BLOMIDON NATURALISTS SOCIETY

Blomidon Naturalists Society

FALL 2019 NEWSLETTER

VOLUME 46 · 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.

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CONTENTS

VOLUME 46 ❀ NUMBER 3

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 Howard Williams, newsletter editor:
gruncle.howard@gmail.com

Digital photographs should be submitted to
doug@fundymud.com

Next submission deadline:
November 31, 2019

From the Editor

by Howard Williams

Mea culpa. The summer issue was supposed to include an article about plans for a conservation group dealing with the Gaspereau watershed. I am partly to blame that it was moved to this issue, largely because we had little space in the previous one. There is no question that this venture, initiated by one of our members, Eric MacDonald, and supported by our president, Soren Bondrup-Nielsen, needs exposure to gain members and funding. Soren has written an article on the watershed for this issue.

Greening of the political landscape has occurred in this period preceding an imminent election. Extinction Rebellion had room-capacity meetings for those intending to stand for election, a good sign that there is an increase in the general concern for the environment that we are leaving for generations to come. For a while it seemed as if discussion on the environment would be a partisan political issue (see www.cbc.ca/news/politics/environment-groups-warned-climate-change-real-partisan-1.5251763), but that fear seems to have died down. What were they thinking?

Environment and Climate Change Canada is involved in Arctic PRISM (Program for Regional and International Shorebird Monitoring), which is identifying shorebird population declines (see www.canada.ca/en/environment-climate-change/services/bird-surveys/shorebird/arctic-program-regional-international-monitoring.html). This year, as usual, BNS members have been viewing the southward migration. George Forsyth reported seeing 75,000 shorebirds in flocks on August 9 at The Guzzle. An article by Jerry Lockett on this topic appears in this issue.

Sandhill Cranes have been seen in Stewiacke this summer. Stewiacke is close to the Shubenacadie Nature Park, and I wonder if they are escapees or migratory. I have seen them in early October at Little Mabou on Cape Breton Island.

I hear that White Nose Syndrome in bats is being tested with a probiotic approach in British Columbia. Certainly, something needs to be done if these useful little mammals are to survive.

One of the people who came to BNS meetings this past year was Sam Jean, a researcher at the Harriet Irving Botanical Garden. This summer he was tasked by Bird Studies Canada to study the distribution and health of Chimney Swifts in the Maritimes. I am hoping that there will be a report that we can use to update members on this at-risk species, coupled with local information, usually provided by Jim Wolford.

The State of Canada's Birds 2019 was published in June (39-004-Canada-State-of-Birds_EN_WEB-2.pdf). The news for song birds is not good. In a subsequent issue I will be looking for someone to provide a synopsis of that report. Any offers?

The Chronicle Herald published an article on August 8 about Jim Frost, who has for the last 20 years provided floating nests for ducks. This year he modified the nest by adding vegetation and created an artificial loon nest on Sunken Lake. Within a few hours, loons had found the floating platform and started nesting. Nesting was successful, and the loons left the nest and started living on the lake. The article also described how a Bald Eagle attempted to rob the nest and how Jim used a garden rake to fend off the predator. This article shows how small efforts by local people can make the difference between successful and unsuccessful nesting in the face of multiple threats. Recall that the Spring 2019 Newsletter contained an article describing how the Mersey-Tobeatic Research Institute is also creating floating nests on hydropower lakes.

Birds with black or dark coloration on their upper wing surfaces are apparently more efficient flyers than those with pale colours, due to thermal effects (*New Scientist* [August 3,

2019, p. 18], citing *Journal of the Royal Society Interface*, DOI: 10.1098/rsif.2019.0032). Warmer wings promote airflow over the wing, especially for birds that soar, such as gulls, Ospreys, and Northern Gannets. In sunlight, dark feathers heat up more than light feathers. In addition, a common wing colour pattern is beneficial: the researchers from the University of Ghent state that "white plumage at the base of the wing where it attaches to the body and black feathers at the wing tips could increase lift while flying." Wind tunnel experiments have shown that the temperature difference between the light and dark feathers creates convective currents in the air above the wing that move from the cooler base of the wing to the darker tips. This boosts the airflow over the wing, which may make flight more efficient. Read more at www.newscientist.com/article/2210970-dark-feathers-give-birds-hot-wings-that-may-save-energy-during-flight/#ixzz5wnPrLcT7.

I referenced so-called 100-year floods in a previous issue but am reminded of it by an article I read recently that indicated the occurrence of floods of this magnitude are currently occurring much more frequently and are becoming too frequent for comfort (www.sciencedaily.com/releases/2019/08/190822165010.htm). According to the website, researchers have developed new maps that predict coastal flooding for every county on the US eastern and Gulf coasts; they determine that 100-year floods could become annual occurrences in New England and happen every one to 30 years along the southeast Atlantic and Gulf of Mexico shorelines. New England is not far away, Nova Scotia should expect a similar style and magnitude of climatic change.

Ah yes, *Homo roadmenderii*, seen very rarely in the winter and spring months of the year but becomes increasingly ubiquitous in the summer. This beast feeds on decaying and fractured asphalt and is known to use large and noisy tools. Sadly, this beast seemingly cares little for its adverse effects on its sister species, *H. itinerantii*. It does, however, provide employment opportunities for *H. flagmanii* and reduces the need for

H. mechanicus. Perhaps climate change will have an effect on the distribution and need for *H. roadmenderii*, just not in my lifetime.

The board has suggested that it would be appropriate to determine whether the last page of the Newsletter, "Sources of Natural History," is accurate. Accordingly, I have contacted a number of the experts and received replies from some. If you see an error in or omission on this page, or have suggestions for populating it, please contact the editor. We seem to require experts that could deal with First Nations issues and fish.

CLUB NOTES

From the President

by Soren Bondrup-Nielsen

It is the day after Dorian, and the wind has died down dramatically. On our farm we had a tree leaning precariously toward the road, and I have been worried that it would take down the power lines. It has been leaning but resting on another tree for about a year. We have had Nova Scotia Power out, but they were not responsible for taking it down, so they said. With Dorian, I was sure it would come down and cut power to our street. Dorian blew from the north to northwest and was so powerful it actually lifted the tree upright, and it fell in the opposite direction. I was ecstatic, but we still lost power, as did about 80 percent of the province.

The summer seems to have gone terribly fast, as they always seem to do. It is probably a function of my getting older, but our summers are short; I had a fire going in my wood stove into the early part of June this year, and with the power outage, we had a fire in the wood stove one morning to take the dampness out of the air.

In June we had our last regular meeting with Jamie Simpson

talking about wild foraging. He quizzed us on the species of a number of plants he showed us, and collectively we got them all. Given the number of questions afterwards, this was a popular presentation. Jamie has a book on wild foraging called *Eating Wild in Eastern Canada: A Guide to Foraging the Forests, Fields and Shorelines*, published by Nimbus.

Each year I do a forest walk. This year I was asked by a group in Harbourville to take part in what they called a Forest Magic Workshop together with Doug Kemp. Doug owns a beautiful woodlot near Harbourville, and the workshop/tour took place on his property. We had a great turnout with over 60 people. A few BNS members took part on the sunny day. Doug walks his woodlot every day, often planting trees or trimming the lower branches off certain species that he would like to grow tall and straight with smooth trunks. Doug introduced folks to fire logs which was a new thing to me. If a spruce tree blows over, he cuts the trunk into sections about a foot and a half long. He then cuts a cross, almost the length of the log. You place the log upright on the ground with the cross exposed and light a small fire on top. Because the cross is cut most of the way through, a chimney effect occurs, and the log burns from the inside. They are great curiosities, but they are also useful to boil a pot of water on or for roasting wieners and marshmallows.

The summer started out being wet, but by August it was dry; the usual late-summer mushroom walk was postponed. It should be taking place in the early fall.

This summer, I was contacted by two people, Sonya and Sean, from Ontario. They are undertaking to walk Canada's Great Trail from Newfoundland to the west coast. They are doing this to promote the conservation of birds and their habitats. They asked various nature groups if there was an opportunity to give a presentation on their walk. On September 3 they were in Wolfville, and a number of you as well as Acadia students came out to hear their message and learn about their hiking adventure. They figure it will take about three years to cross the country. They gave a fascinating talk, and there were lots

of questions afterwards. If you are interested in learning more about their walk and maybe would like to make a donation, see their website: www.comewalkwithus.online.

Well, that is about it. I hope everyone has a wonderful fall.

CLUB NOTES

Highway Cleanup

by Howard Williams

The Blomidon Naturalists Society board approved a suggestion that BNS become involved in the provincial Adopt-a-Highway program. We have now received approval from the Department of Transportation and Infrastructure Renewal to undertake a cleanup of both sides of Highway 1 from the Landmark School on the western fringe of Wolfville, as far west as Deep Hollow Road.

The optimal times to do this is would be before grass growth in spring (late April) and after plants have died down, but before hard frosts and snowfall in the late fall. The first cleanup will be scheduled for a quiet Sunday morning in late October or early November.

Members and others over the age of 12 who would be interested in participating should contact me by e-mail (gruncle.howard@gmail.com). Bags, gloves, and hazard vests will be provided. One adult will be needed to supervise up to six youths aged 12 to 17.

Our participation in this program means that BNS will be clearly named on official signs at each end of our assigned stretch of highway.

Please contact me if you have questions about the level of activity, timing, etc.

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.

November 18, 2019—*BNS Annual General Meeting*. At the AGM, board members are elected for the coming year. This year, some long-serving members will be retiring, so there is a need for some fresh talent on the board. If you or someone you know is interested in helping guide your club through the next year, please let someone on the board know (see page 4 for contact information—opposite the table of contents in this issue).

We also welcome a guest speaker in November. Watch the website and Facebook page for details.

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).

Summer Nature Notes

by Howard Williams

I love summer—trees leaf out, warblers descend in droves, we get heat and sunshine. After a record cold May, farmers can get into their fields to prepare the soil for planting.

We took a trip to Shubie Park in Dartmouth in the first week of June and found seven different species of wildflower flowering in the mixed hardwood forest there (Pink [Purple] Lady's Slipper, Rhodora, Lily of the Valley, Starflower, Bloodroot, Wild Sarsaparilla, Clintonia). The Ospreys had already fledged,

Red-eyed Vireos were calling their "Here I am, where are you?" Ovenbirds were insistently calling for "teacher."

Strolling through Coldbrook Provincial Park we saw much Shinleaf (*Pyrola elliptica*) under the pervasive tree canopy on July 13. Maybe it's the prepared mind being more fortunate, but this year Shinleaf seems to have been the flower of the year, turning up along many of our walks both on the mainland and in Cape Breton.

The downside of summer versus spring and winter is that warblers are consistently playing hide and seek with anyone trying to identify them. Extreme patience is required. It is during the summer that we learn the importance of hearing rather than seeing birds. I bought a couple of birdsong CDs at a local book sale, and while they are a useful reference, sadly I haven't found the inclination to listen to them sufficiently carefully to learn new songs. Good ironing entertainment perhaps.

In June we spotted a Luna Moth at Home Hardware in Wolfville. I wonder what such a moth does to deserve such size and pastel colouring. Indeed, what purpose does the Luna Moth have? None as far as I can determine, other than to eat (in its larval stage, of course) White Birch leaves. The moths do not visit flowers, and their population density is so low that they do not represent a threat to trees. I have to be careful not to stray into the intellectual minefield known as teleology here. Do any animals, including man, have purpose, other than to reproduce and further their genetic material? Some creatures just exist.

This spring and summer I have been visiting Tangled Garden in Grand Pré to look at birds, identify them, and assist with any questions about birds that visitors might have. I have been visiting once a week and will describe the seasonal changes in a subsequent article. Since late April, I have seen or heard 34 species of birds there or in the immediate vicinity.

By mid-July, and through August, American Robins, Song Sparrows, and Northern Cardinals have received intelligence that they should return to and strip our berry-laden bushes,

including Chokeberry, Red Osier Dogwood, and Serviceberry. It is a good job we planted them specifically for their benefit—otherwise I would be disappointed; they are really efficient.

On YouTube there was recently a video of an unspecified hummingbird waking from its overnight torpor (www.youtube.com/watch?v=iNOKW8NkAVM). It's well worth watching this process that protects the birds from overnight cold. Has anyone here seen such activity locally?

Beside the Harvest Moon trail in Wolfville there has been a raven nest for some years in pine trees north of the Acadia Sportsplex. Each year, as the baby ravens become larger and hungrier, they yell in a tenor voice, while the parents respond to the rather pitiful cries in their bass voices. I suspect that if I lived nearby, the novelty of this chorus would soon wear off. Residents of St. John's, NL, have been complaining about the noises gulls make early in the morning (www.cbc.ca/news/canada/newfoundland-labrador/gulls-making-unbearable-noises-ungodly-hours-1.5239869). Explanations vary from parental encouragement of newly fledged youngsters, to warning off cannibalistic predatory gulls. If we left less or no food for them to feed on in the form of garbage and litter, gulls might not populate our cities to the same degree. Apparently, the noise is largely all our fault. Remember, a watched gull is less likely to take your lunch. According to an article in *New Scientist*, crows living in urban areas have higher cholesterol than those in rural areas, which may be partly due to the fast food they scavenge in cities.

In our garden and locally we began to see Viceroy butterflies on July 8 and Monarchs on July 18. We had to be reminded of their characteristics, using a great poster we bought at the Shubenacadie Nature Park a few years ago, published by the Canadian Wildlife Federation in 2015. I have it hanging up in our bathroom and study it when visiting rather than dipping into Harry Frankfurt's little book *On Bullshit*, published by Princeton Press. Now we know how to sex Monarchs (males have a black spot on the hind wing, females do not). Monarchs

CREDIT: HOWARD WILLIAMS

Maple Cottony Scale on dogwood

making the long journey back to Mexico are not gendered until they get there.

We discovered Maple Cottony Scale (www.mortonarb.org/trees-plants/tree-and-plant-advice/help-pests/cottony-maple-scale) on our Purple (Red) Osier dogwood in July. According to the Morton website, "The eggs hatch into pale yellow-green crawlers in late June or July and migrate to the underside of leaves, feeding along the veins and midrib by withdrawing sap from the plant parts." In late summer, mature winged males mate with immature females. The males, lacking feeding mouth parts, die a few days after mating. Before leaves begin to drop in fall, the immature females migrate to the twigs, where they attach themselves for overwintering. They produce one generation per year.

Ruby-throated Hummingbirds are welcome in our garden, and we have had up to four at a time zooming around this July and August. There is a downside to hummingbirds; they feed from runner bean flowers, being very red and at a safe height. Not only feeding from, they also destroy the flower; it drops

off before it has time to form a new bean. (Hint, if you want to feed hummingbirds, use French runner beans, Crocosmia, Turtlehead, and Hosta.) As seen last year, hummingbirds seem to spend a great deal of time and effort chasing each other off the feeder and flowers. Is this birds behaving badly, or Darwinism at work?

Another aspect of feeding birds, this time with black oil sunflower seeds, is that there is much wastage. Well, not wastage exactly, just a lot of sunflower plants adjacent to the feeder. This year I have noticed in the garden, and elsewhere in town, that by the time these sunflowers have mature flowers, they do not follow the Sun; only young plants do, as their French common name (tournesol) would suggest.

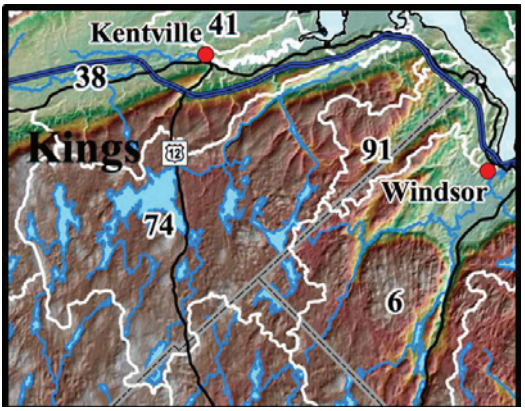
CONSERVATION

Gaspereau River Watershed Conservation Group

by Soren Bondrup-Nielsen

The Gaspereau River flows from Gaspereau Lake on the South Mountain down into the Gaspereau Valley and empties into the Minas Basin. The watershed of the Gaspereau River is diverse, with second growth Acadian Forest on the South Mountain and pockets of old-growth forest primarily on steeper slopes. The lower part of the river is dyked. The valley is dominated by farmland with crops and dairy cattle and now increasing numbers of vineyards on primarily south-facing slopes. There are numerous single-dwelling residences in the valley, which are highly sought after due to the beautiful landscape.

All is not well in the Gaspereau River watershed. Issues of serious concern include deforestation and the loss of species



The Gaspereau watershed (region 74)

habitat, sea-level rise and flooding, fisheries, hydroelectric dams. Also, there are areas of significant cultural value and natural beauty. Currently, there is little protecting the watershed environment, nor is there a unified voice to speak out on issues that affect the watershed or the communities that live in it. Individually, our voices are lost under the noise of tree harvesters and rampant, unchecked development.

People living within the watershed are the ones directly affected by this development. An effective way to address environmental concerns is for the inhabitants to get together to become more aware and better able to decide on actions to be taken.

Local site-specific conservation groups have proven successful in raising awareness of environmental concerns and can unite a community to take action. Two such well-known local conservation groups are the Clean Annapolis River Project (CARP), incorporated in 1990 with the mission "To enhance the ecological health of the Annapolis River watershed through science, leadership and community engagement," and the Jijuktu'kwejk (gee gee WOK tok) Watershed Alliance, established in 2016 with the vision of a "A swimmable, drinkable and fishable Jijuktu'kwejk River."

Eric MacDonald, a BNS member, approached me last winter suggesting that we establish a conservation group to focus on the Gaspereau River watershed. I thought it an excellent idea, but it will require support by you, the Blomidon Naturalists, as well as locals living within the watershed. Initial actions that can be taken include a survey of interests within the watershed, mapping the watershed, mapping the threats, conducting water testing, surveying of plants, animals, etc.

If you are interested in getting involved with establishing the Gaspereau River Watershed Conservation Group, please contact Eric MacDonald (eric-macdonald@hotmail.com) or me, Soren (soren@bondrup.com).

ENVIRONMENT

Can We Prevent the Sixth Mass Extinction?

by Soren Bondrup-Nielsen

Within the last year, two reports were published warning humanity that populations are declining and species are going extinct at alarming rates. In late 2018 the World Wildlife Fund published the *Living Planet Report* (wwf.panda.org/knowledge_hub/all_publications/living_planet_report_2018/). It shows that between 1970 and 2014 there was a massive global decline in abundance of mammals, birds, reptiles, amphibians, and fish. The data are based on population changes over that 44-year period for 16,704 populations of 4,005 species. Species in freshwater and tropical realms are faring the worst. In May 2019, the United Nations Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services published its

Global Assessment Report (www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services) based on analyses of 15,000 scientific and governmental reports; it paints a similar picture of global declines of populations and species.

Climate change is now recognized as a scientific fact, although politically and economically it may not be accepted by all. People are beginning to see and experience the effects of climate change and are taking action such as the spreading global phenomenon known as Extinction Rebellion. However, it is harder to witness and experience the decline in populations and loss of species, which will ultimately have as devastating effect on humans as will climate change. The current loss of species caused by humans has been called the sixth mass extinction event, occurring in what is being called the Anthropocene.

Planet Earth formed about four and a half billion years ago. Earth was a ball of molten rock that slowly cooled. About three and a half billion years ago, when Earth was a billion years old, continents had formed, and there was an ocean and the first bacteria appeared. A huge variety of bacteria evolved and were the only life on planet Earth over the next three billion years. I like to think that the three billion years of bacterial evolution was a giant biochemistry "experiment." Mutations in the genetic code of the bacteria resulted in a large variety of useful proteins making bacteria capable of living in a variety of environments and making use of various resources. After this long experiment, multicellular organisms began to appear.

In the subsequent half billion years, diverse organisms evolved at a tremendous rate, eventually resulting in us humans. The number of species today is unknown. Biologists have named close to two million species, but the species remaining to be discovered number in the millions, ranging from a conservative estimate of five million to as many as fifty million; the species left to be found are mostly tiny but not insignificant.

During the last half billion years, there have been five massive species extinction events. The last such event occurred about

sixty million years ago and caused the disappearance of the dinosaurs. This extinction event is considered by most to have occurred due to an asteroid, about ten kilometres in diameter, slamming into what is now the Yucatán peninsula. It is estimated that the asteroid gouged a crater almost thirty kilometres deep and caused a plume of debris, much of which exited Earth's gravitational pull and went into irregular orbits around the Sun. The asteroid vaporized and set fire to everything up to two thousand kilometres away. The Earth plummeted into darkness due to ash and debris in the atmosphere, and fires burned everywhere around the globe. It is estimated are that about 75 percent of all species went extinct, and only 0.0001 percent of individuals of the remaining species survived. This is equivalent to all present-day humans on Earth dying except for those of us in Nova Scotia. The devastation was beyond massive. But slowly life returned, and new species evolved, including the vast diversity of mammals.

Biologists assume that the number of species present today represents only about 2 percent of all the species that ever existed. Most species are present for only a relatively short time before they go extinct or evolve into new species; life is dynamic and ever-changing. But mass extinction events are devastating. They most likely occur over a very short time, but it takes hundreds of thousands, if not millions, of years before new species evolve and ecosystems stabilize.

Our human time scale is very short in comparison to speciation events, and even though the current extinction event is occurring relatively slowly over tens of decades, the evolution of new species will be as slow as in the past. When populations diminish and species disappear, ecosystems change, and the fewer the species left behind, the lower the resilience of these systems and the less their ability to sustain human populations. Ultimately, our survival depends on resilient ecosystems providing a huge variety of functions to support all life.

The loss of populations and species are a direct result of

humans. The UN report states that humans have significantly altered three-quarters of land-based environment and 66 percent of marine environments. More than a third of the world's land surface and nearly 75 percent of freshwater resources are devoted to crop or livestock production. Land degradation has reduced productivity by 23 percent of the global land surface. 33 percent of marine fish stocks are being harvested unsustainably. Urban areas have doubled since 1992. Plastic, pollutants, and toxic substances are pumped into the atmosphere, waterways, and ground. The list goes on and on. This is all very disturbing, but there is still time to do something. We can reverse the amount of greenhouse gas being emitted into the atmosphere, and we can stop the decline in populations and species. But this will require a concerted global effort.

Since 1970 the global human population has more than doubled from 3.7 to 7.6 billion people. On a finite planet, there is no room for a population that keeps increasing. So-called developed countries have primarily stopped growing, and it is tempting to blame this runaway population growth on the so-called undeveloped countries. But wait—why are some populations continuing to grow while others have stopped growing? We generally attribute a high standard of living to reduced growth rate. Those countries that have adequate, and often more than adequate, food, shelter, education, health care, and more tend to stop growing. On the path to a high standard of living, populations go through what demographers call a demographic transition. That is, the death rate initially falls because of good food, shelter, and health care, but the birth rate remains high. After a while, the birth rate falls. The desire to have kids diminishes for a variety of reasons, and a balance between birth and death rate is reached, and the population stabilizes.

So it can be argued that if the developed countries of the world want the world population size to stop increasing, we should do everything we can to help the undeveloped countries reach the same standard of living that we enjoy. Another argu-

ment, however, is that the problem we are having with environmental degradation is not caused by people in undeveloped countries but by the high standard of living in developed countries. The concept of the ecological footprint determines the amount of land needed to sustain a person. People in undeveloped countries have dramatically smaller ecological footprints than do people in developed countries. The concept of the ecoson (ecological person), which focuses on per capita energy use, is interesting in the human population growth debate. When you convert population size to ecoson size, the US ecoson size is nine times larger than that of India, three times larger than that of China, and 36 times larger than that of Indonesia. Then you can ask, what is it that should be controlled? It has been argued that if all populations on Earth had the same ecoson as that of developed countries, we would need more than one Earth to supply the necessary resources.

Biodiversity cannot be saved by establishing a few protected areas where we humans take a hands-off approach. The recommendation of the 1992 Brundland Report to protect 12 percent of the Earth is not enough. The new target of 17 percent will not be enough. Estimates are that we need to protect 50 percent of the Earth to preserve biodiversity. This is already not an option. What we need is a radically new way for humans to live within the biosphere.

The WWF report recognizes, and is brave enough to promote, that we need to rethink our economic system. An economic system based on continuous growth is not sustainable on a finite planet. We may be able to reduce greenhouse gas emission within our growth economy because switching to alternative sources of energy can lead to economic growth—but not so with population and species loss. Continued economic growth requires continued use of resources even if we substitute types of resources and increase efficiencies. Our current economic system is not sacrosanct. We made it up, we can change it! Can we find an answer to the biodiversity crisis caused by

our current economic system by applying our current economic system? I doubt it.

Insanity is defined as doing the same thing over and over again and expecting different results. We need to stop "worshipping" material goods, as most spiritual practices in most cultures around the world have discovered in the past. We need to adopt an alternative economic system. Such systems already exist: Steady-State Economics and Donut Economics, for example.

NATURAL HISTORY

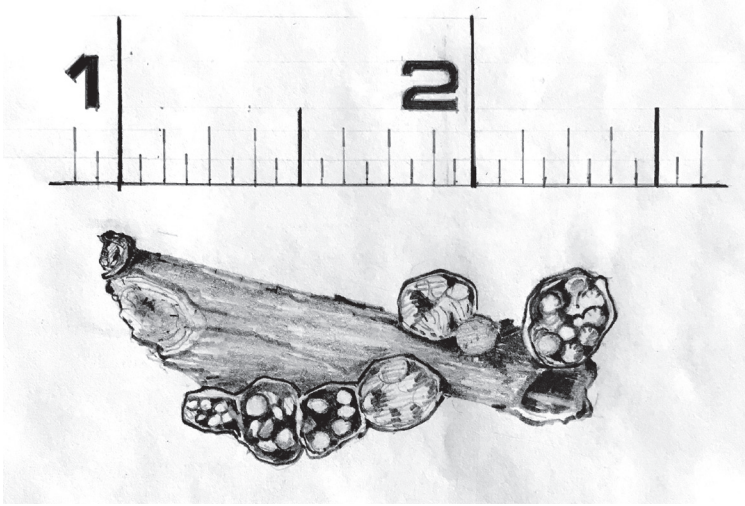
Fascinating Fungal Findings

by Barry Yoell

Readers of the Blomidon Naturalist's Newsletters who have long memories may remember that about a decade ago I wrote several articles based on the fascinating beasts that had shown up in my garden. Giant water-spiders, 30-cm Horse-hair Nematodes, a mouse that could count, snow fleas, and other wonders that allowed me to write my quasi-scientific notes. Then, suddenly my muse seemed to die, and coincidentally all the beasts disappeared, and the garden retreated into its flower and veg mode.

Recently, however, a new, and to me astonishing resident has been found, and my literary muse piqued. Sabine, our good friend and keen garden helper, found a strange minute structure in the asparagus bed and brought it to me so that we might try to identify it. It turned out to be white egg Bird's Nest Fungus, and we have a fine crop! Evidently it is not a rare visitor but one so small and well camouflaged that it escapes all but the most vigilant.

As the name suggests, this fungus produces "eggs in a nest."



CREDIT: BRIAN MCKIBBIN

The former, in our case, are white, about 0.5–1.0 mm in diameter, around half a dozen in each nest, which is cup shaped and about 1.0 cm in diameter and perhaps 0.5 cm deep. The eggs are the fruiting bodies of this fungus and are attached to the bottom of the nest by a coiled leash. The eggs are distributed, when ripe, by a rain drop hitting the nest at an appropriate angle and splashing the eggs out of the nest, evidently up to 1 or 2 m away, where they germinate and start a new fungal colony.

I am told that there are five genera in this family (Nidulariaceae). Our example evidently is *Crucibulum laeve*. They are all saprobic, feeding on decomposing organic matter, often wood chips or bark mulch. Because of this, they are helpful in the garden, aiding composting and contributing to the fertile soil. As they are also rather beautiful, they are welcome to live in our garden. A minute ornamental in our asparagus bed.

Amazing what new friends one finds when one looks carefully.

Meadowvale Bioblitz

by Ian Manning

Saturday, June 8—BNS, in partnership with Lichens NS, hosted a mini-blitz field trip at a beautiful Kingston Sand Barrens site in Meadowvale, Nova Scotia. The purpose of this trip was to get participants to experience this amazing ecosystem and to help improve the knowledge-base of the ecosystem and the diversity of organisms that call the barrens home. Thank you to the Deveau family for allowing us access to the sand barrens and parking, the three field trip leaders, and the numerous knowledgeable and kind participants.

The Kingston Sand Barrens, known in some circles as the Atlantic Coastal Heathland, or perhaps better to Valley locals as "that interesting habitat off the 101 in Kingston," is a globally rare ecosystem found only in the northeastern United States, particularly in the Nantucket / Martha's Vineyard vicinity. Sand barren habitats are characterized by deep, sandy, rapidly draining soils and a plant community dominated by Pine Barren Goldenheather (*Hudsonia ericoides*) and Broom Crowberry (*Corema ericoides*), among other species.

The sand barren ecosystem in Kingston has closely associated wetlands that occupy the depressions between sand ridges. The sand barrens and these wetlands play an important function for groundwater recharge, an ecosystem service that is particularly important in the western Annapolis Valley, as many residents rely on shallow wells that draw water from these same aquifers. Keeping this habitat intact and healthy is vital for maintaining excellent water quality for the community.

Participation for the morning was excellent. The event attracted over 20 people, including the field trip leaders and

organizers. Each mini-field trip yielded some interesting observations, and more observations were collected independently from photographs uploaded to iNaturalist.

The morning was structured as a series of three walks. Participants could arrive and stay for whatever talk they were interested in. In total, 21 adults and 2 children participated. Each talk was a separate topic:

- Sand Barrens Birds with James Churchill (ACCDC)
- Sand Barren Lichens with Alain Beliveau (EC Smith Herbarium)
- Sand Barrens—The Habitat—with Nick Hill (Fern Hill Institute)

The bird walk started off with James giving participants a rundown about birds in the sand barrens. The sand barrens are not particularly well studied relative to other local habitat types, and it was noted that there is still a lot to discover. James noted that barrens birds that could be found on site included Vesper Sparrow, Common Nighthawk, and Pine Warbler. In total, the group found 36 species (see the BNS website for species lists). Highlights included sightings of several species at risk, including Eastern Wood-pewee, Evening Grosbeak, Brown-headed Cowbird, Eastern Kingbird, and Veery. At 9 a.m. many folks headed back to the parking area to meet with Alain for the lichen walk while others continued on the bird walk.

The lichen walk was full of enthusiastic participants crawling around the open areas and scrubby Rhodora edge habitat armed with loupes, high-powered cameras, and collecting materials. While the majority of lichens in the sand barren were of the *Cladonia* genus, diligent searching revealed several notable species, including the Salted Starburst Lichen (*Imshaugia aleurites*) and *Parmeliopsis capitata*. It's interesting that none of the lichens of the *Citraria* genus were found on this outing despite the seemingly ideal habitat.

At 10 a.m., the group met up with Nick, who gave an overview of the ecological and human-use importance of functional

sand barrens and heathlands and began by examining a soil pit in the nearby wetland. Nick showed participants remnants of charcoal within the peat. While it's not known what time period this charcoal is from, its presence offers clear evidence of the natural disturbance regime of this ecosystem.

With Nick enthusiastically leading the charge, participants explored the dry open areas and adjacent peat lands, stopping to examine various plants in flower, lichens, and other interesting nature observations along the way. Nick pointed out several pitfall traps set by Sherman Boates, earlier in the week. The traps had been set to capture ants, the driving force behind seed dispersal of the abundant *Corema* throughout the upland areas. The trip concluded in a beautiful wetland just west of Easy Street, teeming with the purple flowering Rhodora (*Rhododendron canadense*).

The mini-bioblitz helped to bring attention and appreciation to an amazingly beautiful functional ecosystem in our region—a globally rare habitat in our own backyard—unfortunately one that has become increasingly rare due to development and agricultural pressures. There is a growing appetite in the Annapolis Valley to appreciate, protect, and restore this amazing environment. Perhaps BNS should consider taking action on conserving this amazing gem. For more information, or to be kept in the loop on future sand barren activities, please send an e-mail to ianmanning4@gmail.com to indicate your interest.

A complete species list from the event is viewable at http://bit.ly/sandbarrenspecies.

French Heartworm

Adapted from an article in Island Naturalist *(PEI) under the editor's name, J. McAskill*

Jenna Priest, a Masters in Biology student at Acadia University, recently discovered French heartworm (*Angiostrongylus vasorum*) during a study of coyote carcasses voluntarily submitted by Nova Scotia hunters and trappers.

Four of 284 coyotes in four counties of mainland Nova Scotia were infested. Previously in North America, it had been found in a coyote and red foxes in Newfoundland and in red foxes in West Virginia. This exotic parasitic nematode is endemic to Western Europe but is now widespread in South America and Africa. It has been found in four coyotes, one each from Kings, Hants, Halifax, and Lunenburg counties. About 100 coyotes in total were examined for the study.

The intermediate hosts of this nematode utilize certain terrestrial and aquatic gastropods (snails and slugs) and the European common frog (*Rana temporaria*) to develop to the larval L3 stage. When various canids (including foxes, coyotes, and domestic dogs) eat a gastropod infested with this organism, the parasite can be transferred to it and develop into the L4 and L5 stage. The latter is the adult stage that breeds to produce eggs that develop into the L1 stage, which is transferred via feces to infest the intermediate host. The symptoms of French heartworm infestation are respiratory distress, bleeding disorders, and central nervous system symptoms that can lead to death. Fortunately, there is a medication to control it in dogs, and it does not transfer to humans. (Adapted from J.M. Priest et al, *VetRecord* 2018 [doi:10.1136/vr.105097] and Wikipedia, *Angiostrongylus vasorum*. The topic has also been addressed in *The*

Chronicle Herald, Feb 14, 2019, and by Ian Fairclough, "New-to-Nova Scotia parasites found in coyotes," in *The Guardian*, Feb. 15, 2019).

CONSERVATION

Sharing the Coast with Shorebirds—the Video

by Jerry Lockett

For the last few summers it has been my good fortune to spend many hours photographing and filming one of Nova Scotia's most spectacular wildlife events—the annual visit of massive flocks of migrating shorebirds to the Minas Basin. I have been drawn back to this event every July and August by the sheer magnificence of their synchronized flight, and by my admiration for the pluckiness of these tiny birds that undertake a migration of staggering proportions. They weigh in at only 40 grams or so, yet fly from here nonstop to South America, a distance of some 4,300 kilometres.

The flocks, as most readers of this Newsletter will know, although a mere fraction the size of the ones that visited the Minas Basin a decade or two ago, can still number in the several thousands, comprising predominantly Semipalmated Sandpipers, along with significant numbers of Semipalmated Plovers and other closely related species. Such flocks are found in each arm of the upper Bay of Fundy.

I soon accumulated a few hours of video footage that I had originally intended to include in a large, long-term project about the way that the massive tidal range in the Bay of Fundy affects all manner of marine and coastal creatures that live in or around the bay, and some of the environmental issues that are

CREDIT: JERRY LOCKETT

affecting them. But several segments of this big-picture story have had a habit of developing into short documentaries in their own right; and so it was with the shorebirds. (The big-picture project is still a work in progress.)

In August 2018 some of my footage was aired on the popular CBS network magazine program, *Sunday Morning*, which wraps up every episode with a short "Nature Moment." Subsequently, CBS posted an expanded version of the segment on Facebook, which has had more than 390,000 visits and some very positive feedback. It can be viewed at cbsn.ws/2PdcH9k.

This success was gratifying, but although wildlife films can have a great "wow" impact and can alter the way people think about wildlife and respond emotionally, the question of whether or not they influence positive action on conservation issues is open to debate.

In the Semipalmated Sandpipers' Arctic breeding grounds, global warming may be adversely altering their habitat; in South America, where they overwinter, they run the gauntlet of subsistence hunters; and here in Nova Scotia, where they are stopping for about a three-week period to "fuel up" on mud shrimp (*Corophium volutator*) for the next leg of their journey, they

CREDIT: JERRY LOCKETT

may be in jeopardy from human disturbance on the beaches they rely on to rest and roost at high tide, when they are limited to very narrow strips of shoreline. When disturbed, whether by human recreational activity or predators such as the Peregrine Falcon, they take to the air and burn up valuable fat resources that they need for their migration.

This was the story I really wanted to tell, and as a result I decided to put together a short documentary focusing specifically on the need for shorebird conservation, highlighting some of the conservation efforts being made in the region, both past and present. A discussion with Jaya Fahey, who at the time was working with the Space to Roost program, set the ball rolling. She was surveying recreational users and photographers like me about our use of the beaches. Space to Roost is a collaboration between a number of organizations, including the Blomidon Naturalists Society. Its aim is to evaluate and reduce human disturbance of shorebirds at key high-tide roosting sites in the Minas Basin, including Evangeline Beach, the Guzzle, and Avonport.

And so the production began. A number of biologists generously shared their expert knowledge in on-camera interviews.

Sue Abbott, who at the time was with Bird Studies Canada, anchored the whole video with a clear overview of the issues; I was delighted that retired CWS biologist Peter Hicklin, who was in the forefront of research in the 1980s that established the extraordinary migration of the birds, agreed to share an account of his early research; Donald Sam of Nova Scotia Natural Resources provided an excellent account of early conservation efforts in Nova Scotia; Kerry Lee Morris-Cormier of Nature Conservancy of Canada spoke passionately about that organization's pioneering conservation efforts at the Johnson's Mills Shorebird Interpretive Centre in New Brunswick; and Jaya Fahey provided an excellent account of the Space to Roost program and how successful it has been.

I thoroughly enjoyed working on this project, and I am glad to say that it has been well received in the conservation community. But I am always hoping to reach a wider audience, so I invite all BNS members to watch the (11m 30s) video online: vimeo.com/338745854/e02adb7af3.

If it grabs your interest and you empathize with the message, please share the link and support shorebird conservation!

Monarchs in the Annapolis Valley—2019

by Larry Bogan

2018 was an excellent year for the population of Monarchs, and this year is also looking good. Our 2-hectare field is full of Common Milkweed (*Asclepias syriaca*), which was sprouting by mid-May this year. It is a perennial, and its roots overwinter. The damp spring helped growth, and by the time the Monarchs arrived the plants were large. The Monarchs, however, prefer to lay eggs on the small, fresh growth, so in late June I mowed several patches in the field as well as some new pathways. These areas quickly came back in small milkweed plants and this is where we saw most of the eggs and caterpillars when we did our surveys.

Our first Monarch (female) of 2019 arrived on June 8, and other sites in Nova Scotia saw their first Monarchs about then. However, there were only scattered numbers, and we were lucky to see that Monarch stay around for the next month. We found a couple of caterpillars, probably laid by her in our field, which pupated on July 17 and eclosed on July 30 and 31. We found few eggs—the first only on June 22.

The early June arrivals were not the main migrating population. Most Monarchs arrived between July 7 and 17, and by the end of that period we had 12 or more residing in our field, and the egg laying picked up dramatically.

Nova Scotia is at the far northeast limit of the Monarch migration, and it takes two or three life cycles for the butterflies in the spring to reach us from their overwintering area in Mexico. This year we had a cool, wet June, as did the New Eng-

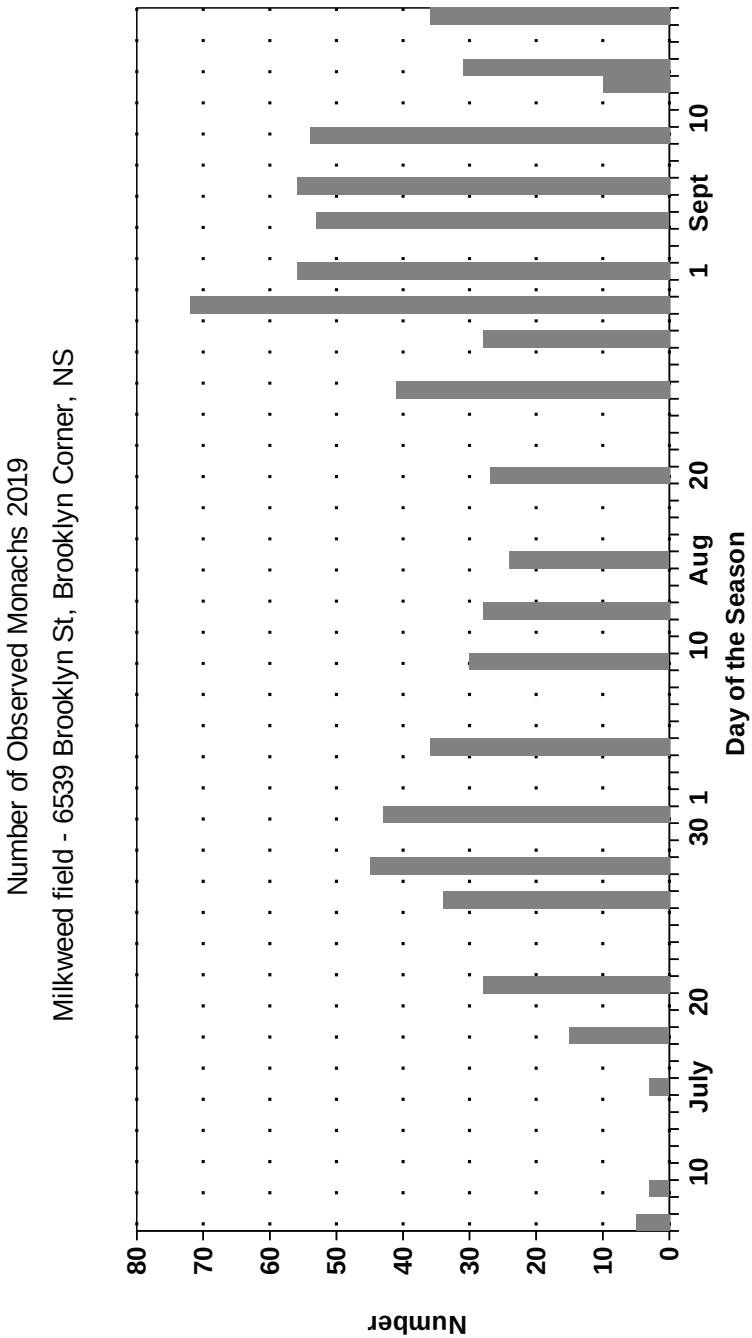
land states through which they must pass. As a result most of the breeding population arrived later this year (for more details see monarchwatch.org/blog).

The milkweed blossoming peaked in mid-July just as most of those Monarchs arrived. There was lots of nectar for their activities. In the evening before sunset we would find 5 to 15 Monarchs frolicking over the sunny part of the field as if they had finished the work for the day and it was time to have some fun. We had more breeding Monarchs arrive than we did last year, but those last year arrived at the end of June.

In the past Alison and I have protected as many eggs or larvae as we could to help build the population. However, we have limits and there is some evidence that reared Monarchs are not as successful as wild ones at migrating back to Mexico. The latter fact has caused Monarch Watch (monarchwatch.org) to recommend preferentially tagging wild Monarchs and only larger ones. Following these recommendations, we shifted our efforts from rearing indoors to monitoring the breeding in the field. Alison found chrysalises in the field and flagged them. She found so many she used up her 50 flags quickly. She monitors them daily and rescues any that are in danger. I make regular counts of adults in the field using a standard walking path to measure numbers coming out of the field.

The accompanying chart shows the number in the field during the summer. It appears that there was an influx during July, which then died off in late July to be replaced with their offspring emerging from the field in mid-to-late August. By early September we saw a large number of Monarchs from the field, with still many chrysalises present. However, we expect by the end of summer most will have emerged and headed south.

In 2018 the huge increase of Monarch butterflies in our field began in the first week of August while this year it was the third week. Monarchs stop breeding about mid-August, and last year the new Monarchs stayed in the field and laid more eggs to create another generation. This year the Monarch popula-


Number of Observed Monachs 2019
Milkweed field - 6539 Brooklyn St, Brooklyn Corner, NS
Number
80
70
60
50
40
30
20
10
0
10
July
20
30
1
10
Aug
20
1
Sept
10
Day of the Season

tion increased after they become sexually inactive and begin to migrate south, so there was no second generation in 2019.

We still had many reared Monarchs in the house but not the number we had last year. They were fed full milkweed plants (kept in water for freshness) and confined to the plant or a large screened-in cage. They were allowed to pupate on the plant or in the cage. As of this writing, we have released 190 Monarchs, of which we tagged 95, and 75 of the releases were considered wild, since they were from chrysalises rescued from the field and had spent all their caterpillar life in the wild.

Mission Monarch 2019

Mission Monarch (mision-monarch.org) is run by the Space for Life Insectarium in Montreal. It is a continent-wide citizen science program documenting the Monarch's reproductive success. It is part of an international research and education effort aimed at saving the migratory populations of this endangered species. I have been participating for the last four years and encouraging other naturalists in Nova Scotia to get involved.

During the summer, we survey milkweed plots in our areas for the life stages of the Monarch butterflies. Each year, extra effort—a blitz—is scheduled at the end of July; that is when most observations are done as part of a continent-wide program.

I surveyed 20 Common Milkweed plots this year and found one or two Monarch butterflies at most of them, with at least eggs and small caterpillars. This year because of the late arrival of the majority of the spring migration, Monarchs were mostly in the egg stage at that time. The results indicated a good year overall and not just at our field.

I have extracted Mission Monarch data for all the surveys in Nova Scotia for this year (July 1 to September 3):

16 observers
37 milkweed plots visited
52 visits

1938 plants inspected (1/3 Swamp, 2/3 Common Milkweed)
438 eggs found
345 caterpillars found
139 adult Monarchs seen
50 chrysalises found (all in the Bogan milkweed field in August)

It is encouraging to see more observers visiting more sites this year and the success they had in finding Monarchs. Their results show that there was a widespread breeding of Monarchs in Nova Scotia in 2019. For news of the success of the Monarchs this year, follow the reports of Monarch Watch (monachwatch.org).

NATURAL HISTORY

The Last Bright Star

by Patrick Kelly

As a young child with a passion for astronomy, I learned the constellations from a book called *Find the Constellations*, by H.A. Rey (yes, the same guy who wrote the Curious George books). In fact, it is still in print and I still recommend it to people along with his other book, *The Stars*. Like many starting guides to the night sky, you start with the things that are easiest to see, the brightest stars. Most of the easiest to find constellations have a bright star to mark them. Some, like Orion, have more than one. They are signposts of the seasons, returning each year to their places and bringing their constellations, and memories, with them. At the end of the book was a list of the "15 Brightest Stars" that could be seen from Canada and the United States. A nice round number. There was a note about one more you could see if you lived in the really southern parts of the United States, but I had no plans as a child to go there, and until recently my travels have all been east, west, or north from Nova Scotia, so my list of 15 was all I needed. But as I got

more involved in astronomy, I realized that there were other bright stars, and a lot of them were brighter than many of the 15 that I knew. So if one wants to see all of the bright stars, how many are there?

The brightness of stars is confusing to those who first encounter it. It dates back to Hipparchus of Nicaea, a Greek astronomer and mathematician who lived from c. 190 BCE to c. 120 BCE. I have always found it ironic that we count the years in which he lived "backwards" (in effect: –190, –189, stopping at –120) because his system for measuring the brightness of stars also seems backwards to many people, especially first-year astronomy students! He is credited with essentially grouping stars together into "magnitudes," the brightest being "first magnitude," the next brightest "second magnitude," and the stars that you could barely see were "sixth magnitude." As you can imagine, there were not that many first-magnitude stars compared to the number of second-magnitude stars, even more of stars of third magnitude and lots and lots of sixth-magnitude stars. You can see why this is backwards. When you measure mass, electrical current, etc., the more of the thing you are measuring, the bigger the number. With magnitudes, the brighter the star, the smaller the number.

In the 1800s, as science progressed, more exact ways were determined to measure stellar brightness, and it was noted that a change of five magnitudes in brightness was pretty close to a factor of 100, and the system was slightly redefined so that a change in brightness of 100 corresponded exactly to a change of 5 magnitudes. (Thus a change of one magnitude is a change of brightness of the fifth root of 100, or about 2.512.) This is where the magnitude system gets even weirder. Some of the first-magnitude stars are a lot brighter than the rest. This meant that with the new scale you needed magnitudes that were brighter than first. What to do? Let's do this: a star that is one magnitude brighter than a first-magnitude star will be *zero* magnitude. One brighter than that will be –1 magnitude. Yes, this is how

is really works! Sirius, the brightest star in the night sky has a magnitude of –1.47. At their brightest, Mars and Jupiter get up to (or down to, if you think about it) magnitude –2.9, Venus a blazing –4.9! On this scale, the Full Moon is around –12.9, and the Sun is –26.7, which is about 400,000 times brighter than the Full Moon.

So where does that leave someone wanting to see all the bright stars? Clearly, Sirius is brightest, but at what point do you draw the line to cut off the list. As you go to fainter stars there are more and more of them, so you either has to pick a reasonable number at which to stop (say, the 25 brightest) or stop at a point where you no longer think of them as bright. As you go to dimmer stars the difference in magnitude to the next-faintest star becomes smaller and smaller, with eventually a lot of stars having the same magnitude. So where is there a big enough gap that will also give a relatively short list? The gap between Regulus (magnitude 1.39) and Adhara (1.50) is a good place to stop. There is a gap of 0.11 magnitudes and the magnitude of Adhara, at 1.50, places it exactly halfway between stars of magnitude 1 and 2. That gives the following list of 21 stars: the 15 stars from my childhood plus six others, listed in italics.

Magnitude	Name	Constellation	Declination (°)
–1.46	Sirius	Canis Major	–17
–0.74	*Canopus*	Carina	–53
–0.27	*Rigil Kentaurus**	Centaurus	–61
–0.05	Arcturus	Boötes	+19
0.03	Vega	Lyra	+39
0.08	*Capella*	Auriga	+46
0.13	Rigel	Orion	–8
0.34	Procyon	Canis Minor	+5
0.46	*Achernar*	Eridanus	–57
0.50	Betelgeuse	Orion	+7
0.61	*Hadar*	Centaurus	–60

0.76	Altair	Aquila	+9
0.76	*Acrux*	Crux	−63
0.86	Aldebaran	Taurus	+17
0.96	Antares	Scorpius	−26
0.97	Spica	Virgo	−11
1.14	Pollux	Gemini	+28
1.16	Fomalhaut	Piscis Austrinus	−30
1.25	Deneb	Cygnus	+45
1.25	*Mimosa*	Crux	−60
1.39	Regulus	Leo	+12

**Better known as Alpha Centauri, the nearest star system to the Sun.*

The column giving declination is important. Declination is one of two numbers that gives a star's position on the celestial sphere. It is the equivalent to latitude on Earth and is measured in degrees, from +90° at the north celestial pole to 0° on the celestial equator, and southward to −90° at the south celestial pole. From the latitude of Nova Scotia (effectively +45°), any star with a declination between +45° and +90° never sets, stars with declinations between (+45° and −45°) will be visible for part of the year (with those closest to −45 barely making it above the southern horizon), and stars with declinations between −45° and −90° are never visible. You can see that the six stars listed in italics are not visible from Nova Scotia, no matter how badly you would like to see them! For every degree south that you travel, a star that you can never see here in Nova Scotia is closer to being seen by one degree. Since Canopus misses our cutoff by 8° (53°−45°), to see it you would have to go at least 8° south, which would place you at the latitude of Tennessee and Southern California. That would only put Canopus just above your southern horizon; to see it clearly you need to go farther south. When you stand on the equator you get to see the entire celestial sphere, from +90° to −90° declination. The advantage

is that no stars are hidden; the disadvantage is that none are up all the time.

In the summer of 2017 I went to Peru, and despite the clouds, light pollution, and mountains, I was able to see Rigil Kentaurus, Hadar, Acrux, and Mimosa, as they are all in the same, relatively small, part of the sky. In fact, these six stars are crammed into a rectangle that is only 20° by 6°, smaller that the area occupied by the Big Dipper. In February of this year, I finally went to the Caribbean and stayed at a resort that had very dark skies. There, below Orion and Sirius, was a really bright star, my first sighting of Canopus. It was about 50 years from the first time I had heard of this star until I was able to see it! It's too bad that it is close to Sirius, as it is clear at a glance which is the brighter.

This tale now brings me to the last bright star, Achernar. It is at almost the same declination as Canopus but is about 40° west of it. That means that from the Caribbean, at that time of the year, Achernar sets at the same time as the Sun. If I went back to that area in November, when both it and Canopus will be up at the same time, along with all of the bright stars in the Orion area, it would be a very pretty sight.

NATURAL HISTORY

An Ice Dam with a Twist: Matters Arising

by Patrick Kelly

This is a brief follow-up to the article in the summer issue (Vol.46 No.2) about my adventure with the ice wall at Scots Bay.

I posted a video of the view from the top of the wall on the BNS Facebook page. Hugh Chipman shared the video, along with my interest in whether this was a common event. He got

the following response: "This is common here in winters when it gets cold enough for the ocean water to start to freeze along with any fresh water entering. The older locals called it *sposh*. If the wind blows long enough from the west it can build a pretty high wall of this stuff. What's on the water eventually forms into pans."

So it looks as if someone looking for a similar adventure should be able to do it when it is really cold, with a strong wind from the west and a rising tide.

SEEN IN THE WILD

Cougar

by Ed Sulis

July 10, 2019—I was driving south on Highway 12 when at 8:15 a.m. and 6 km north of New Ross a cougar crossed the road in front of the truck. The early morning sun enhanced the long tail and the long sleek profile of this large red/brown cat. It was travelling west (from left to right) at a point where the road was slashed quite wide, and I was able to slow down to extend the view time. The cougar was close, travelling quickly but not in panic mode and not in any danger of being run over—an amazing sighting of this majestic animal.

Positive identification awaited my return home later in the day and a search for photos and information on the internet. This was a large animal, particularly when seen full length and including tail: near half the road width.

Here Is What Nature Canada Has to Say

- The eastern Cougar is an endangered species

- Range is Ontario, Quebec, New Brunswick, and Nova Scotia
- Life span is up to 21 years
- Male up to 2 metres in length and up to 100 kg
- Masters of camouflage
- Usually hunt at night
- Rarely chase prey, locate prey by sight and sound, slink silently and pounce
- Favourite food White-tailed Deer, but also take Beaver, Porcupine, other small mammals
- Travel long distances and mark with scratched scent posts
- Typically dispatch prey with prolonged neck bite

Canada's largest most powerful cat, a majestic creature, needs large and undisturbed tracts of forest habitat for survival.

The question remains, do cougars actually exist in eastern Canada? Until there is confirmation that the eastern cougar still survives, no direct recovery action will take place for this species. Cougars are protected from hunting and killing in Nova Scotia, New Brunswick, and Ontario. Despite this their population does not seem to have increased.

The deer population in New Brunswick is high enough to support 140–250 cougars. However, logging, mining, roads, and other activities have driven cougars away in search of areas that are free of human disturbance. In order for the eastern cougar to survive, areas of land must be protected from human activity.

What You Can Do

- Report any cougar sighting to the Canadian wildlife service and your provincial department of wildlife.
- Learn about the cougar and share your knowledge with others to stimulate concern for this beautiful and endangered animal.

- Reduce your use of paper and other forest products to lessen the pressure to log the remaining cougar habitat. Always recycle paper and cardboard and buy recycled products wherever possible.
- Be aware of and question local development plans that could destroy cougar habitat.

What We in Nova Scotia Can Do

Encourage the provincial government to put Crown land to good use; that is, leave it alone to revert naturally to the Acadian forest—for the cougar, for all of us, and for all living things for generation after generation.

I shall remember this unique sighting forever.

YOUTH

Old Ways in New Places: Foraging with Newcomers to Nova Scotia

by Robin Musselman, YNC Coordinator

On a sunny fall day last year, the number 9 bus pulled up to the York Redoubt National Historic Site, and six immigrant families from Syria and the Congo stepped off the bus. They were greeted by Jamie Simpson, author of the newly published *Eating Wild in Eastern Canada: A Guide to Foraging the Forests, Fields and Shorelines*, volunteer biologist Sally Gallant, and me, representing the Young Naturalists Club (YNC). We welcomed them and led them on a foraging wild edibles field trip.

Lani Poce from Immigrant Services Association of Nova Scotia (ISANS) accompanied the group along with several Arabic and French interpreters. YNC has worked with ISANS

for the past few years to organize field trips to accessible natural areas for new immigrant families. In the fall, Lani suggested a field trip focusing on foraging wild edibles, because many newcomers to the area had expressed interest in this topic. Foraging for food, beyond traditions like berry picking, is regaining interest in Canada, but for immigrants from other countries it is often a natural way of life and something they want to do in their new home. Jamie and Sally led us on a two-hour walk around York Redoubt. We identified a number of different berry plants, apple trees growing wild, and edible plants like plantain, dandelion, and bayberry. We also talked about nuts and seeds that could be made into tea or eaten, and we scoured the shoreline for molluscs, seaweed, and other treats from the sea.

These field trips are very beneficial in introducing new immigrants to local natural areas and educating them about some of the plants and wildlife found in their new home. The trips help them feel more comfortable spending time outside and encourage them to revisit areas on their own in the future. Thanks to support from organizations like the Blomidon Naturalists Society, YNC has been able to hold several of these field trips and other related programs and events each year.

Visit www.yncns.ca to learn more about past and future activities.

The Uninhabitable Earth

Reviewed by Howard Williams

David Wallace-Wells, *The Uninhabitable Earth: Life After Warming* (Duggan Books, 2019), 320 pages.

A large part of this rather depressing book justifies the current trend in thought that we should think in terms of climate emergency rather than climate change. Almost every sentence refers back to issues that have happened in the recent past, such as excessive heat and drought, hunger induced by a changing climate, drowning next to the sea, hurricanes, wildfires, dying oceans, unbreathable air, plagues, forced immigration, and other natural disasters. All these natural events have been exacerbated by the very rapid increase in greenhouse gases over the last few decades.

There are several memorable lines in this book; here's one that stuck out for me: If climate change is a shark, then water resources are the teeth. Think about it. Without water in the right place and the right time, we are nothing. The book also introduces the work of Eunice Foote, an American scientist who, in 1856, was the first to draw the connection between carbon dioxide and the greenhouse effect.

If you read this book, and you should if you are at all interested in your future and that of your children and grandchildren, you will likely get angry that you did not do enough, early enough, to make a difference in arresting the climate emergency that is now only a few years away. As a result of having read this book, all I can recommend is that we should all use our rights as citizens (by voting, writing, joining—there are many ways to participate) to encourage and even insist on a rapid change in the way we address the climate emergency. So far we seem to have simply allowed precious time to be wasted, and thus

have compromised our children's future and perhaps even our grandchildren's very existence.

Until the local Armageddon, this book is available within the Annapolis Valley library system.

WEATHER

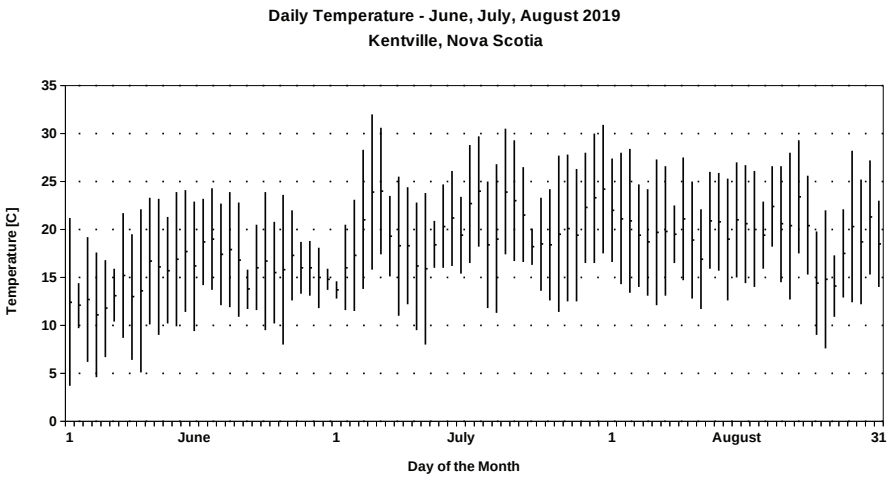
Summer Weather 2019, Eastern Annapolis Valley

by Larry Bogan, Cambridge Station

	TEMPERATURE			PRECIPITATION
	Max (°C)	Min (°C)	Mean (°C)	Total (mm)
June 2019	20.7	10.0	15.4	175
(30 yr. average)	(21.5)	(10.4)	(16.0)	(85)
July 2019	25.8	14.2	20.0	50
(30 yr. average)	(24.9)	(14.0)	(19.5)	(84)
August 2019	25.3	13.8	19.6	137
(30 yr. average)	(24.3)	(13.6)	(19.0)	(77)
Season	24.0	12.7	18.4	362
(30 yr. average)	(23.6)	(12.7)	(18.2)	(243)

Source: Environment Canada data for Kentville, NS (http:weatheroffice.gc.ca). 30-yr. averages: 1981–2010.

Overall, it was a normal summer, but averages can be deceiving. Remember the cool, wet June and the huge rainfall at the end of August from tropical depression Erin.

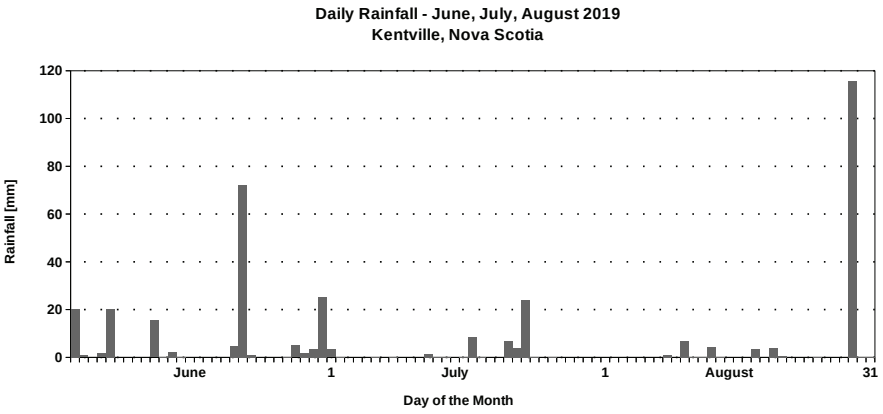


Temperature

June was the cool month this summer, while both July and August were warmer than average by about 0.5°C. Overall, the season was a nice typical Nova Scotia summer in the Annapolis Valley. We had five days that hit 30° and over but no long sweltering week-long hot periods. As you can see in the graph of daily temperatures, July and August were uniform, with only a few days of cooler weather near the end of August. The high temperatures for those two months averaged a full degree above average, indicating daily sunshine was above normal.

Precipitation

June had over twice its quota of rain, but after the end of June the summer became very dry. Between July 24 and August 9, we received barely 1 mm of rain. The change came on August 29, when the Annapolis Valley was hit with a rainstorm from tropical depression Erin, which gave Kentville 116 mm of rain



within 18 hours. My rain gauge (farther west in Brooklyn Corner) recorded 140 mm that day. For the rest of July and August there was only 72 mm of rain, less than half the average 160 mm for the two months. That 116 mm that fell put the summer over the top of normal rainfall amount by 20 mm.

Private Weather Stations

I have a weather station at my home and report the results to Weather Underground (http://www.wunderground.com). In the last couple of months, I changed over from a Windows to a Linux server and changed reporting software. Now I also send the weather data to a website that you can access at wx.nature1st.net. Monitoring the weather is a popular hobby, and there are a dozen private weather stations reporting to Weather Underground in Kings County.

What's in the Sky?

by Patrick Kelly

Highlights for July 2019 to December 2019

October 3: Jupiter 1.0° south of Moon (5 p.m.)
October 5: Saturn 1.0° north of Moon (6 p.m.)
October 13: Full Moon
October 28: New Moon

November 3: Daylight Silly Time Ends
November 11: Transit of Mercury (11 a.m.)
November 11–12: Full Moon†
November 26: New Moon
November 28: Mercury at greatest elongation west (a.m.)
November 29: Saturn 2° north of Moon (5 p.m.)

December 11: Full Moon*
December 22: Winter Solstice
December 26: New Moon
December 28: Venus 3° north of Moon (6 p.m.)

January 10: Full Moon
January 24: New Moon

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* For some Full Moons, the date shown is that of the best evening view. For example, Full Moon officially occurs on December 12 at 1:12 a.m. AST. Thus, I have used December 11, as most people expect a Full Moon in the evening sky on the date of the Full Moon.
† The Moon is full near midday, so you will see an almost-full moon on both evenings.

Mercury: The only good view of Mercury during these four months is in late November, around the time it reaches greatest elongation from the Sun. On the morning of November 28, look at the 1:30 position from where the sky is brightening from the rising Sun. Mercury will be quite bright, and about 10° above the horizon around 6:40 a.m. If you draw a line from the point where the sunrise is brightest to Mercury and continue the same distance again past Mercury, you may spot reddish Mars. Mars will be a lot dimmer, and you may need binoculars. There is another opportunity to see Mercury in November, but it will require a properly shielded telescope. On November 11, as Mercury scoots between Earth and the Sun, it will actually pass in front of the Sun from our viewpoint. This is called a transit. Unlike the transits of Venus, which are quite rare, Mercury transits more than a dozen times per century. This is due, in part, to Mercury's moving around the Sun more quickly than Venus. As a result, it laps Earth every 116 days compared to every 584 days for Venus. The transit will start around 8:30 a.m. and end around 2:00 p.m. Mercury will appear at its closest to the centre of the solar disk around 11:20 a.m. Mercury will not be visible without a telescope. If the weather is clear, there will likely be a public observing event to mark the occasion.

Venus: Venus will be a non-event for people in the Northern Hemisphere until December, when it will re-appear in the evening sky. On December 28, look for a thin crescent Moon at 6 p.m. after the Sun has set. Which can you find first, the Moon or brilliant Venus? Venus will continue to rise higher in the evening sky and get brighter right into the first third of 2020.

Earth: Was your home planet ever the subject of a television series called Third Rock from the Sun? if so, you are on Earth.

Mars: Mars slowly re-emerges from behind the Sun in November. It will start to move up into the morning sky, but due to its distance it is still quite faint and remains so at the end of the year and into January.

Jupiter: With Venus out of the picture until December, Jupiter is the brightest star-like object from October to November. Venus will become brighter than Jupiter starting in December. On October 3, the Moon appears very close to Jupiter. The Sun will still be out, but look due south for the Moon, which will be approaching first quarter, so it should be quite visible. Jupiter will be about 1° below the Moon. The Moon is 0.5° in angular diameter, so Jupiter will be two "moons" away. Look first with binoculars and then see if you can find Jupiter without them.

Saturn: Like Jupiter, Saturn is visible in the evening sky for the last months of the year and has been tailing Jupiter the entire time. Its smaller size and greater distance make it appear dimmer than Jupiter. Two days after the Moon passes Jupiter, on the evening of October 5, Saturn gets its turn. This time the Moon is at first quarter, and Saturn will be two "moons" above the Moon. If you can see Saturn, scan to the right and look for Jupiter. It will be at the same altitude above the horizon and 25° to the right. Hold your hand at arm's length in front of you and spread your fingers as far apart as they can go. The angle from the end of your thumb to the end of your little finger is about 25°. If you can find it, you can see just how far the Moon moves in just two days!

BLOMIDON NATURALISTS SOCIETY
2019 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	$_____
_____	Junior (under 16 years) Membership	FREE	$_____
_____	Nature Nova Scotia Membership	$5.00	$_____
_____	2019 BNS Calendar	$15.00	$_____
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_____	Blomidon Naturalist hat	$15.00	$_____
	Postage: (calendar $2) (parcel $6)		$_____
	Tax-deductible Donation		$_____
	(Registration number: 118811686RR0001)		
		TOTAL	$_____

Address cheques or money orders to BLOMIDON NATURALISTS SOCIETY for membership and other purchases to: Ed Sulis, 107 Canaan Avenue, Kentville, NS B4N 2A7. Due date is January 1 of current year.

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