BLOMIDON NATURALISTS SOCIETY

Blomidon Naturalists Society

FALL 2020 NEWSLETTER

VOLUME 47 · NUMBER 3

THE BLOMIDON NATURALISTS SOCIETY

The primary objective of the Society shall be to encourage and develop in its members an understanding and appreciation of nature. For the purpose of the Society, the word "nature" will be interpreted broadly and shall include the rocks, plants, animals, water, air, and stars.

FROM THE BNS CONSTITUTION

The Blomidon Naturalists Society Newsletter is published quarterly (March, June, October, & December) by The Blomidon Naturalists Society. Contributions to the BNS newsletter are always welcome. Articles may be reprinted with permission of the author or the editor. Credit the Blomidon Naturalists Society Newsletter. Unless otherwise stated, opinions are those of authors, not necessarily the Blomidon Naturalists Society. For subscription information, see the membership fees form at the back of this newsletter. If you change your address, please notify us at the address below.

The Blomidon Naturalists Society is a member of the Federation of Nova Scotia Naturalists (Nature Nova Scotia). The Blomidon Naturalists Society is a registered charity. Receipts (for income-tax purposes) will be issued for all donations. (Registration number: 118811686RR0001)

Typeset in Goluska types by Andrew Steeves.
Printed offset & bound at Gaspereau Press, Kentville, NS.

THE BLOMIDON NATURALISTS SOCIETY
P.O. Box 2350, Wolfville, NS B4P 2N5
www.blomidonnaturalists.ca

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BLOMIDON NATURALISTS SOCIETY members are encouraged to share unusual or pleasurable nature stories through the pages of the BNS Newsletter. If you have a particular area of interest, relevant articles and stories are always welcome. All articles, queries, and letters to the editor should be directed to HowardWilliams,newslettereditor: *gruncle.howard@gmail.com*

Digital photographs should be submitted to *doug@fundymud.com*

Next submission deadline: *November 30, 2020*

From the Editor

by Howard Williams

This edition of the Newsletter contains a number of articles by members. A review of the activities of Chimney Swifts is derived from data collected in Wolfville; the rare occurrence of a Grey Heron in the Kentville area is described by Richard Stern; I asked Ken Harrison to describe the fungus *Syzygites megalocarpus*. Larry Bogan reports on Monarch butterflies farmed at his property, while Jonathan Fowler describes his work on "Forest on the ocean floor."

This August, BNS undertook a review of its activities and initiated a process to move toward a strategic plan that will act as a guide for the future of the organization. Soren addresses this issue in his president's message.

My attention was drawn to an interview on BBC featuring a young lad who is a birdwatcher, which in itself is not extraordinary, but his ability to communicate to the interviewer was riveting (see bbc.com/news/av/uk-england-nottinghamshire-52009781/birdwatcher-14-making-the-most-of-lockdown-wildlife). I highly recommend that members watch this to see how well the birder dealt with questions while at the same time swivelling his eyes and ears and interjecting identifications into his responses during the interview. Remarkable. Do we have any similar talent locally? If not, how do we encourage it?

Another story I heard, on CBC radio, is about a child with an environmental project: cbc.ca/listen/live-radio/1-27-information-morning-ns/clip/15783141-11-year-olds-project-to-save-butterflies.

There is a new bench seat at the Guzzle, dedicated to Wally Bower. At risk of seeming impertinent, I am curious to know

who Wally was. Would someone speak up for him and thank his descendants for funding the sensibly placed granite bench that facilitates watching peeps?

In early July there was a report on research undertaken in western Canada showing that the White-throated Sparrow, of "Oh Canada, Canada, Canada" fame, has changed its song (cbc.ca/news/canada/british-columbia/white-throated-sparrows-change-their-tune-1.5636004). Ken Otter, of University of Northern British Columbia, was quoted as saying, "The doublet now sounds like 'Oh My Sweet Cana-Cana-Cana-da'. They are stuttering and repeating the first two syllables, and they are doing it very rapidly. It sounds very different."

In the last issue I mentioned the fact that clearing of vegetation during nesting time was environmentally insensitive and contrary to Department of Environment regulations. Recently, the Department of Transport has been cutting hedges and trees on the roadsides to improve visibility for traffic, again during nesting season (cbc.ca/news/canada/nova-scotia/protesters-stop-tree-removal-petite-riviere-nova-scotia-1.5643209).

There are more issues of bees not being so common this year and stories circulating about how horticulturalists treat their plants before sale with insecticides. Can one buy plants that have not been treated? In New Zealand, plants left untreated were labelled as such, to encourage sale to those who cared.

A major truck manufacturer shows trucks trashing the environment, with the words: "Go on a play date with Mother Nature," or "This is the future of off-road driving." How any thinking person interested in the environment can see that encouraging driving across dry land and through rivers is consistent with a company trying to exhibit a good environmental record is beyond my understanding. Furthermore, in another advertisement, vehicles are shown with contented wildlife to give the impression that the vehicles are quiet. The ad avoids showing the amount of time taken for wildlife to recover from the vehicle's arrival. Do vehicle manufacturers think we are

stupid? Clearly there is a disconnect between those that enjoy off-road driving and a love of the environment. There is a clear and present need for education of vehicle builders here.

This fall, I will initiate a series of regular walks within Reservoir Park, probably every two weeks, unless there is demand for weekly walks. Only recently did I discover how much more trails and woodland there are in the park if you venture down the cycle trails into ravines and meadows. There is a variety of habitats there with birds and plants to see and hear.

Also this fall, there will be a second highway clean-up along our designated section of Highway 1 between Wolfville and Deep Hollow Road.

In the August 20 *Grapevine*, Richard Stern wrote a piece about the joy of birding and how this pastime can be carried out safely within the Nova Scotia bubble.

Just a pre-Christmas reminder to order extra copies of *Wildflowers of Nova Scotia*, a pocket guide to common native flowers and shrubs from blomidonnaturalists.ca/publications/, to give to those you care about as stocking-stuffers. BNS has already sold over 180 of the guides.

If you find yourself with some spare time, here are a few more online stories you might find enlightening:

- Annapolis Valley sand barrens: cbc.ca/news/canada/nova-scotia/nova-scotia-annapolis-valley-sand-barrens-biodiversity-1.5686199
- Benefits and costs of childhood connections to nature: sciencedaily.com/releases/2020/08/200806092435.htm
- Effects of systemic racism on biodiversity in cities: sciencedaily.com/releases/2020/08/200813142325.htm

From the President

by Soren Bondrup-Nielsen

On September 3, I attended the Don't Spray Us—North Mountain Rally at the Burlington Community Hall. There were about 150 people there, and I noticed at least a dozen or so BNS members. Excellent! A day or so before the event, due to public pressure the landowner had decided not to spray Roundup (glyphosate) on the 200+ acre clear-cut. This was indeed a win for the local community. But they recognized that this fight against poisoning the land throughout Nova Scotia is not over, so they went ahead with the rally. A real appetite within the crowd demanded an end to the practice of applying herbicide clear-cuts to promote evergreen regeneration. It was energizing to attend. We will see what happens, and maybe BNS can become more active in this fight. Maybe Covid-19 will be the impetus to demand that enough is enough with regard to human-caused destruction of our natural environment.

Because of Covid-19, the summer, which is now nearing its end, has been to some degree delightfully quiet and peaceful. The June meeting took place over Zoom again. Mike Gill gave an engaging presentation: From Local to Global and Back Again: Citizen Science's role in a Global Biodiversity Observation Network. Again, we had great attendance, and I received several emails about how people had enjoyed the presentation. Zoom meetings will resume this fall. Acadia University remains closed to the public to at least the end of this year.

The species at risk (SAR) lawsuit is now officially over—we won. The government had a month to file an appeal, which it didn't and is now bound to carry out what was legally required in the first place. I know Lands & Forestry has been busy; unfor-

tunately, Justice Brothers did not give a time line in her ruling. We had about $3,500 left over in the lawsuit account. Together with the other litigants we decided to donate $2,000 to Eco Justice, who helped with the suit.

In the meantime we were approached about the Owl's Head lawsuit launched by Bob Bancroft and Eastern Shore Forest Watch Association, and asked if we could take donations for the purpose of paying Jamie Simpson, the environmental lawyer handling the case (and who handled the SAR lawsuit). The board agreed, and we received a $5,000 donation from Marguerite Hubbard Charitable Foundation. We had an outstanding donation of $1,000 for the SAR case, and the donor was very pleased to have it put toward the Owl's Head case. We transferred the money left over from the SAR lawsuit to the current lawsuit, so we have a sizable account to support this new case.

As I mentioned in my last report (BNS Newsletter 47:2), the board has started a strategic planning process. We have had one Zoom meeting and one in-person meeting, both with Joanne Cook as facilitator. We will have another facilitated in-person meeting in early October, and our intent is to bring a plan forward to the membership at the November general meeting.

The pocket guide *Wildflowers of Nova Scotia* has become very popular. Well over 60 people have purchased the guide on the BNS website, using PayPal. In total we are approaching 200 copies sold. After paying back the "loan" that the board used to help produce the guide, we have made almost $2,000. Producing the guide has proven quite the source of revenue. A huge thanks to the massive effort by Howard and Carole for producing this beautiful guide.

I am pleased to announce that we have been successful in obtaining funds to hire an assistant to help us with a number of tasks to make BNS more inclusive, welcoming, and relevant in today's climate (pun intended) of massive species loss, climate change, inclusivity, and Covid-19. That is about it for this time. Stay safe everyone.

From Local to Global and Back Again: Citizen Science's Role in a Global Biodiversity Observation Network

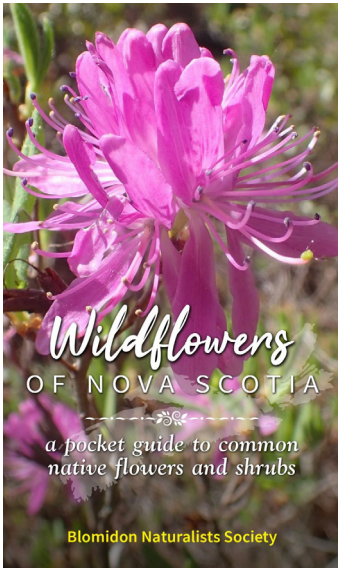
A summary of the June 15, 2020, presentation to the BNS membership by Mike Gill, as reported by Howard Williams

Mike Gill is director of the Biodiversity Indicators Program at NatureServe, and for the past 25 years he has been co-chair of GEO BON (Group on Earth Observations Biodiversity Observation Networks). He has established user-driven and results-oriented biodiversity conservation, research, and monitoring programs, spanning the Arctic, North America, Eurasia, Antarctica, and Latin America. These projects have involved partnerships with aboriginal, federal, provincial, territorial, and foreign governments, academia, industry, and NGOs. Mike advises governments, senior officials, and environment ministers on conservation issues, and he has published numerous scientific publications, books, and book chapters.

Despite the drawbacks of using online delivery, Mike's presentation showed the importance of citizen science in global efforts to better monitor the pulse of our planet. After an overview of the development of a global biodiversity observation network, Mike gave examples of how citizen science is used to support informed conservation action. He answered many questions and generated discussion about current citizen science platforms such as eBird and iNaturalist.

A New Field Guide from BNS

***Wildflowers of Nova Scotia: a pocket guide to common native flowers and shrubs*, published by Blomidon Naturalists Society, June 2020, $20**



Some of your BNS board members had a sneak peek:

"What a beautiful book."

"A wonderful flower guide."

"This pocket guide will provide a stepping stone to more in-depth, comprehensive guides."

"It will become a beloved little reference for many people in the province."

"This book fills a useful gap in Nova Scotia: it is a pocket-sized, accessibly written, and beautifully imaged reference guide for identification of common wildflower species and groups in the province. The guide is written for the average reader and slips easily into a pocket. This book will help Nova Scotians from many different backgrounds to engage with the botanical world in a user-friendly way, and it will probably join its owners for more hikes and walks than other guides." *—Dr. Sean R. Haughian, Curator of Botany, Nova Scotia Museum.*

Contact Howard Williams
(*gruncle.howard@gmail.com*)
for info on how to buy your copy

Upcoming Events

MEETINGS

Unless otherwise noted, all meetings are held at 7:30 p.m., usually on the third Monday of each month, in Room BAC241 of the Beveridge Arts Centre of Acadia University, on the corner of Main Street and Highland Avenue, Wolfville. Parking is available off Highland Avenue, on Acadia Street, and at the parking area around the Robie Tufts Nature Centre.

Everyone is welcome. For more information on any events, see the BNS website (blomidonnaturalists.ca), the BNS Facebook page (www.facebook.com/groups/blomidonNaturalistsSociety/events/), or contact us at info@blomidonnaturalists.ca.

FIELD TRIPS AND OTHER NATURE EVENTS

Visit the BNS website for upcoming events and for field trip maps and directions. If you do not receive e-mail alerts for events and would like to, please let Pat Kelly know and he'll make sure you're on the list (info@blomidonnaturalists.ca).

[NOTE: because of restrictions owing to the coronavirus, the original schedule has been cancelled or postponed. For now, member meetings will be offered at regular times when possible, via Zoom. Keep an eye on your BNS email notices—ed.]

HIKE NOVA SCOTIA—*2020 Fall Guided Hike series, courses, and webinars.* Hike Nova Scotia and 17 host organizations have partnered to offer the 2020 Fall Guided Hike Series from September to November across Nova Scotia. More than 30 hikes

led by local folks and participants qualify to win "trail prizes." These free hikes require pre-registration and will follow public health protocols, including social distancing. Hike NS thanks its partners for organizing the hikes on the ground, and MEC, Goose Lane Editions, and the NS Department of Communities, Culture and Heritage for their support. Check out the detailed schedule, at hikenovascotia.ca/projects-guided-hike-events/.

Hike NS Fall Courses & Webinars: see hikenovascotia.ca/courses-workshops/. In-person courses include Field Leader–Hiking; Navigation Maps & Compass; and Field Leader–Winter. Webinars include Intro to Hiking; Leave No Trace; Tick Prevention; and Wildlife Encounters & Safety.

Dates, locations, and costs vary. Partners include the NS Department of Communities, Culture and Heritage, the Outdoor Council of Canada, Leave No Trace Canada, the District of Chester, AtlanTick Repellent Products, and the NS Natural Resources Education Centre.

For more information, contact Janet Barlow, executive director, Hike Nova Scotia (Mailing address: PO Box 31076 Gladstone, Halifax, NS B3K 5T9; Phone: 902-932-6902).

Nature Notes—Summer 2020

by Howard Williams

On the first day of June, American Goldfinches descended on our feeders, up to 12 at a time. On the same day, friends of mine living elsewhere in Wolfville noticed this behaviour also. My question is: Why that day and no other? Answers, please. There seemed to be no special weather-related reason; perhaps migrants were just passing through?

Early in June it was a pleasure to be struggling through some muddy patches on two local farm tracks and notice deer hoof prints. I suspect that not having heard or seen coyotes these last few months coincides with an increased confidence by deer to browse on the grasses and shrubs associated with farmland.

I have been tickled by the way in which a variety of flowering plants appear to deal with mowing by flowering earlier (and more often) and at a lower height. They seem to be able to do this after only one or two cuts. Would someone please explain how plants have this botanical memory. It is most obvious in lawns, where clover and dandelion both have low-height flowering habits. The process is also clearly evident along various local trails that are mowed, with Queen Anne's Lace, St. John's Wort, and Evening Primrose showing this behaviour.

In late June, fruit on our Amelanchier shrubs (Serviceberry) were just beginning to ripen, showing pink and red through the green. As they ripened, Cedar Waxwings pounced on them, picked them off the bush and then exhibited their characteristic tossing back of the head to move the plucked berry down their gullet. Passing berries to neighbouring birds also occurs; waxwings seem to do this more than any other bird. Why?

I know this is speciesism, but for a while I had a pair of

unwanted Rock Doves attempting to make a nest between my roof and the solar panels that are affixed to it. In the last three years I have seen Rock Doves becoming more common on our street, gradually moving up the hill. Now they have reached my house, and I am not happy. I do not expect them to damage the panels or the associated wiring, but the long fibrous plant material they are using to make a nest is entering the storm-water system and will ultimately cause a blockage. I admit to removing the nest with a crook. My panel installer notes that solar panels are now required by Nova Scotia Power to have a skirt around them to discourage vermin. My panels are now protected by rodent-proof and bird-proof gauze.

"Location, location, location" is the phrase used by realtors to distinguish properties that have advantages over others. Now I see the same effect associated with Tree Swallows. My neighbour and I had identical nesting boxes, simultaneously ready for occupation. My neighbour's box was a different colour and orientation from mine. The choosing process seemed to take several hours, during which time the swallows repeatedly checked the entry size of each box and looked inside. The comparative shopping was completed when swallows decided my box was not up to snuff. My neighbours now have the distinct disadvantage of not being able to go into the part of the garden where their nest box is without being bombarded by diving swallows; perhaps I am not so disappointed after all. What is more important, garden access or the view of their activities?

I have seen and heard fewer Chimney Swifts this year. I have written a review of the local occurrence data, based on surveys by Jim Wolford and others who have stood around in the gathering gloom to observe these birds.

We managed a few nights in Cape Breton in June, physically and socially isolated in a cabin on a friend's 250 ha property, complete with lake and waterfall. Seemed very buggy at that time of the year and warblers in general seemed to be making the most of it while we rushed our walks to evade the swarms of

mosquitos. On a more positive note, there were many wildflowers to be seen carpeting the mixed forest.

It was a joy to see three hummers: mum, dad, and at least 1 child (initially greyish, smaller than an adult and a bit fluffy). An adult male protects the feeder from others, letting the youngster feed at will. Lots of aerial combat. Needless to say, both the hummers and bumblebees perform tracheotomies on the red flowers of the climbing beans. Result—fewer beans than expected and a lot of flowers on the ground. I can recommend planting scarlet runner beans for the hummers; it provides both visual enjoyment and culinary satisfaction if some flowers make it to become beans. Over much of August we were treated to "boy behaving badly." The young hummingbird that has been feeding for several weeks now apparently sees off both a larger male and female, probably its parents. Having seen them off, it preens on top of the feeder or in a neighbouring ash tree until one or other of the adults returns, only to be seen off again. It seems that not just humans have problems with their children. The meaning of the word "share" seems to be causing this young hummer some difficulty, unlike the waxwings that often are seen to share. Why do birds have such contrasting behaviours?

It is good to see Purple Finches back in the garden. They had been absent for about two years. There seem to be more of them this year; no sign of disease in this area yet.

There have been 50-strong gangs of young starlings murmuring around the meadows at the top of Stirling, seemingly alighting to feed on grasses and seed. The crows love the new dirt piles associated with the long-awaited southward continuation of Hillcrest Avenue and the digging of foundations for the property next door, giving them a series of new vantage points.

My ignorance appalls me sometimes. It has taken me 40 years to realize that chipmunks are ground-dwelling squirrels. I found this out in trying to explain tunnelling occurring in our raised vegetable plots in the middle of winter. We caught the

occasional mouse, but nothing big enough to make tunnels; and then we saw the chippy. I tried discouraging it with peppermint oil but found that urine worked a lot better. The chipmunk is no longer tunnelling in the garden, but it still enjoys feeding from the seeds on the ground left by those messy eaters, Mourning Doves.

Now that the task of creating the native wildflower guide is over, we can enjoy the plants that develop sequentially on the Harvest Moon Trail and elsewhere. We note that most weeks there is a handful of native species flowering, including Spreading Dogbane, *Epilobium ciliata*, both Canada and Flat-topped Goldenrods, and Steeplebush. Judging from this year, I think Spreading Dogbane is probably the longest-blooming flower; it has been in flower from June until at least the end of August. I have to admit that there is a substantial amount of introduced plants along the trails, too. You will not find these in the guide.

July has seen an enormous flowering of Queen Anne's Lace beside trails and in the orchards; I don't remember such masses in previous years; maybe there is a cyclicity to these wildflowers. August, by contrast, is the month of yellow-flowering plants, both native and introduced, with the various goldenrods, Tansy, St. John's Wort, and Evening Primrose.

Our first Monarch visited the Swamp Milkweed in the garden on August 2. Miner's Marsh has masses of Common Milkweed, a popular attraction for Monarchs.

Looking at the BNS calendar, my attention was drawn to the First Nations full moon description: birds losing feathers (see elsewhere in this issue).

Old Birds, New Songs

by Patrick Kelly

Anyone who has done birding soon learns that there are times when you have to rely on the sound a bird makes to identify it. It could be too far away to see it clearly, or you don't have binoculars at hand. It could be moving so quickly you don't have enough time to get a good look at it. This is often the case when you flush a bird that you did not know was there. Most of the time, though, the problem is that there are leaves in the way. With time (and patience) one can learn the common calls of many birds. While the regular songs of most species are distinctive enough that you can tell one from the other, the same cannot be said for the various squeaks and chirps that birds make that are not actual songs. (There are those among us who can do this, to my eternal amazement, but for many of us one chirp sounds much like the next.) For some birds, that are here year-round, one can learn just by being outdoors a lot. A good example of this are the sounds make by a small flock of chickadees as they move through the woods looking for food. You can tell they are chickadees, even if you don't hear the usual "chick-a-dee-dee-dee," "phoebe," or "cheeseburger" calls.

I have mastered a few of these. One of the first was the chirp of the Song Sparrow, which I picked up while working on the second *Maritimes Breeding Bird Atlas*. This was because, when atlassing, I would often catch some motion by the side of the road and track it down only to discover that it was yet another Song Sparrow. You don't realize just how many Song Sparrows there are until you work on an atlas. Another species that was also atlas-driven was the chirp of the Dark-eyed Junco. While at first it may sound like a Song Sparrow, it sounds more, at

RICHARD STERN

Northern Cardinal

least to me, like someone flicking a plastic guitar pick. Sometimes the chirp of a single bird may not be enough, but get enough starlings together and you can tell they are starlings, even though each bird is doing its own thing. In the wintertime, one goldfinch, scolding you for letting the feeder go empty, may not be identifiable at first, but when joined by a few more, it acts as a great reminder.

Sometimes, when you hear a new call that is not a song, it could be a common bird making a sound you have not heard before, or a bird you might not have seen before. In the field, you often may not get a chance to track down such a bird, but if it stays in one area you might. In the last week and a half, I found that to be the case. I have been doing a lot of long-overdue garden work and tend to take breaks for tea and reading on the front verandah. For five days in a row, there were birds making noises in the nearby trees. They sounded like someone playing with a bathtub rubber duck, squeezing it over and over. Sometimes it would be only a few calls and then stop, and I would just shrug and return to what I was doing. Several times a day it would continue on long enough for me to stop what I was doing and get my binoculars, determined to track it down. The result

was always the same. I would step outside and it would stop, or the call would be coming from inside the top a dense fully-leaved tree, and no angle would allow a view of it. Any attempt to pish was either ignored or met with silence. I decided to leave the binoculars outdoors.

The next day, while having tea, I heard it again, this time coming from the tree in front of the verandah. It is a White Ash, a tree of well-separated branches, so one can see into it easily. I grabbed the binoculars and slowly stepped forward, and about 5 metres above the ground and toward the back of the tree was an adult Common Grackle. Strange—especially because when I finally got a look at its head, it was making the noise with a closed bill. I looked up again, and this time found the source of the noise in almost the same direction, but closer: two goldfinches, an adult and newly fledged one. The youngster was squeaking and flailing about with its wings trying to keep its balance on the twig on which they were both standing. It was the first time I had seen a juvenile goldfinch. As soon as I knew what it was, it made sense, as they breed late in the summer, feeding to their young not insects, but seeds, especially those of thistle. Jim Wolford once told me that the best way to learn a bird's song is to watch it singing in the wild. I think it works even better if it has driven you crazy for a week first.

I was better prepared the next day when yet another strange sound started up in one of the ash trees in the back yard. This time it was more of a ululating call, coming from a part of the tree quite close to me. I already had my binoculars in hand. It was a bit later in the afternoon, so I got to see a backlit shape that was a bird of some sort—smaller than a robin, but bigger than a starling. What was unusual about it was that it had no tail. So that meant either something that had just escaped with its life, or yet another juvenile bird that had not yet grown its tail feathers. The only thing I could really make out was that the head looked sort of brown and it had a crest. Well that narrowed it down: Blue Jay, Cedar Waxwing, or American Cardinal. It

turned its head enough that I could see some of the bill, and I was definitely leaning toward cardinal when I saw a flash of red, and a male cardinal landed in the nearby ash tree. At that point, the bird I was watching flew off, unimpeded by a lack of a tail, to join its father. With the change in lighting, I got a good view of my first fledged cardinal.

So the next time you hear an unusual bird sound, make the effort to see what it is. You might be pleasantly surprised. Or it might be a Song Sparrow, or a starling. Either way, you will learn something new.

NATURAL HISTORY

What's in a Name?—a Response

by Howard Williams

In our last issue (summer 2020, 47:2), Soren wrote with some feeling and brutal honesty about his personal experiences associated with two online monitoring and recording platforms: iNaturalist and eBird. He found himself becoming almost obsessed with seeing more species of plants and birds and capturing them on camera, rather than immersing himself in the glories of and interconnections within the natural world. I do not take issue with anything he describes, nor with his feelings; in fact, in general I agree with him. However, I do want to show that these platforms can be useful, as Mike Gill showed in his June presentation to BNS. I, too, have been obsessed (my wife would say I still am) with the sometimes competitive nature of the platforms and have nearly come out the other side as a recovering but continuing online platform user. On the iNaturalist site I describe myself as a recovering geoscientist. I did so because I realized that during my career as a structural geologist and then as a groundwater scientist, I had lost track

of the animate part of the environment, concentrating first on hard rocks, and secondly, on water. Over all the years I spent outside in the field, in places as far apart as Sierra Leone, New Zealand, East & West Greenland, and Northern Ontario, I can remember appreciating only a few handfuls of non-geological aspects. It seems that it has been only since I retired that I have had the time and inclination to look at the rest of the environment around me. How sad is that?

Mike Gill, in his June presentation fielded questions about both eBird and iNaturalist. He emphasized that both platforms are excellent sources of data for scientists and environmental organizations to learn about what is happening and where. We need these platforms, largely populated with data from amateurs, for effective conservation: you cannot manage what you don't measure.

People look at or wish to experience nature for different reasons. Some may be interested in ecology, like Soren. Some may marvel at its beauty and want to capture it, such as the many bird watchers and photographers in BNS, or by painting its beauty like BNS member Twila Robar-DeCoste. Yet others may enter the natural environment for exercising the body and the mind, a topic I have mentioned a number of times in these pages. Children, too, are highly susceptible to wonder at nature and learn from it, something that Flying Squirrel Adventures effectively promote. The educational and enjoyment advantages of going out to look and feel nature, even during a bioblitz, are so much better than merely looking at a book, or worse, trying to look at a screen in the sunshine.

Conservation issues usually relate to so-called "native" plants and animals. "So-called" because most species in Nova Scotia are self-introduced since the last Ice Age some 15,000 years ago and as a result are not truly native in a geological time frame. It is all a question of the time frame you choose. Over geological time frames, species migrate, including humanoids. in contrast,

biologists and conservationists tend to look at much shorter time scales, not much more than decades.

Then there are common and introduced plants and animals—are they important too? In his talk, Mike Gill observed that common species are important to conservationists and ecologists. I recall that for a while, even the lowly (how's that for a specist statement?) House Sparrow in London (UK), once an incredibly successful city bird, became threatened. These common, not-necessarily native organisms also respond to climate and environment variables such as habitat. Monitoring introduced "weeds" is just as important if the questions you are asking are about the health of the environment.

NATURAL HISTORY

Ancient Forests in the Minas Basin

by Jonathan Fowler

We bought our house in 2003, which means we started paying for it then. It was already about 70 years old, and even now I find myself wondering about all the other lives this place contained.

Sometimes their artifacts appear unexpectedly, like when that old plastic toy from the 1960s emerged from the garden. My favorite was the nearly empty pint of rum squirreled away above the ceiling tiles in the basement. I sense the agency of a teenager in this, having been one myself.

The places we inhabit reveal themselves gradually, and the same goes for landscapes. Any geologist will tell you as much, especially if you are driving across Nova Scotia, where millions of years of history face you from the highway cuttings. What

these ancient places have to say depends a great deal on how we look and listen (and they say nothing if we don't).

North of Grand Pré, the monstrous tides of the Minas Basin are daily surging. Think of a milk carton. To contain the volume of water pouring into the Minas Basin with each tide you'd need a milk carton 1km wide, 1km long, and 10 km tall. The difference between low and high tide can measure as much as 15 m here (about 50 ft.).

The turbid waters scour away the earth here and smother it with sediment there. Twice a day the rivers emptying into the basin run backwards. Over geological time, the low lands around the tidal estuaries became fringed with glistening mudflats. Salt-tolerant grasses colonized them, attracting innumerable fish, fowl, and human hunters. Gradually, extensive tidal marshes took root.

It was these more than anything that attracted French farmers in the late 17th century. Salt hay could easily sustain animals through the winter, and the nutrient-rich marshes could be repurposed to grow European crops with a few strategically placed dykes and drains. The linchpin of their terraforming technology was the aboiteau, a kind of one-way sluice-and-dam structure that held back the ocean while allowing fresh water to exit the agricultural marshes at low tide.

Here, too, one wonders how the French immigrants came to understand the ancient landscape that was becoming their new home. We sometimes find ancient stone tools and other signs of Indigenous presence at Acadian archaeological sites. Did the French inhabitants ever puzzle over these? If they did, they might have asked their Mi'kmaw neighbours for their thoughts.

And what about the intertidal zone, that vast, almost lunar landscape laid bare twice daily by the evacuating tide. Did people ever wander out there? I suspect they did, if for no other reason than to harvest fish with tidal brush weirs. This Indigenous practice carried on into recent times and was certainly adopted by the French. Perhaps here and there it survives even now, but

JONATHAN FOWLER

19th century industrialism poisoned most of the habitat that formerly supported enormous populations of migratory fish species.

If the curious inhabitant wandered past the weirs and out into the emptiness of the tidal flats, they might have chanced upon scores of tree stumps miraculously preserved on the bottom of the ocean. Today they are 5 to 6 m below mean sea level (16 to 20 ft.) and are only visible for a few hours each day. This constant waterlogging is largely responsible for their preservation.

Modern researchers have identified pine and hemlock out here, and maybe earlier people might have done the same. Incredibly, radiocarbon dating tells us these trees are over 4,000 years old. The forest in which they grew up bordered a Minas Basin that had not yet become mega-tidal. When it did, and as sea level rose, it killed this forest.

The people of the 17th and 18th centuries would have had no framework for understanding radiocarbon, and little concept of the deep antiquity of humanity. For them there were no atoms, no elements, and no periodic table to sort them on. The French inhabitants, if they peered into ancient history at all, probably

did so through the lens of scripture. Maybe these trees were from the world before Noah's flood?

The Mi'kmaq might have told a different tale, of the culture hero Glooscap who long ago broke a giant beaver dam at the mouth of the basin. His doing so let in the sea and created the Minas Basin as it appears today. Interestingly, their version finds some support in modern science.

In a 2010 article in the *Canadian Journal of Earth Sciences*, researchers suggest that a natural sand and gravel barrier formerly spanned the Minas Passage, protecting the Minas Basin from the Bay of Fundy's full tidal range. They think this barrier was breached around 3,400 years ago, subjecting the hitherto sheltered basin to the growing force of Fundy's waves. If these dates are correct, our trees on the flats had already succumbed to sea level rise before the onset of the mega-tides swallowed the neighbouring land and buried these stumps in sediment.

These ancient trees are remarkable survivors from a lost world. There aren't too many 4,000-year-old forests out there, and it is entirely likely that people once walked among these trees without a care for the tide times.

NOTE: *This article originally appeared on facebook.com/archaeologyacadie/posts/2516919731954313 and is reproduced with permission.*

Monarchs—2020

by Larry Bogan

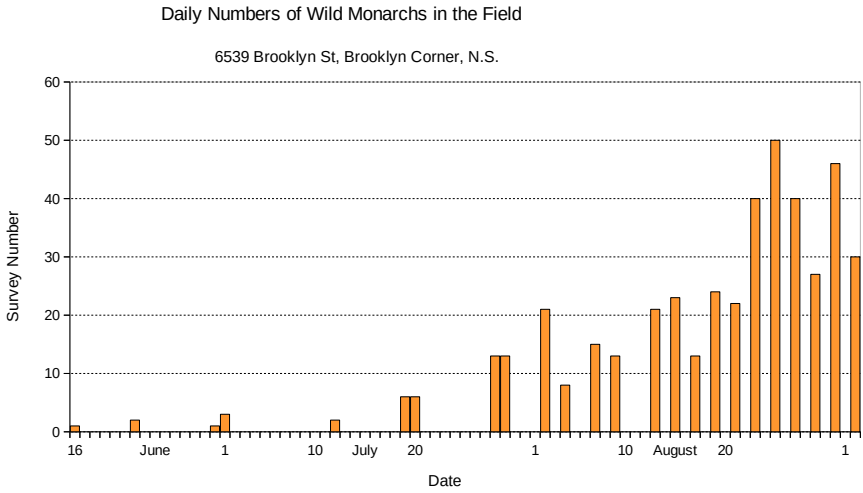
MONARCHS IN THE VALLEY

The migration south by Monarchs started in late August, and I can report preliminary results of my surveys of them during this breeding season. We have been managing a two-hectare field of Common Milkweed and wildflowers for butterflies, and each June and July hope for Monarchs to find it and settle in for the summer.

We saw the first Monarch of the season on June 16, then saw two on the 22nd, but there still was no evidence of laying of eggs. It was only after we counted three on July 1 that they began laying, and we found 13 eggs on July 5. I regularly walk the field in a fixed pattern and count the number of adult Monarchs in our field. The chart below shows the growth in numbers during the summer.

The field is prepared for the Monarchs by mowing areas in late June to induce young milkweed sprout growth. Eggs are laid preferentially on the fresh young plants. The milkweed bloomed a bit later this year and was only coming out when the first Monarch appeared in the field. It was in full bloom about mid-July. The time from egg to butterfly is 30–35 days, and the first adult emerged from its chrysalis on August 5. After that, the number of Monarchs in the field increased, and by late August we were enjoying seeing as many as 50 Monarchs flying.

Although we rescue eggs and caterpillars from the field to protect them from predators, we leave most of the development to the wild ones in the field. We keep track of the wild development by marking locations of chrysalises found hanging on



milkweed in the field. If some get into trouble we rescue them and release them from the house after they eclose. Those we have rescued get tagged with Monarch Watch tags if they are big and healthy butterflies (monarchwatch.org). By September 1, we had released 150 Monarchs and tagged 50. There are still about 30 caterpillars and chrysalises inside and many more in the field.

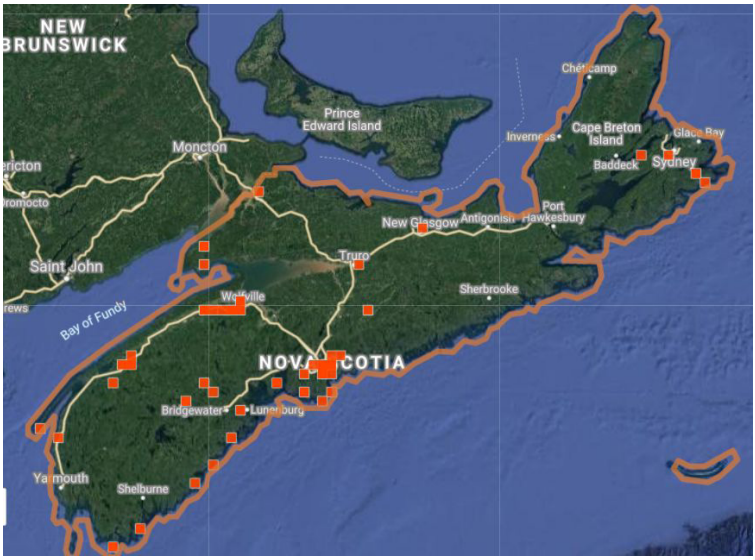
An excellent video has been produced by Jerry Lockett about the Monarchs and our efforts to help them. It is called *A Field for Monarchs*, and you can see it online at vimeo.com/448650247.

Monarchs were also seen in other parts of Nova Scotia in June, but those were only the forefront of the main northern migration. It was early and mid-July when the egg laying really began. The number of Monarchs here was down from the large number in the last two years. I surveyed 24 milkweed patches in the Coldbrook/Cambridge/Waterville area during July and August and reported them to Mission Monarch. Of my visits, two-thirds of the patches showed evidence of Monarch activity.

Mission Monarch (mission-monarch.org) is an online citizen science site to report surveys of Monarch activity in milkweed patches across North America. I extracted the following information for Nova Scotia during June, July, and August. Eleven observers visited 37 milkweed patches of various sizes and examined about 2,500 plants and found evidence of Monarch presence:

eggs	322
caterpillars	178
chrysalises	6
butterflies	87

Of the 103 observations, 70 showed signs of Monarch activity. More eggs than caterpillars, chrysalises, and butterflies was expected because of the time of the Mission Monarch blitz (July 24–August 2). The laying of eggs was so recent that they had



no time to develop to later stages. Details of locations, dates, observers, etc. are available on the Mission Monarch website.

I also looked at the records of iNaturalist and eButterfly online sites. Surprisingly, there were no reports on eButterfly (yet). On iNaturalist, I looked at sightings in Nova Scotia for the June, July, August period; 53 observers reported 89 observations, and 69 of those observations were of adults. Most observations were in southern Nova Scotia and the Valley, with a few scattered in central Nova Scotia and Cape Breton.

I also searched for the same period in New Brunswick; 42 observers reported 84 Monarchs, 10 of them being butterflies. All of the sightings were in southern New Brunswick, below a line between Fredericton and Moncton.

COMMENT

Monarch activity in Nova Scotia was widespread in 2020. While there were not the abundant numbers of the last two years, they had a good summer here and were seen in at least 70 percent of the milkweed patches. Their arrival was late due to a cool spring in the east, but the hot, humid July and August sped their development. Monarchs are still emerging from the milkweed patches here. but these later migrants may not have time to get to their Mexico roost by early November, when they are expected.

The reporting of Monarch activity (and other nature sightings) seems to be moving to iNaturalist, and I wonder if sites such as Mission Monarch and eButterfly might be better served by just becoming projects on iNaturalist.

Multiflora: The rose that by any other name would still be a nuisance

by Patrick Kelly

This summer was perfect—if you were a multiflora rose. In the Windsor area, it was hard to find any place where you could not drive and see masses of the small white blossoms that typify this invasive plant. Ford Edward was engulfed in an ocean of white. Large mounds of it stood out in many empty fields. I do not think most people really appreciate just how much it had spread until this year. It is a little better in my part of Falmouth, as there are not as many open areas for it to take over.

Even so, the plants have been in the wooded section of my property, and for the last while, each year I think I really should get rid of them. I finally reached the point where I decided it was time to stop thinking and try eradicating them. Having gotten rid of a large clump of it from near the end of the driveway many years ago, I know that you could not just cut it out without keeping an eye on the stump, as it will send up new shoots. If these are repeatedly cut back you can kill the plant. Years ago, we had a BNS field trip to a property where George Alliston was successfully dealing with buckthorn, so I knew it could be done over a wide area with some vigilance.

I rolled the green bin down the cemetery driveway and prepared to do battle, armed with a leather glove on my left hand, a pair of pruning shears in my right hand, and a bow saw for the bigger roots. This plant tends to form large single clumps, and as new shoots come out of the centre, the older ones die, leaving lots of dead thorn-covered stems underneath. I pulled

out and clipped off the living branches, getting about halfway to the centre. It was slow going, and at first it did not seem like I was making much progress. Once I worked my way inside, it got easier as I started taking out entire branches, right from the main root. As branches were chopped into smaller pieces, and shoved into the green bin, they did make it easy to pack a lot in, as when I pushed the pile down, all the thorns acted like Velcro, and they scrunched down and stayed down!

More that one large root had a stem as big around as my thumb that went straight up alongside the trunk of a tree. The stem had no thorns and was covered in bark and looked like a normal tree. Four to five metres up in the tree the "trunk" spread like a palm tree, with fronds half the size of the clump on the ground! Pulling them back down is quite a challenge. At one point, with all my weight was hanging on one, it did not want to move. I eventually got it down by pulling from a different angle. In another case, I gave up and cut out the middle three metres of the stem. Let's see the top keep growing now! Under the right conditions, when the end of a stem comes back to the ground, it continues underground as a line of roots and sends up more shoots. Pulling those out is particularly rewarding! The plant does have one thing working in our favour. Its leaves are easy to recognise, and they do not make flowers (and thus seeds) until they reach a certain age.

I now have my fifth green bin full and have gotten most of it. There is an area under the canopy about five by ten metres with only one small hemlock in the middle, and the rest is bare ground or dead twigs. Nothing really grows under multiflora rose, likely due to the ground being covered with dead wood and the light being blocked by the leaves. There is one more clump (I hope it is just one) that is a bit harder to get to, so once that is done the property should be free. Once you know what it looks like, though, you start to see it everywhere.

The ditch across the street had some; not any more! Next up will be young ones growing along the roadside near an empty lot

just down from my house. The other day I noticed that there are more (with seeds starting to set) along one side of the cemetery driveway. The bushes there are as tall as I am, but there should still be enough time to clear this out before the snow arrives. Hopefully then, I can have a bonfire to get rid of the giant pile of dead branches and roots. Next year, should, fingers crossed, be just a case of getting any last-gasp shoots.

NATURAL HISTORY

Traditional Names of Months and Full Moons

by Howard Williams

My treasured and well-used BNS calendar provides the full moon names used by First Nations people in Nova Scotia, the Mi'kmaq. This August, looking for tide times, I noted that the full moon is described as "Birds shedding feathers moon." It seemed to me that only a people in tune with the environment would appreciate that birds usually shed their feathers after breeding, but at a time when food is plentiful and before winter or migration. This got me thinking; what other traditional societies or First Nations use the occurrence of natural phenomena to describe months, or seasons, or full moons? Some of my findings include descriptions and a table, using Maori (New Zealand) and Mi'kmaw names. There is a website that illustrates, in a more general way, the names of full moons in traditional Celtic, English Medieval, and European Pagan societies: lunarphasepro.com/full-moon-names/.

The 100 or so Maori iwi (tribes) in New Zealand use climate-related phenomena to describe their months; there is some variation between tribes, given that New Zealand extends over

1,500 km from north to south. In the list below I have entered the Gregorian, Maori, and Mi'kmaw month names, and the Mi'kmaw full moon names. I have not allowed for the fact that the southern hemisphere climate is six months out of phase with the northern hemisphere.

The Gregorian month names with which we are probably most familiar are based on ancient gods and the Roman numerical system. All rather dull and with no connection to the natural environment. The earlier Celtic and pagan full moon names are slightly connected with the environment (e.g., Harvest Moon, Mead Moon).

In stark contrast, Maori month names relate to effects of temperature, leaf out, bird nesting, fruit ripening, harvesting, and food storing. These month names indicate a much closer relationship between people and their environment than the Gregorian calendar, which to a large extent seems to be related either to religion or just plain numbers.

Similarly, Mi'kmaw month names, like Maori ones, are related to what was happening in the environment around them, especially food-related issues. For example, January is time for the winter cod, frost fish run; March is the time for maple sugar production; in April birds lay eggs; and in September berry picking is significant for building up winter food stores. It is not hard to understand that when one's existence relies on being able to provide for your family from the natural environment, the importance of the time of year and seasonality needs to be emphasized.

Mi'kmaw moon names are even more subtle: they, like the month names, relate to significant flowering, fruiting, and food gathering events.

It seems that western societies lost that vital connection with the environment over two millennia ago. We need to regain that connection.

The following list is arranged by the Gregorian month names followed by the Marori and Mi'kmaq names and their meanings. English versions of the Mi'kmaq moon names conclude each entry.

January—MAORI: *Kohi-tātea* (fruits are now ripe, and man eats of the new food of the season). MI'KMAQ: *Penamujuiku's* (frost fish runs).Tomcod moon.

February—MAORI: *Hui-tanguru* (the foot of Rūhī—a summer star—now rests upon the earth). MI'KMAQ: *Apuknajit* (snow blinding month). Snow blinding moon.

March—MAORI: *Poutū-te-rangi* (the crops are now harvested). MI'KMAQ: *Siewkesiku's* (forerunner of spring). Maple sugar moon.

April—MAORI: *Paenga-whāwhā* (all straw is now stacked at the borders of the plantations). MI'KMAQ: *Penatmuiku's* (egg hatching time). Birds lay eggs moon.

May—MAORI: *Haratua* (crops are now stored in pits; the tasks of man are finished). MI'KMAQ: *Etquljuiku's* (frog croaking time). Frog croaking moon.

June—MAORI: *Pipiri* (all things on earth are contracted because of the cold; likewise man). MI'KMAQ: *Nipniku's* (leaves are budding time). Trees fully leaved moon, 1.

July—MAORI: *Hongonui* (man is now extremely cold and kindles fires before which he basks). MI'KMAQ: *Peskewiku's* (animal fur thickens time). Trees fully leaved moon, 2.

August—MAORI: *Here-turi-kōkā* (the scorching effect of fire is seen on the knees of man). MI'KMAQ: *Kisikwekewiku's* (ripening time). Birds shedding feathers moon.

September—MAORI: *Mahuru* (the earth has now acquired warmth, as have vegetation and trees). MI'KMAQ: *Wikumkewiku's* (mate calling time). Berry picking moon.

October—MAORI: *Whiringa-ā-nuku* (the earth has now become quite warm). MI'KMAQ: *Wikewiku's* (animal fattening time). Mate calling moon.

November—MAORI: *Whiringa-ā-rangi* (it has now become summer, and the sun has acquired strength). MI'KMAQ: *Keptekewiku's* (frost month). Animal fattening moon.

December—MAORI: *Hakihea* (birds are now sitting in their nests). *Kesikewiku's* (winter month). MI'KMAQ: Chief moon.

YOUTH

Connecting to Nature Has Never Felt Better (Flying Squirrel Adventures Field Report)

by Judy Lipp

We're so happy to be back out in the nature with people again! As much as we love our solitude time, Flying Squirrel Adventures is about connecting with people and with nature and connecting people with nature, and so we are grateful to be doing that again since the start of the summer.

We were pleased to run our newly improved Forest Play program in partnership with Kentville Parks and Recreation in the Kentville Gorge, offering 4- and 5-year-olds an important opportunity to play and connect outside. Due to overwhelming response, we doubled our capacity and ended up with two cohorts of kids, running a morning and afternoon session twice a week for six weeks. We are loving the 2x/week format and are seeing the benefits for individual participants and group cohesion as a whole. We look forward to offering this model again in the fall for a slightly younger cohort (3–5 years).

We also forged a new partnership this summer with the Portal Youth Association, delivering weekly nature sessions at their Engage camps for 12–15-year-olds in Canning and Kentville. Other outings included a waterfall walk in the Kentville Ravine with Big Brothers Big Sisters of the Annapolis Valley and a Nature Day at Lockhart Ryan Park for families served by Great Beginnings. Follow-up events and activities are being discussed for these audiences, and we are excited to be serving new families and individuals with new nature experiences.

Through the summer we also continued with our monthly Ask-the-Experts webinar series in partnership with Clean Annapolis River Project. We are so grateful to the generous experts who made our sessions so engaging. We covered the following themes: native plant gardening, marine and coastal Nova Scotia, Monarch butterflies. Recordings of all our webinars are available on the FSA website: valleyflyingsquirrel.wordpress.com/nature-webinar-series/.

We will continue with webinars into the fall—the last Tuesday of the month at 7 p.m.—and will also be exploring how to bring back in-person outings in a way that is safe and manageable. We will keep you posted.

Judy Lipp is the program coordinator for Flying Squirrel Adventures and loves running outdoor nature programs for all ages. If you have a naturalist topic you'd like to share or otherwise want to get in touch, e-mail: valleyflyingsquirrels@gmail.com.

NATURAL HISTORY

Lichens

An excerpt from L.A. DeWolfe's
Happy Hours in Garden, Field & Woodland
(Toronto: J.M. Dent, 1934), 111–3.

[NOTE: *The following may seem a little weird to us. After all, stating that Latin names are not important can certainly cause consternation in some circles. But the little amusing story of lichen origins is pretty accurate—ed.*]

Lichens are dry, hard, pale green plants that grow on tree-trunks, stones, and old fences; the 'old man's beard' (*Usnea*) so common on dead branches of fir and spruce is familiar to every one.

DOUG LINZEY

Most lichens attract so little attention that they have not been given common names. Scientists classify them by Latin names. The commonest one, nearly covering the bark on dead branches of cone-bearing trees, is *Parmelia perlata*. A goblet-shaped one on old stumps is *Cladonia fimbriata*. A red-topped one on stumps is *Cladonia cristatella*. The dry, grey, mossy sort growing on almost bare rock is *Cladonia rangifera*. It is called 'reindeer moss' but it is not a moss. The large leafy lichen on trunks of maple trees, and which our grandmothers used for making dye, is *Sticta pulmonaria*. A common name for it is lungwort.

Latin names are used here to enable you to find the plant descriptions in botanical textbooks. After all, these names are not important. The few given might serve to introduce this class of plants. It will be sufficient to notice different kinds of lichens, their habit of growth; where they grow; their texture in wet weather compared with that when dry. To know that 'reindeer moss' is eaten by reindeer, and that many kinds of lichens give good dyes, teaches that even these insignificant plants are not useless.

How Mother Nature originated lichens is somewhat as follows: Long ago a certain small fungus found it hard to get a living as a saprophyte. Dependent luxury had weakened its energies. Having lost its chlorophyll, it was helpless. It tried living upon a green alga; but the alga had no spare strength to work for boarders. At last a compromise was made. The fungus agreed to absorb water for both itself and the alga. The alga, being green, agreed to assimilate carbon dioxide for itself and the fungus. Thus a partnership was formed which still exists. Every lichen is a combination of algae and fungi working together for the common good.

REVIEW

An Extinction of Our Own

reviewed by Doug Linzey

Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (Picador, 2016).

This year, an entire herd of Woodland Caribou has been declared extirpated—this in a large protected area, a Canadian federal park. The reason for its demise? Human activity.

The fate of this discrete population of caribou in Jasper National Park is just the latest in a history of human interference with nature that spans millennia. Today, in 2020, we complain about invasive species in our gardens and in the local environment. But it seems that on a planetary scale, *we* are the invasive species. You'd think that some of the most hostile winter habitat on the continent would be spared our need to spread ourselves everywhere; apparently not. Our insistence on being allowed to extend our recreation needs wherever and whenever we choose has created the pathways for wolves and other preda-

tors of the caribou to follow these broad-footed ungulates into their formerly inaccessible traditional wintering grounds.

We can't seem to help it. From the first slaughter of a mammoth to the near extinction today of various elephant, rhinoceros, and whale species, we have been working assiduously to rid Earth of megafauna—with a great deal of success. The reasons vary hugely, from finding food (the mammoth, the mastodon) to extracting valuable resources (whale oil and verdigris, rhino horn aphrodisiacs), to pure greed and personal pleasure (trophies, records), to that innate human characteristic of realizing that once a species is proven killable, we . . . well . . . kill it.

The bulk of this book, Elizabeth Kolbert's 2016 *The Sixth Extinction: An Unnatural History*, is devoted to this premise: that *Homo sapiens* is the cause of the extinction event that we are in now, and that it has been underway and accelerating since we and our big brains broke off from the rest of the humanoid results of evolution (not to mention outsmarting our Neanderthal cousins).

Kolbert devotes the first three chapters of thirteen to the previous five extinctions. Apart from the End-Cretaceous extinction (the fifth one), which was caused by an asteroid strike, the previous four lasted in the order of hundreds of thousands to millions of years each to wreak their particular destruction of life. The first, the End-Ordovician, some 440 million years ago, appears to have been a glaciation event, with atmospheric CO_2 levels dropping catastrophically. At this time, the bulk of life was marine, of which 50 to 60 percent of genera were eliminated, and the first plants were appearing on land.

The second, the Late-Devonian extinction, about 360 million years before present (BP), seems to have been largely an ocean event, with anoxia killing off at least 50 percent of extant genera. Specific causes are not clear, but over the course of a few million years may have included glaciation, sea-level change, and an extra-terrestrial impact event in the vicinity of Sweden.

The third, the End-Permian extinction, was massive and

short (possibly less than 100,000 years), eradicating some 90 percent of species 252 million years BP. CO_2 levels went through the roof, as did global temperatures and sea levels. The primary cause of marine death was ocean acidification.

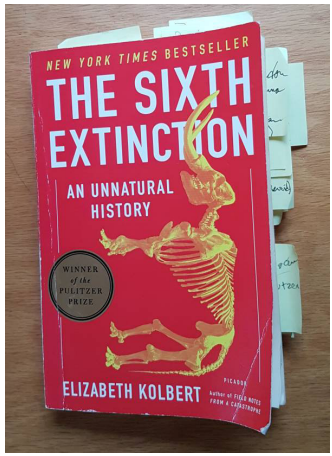
The fourth, the Late-Triassic extinction (~200 million years BP), was another ocean acidification event caused by global warming in which some 30 percent of marine genera were exterminated. Proximate causes are not certain, but intense volcanism is believed to have had a major role. This extinction event was likely spread out over the course of a few million years encompassing a number of causes.

The End-Cretaceous extinction, 65 million years ago, is the one that killed the dinosaurs. The result of a very large asteroid strike, it happened extremely fast and made it possible for mammals and birds to prosper in the following millennia.

In this early part of the book, Kolbert goes into some detail on how our knowledge of past extinctions evolved, featuring such names associated with natural history as Georges Cuvier (who first proposed the concept of extinctions, despite not believing in evolution), Carl Linnaeus, Charles Lyell, Charles Darwin, Walter Alvarez. She also starts to introduce to us specific more-recent extinction events such as the mastodon, the Great Auk, and the chytrid eradication of amphibians worldwide, preparing us for the effect of human agency on the modern natural world.

A staff writer at the New Yorker, Elizabeth Kolbert is an accomplished science reporter. To last at the New Yorker, you have to be good, you have to be curious, you have to go deep. For *The Sixth Extinction*, Kolbert travelled widely, consulting scientists working worldwide to chart the changes wrought by climate change and global warming, and accompanying many of them on their fieldwork. It's the documenting of this latter activity that really brings the fate of the natural world home to readers. What Kolbert is revealing in this book, she has experienced herself. The mass of detail she documents would be over-

whelming to a less-accomplished writer.



I'm not normally a reader who marks up books, but I did with this one. It's full of fascinating detail and implicit warnings of continuing and accelerating disaster. Kolbert's travels included the Panamanian jungle in search of a suddenly disappeared frog species (the chytrid problem) and the island of Eldey in Iceland, the last bastion of the Great Auk. She visits Paul Crutzen, the Dutch chemist who invented the now generally accepted term "Anthropocene." She circles Castello Aragonese in the Tyrrhenian Sea, where an underwater CO_2 vent demonstrates what happens to sea life as seawater acidifies.

Ocean acidification played a major role in two of the previous extinctions and is now increasing (in our lifetimes) as the oceans absorb more CO_2 from the atmosphere.

Kolbert spent time at a research station on a small remote island, composed entirely of coral rubble, on the Great Barrier Reef. The research involves collecting water samples over a long period of time to calculate changes in calcification rates on the reef as more CO_2 is absorbed. The leader of the project, in one of his other guises, has calculated that "with the present rate of temperature change, plants and animals would have to migrate poleward by thirty feet a day, and that a molecule of CO_2 generated by burning fossil fuels will, in the course of its lifetime in the atmosphere, trap a hundred thousand times more heat than was released in producing it." She went to the site of Biosphere 2 in Belize, an experiment in totally self-sufficient living that eventually failed from uncontrollably soaring CO_2 levels in its isolated atmosphere.

One of Kolbert's most fascinating visits was to a long-term study on tropical forest ecology on a Peruvian mountain. The area comprises 17 two-and-a-half-acre plots, arranged vertically, the first of which starts at over 11,000-foot elevation, the final one near sea level in the Amazon Basin. In each plot, every tree over 4 inches diameter is identified, tagged, measured, and mapped. Over the years, growth, death, new trees, etc. are recorded. As atmospheric CO_2 levels increase, some species are able to move upward in response, some too slow to make it in the long run, others not at all. The team estimates that, roughly, "global warming was driving the average genus up the mountain at a rate of eight feet per year." They further estimate that by 2050, under minimum warming conditions, "22 to 31 percent of the species would be 'committed to extinction'." Under a more-likely maximum warming, "between 58 and 52 percent" would disappear. And that's significant, when you consider how many tree species are on these 17 plots (plot 4, for example, at 8,800 ft., alone has 80 tree species, and the lower altitudes have higher species density) and how many of them are unique to that part of the world. All this without even considering the knock-on effects on the biodiversity that currently exists—many, many more species are threatened.

Another South American study in forest ecology is perhaps more relevant to the Nova Scotia situation. Thirty years ago, an American biologist persuaded the Brazilian government to adjust its logging regulations in an area of Amazonia so that some landowners (read cattlemen), who were required to leave 50 percent of the forest intact, to leave 25-acre squares, each surrounded by an equal area of deforested land. As a result, BDFFP (the Biological Dynamics of Forest Fragments Project) has produced many scientific papers and books by researchers from around the world. If you want some in-depth findings from the project, you'll have to delve into it yourself. Suffice it to quote this observation from the author:

> One of the defining features of the Anthropocene is that the world is changing in ways that compel species to move, and another is that it's changing in ways that create barriers—roads, clear-cuts, cities—that prevent them from doing so.

Kolbert goes on to explore bat caves affected by white-nose syndrome, something we're familiar with here in Nova Scotia; she goes to Cincinnati to witness attempts to save the Sumatran Rhino through artificial insemination; and she goes to the Neander Valley in Germany to look into what happened to Neanderthals. (Bottom line: most of us of non-African descent have a bit of *Homo neaderthalensis* DNA in us [a whole 'nother story!], but it's likely that *H. sapiens* contributed to the demise of Neanderthals some 40,000 years ago.)*

So many facts, so much change. It's literally mind-blowing.

What do we learn from looking at previous extinctions and comparing the current situation to them? It's us, *Homo sapiens*, that seem to be the driving force of this one. Previous exterminations have been the result of volcanic eruptions, asteroid strikes, natural causes over millennia. Whatever the driver, though, the common factor is climate change—whether nearly instantaneous in the case of a huge asteroid strike, or more prolonged in the case of an ice age. Whatever the cause, though, mass extinctions involve the death of a huge proportion (up to 90%) of life on Earth.

Elizabeth Kolbert makes the persuasive case that we are in the early stages of such an extinction, not quite as abrupt as the asteroid. but certainly a swiftly moving one nevertheless.

I'm sure that most Blomidon Naturalists do not need more lectures about the threat of global warming, but this book does

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*There seems still to be uncertainty as to whether modern humans and Neanderthals are in fact subspecies, which would be termed *H. sapiens sapiens* and *H. sapiens neanderthalensis*, respectively. The DNA revelation that interbreeding occurred lends credence to the subspecies theory.

arm you with useful background for your discussions with others. And best of all, it tells good stories—of some of the women and men who dedicate their lives to figuring out what's happening to our world. The only world we have: planet Earth.

WEATHER

Summer Weather 2020, Eastern Annapolis Valley

by Larry Bogan

	TEMPERATURE			PRECIPITATION
	Max (°C)	Min (°C)	Mean (°C)	Total (mm)
June 2020	23.2	11.5	17.3	49
(30 yr. average)	(21.5)	(10.4)	(16.0)	(82)
July 2020	25.1	15.2	20.2	115
(30 yr. average)	(24.9)	(14.0)	(19.5)	(84)
August 2020	26.1	14.3	19.5	71
(30 yr. average)	(24.3)	(13.6)	(19.0)	(77)
Season	24.8	13.7	19.3	235
(30 yr. average)	(23.6)	(12.7)	(18.2)	(243)

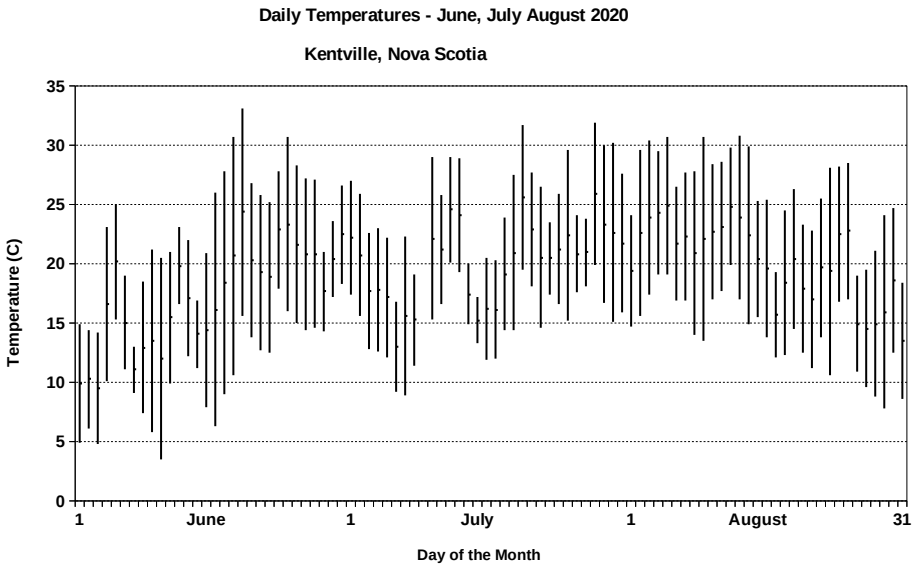
SOURCE: ENVIRONMENT CANADA DATA FOR KENTVILLE, NS (WEATHEROFFICE.GC.CA). 30-YEAR AVERAGES: 1981–2010.

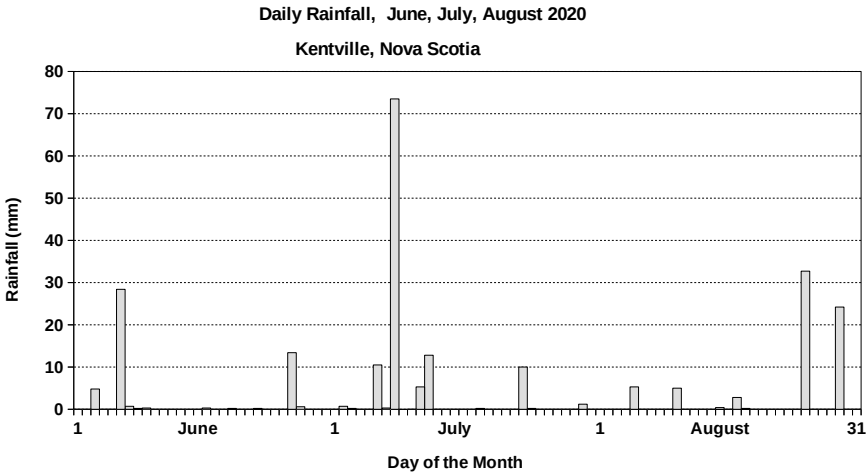
It was a hot summer. Everyone remembers the long periods of hot, humid air streaming up the Atlantic coast from the

Caribbean and hitting the Maritimes. This resulted in the average temperature in the Valley for the whole season being 1.1°C above the 30-year average.

TEMPERATURES

Usually during a season, some months will be above and some below normal, but this year each of the summer months was warmer than the average by nearly 1° (1.3°, 0.7°, and 1.1° for June, July, and August, respectively). Ten days this summer had maximum temperatures above 30°. The long-term average is four days above 30°. It was the humidity that made the days feel like it was in the high 30s. This period lasted from mid-June to mid-August, with a week of cooler weather in early July. See the chart of daily temperatures.





PRECIPITATION

High humidity usually leads to showers, but in western Nova Scotia we were denied the needed moisture. Much of the rain passed north of this area.

In a 45-day period (half the summer), from July 10 to August 24, Kentville received only 43 mm of rain. Rainfall was very localized in thundershowers during this period, so some communities saw more, some less. Four heavy-rain days during the summer gave Kentville a total of 159 mm (one day, July 8, saw half of that, with 74 mm). This amounted to two-thirds of the rainfall for the whole summer. The two rainfalls in late August seem to have marked change from the hot, dry summer to more normal conditions.

The chart of daily rainfall amount shows the spotty rainfall pattern of the summer. The monthly rainfall summary in the table does not tell the real story since it indicates that we received nearly the average summer rainfall. In a normal summer we would have 34 days with some rain, but this year there were only 21.

What's in the Sky?

by Patrick Kelly

Highlights for October 2020 to February 2021

October 1: Full Moon
October 2: Mars 0.4° from Moon (midnight)
October 6: Mars closest to Earth
October 13: Mars at opposition
October 16: New Moon
October 16: Moon at perigee
October 16–18: High tides
October 30–31: Full Moon

November 1: Daylight "Saving" Time ends
November 10: Mercury at greatest elongation (6:00 a.m.)
November 14: Moon at perigee
November 14-16: High tides
November 15: New Moon
November 29: Full Moon*

December 14: New Moon
December 21: Winter solstice
December 21: Jupiter 0.1° S of Saturn (5:00 p.m.)
December 30: Full Moon

January 9–12: Jupiter, Saturn, and Mercury (5:00 p.m.)
January 13: New Moon

NOTE: * For some Full Moons, the date shown is that of the best evening view. Full Moon officially occurs on November 30 at 5:30 a.m. AST. Thus, I have used November 29, as most people expect a Full Moon in the evening sky on the date of the Full Moon.

January 24: Mercury at greatest elongation (5:00 p.m.)
January 28: Full Moon

February 11: New Moon
February 26: Full Moon*

Mercury: Mercury passes between Earth and the Sun on October 25, returning to the morning sky in early November and reaching its greatest angular distance from the Sun on the morning of November 10. At around 6:00 a.m., look in the southeast. Start by finding brilliant Venus, which will be above and to the right of the glow on the horizon where the Sun will eventually rise. From Venus, look along the 7 o'clock position and about halfway to the horizon, the bright "star" will be Mercury. After this date, Mercury appears to move closer to the Sun as it speeds ahead of us, and on December 20 it is on the opposite side of the Sun from the Earth. As it starts to swing back between Earth and the Sun, it will return to the evening sky, and on the nights of January 9–12 you can watch it move higher in the sky as it passes first Saturn, then even-brighter Jupiter. It will reach the point where it appears farthest from the Sun on January 24. By then, Saturn and Jupiter will be too close to the Sun to help you find Mercury. It will be above and to the left of the Sun.

Venus: Venus will continue to be easy to spot in the morning sky. It will spend the upcoming months gradually appearing closer to the Sun each morning until it disappears into the morning twilight.

Mars: Mars was at opposition in October and will spend the coming months still easy to spot in the evening sky, but its brightness will quickly fade as Earth begins to pull ahead of it.

Jupiter & Saturn: These planets have been in the evening sky all summer and fall, and if you have seen them, you will notice that

they have been getting closer together as the months have gone by. This will culminate with the two planets getting to within 0.1° of each other. This is a rare event! The next time they are that close will not be until March 14, 2080; after that you will have to wait until August 24, 2417. As these planets move quite slowly, you will be able to see them really close for a few days on either side of December 21. By early January, they will have started to separate again, and on the nights of January 9–12, you can watch Mercury move upward past them. Make sure you have a good horizon to the southwest. On January 10, the three planets will make an equilateral triangle 2.2° on a side. This is also a rare event. The next time these three planets will be this close will be January 19, 2140!

POEM

The Blue-Bird

by Alexander Wilson

This is extracted from a poem by Alexander Wilson (1766–1813), Scottish-American poet and ornithologist. In P.H. Gosse, *The Canadian Naturalist* (Coles, 1971 [facsimile ed. of Van Voorst, 1840]), p. 242.

He flits through the orchard, he visits each tree,
The red-flowering peach and the apple's sweet blossoms;
He snaps up destroyers wherever they be,
And seizes the caitiffs that lurk in their bosoms;
He drags the vile grub from the corn it devours,
The worms from the webs where they riot and welter;
His song and his services freely are ours,
And all that he asks is in summer a shelter.

The ploughman is pleased when he gleans in his train,
Now searching the furrows—now mounting to cheer him;
The gardener delights in his sweet simple strain,
And leans on his spade to survey and to hear him;
The slow-ling'ring schoolboys forget they'll be chid,
While gazing intent as he warbles before them,
In mantle of sky-blue, and bosom so red,
That each little loiterer seems to adore him.

When all the gay scenes of the summer are o'er,
And autumn slow enters so silent and sallow,
And millions of warblers, that charmed us before,
Have fled in the train of the sun-seeking swallow;
The blue-bird, forsaken, yet true to his home,
Still lingers, and looks for a milder to-morrow,
Till forced by the horrors of winter to roam,
He sings his adieu in a lone note of sorrow.

RICHARD STERN

Eastern Bluebird (Nova Scotia)

BLOMIDON NATURALISTS SOCIETY

2020 Membership Fees & Order Form

Members receive four issues of the BNS newsletter annually.
As a registered charity, BNS issues receipts for all donations.
Members may also join Nature Nova Scotia through BNS.
(Neither BNS nor NNS membership is tax deductible.)

NAME _____

ADDRESS _____

POSTAL CODE _____

E-MAIL _____ TEL _____

In signing this membership application, I/we hereby waive & release the Blomidon Naturalists Society, its executive committee and members, from all claims for injury and/or damage suffered at any function or field trip organized by the Blomidon Naturalists Society.

SIGNATURE _____ DATE _____

NO.	DESCRIPTION	PRICE	TOTAL
_____	Individual/Family Membership	$30.00	$_____
_____	Student Membership	$15.00	$_____
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_____	Nature Nova Scotia Membership	$5.00	$_____
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_____	*Merging*	$25.00	$_____
_____	Blomidon Naturalist hat	$15.00	$_____
	Postage: (calendar $2) (parcel $6)		$_____
	Tax-deductible Donation		$_____
	(Registration number: 118811686RR0001)		
		TOTAL	$_____

Due date is January 1 of current year. Please send membership dues and purchases by e-transfer to treasurer@blomidonnaturalists.ca. Alternatively, address cheques or money orders to BLOMIDON NATURALISTS SOCIETY for membership and other purchases to George Alliston, PO Box 2350, Wolfville, NS B4P 2N5.

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