brought lunches, and dried gloves, pants, and shoes as the lovely heat warmed us up again. (With no turtleneck I had improvised a scarf with a piece of drycleaning plastic from the car; it worked well and was indeed needed.)

Off again toward our annual Dollar Lake Brook hike up the track beside the old mill stones. This year the brook was in full torrent; no perching or climbing around on the central rocks. But still a breathtakingly beautiful spot with the unique rock formations and overhanging trees and plants.

One more leg of the trip to the pull-out at Meagher, paddling through intermittent blizzards and disembarking in one as well. As if demonstrating the necessity of wearing uncomfortable lifejackets at all times, two of the party fell in. Lesley Butters went in up to her hips while leaving her canoe; and Lise Fillmore went right over and was swimming for awhile in the freezing cold water! Being experienced naturalists, they had extra clothes to put on, the steamed-up car windows providing natural privacy curtains.

Off home with heaters going full blast and it wasn't long before we were warm again. Thank you, David.

— Stephanie Robertson

Canoe Picnic Species list

Groundhog	*Marmota monax*
Wood Duck	*Aix sponsa*
Little Blue Heron	*Egretta caerulea*
Osprey	*Pandion haliaetus*

AMPHIBIANS BY NIGHT

DATE: Thursday, 29 April, 7:30 p.m.
PLACE: Uniacke Estate Museum Park
WEATHER: Cloudy and cold (approx 0° C.)
INTREPRETER: John Gilhen
PARTICIPANTS: 8

Eight brave souls, including a local journalist, turned out early for the amphibian crawl at Uniacke Estate, Hants County. We escaped dropping temperatures by retreating to the kitchen of Uniacke House, where I had set up temporary living quarters for the five species of salamander native to Nova Scotia and five of the eight species of frog. One of the most interesting specimens was an erythristic Redback Salamander, which is found only in mature deciduous forest some 500 feet above sea level.

We also had time to view my slides of amphibians, which included all species native to Nova Scotia. I touched on a number of subjects, including:

— that amphibians have a moist sensitive skin and are excellent environmental indicators.

— that there is an increase in albino amphibians (notably Redback Salamanders and Green Frogs) as a result of urban sprawl; the resulting fragmentation of habitat leads to isolation and inbreeding.

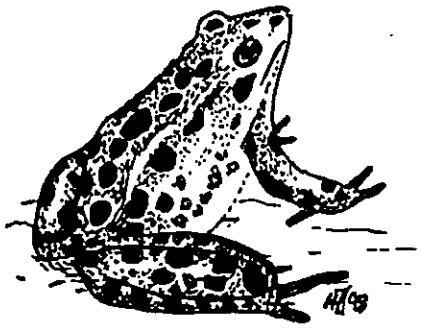
At dark, as temperatures continued to fall, we walked to the sphagnacious roadside pond and were treated to a chorus of Northern Spring Peepers. There was no evidence of Yellow-spotted Salamanders, which seemed unusual as the Wood Frogs had completed spawning and left the pond. We counted over 50 full complements of Wood Frog eggs attached to several Cattail and Sedge stems at a communal egg laying site. Wood Frogs produce from 636 to 1,279 eggs at a time.

— John Gilhen

Some members of the HFN had previously sampled a 'salamander meander' with John Gilhen earlier this spring on a warm April 1, and were interested to find that the temperature seems to influence what is seen on an amphibian trip; the cold evening had caused the salamanders to stay hidden in their natural habitats this time. Not so the species which came along to Uniacke House in jars from the Museum of Natural History. We all enjoyed close-up looks at Yellow-spotted, Blue- spotted, and Red-bellied Salamanders; and Newts and other small creatures of our woodland and wetland, before going out to look for them. At the close of the evening, Mr. Gilhen gave us a slide show of the beautiful amphibians of Nova Scotia and shared his knowledge of them with us.

Thanks to John's planning, those attending had a thoroughly enjoyable evening. Andrew Hebda, Curator of Zoology, brought along a bat detector; but alas, it was too cold for bats!

— Joan Czapalay and Bernice Moores



AMPHIBIANS BY DAY, PLUS!

DATE: Saturday, 12 June
PLACE: Nature Centre in Wolfville
WEATHER: Sunny and hot, but thankfully breezy
INTERPRETER: Lesley Butters
PARTICIPANTS: 15

I handed out several information sheets and talked about the Nova Scotia Herpetofaunal Atlas Program, encouraging participation. The hand-outs included new versions of the Atlasser's Guide and atlassing cards for reporting; a Verbal Field Guide to Calls of N.S. Frogs, Peepers, and Toads; descriptions of eggs and egg masses of N.S.Amphibians; and line-drawings of pond creatures (insects and other invertebrates). On a cassette player I played the calls of all eight N.S. Anura: six species of frog, Spring Peeper, and American Toad.

Finally we started our caravan of cars at 1:35 p.m., and our first stop had nothing to do with herptiles. We drove to Acadia's University Hall, to use telescopes on the the Red-tailed Hawk nest just northwest of the building in a Silver Fir. There were three very large near-fledglings in the nest; there must have been extra food lying in the nest, since one youngster was feeding itself. An adult flew in, possibly with more food, just as we were leaving.

We drove to the west from Gaspereau village, to Cyril & Ross Coldwell's houses, below which is a picturesque small pond full of flowering scented water lilies. With some difficulty in jockeying for viewing positions, we saw two male Green Frogs calling, with bright yellow throats.

Our next stop was Waldon Coldwell's (no relation) hay field on the Wolfville Ridge. A short walk got us to a spring-fed pond where two days earlier I had found fresh eggs of Green Frogs. In addition to that batch, we found four more floating rafts of very fresh-looking Green Frog eggs. The floating raft is an adaptation for speeding up the development of the embryos to the hatchling tadpole stage. In spring this would likely be detrimental, since the danger of frost at the surface would be high. Several adult Green Frogs were seen well, and a few people saw a half-grown Wood Frog, which was a big surprise to me; they should all be in the woods now, except for this year's tadpoles, which will metamorphose next month.

Other items at the Ridge pond: several male White-tailed Skimmers cruising above the pond surface, plus lots of other adult dragonflies and damselflies. With a dipnet, enamel pan, and bucket, I showed a few Leopard Frog (?) tadpoles, one small Yellow-spotted Salamander larva (I forgot to show the algae-laden, green envelopes of their hatched eggs, which I had seen two days before). Adult Whirligig Beetles, three kinds of beetle larvae, adult predaceous diving beetles, adult crawling water beetles, oodles of damselfly larvae (of two sizes and kinds), water boatmen, backswimmers, water fleas (tiny crustaceans like *Daphnia*), and oodles of filamentous green algae.

The first things we noticed when we arrived at the pond were lots of blooming, emergent, well-named Arrowhead plants. Back at the gate of the hay field we found a Seven-spot Lady Beetle, which is an alien species and seems to be displacing our natives.

Next was an ice cream cone stop at Hennigar's Farm Market to see the two species of turtle in the pond: several Painted Turtles were easy to see, both basking and in the water; but only one of us saw the resident alien adult Red-eared Turtle which has been there at least a year and was probably someone's pet that was released illegally.

In the late afternoon we drove to Lakeville's Silver Lake and saw Bullfrogs at the western end with their second-year tadpoles which are five to six inches long; a few tadpoles were into metamorphosis, with two pairs of limbs and a changed head-shape. There were four territorial adult male Bullfrogs with bright yellow throats and large eardrums (tympana), plus one half-grown subadult; one adult called while we were there. Since we didn't see two sizes of tadpole, perhaps last summer was a reproductive bust versus the boom of 1997 - yes, bullfrog tadpoles do not metamorphose until they are two years old.

Also at Silver Lake, Green Frogs were glunking. There were an adult Double-crested Cormorant and lots of Red-winged Blackbirds and Grackles. There were lots of small schooling fish and several colourful territorial male Three-spined Sticklebacks (these were a surprise to me); goldfish were introduced a few years ago and are abundant, but none were seen. Lots of adult dragonflies & damselflies of several kinds were actively patrolling, chasing, in tandem, and even copulating or egg-laying on the wing. Finally, a single Mourning Cloak and a White Admiral butterfly.

The trip finished at about 6:00 p.m. Nobody showed up later for the optional nocturnal excursion from 8:00 p.m. on to after dark.

— Jim Wolford

Amphibians by Night, and by Day, Species List

Blue-spotted Salamander	*Ambystoma laterale*
Yellow-spotted Salamander	*A. maculatum*
Red-spotted Newt	*Notophthalmus viridiscens*
Redback Salamander	*Plethodon cinereus*
American Toad	*Bufo americanus*
Northern Spring Peeper	*Hyla crucifer*
Green Frog	*Rana clamitans*
Wood Frog	*R. sylvatica*
Leopard Frog	*R. pipiens*
Eastern Painted Turtle	*Chrysemys picta*
Red-eared Turtle	*Pseudemys scripta*
Birds	
Double-crested Cormorant	*Phalacrocorax aurita*
Redtailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoenicus*
Common Grackle	*Quiscalus quiscula*
Fish:	
Goldfish	*Carassius auratus*
3-spined Stickleback	*Gasterosteus* sp.
Insects	
White-tailed Skimmer	Order Odonata
Mourning Cloak	*Nymphalis antiopa*
White Admiral	*Limenitis arthemis*
Whirligig Beetles	Family Gyrinidae
7-spot Ladybeetle	Family Coccinellidae
Plants	
Scented Water Lily	*Nymphaea odorata*
Arrowhead	*Sagittaria latifolia*

SPRING WILDFLOWERS

DATE: Saturday, 5 June
PLACE: Gaspereau river, near White Rock
WEATHER: Sunny; warm to hot; cloudless sky
INTERPRETER: Lesley Butters
PARTICIPANTS: 24

Under a clear, intense blue sky, the rendezvous at the small wooden bridge over the Gaspereau River welcomed us with a five-star reception of brilliantly sunlit Canadian Tiger Swallowtails, all fluttering about the area and dicing with death as vehicles, going much too fast, occasionally passed. While awaiting three tardy participants, we photographed a silver and sienna mirror-surfaced lake and watched a tiny Chipmunk scampering through the shady wooded slope nearby. The stragglers arrived and off we started across the road, amongst the brilliant greens and rich smells of this lovely riverside trail that Lesley had chosen for our wildflower excursion.

After passing under a ponderous Willow trunk, suspended low and horizontal on the riverside, we wandered along the river trail slope among trees that were predominately Birch and Maple.

The first plant identified was a Sensitive Fern (it is sensitive to cold temperatures, not to touch). The ping-y 'chunk' of a Bullfrog accompanied our passing by golden Buttercups, Touch-me-nots (a cure for Poison Ivy), and small cerulean Forget-me-nots on the land side of the woodland path. Clumps of deep purple Wild Irises grew beside the water, and also out on the heavily-grassed mid-river island tussocks. Such a very pleasant walk; we in the comforting dappled woodland shade, the river on the left in bright, blinding sunshine, shimmering with many small flying insects and flitting Dragonflies. Here Lesley spotted the flight from the river's surface of an American Widgeon drake.

Then — wild Blackberries and Strawberries in flower, Columbine not yet in bloom, many clusters of a primordial looking horsetail (one of my favourites), and Timothy among all the other grasses. The river tussocks and small islands also boasted dense thickets of sunbasking Ostrich Fern. On the banks Wild Clematis (Virgin's Bower) and Meadowsweet grew, and both sides of the path were lined with Red Oak saplings.

Ravens were now our musical entertainment, accompanied by the melodies of many other birds. The river was very low, despite the lush conditions, and soon we came upon a long muddy section of the path which held the trip's second surprise — a fluttery cluster of about 20 'puddling' Swallowtails extracting some delicious and needed substance from the sticky mud. Cameras were swiftly and silently whipped into place, as we moved as carefully and quietly as possible, closer and closer — 'til of course they finally twigged and softly dispersed up and away into the sunshine.

Farther on, a distinctive Vireo's nest was spotted up in a shaded tree fork and many different S²edges lined the path. Ash and Beech (sporting interesting Lichens) began mixing with the Birch and Maple, along with a lone young Balsam Fir. We saw Speedwell, Red Spruce, Witch Hazel, and many curious carmine egg masses on the otherwise green and healthy leaves of a Red Maple sapling. Near some White Ash, Jacks-in-the-Pulpit were spotted, and also Hawkweed and Curly Dock, as we were serenaded by an Ovenbird.

The cracked and fallen chunks of metamorphic Meguma sedimentary rock that formed these riverside slopes became more visible and predominant as we wandered toward our lunching site. Where many of the small waterfall and brook beds ran down to meet the river, these tumbled rocks and boulders made evident the more usual extent of the watercourses when water levels were higher. The river was very low indeed now; most stream beds boasted only a trickle of water and some were dry, making the rocky and roughly logged-in crossings easy to negotiate. Here, immense and ancient Hemlocks clung precariously to the steep and broken rocks on both sides, and true to form, the accompanying low-growing Canadian Yew was everywhere underneath these old trees. One plant was argued over — a Viburnum, a Hobblebush? Later on, I identified it as a Hobblebush, *Viburnum alnifolium.*

Further along, Banded Killifish were enjoying a small muddy riverside pool where we spotted Clintonia, False Solomon's Seal, a small blue Butterfly, black Elderberry, and Partridgeberry. Here we enjoyed the ministrations of (not too many!) mosquitoes. We saw the promised Trilliums, sadly no longer in bloom because of the early and wonderful weather this spring. A deerfly and a small coppery-coloured butterfly were also enjoying the area, and a huge ancient tree sported very large Woodpecker workings. Three Bald Eagles were seen slowly circling up in the blue.

Noontime, and we lazed about for lunch on a shady river isthmus. Here, among some tall grasses, Carl Munden found with unerring accuracy the just blooming White Bog Orchid which pervades its habitat with the delicious scent of cloves when all are in full flower. Nearby were sticky Bedstraw and Oak Fern.

During our lunch, a strange and beautiful celestial phenomenon was seen which someone thought might be a 'sun dog'(?) — a streak across the cloudless blue that would have been a rainbow except for its very wide swathe and angle of arch — 0°! Successful pictures were taken for later identification.

On the trip back, we saw in bloom an intense orange and yellow Devil's Paintbrush, and back at the cars, perhaps a Ground Ivy or Speedwell, and also a beautiful specimen of Common Blue-eyed Grass that could not have been definitely pinned-down except for someone's excellent field guide.

Our party left at this point, but a pair of Phoebes was seen by the rest on the afternoon foray to see the 'Three Pools'. They also saw a small pale-coloured Garter Snake, and some River Avens.

All-in-all eleven ferns were identified that day; Sensitive, Oak, Ostrich, New York, Royal, Cinnamon, Bracken, Christmas, Interrupted, Rock Polypody, and Wood Fern.

For those of you who missed this most perfect of HFN field trips — too bad! Thank you, Lesley, for introducing us to this wonderful area.

— Stephanie Robertson

Spring Wildflowers Species

Animals

Eastern Chipmunk	*Tamias striatus*
American Widgeon	*Anas americanus*
Bald Eagle	*Haliaeetus leucocephalus*
Eastern Phoebe	*Sayornis phoebe*
Northern Raven	*Corvus corax*
Ovenbird	*Seiurusaurocapillus*
Bullfrog	*Rana catesbeiana*
Garter Snake	*Thamnophis sirtalis*
Banded Killifish (Topminnow)	*Fundulus diaphanus*
Canadian Tiger Swallowtail	*Paphio canadensis*

Plants

Horsetail	*Equisestum sp.*
Royal Fern	*Osmunda regalis*
Interrupted Fern	*Osmunda claytoniana*
Cinnamon Fern	*O. cinnamomea*
Bracken	*Pteridium aquilinum*
New York Fern	*Thelypteris noveboracensis*
Sensitive Fern	*Onoclea sensibilis*
Ostrich Fern	*Matteucia struthiopteris*
Christmas Fern	*Polystichum acrostichoides*
Wood Fern	*Dryopteris* sp.
Oak Fern	*Gymnocarpium dryopteris*
Rock Polypody	*Polypodium virginianum*
Canadian Yew	*Taxus canadensis*
Balsam Fir	*Abies balsamea*
Red Spruce	*Picea rubens*
Hemlock	*Tsuga canadensis*
Wild Clematis, (Virgin's Bower)	*Clematis virginiana*
Buttercup	*Ranunculus* sp.
Columbine	*Aquilegia vulgaris*
Witch Hazel	*Hamamelis virginiana*
Birch	*Betula* spp.
Red Oak	*Quercus rubra*
Curled Dock	*Rumex crispus*
Blackberry	*Rubus allegheniensis*
Meadowsweet	*Spiraea alba*
River Avens	*Geum ?rivale*
Strawberry	*Fragaria virginiana*
Maple	*Acer* spp.
Red Maple	*Acer rubrum*
Forget-me-not	*Myosotis* sp.
Ground Ivy	*Glechoma hederacea*
White Ash	*Fraxinus americana*
Speedwell	*Veronica* sp.
Touch-me-not	*Mimulus moschatus*
Sticky Bedstraw	*Galium* sp.
Partridgeberry	*Michella repens*
Hobblebush	*Viburnum alnifolia*
Black Elder	*Sambucus canadensis*
Wood Aster	*Aster acuminatus*
Hawkweed	*Hieracium* sp.
Devil's Paintbrush	*H. aurantiacum*
Jack-in-the-Pulpit	*Arisaema triphyllum*
Timothy	*Phleum pratense*
Clintonia	*Clintonia borealis*
Painted Trillium	*Trillium erectum*
False Solomon's Seal	*Smilacina ?trifolia*
Wild Iris	*Iris versicolor*
Blue-eyed Grass	*Sisyrinchium montanum*
Tall White Northern Bog Orchid	*Platanthera dilatata*

NATURAL HISTORY

MAGNIFICENT MICROBES, GORGEOUS GERMS

Microbes are like insects; they have a bad press. There is an industry devoted to destroying them, and another trying to convince us they all should be destroyed. Yet we could not live without them, and we even cultivate and exploit them!

Microbes are defined as 'minute living beings', a convenient category for small things of various classifications.

Most are bacteria — that is, prokaryotes without a membrane round the nucleus, and with some very untidy reproductive strategies.

Most of the rest are protoctists — eukaryotes with membranes round their nuclei and more orderly ways of dividing their genetic material, some of them even sexual. Many microbes are fungi, and few are actually eukaryotes with cellular organisation; these include small nematodes, rotifers, tardigrades and so on, all of ancient lineage. There are millions of species of microbe.

Some are beautiful; *Trepanema pallida* belong to a group of bacteria formed like coiled springs. They look as if made of clear plastic, but as they revolve stiffly through the culture medium, each refracts the light as a series of rainbows, running along the coils until they vanish at the tail. A microscope field full of these rainbow chips swimming in all directions is unforgettable. *Trepanema pallida* might be beautiful, but it causes syphilis.

Other microbes are coloured; for instance the purple film on the floors of salt-marsh pools in summer is formed by anaerobic photosynthetic bacteria, which use sulphur compounds from the black mud underneath instead of compounds containing oxygen.

Live bacteria often produce interesting patterns formed by the way in which the cells divide. A few have a sort of gliding movement, but most just hang around forming part of living assemblages in almost any damp place. The strands (known unfairly as slime cities) seen in discarded cans for example, or in stagnant pools or neglected aquaria, are full of bacteria and other.microbes; the elegant strands themselves are made by microbes, and other creatures live in the mesh.

Bacteria are the ultimate recyclers; they cover every surface and lurk in all damp places. They compost organic matter, including spilled oil. They were probably the first colonists on earth, and gained their diversity by having to salvage every useful molecule from a hostile environment. Some lived in niches with extreme temperatures and a limited variety of resources, as they do today in volcanic cracks and undersea vents. Theirs is a story of biological chemistry, and we do not know the half of it.

Living bodies provide planets for microbial colonisation. Competition for resources plus the body's defences keep their numbers in check. When the body loses its integrity in some way, or is exposed to unusual colonisers, bacteria become agressive and cause disease. We use their bodies to make vaccines against them, and employ moulds to produce antibiotics.

Milk is produced from grass by a complex of microbes which digest cellulose composted in the rumen of cud-chewing cows; the microbes are digested as well. Lactic acid bacteria occur naturally in milk and sour it, leading to the production of cheese, butter and yoghurt. When cheese is aged, other bacteria, and sometimes fungi, enter and change its appearance and flavour. The ripening agent for Roquefort cheese is Penicillium roqueforti; Penicillium species produce antibiotics.

Fermentations by other families of bacteria and moulds produce the ripening of muktuk (whale blubber); preparation of sauerkraut; pickles; silage; and the retting of flax and nettle stalks for making linen.

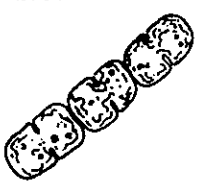
Actions of selected microbes, primarily yeasts and bacteria, produce bread, beer, wine, and vinegar. As always, it takes many species to make each product, and we manage the process to obtain the most desirable.

An interesting bacterium, *Acetobacter xylinum*, synthesises cellulose, forming a dense mat in which other bacteria produce simple sugars and yeasts ferment them, a real slime city. The result is kombucha tea, a mild aromatic vinegar, made from weak sweet tea. The process is the same used by the apple growers in production of apple cider vinegar, except that they use another species of *Acetobacter* which does not form a mat.

Most of these processes produce acids, which preserve the products from other recyclers. In fact microbes are very fragile; adjustment of the environment deters or kills them fast, and soap and water simply washes them away.

So the mixture of creatures at the base of the old Tree of Life (forming a mycelium there?) is actually a new world for naturalists to explore.

Something to consider as one reaches for a pot of yoghurt with five live cultures, or a slice of sourdough bread.



— Ursula Grigg

ALMANAC

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

These walks in midsummer were often marred by the presence of mosquitoes and black flies, which were far worse in Whitehorse than in Dawson. It is almost impossible to describe to those who have not experienced it the fearful ordeal of walking through these swarms of insects that, in the early days, quite literally drove unprepared men insane... Before our days at Whitehorse came to an end we believed the story of the mosquitoes which attacked a man carrying home a copper wash-boiler. Unable to cope with them, he took refuge inside the boiler, only to find that they were stinging him right through it. Desperately he seized a rock and hammered each stinger as it came through the metal. At this the insects rose up in a cloud and, finding themselves securely fastened down, flew away taking the boiler with them.

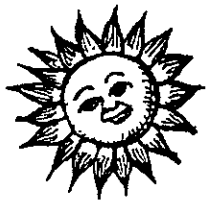
— Laura Beatrice Berton: I Married the Klondike (1954)

NATURAL EVENTS

24 May-15 July	Flight period of Canadian Tiger Swallowtail.
17 June-31 Aug.	Flight period of Black Swallowtail.
21 June	Summer Solstice at 4:49 p.m. ADT; Summer begins in the Northern Hemisphere.
28 June	Full Moon — this is the 'Strawberry Moon'.
9 July-24 Aug.	Flight period of Common Wood Nymph.
July	Jupiter is prominent in the southeast in the predawn sky.
14 July	Venus is at its greatest brilliancy in the West after sunset. It will soon be lost in the evening twilight.
15 July	An interesting evening grouping of Venus, Regulus, and the crescent Moon.
17 July	Canada's 'Parks Day' — look for events at local parks.
18 July-12 Sept.	Flight period of the Red Admiral butterfly.
28 July	Full moon — this is the 'Buck Moon'.
5-12 Aug.	Hottest days of summer (average daily maximum is 22.5° C).
11 Aug.	Total Solar Eclipse; in Nova Scotia it will be in progress at sunrise.
12 Aug.	Perseid meteor showers.
12 Aug.-5 Sept.	Flight period of the Viceroy butterfly.
13 Aug.	Temperatures start decreasing.
26 Aug.	Full moon — this is the 'Corn Moon'.
late Aug.	Venus reappears in the eastern morning twlight.
late Aug.-earl.Sept.	Look for large hatches of Crane Flies (*Tipulidae*).
23 Sept.	Autumnal Equinox at 8:32 a.m. ADT; Fall begins in the Northern Hemisphere.
25 Sept.	Full moon — this is the 'Harvest Moon'.
30 Sept.	Average date for first frost in Halifax (i.e. Environment Canada says that there is a 1:10 chance 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.; Colombo's Canadian Global Almanac, 1997 & 1999; Peter Payzant's compilation of butterfly data; Royal Astronomical Society of Canada's Observer's Handbook 1999; and the personal observations of the compiler.

SUNRISE AND SUNSET ON LATE SPRING AND SUMMER SATURDAYS



5 June	5:30	20:56	3 July	4:34	20:03
12 June	5:29	21:00	10 July	4:39	20:00
19 June	5:28	21:03	17 July	4:45	19:56
26 June	5:30	21:04	24 July	4:51	19:50
			31 July	4:59	19:42
7 Aug.	5:07	19:33	4 Sept.	5:40	18:46
14 Aug.	5:15	19:22	11 Sept.	5:48	18:33
21 Aug.	5:23	19:11	18 Sept.	5:56	18:20
28 Aug.	5:32	18:59	25 Sept.	6:04	18:07

— courtesy of David Lane, Burke-Gaffney Observatory, Saint Mary's University

ORGANISATIONAL EVENTS

Blomidon Naturalists Society — Indoor meetings take place on the third Monday of the month at Room 241 in the Beveridge Arts Centre, Acadia University, 7:30 p.m. Field trips usually depart from the Robie Tufts Nature Centre, Front St., Wolfville. For more information, go to <http://www.go.ednet.ns.ca/~bns/home.htm>.

5 July "Blomidon Provincal Park", with Sherman Williams, 542-5104.
17 Sept. Joint meeting with the Nova Scotia Bird Society.

Burke-Gaffney Observatory — Public shows at the Burke-Gaffney Observatory at Saint Mary's University are held every Saturday from June through September; tours begin at either 9:00 p.m. or 10:00 p.m. (depending on when it gets dark). For more information phone 496-8257, or go to <http://apwww.stmarys.ca/bgo/>.

Cole Harbour Parks and Trails Association — For more information, phone 434-7493.

17 July "Discover Cole Harbour", with guides.

Ecology Action Centre — For more information, phone 429-2202.

19 June "Annual General Meeting", followed by a slide show by Oliver Maass.
24 July "Hants County Salt Marshes", with Sherman Boates.

Friends of McNabs Island — For more information, call Dusan Soudek, 422-1045; or Mike Tilley, 465-4563; or go to <http://chebucto.ns.ca/Environment/FOMIS/>.

19 Sept. "McNab's Island Paddle and Cleanup".

Nova Scotia Bird Society — Indoor meetings take place on the fourth Thursday of the month, October to April, at the Nova Scotia Museum of Natural History, 8:00 p.m. For more information, phone 852-2428 (recording); or Fulton Lavender at 455-4966; or go to <http://chebucto.ns.ca/Recreation/NS-BirdSoc>.

10 July "Cape Chignecto, West Advocate", with Joan Czapalay, 348-2803.
18 July "Wallace Bay, Cumberland Co.", with Jim Taylor, 434-8516.
25 July "Mahone Bay", with Clarence Stevens, 835-0098.
21 Aug. "Matthew's Lake, Shelburne Co.", with Dave Young, 656-2225.
22 Aug. "The Hawk, Shelburne Co.", with Murray Newell, 745-3340.
28 Aug. "Conrad's Beach Birding", with Fulton Lavender, 455-4966.
17 Sept. Joint meeting with the Blomidon Naturalists Society in Wolfville.

Nova Scotia Lighthouse Preservation Society — Organises visits to lighthouses, including boat trips to islands. For more information phone Dan Conlin, 424-6442; or go to <http://www.ednet.ns.ca/educ/heritage/nslps/>.

10 July "Sambro Lighthouse, near Ketch Harbour", with Chris Mills, 868-2313.

Nova Scotia Museum of Natural History — For more information about programmes phone 424-6099, or 424-7353; or go to <http://www.ednet.ns.ca/educ/museum/mnh/>.

12 June-19 Sept. "Monarca — Butterfly Beyond Boundaries", a display from the Canadian Museum of Nature.
23 June "Butterfly Invasions", with speaker Fred Scott.
26 June "Bat Walk", with Andrew Hebda at Smiley's Provincial Park.
1 July "The Canada Day Butterfly Social" — come to the launch of the Butterfly Garden.
10 July "Dawn Chorus", with Azor Vienneau at Uniacke Museum Estate Park. **Preregister**, 424-7353.
14 July "Botanical Ramble through the Public Gardens", with Alex Wilson. **Preregister**, 424-3563.
3 Aug. "Family Butterfly Hike at Uniacke Estate Museum Park", with Derek Bridgehouse. **Preregister**, 424-3563.
11 Aug. "Butterfly Barbecue — Wing Night at the Museum". **Purchase tickets** at 424-7353.
25 Aug. "Fungi & Lichen Walk at Uniacke Estate Museum Park", with Karen Casselman and Katie Syme.

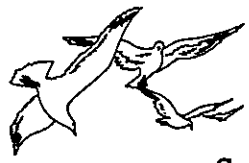
Nova Scotia Wild Flora Society — Meets fourth Monday of the month, September to May, at the Nova Scotia Museum of Natural History, 7:30 p.m. For more information phone Heather Drope, 423-7032.

26 June "Keji Adjunct, Queen's Co.", with Nick Hill.
28 June "Peggy's Cove", with Heather Drope.
25 July "Caribou Prov. Park, Pictou Co.", with Barry Sawyer, 445-4938.

Royal Astronomical Society of Canada (Halifax Chapter) — Meets third Friday of each month at the Nova Scotia Museum of Natural History, 8:00 p.m. For more information, go to <http://halifax.rasc.ca>. Public shows at the Planetarium in Dalhousie's Sir James Dunn Building have been discontinued.

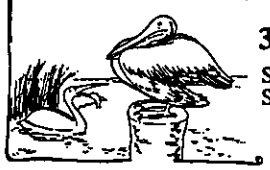
— compiled by Patricia L. Chalmers

HALIFAX TIDE TABLE



July-juillet

Day	Time	Feet	Metres	jour	heure	pieds	metres
1	0345	0.7	0.2	16	0445	0.0	0.0
	0955	5.2	1.6		1030	5.9	1.8
TH	1555	1.6	0.5	FR	1715	1.3	0.4
JE	2150	5.6	1.7	VE	2240	5.9	1.8
2	0425	0.7	0.2	17	0535	0.3	0.1
	1030	5.2	1.6		1115	5.9	1.8
FR	1645	1.6	0.5	SA	1810	1.3	0.4
VE	2230	5.6	1.7	SA	2325	5.6	1.7
3	0510	0.7	0.2	18	0625	0.7	0.2
	1110	5.2	1.6		1200	5.6	1.7
SA	1740	1.6	0.5	SU	1905	1.3	0.4
SA	2310	5.2	1.6	DI			
4	0555	1.0	0.3	19	0015	5.2	1.6
	1150	5.2	1.6		0715	1.0	0.3
SU	1835	1.6	0.5	MO	1245	5.2	1.6
DI	2355	5.2	1.6	LU	1955	1.6	0.5
5	0650	1.0	0.3	20	0105	4.9	1.5
	1235	5.2	1.6		0800	1.3	0.4
MO	1930	1.6	0.5	TU	1335	5.2	1.6
LU				MA	2050	1.6	0.5
6	0045	4.9	1.5	21	0200	4.6	1.4
	0740	1.0	0.3		0850	1.6	0.5
TU	1325	5.6	1.7	WE	1430	4.9	1.5
MA	2030	1.3	0.4	ME	2135	1.6	0.5
7	0145	4.9	1.5	22	0305	4.6	1.4
	0835	1.0	0.3		0940	2.0	0.6
WE	1425	5.6	1.7	TH	1530	4.9	1.5
ME	2125	1.0	0.3	JE	2225	1.3	0.4
8	0255	4.9	1.5	23	0415	4.6	1.4
	0930	1.0	0.3		1030	2.0	0.6
TH	1525	5.6	1.7	FR	1625	4.9	1.5
JE	2225	0.7	0.2	VE	2315	1.3	0.4
9	0405	4.9	1.5	24	0515	4.6	1.4
	1035	1.0	0.3		1125	2.0	0.6
FR	1625	5.9	1.8	SA	1720	5.2	1.6
VE	2325	0.3	0.1	SA			
10	0510	5.2	1.6	25	0005	1.3	0.4
	1135	1.0	0.3		0605	4.6	1.4
SA	1725	6.2	1.9	SU	1210	2.0	0.6
SA				DI	1805	5.2	1.6
11	0025	0.0	0.0	26	0045	1.0	0.3
	0610	5.6	1.7		0650	4.9	1.5
SU	1240	1.0	0.3	MO	1255	2.0	0.6
DI	1820	6.2	1.9	LU	1850	5.6	1.7
12	0120	0.0	0.0	27	0125	0.7	0.2
	0710	5.9	1.8		0735	5.2	1.6
MO	1335	1.0	0.3	TU	1335	1.6	0.5
LU	1920	6.2	1.9	MA	1930	5.6	1.7
13	0210	−0.3	−0.1	28	0205	0.7	0.2
	0805	5.9	1.8		0815	5.2	1.6
TU	1430	1.0	0.3	WE	1415	1.6	0.5
MA	2010	6.2	1.9	ME	2010	5.6	1.7
14	0305	−0.3	−0.1	29	0240	0.7	0.2
	0855	5.9	1.8		0850	5.6	1.7
WE	1525	1.0	0.3	TH	1455	1.3	0.4
ME	2105	6.2	1.9	JE	2050	5.9	1.8
15	0355	0.0	0.0	30	0320	0.3	0.1
	0945	5.9	1.8		0930	5.6	1.7
TH	1620	1.0	0.3	FR	1540	1.3	0.4
JE	2155	6.2	1.9	VE	2130	5.9	1.8
				31	0400	0.7	0.2
					1005	5.6	1.7
				SA	1625	1.3	0.4
				SA	2210	5.6	1.7

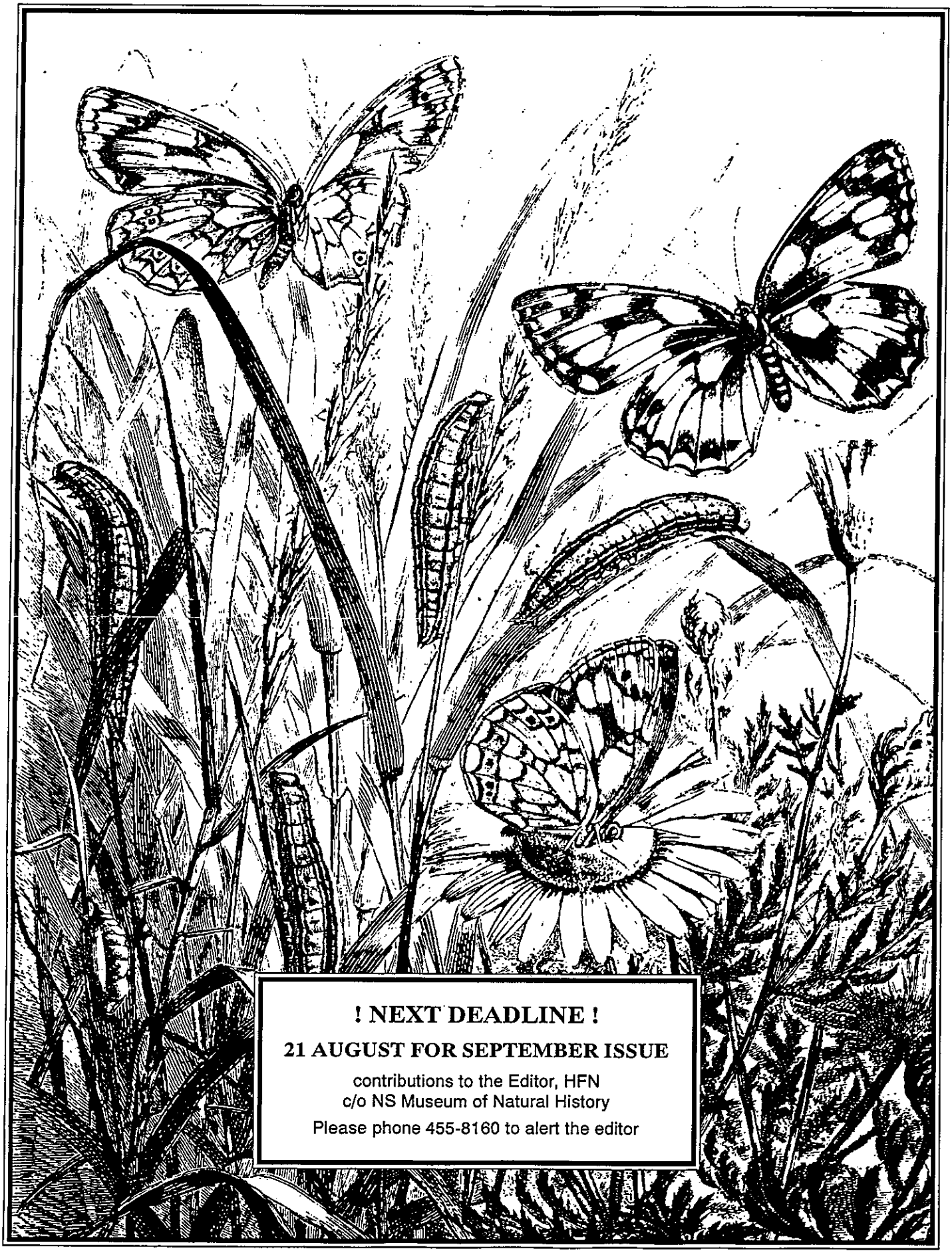


August-août

Day	Time	Feet	Metres	jour	heure	pieds	metres
1	0445	0.7	0.2	16	0545	1.0	0.3
	1045	5.6	1.7		1125	5.6	1.7
SU	1715	1.3	0.4	MO	1820	1.3	0.4
DI	2255	5.6	1.7	LU	2345	5.2	1.6
2	0530	0.7	0.2	17	0630	1.3	0.4
	1125	5.9	1.8		1205	5.6	1.7
MO	1810	1.3	0.4	TU	1910	1.6	0.5
LU	2340	5.2	1.6	MA			
3	0625	1.0	0.3	18	0030	4.9	1.5
	1210	5.6	1.7		0715	1.6	0.5
TU	1910	1.3	0.4	WE	1250	5.2	1.6
MA				ME	2000	1.6	0.5
4	0025	5.2	1.6	19	0120	4.6	1.4
	0720	1.0	0.3		0805	2.0	0.6
WE	1300	5.6	1.7	TH	1340	4.9	1.5
ME	2010	1.0	0.3	JE	2050	1.6	0.5
5	0125	4.9	1.5	20	0220	4.6	1.4
	0815	1.3	0.4		0855	2.0	0.6
TH	1355	5.6	1.7	FR	1440	4.9	1.5
JE	2110	1.0	0.3	VE	2140	1.6	0.5
6	0230	4.9	1.5	21	0330	4.3	1.3
	0920	1.3	0.4		0950	2.3	0.7
FR	1500	5.6	1.7	SA	1545	4.9	1.5
VE	2210	0.7	0.2	SA	2235	1.6	0.5
7	0345	4.9	1.5	22	0440	4.6	1.4
	1025	1.3	0.4		1045	2.3	0.7
SA	1605	5.6	1.7	SU	1645	4.9	1.5
SA	2310	0.7	0.2	DI	2325	1.3	0.4
8	0500	5.2	1.6	23	0535	4.6	1.4
	1130	1.3	0.4		1135	2.0	0.6
SU	1710	5.9	1.8	MO	1735	5.2	1.6
DI				LU			
9	0010	0.3	0.1	24	0010	1.0	0.3
	0600	5.6	1.7		0620	4.9	1.5
MO	1230	1.0	0.3	TU	1225	2.0	0.6
LU	1810	5.9	1.8	MA	1825	5.6	1.7
10	0105	0.0	0.0	25	0055	1.0	0.3
	0700	5.6	1.7		0705	5.2	1.6
TU	1325	1.0	0.3	WE	1305	1.6	0.5
MA	1905	6.2	1.9	ME	1905	5.6	1.7
11	0155	0.0	0.0	26	0135	0.7	0.2
	0750	5.9	1.8		0745	5.6	1.7
WE	1420	1.0	0.3	TH	1350	1.3	0.4
ME	2000	6.2	1.9	JE	1945	5.9	1.8
12	0245	0.0	0.0	27	0215	0.7	0.2
	0840	5.9	1.8		0820	5.6	1.7
TH	1510	1.0	0.3	FR	1430	1.0	0.3
JE	2045	6.2	1.9	VE	2025	5.9	1.8
13	0330	0.0	0.0	28	0255	0.3	0.1
	0925	5.9	1.8		0900	5.9	1.8
FR	1555	1.0	0.3	SA	1515	1.0	0.3
VE	2135	5.9	1.8	SA	2110	5.9	1.8
14	0415	0.3	0.1	29	0335	0.3	0.1
	1005	5.9	1.8		0940	5.9	1.8
SA	1645	1.3	0.4	SU	1600	1.0	0.3
SA	2215	5.9	1.8	DI	2150	5.9	1.8
15	0500	0.7	0.2	30	0420	0.7	0.2
	1045	5.9	1.8		1015	6.2	1.9
SU	1735	1.3	0.4	MO	1655	1.0	0.3
DI	2300	5.6	1.7	LU	2235	5.9	1.8
				31	0510	0.7	0.2
					1100	6.2	1.9
				TU	1750	1.0	0.3
				MA	2320	5.6	1.7

September-septembre

Day	Time	Feet	Metres	jour	heure	pieds	metres
1	0605	1.0	0.3	16	0625	2.0	0.6
	1145	5.9	1.8		1210	5.2	1.6
WE	1850	1.0	0.3	TH	1905	1.6	0.5
ME				JE			
2	0010	5.2	1.6	17	0045	4.9	1.5
	0705	1.3	0.4		0720	2.3	0.7
TH	1235	5.9	1.8	FR	1255	4.9	1.5
JE	1955	1.0	0.3	VE	2000	1.6	0.5
3	0110	5.2	1.6	18	0140	4.6	1.4
	0810	1.3	0.4		0815	2.3	0.7
FR	1330	5.6	1.7	SA	1350	4.9	1.5
VE	2055	1.0	0.3	SA	2055	1.6	0.5
4	0215	4.9	1.5	19	0245	4.6	1.4
	0915	1.6	0.5		0915	2.3	0.7
SA	1440	5.6	1.7	SU	1455	4.9	1.5
SA	2155	1.0	0.3	DI	2150	1.6	0.5
5	0335	4.9	1.5	20	0400	4.6	1.4
	1020	1.6	0.5		1010	2.3	0.7
SU	1550	5.6	1.7	MO	1605	4.9	1.5
DI	2255	0.7	0.2	LU	2240	1.6	0.5
6	0450	5.2	1.6	21	0500	4.9	1.5
	1120	1.3	0.4		1105	2.0	0.6
MO	1705	5.6	1.7	TU	1705	5.2	1.6
LU	2355	0.7	0.2	MA	2330	1.3	0.4
7	0555	5.6	1.7	22	0550	5.2	1.6
	1220	1.3	0.4		1150	1.6	0.5
TU	1805	5.9	1.8	WE	1755	5.6	1.7
MA				ME			
8	0050	0.3	0.1	23	0020	1.0	0.3
	0645	5.6	1.7		0630	5.6	1.7
WE	1315	1.0	0.3	TH	1240	1.3	0.4
ME	1855	5.9	1.8	JE	1835	5.6	1.7
9	0140	0.3	0.1	24	0100	0.7	0.2
	0730	5.9	1.8		0710	5.9	1.8
TH	1400	1.0	0.3	FR	1325	1.0	0.3
JE	1945	5.9	1.8	VE	1920	5.9	1.8
10	0225	0.3	0.1	25	0145	0.7	0.2
	0815	5.9	1.8		0745	6.2	1.9
FR	1445	1.0	0.3	SA	1410	0.7	0.2
VE	2030	5.9	1.8	SA	2000	6.2	1.9
11	0305	0.7	0.2	26	0225	0.3	0.1
	0855	5.9	1.8		0825	6.2	1.9
SA	1530	1.0	0.3	SU	1455	0.7	0.2
SA	2110	5.9	1.8	DI	2045	6.2	1.9
12	0345	0.7	0.2	27	0310	0.7	0.2
	0935	5.9	1.8		0910	6.6	2.0
SU	1610	1.0	0.3	MO	1540	0.7	0.2
DI	2150	5.9	1.8	LU	2130	6.2	1.9
13	0420	1.0	0.3	28	0355	0.7	0.2
	1010	5.9	1.8		0950	6.6	2.0
MO	1650	1.3	0.4	TU	1635	0.7	0.2
LU	2235	5.6	1.7	MA	2215	5.9	1.8
14	0500	1.3	0.4	29	0450	1.0	0.3
	1050	5.6	1.7		1035	6.2	1.9
TU	1730	1.3	0.4	WE	1730	0.7	0.2
MA	2315	5.2	1.6	ME	2305	5.9	1.8
15	0540	1.6	0.5	30	0550	1.3	0.4
	1130	5.6	1.7		1125	6.2	1.9
WE	1815	1.6	0.5	TH	1835	0.7	0.2
ME	2355	4.9	1.5	JE			



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