Beyond the Tides

The Seasonal Journal of the Blomidon Naturalists Society

SPRING 2023
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Asitu'lisk

Special Places in Kings County

Food, Art, Nature

FROM THE EDITOR

The theme for this issue is "Special Places" in nature, be it understanding, exploring, protecting, or celebrating them. The President's Report rightly points out that ultimately nature is protected only when all of our lands and waters are used in a sustainable manner, rather than restricting our efforts to protecting special places, and then destroying the rest to meet human needs, desires or economies. However, special places bring deep feelings and a sense of awe that inspire us to be better stewards and crew members of this planetary ship. They offer opportunities to observe and appreciate a diversity of creatures that can no longer survive in any numbers in more degraded landscapes. I hope this issue inspires you to take action with respect to the special places in your life, whether it is visiting them this spring, learning a bit more about them, or contributing funds, or time, to protect them.

The articles on experiential tourism (Food Art, Nature), the Black Rock trails, Asitu'l̶i̶sk (formerly Windhorse farm), and earth adventures are all invitations to get out and explore, learn about, and enjoy these places. We are so lucky to have these experiences at our finger tips in our region thanks to the community members who have worked so diligently to bring them to life. The development of Asitu'l̶i̶sk is particularly inspiring. After 100s of years of colonialism, Mi'kmaq have finally been given back an inspiring and speical place for their own healing and cultural growth. In addition, with incredible generosity, given the trauma inflicted by settler society, they are welcoming everyone to experience this place. Colonialism has stolen special places from Indigenous peoples over centuries and restricted them to small parcels of frequently degraded lands. I encourage everyone to donate to Asitu'l̶i̶sk as a small act of Reconciliation. Finally, the article on special places needing protection in Kings County deserves everyone's attention. We have less protected land than almost any other county in the province. We need to act quickly to at least get a moratorium on cutting in old forests with particular value for biodiversity. The new Blomidon Naturalists Society working group is tackling this enormous challenge. We hope you will help. I hope this issue inspires you to step out and act on your passions for special places in nature.

Alan Warner
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LAND ACKNOWLEDGEMENT AND RECONCILIATION

Blomidon Naturalists Society activities take place in the district of Sipekne'katik in Mi'kma'ki, the traditional, ancestral and unceded territory of the Mi'kmaq. This territory is covered by the "Treaties of Peace and Friendship," first signed in 1726. These treaties did not imply or affirm the surrender or transfer of land to the British, but recognized Mi'kmaq and Wolastoqey title, and a set the rules for what was to be a long-standing relationship between nations.

We are grateful above all to the land, air, water, and countless non-human beings that make life possible and inspire us every day. We recognize that outdoor learning, exploration and recreation would not be possible without access to the natural world, which has been stewarded for thousands of years by the many Indigenous peoples of this land. We have a responsibility to honour and learn about their histories and current cultures, and to actively work in support of reconciliation. We are committed to fostering respectful and sustainable relationships with the Indigenous peoples of this land, with all other organisms, and with the land and the water. We are all Treaty People.

Beyond the Tides is committed and working to include Indigenous voices and perspectives in this publication, and we are committed to a process of relationship-building to facilitate contributions from Indigenous peoples. We also recognize the 400+ year history of communities of African descent and the 50 African Nova Scotian communities throughout the region today, and are committed to seeking out their perspectives and those of others not traditionally included in the work of the Society. We invite you to contribute to this process and/or encourage others to do so. We welcome all comments and suggestions.

Cover Photo: Grandmother Maple, a 350-year-old-plus tree at Asitu'lisk (formerly Windhorse Farm)

Beyond THE Tides

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FEATURES—SPECIAL PLACES

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FROM THE PRESIDENT

I recently returned from a trip to Denmark; a few things struck me. I was born in Denmark and spent the first 13 years of my life there. I remember the forest next to our house where I spent a lot of time. All of the trees, spruce and beech, had been planted, and the forest was totally managed. There were no standing dead trees nor any deadwood on the forest floor. This time, when I walked through similar forests, there was lots of dead and fallen wood. There has been a change in forest management practices in Denmark based on the recognition of the importance of biodiversity and soil health. A similar policy shift in Germany has resulted in many insects and invertebrates, which were thought to be extinct, returning to the forests.

The other thing of interest is that I heard that two wolves had been spotted in Jutland; probably the first wolves in Denmark since the early 1800s. Farmers with livestock, especially sheep, were worried, but they will just need good fences. Nature can recover. There are no original forests in Denmark; they are all planted and managed. A few are beginning to be protected with no cutting, but generally trees are harvested by selective cutting, and I saw some small clearcuts.

In Nova Scotia, conservationists are valiantly trying to stop clearcutting and seeking protection of the few, remaining, older forests. It seems so absurd that we humans feel we must take everything, and manage all of nature, before we realize the value of intact natural forests. Creating protected areas where we cannot harvest is important, but this will not preserve biodiversity. We cannot protect nature, which is dynamic, by "fencing it off." Protecting 10, 20, or even 30 percent of the lands, is not enough. The late E.O. Wilson advocated for protecting 50 percent of lands to adequately protect biodiversity. When we advocate for protecting more land, then the forestry industry argues for greater intensity of use of the remaining land.

We must realize and act in accordance with the understanding that we are a part of nature and depend on her. Nature cannot simply be seen as a storehouse of resources for us to plunder. Ultimately, we must adopt a truly sustainable relation with all of Mother Earth.

Soren Bondrup-Nielsen
President, Blomidon Naturalists Society

The primary objective of the Society is to encourage and develop understanding, appreciation, and stewardship of nature in its members and the interested public. The word 'nature' is interpreted broadly and includes rocks, plants, animals, water, air, and the stars. We are a community grounded in nature exploration, education, and stewardship. We welcome everyone who is curious and wants to learn and share about nature. Our core values are environmental stewardship, building a connection to nature, community engagement and diversity, and collaborative knowledge -sharing.

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Protecting Special Places in Kings County

Less than five percent of Kings County is protected versus 13% of Nova Scotia. The provincial goal is to protect 20% of Nova Scotia by 2030. The Chain Lakes area is a special place worthy of protection now.

BY ALAIN BELIVEAU

Map showing protected areas in Kings County (olive shading), including Cape Split and Cape Blomidon provincial parks, a snippet of Cloud Lake Wilderness Area, and a few smaller (albeit invaluable) Nova Scotia Nature Trust properties. (Basemap ©Esri, all other content from Province of Nova Scotia)

Soaking wet in a torrential downpour, I rushed by giant yellow birch trees and spooked a young black bear. This was a June morning in southern Kings County and the best time of year for listening to forest songbirds. The old trees and young bears could wait. I reached the maple swamp, a little winded, and settled my feet into the spongy wet moss. Then I listened.

Although these moments of discovery always feel serendipitous or even haphazard, this one was very much the product of a lot of research and planning. With over ten years of botany fieldwork experience, fueled by provincial assurances that biodiversity was a priority, there was a clear goal: find out if species at risk of extinction are present on public lands in Kings County. More broadly, I saw an opportunity for science, collaboration, hard work, and good old-fashioned letter-writing to have a positive impact on the region's biodiversity and wilderness recreation opportunities. Read on to find out more!

Protecting nature is critical to humanity's prosperous future. It ensures that people and wildlife have clean water, clean air, and healthy soils. Natural processes regulate the climate. Places spared from intensive resource extraction and development help preserve and nurture biodiversity in ways that cannot be replicated in human-appropriated areas like cities, farms, and intensely managed forests. Experiencing wild, protected areas inspires awe and reminds us of our spirituality and our mortality on this planet. They provide foods and medicines, exceptional hunting and fishing areas, and provide a connection to what once was. They also reinforce a sense of hope for the future. In short, these areas offer us an alternative to the less-than-sustainable path we are on.

With that in mind, and after years of exploring and benefitting from protected areas from one end of the province to the other, I decided to take a closer look at my own backyard: Kings County. This was in 2021 and the main prompt was that the provincial government had just developed the Environmental Goals and Climate Change Reduction Act, which set a legally binding goal of protecting 20% of Nova Scotia's lands by the year 2030. The Act used the word "collaborative," and in it I saw an opportunity to help. Using free mapping software and publicly available data, I plotted out current protected areas on the above map.

Only 4.5% of Kings County is protected. For context, 17% of lands in the world are protected, 12% of Canada's lands are protected, and 13% of the lands in Nova Scotia are protected. The United Nations' goal—based on biodiversity and sustainability science—is 30% by the year 2030. It became clear from this simple mapping exercise that there is much growth potential in Kings County for increasing protected lands and naturally occurring biodiversity. After sharing this number with friends and family, it also became clear that this number was considered too small for many.

The elusive Canada warbler.. PHOTO: JAMES CHURCHILL

The next step was to think about where new protected areas could potentially be established. Big questions like "what regions have the highest biodiversity index? and, as such, would benefit from protected status," and "what lands might lend themselves more easily to protection," were important to this part of the process. In the end, I settled on these key scientific and evidence-driven criteria: the presence or potential for Species At Risk and other species of conservation concern, the presence of intact forest (especially large tracts), the presence of natural water features (wetlands, lakes, rivers, etc.), the presence or potential for ecological connectivity and corridors, the potential for large core areas with minimal human impact, and the presence of large public and privately-owned properties.

Based on these criteria, the resulting map (opposite) indicated that the straightest path to 20% would involve protecting much of southern Kings County's public lands. This area simply checks more boxes, especially with the year 2030 seemingly just around the corner. The Annapolis Valley proper, along with much of the North Mountain, is significantly fragmented and generally lacks large tracts of intact forest, connectivity, the potential for large core areas, and large properties. Those areas are still worth protecting from an ecological perspective, and in many cases they offer unique values not found anywhere else. However, they generally require more resources and time to protect, if protection is possible at all; hence they are beyond the scope of this project.

In a letter to government, I outlined those yellow and orange areas, described the methods used, and asked for those areas to be considered for the province's 20% goal. I also offered my volunteer time to help further the 20% process in the future, i.e. collaborate. The letter was courteously forwarded to appropriate provincial staff and that could've been the end of my contribution to the process.

How could I stop there? The province often ranks areas for protection based on many factors, and my mapping exercise only covered a few. Thanks to that exercise, I was now aware that species at risk data for those yellow and orange areas was slim to non-existent. This seemed like a critical, yet missing piece, of evidence for decision-making.

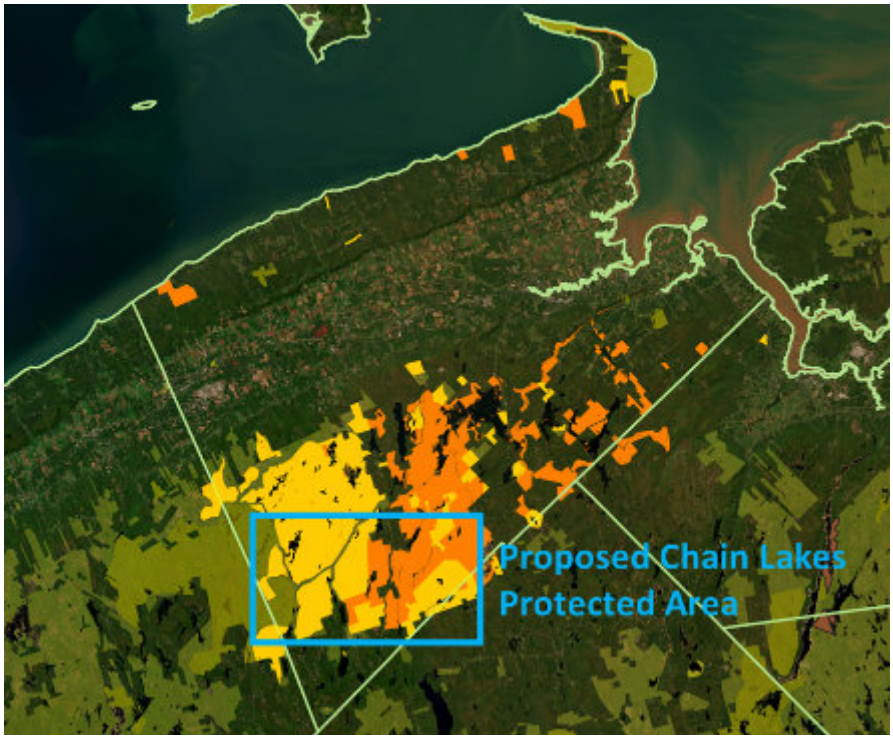
My experience as Acadia University's Irving Biodiversity Collection Manager led to a biodiversity surveying contract in southern Kings County public lands. My expectations of encountering significant biodiversity were modest, given that significant landscape alteration has occurred in this part of the province. My previous experiences in this area weren't awe-inspiring. What would I find?

With my feet in the spongy wet moss, I listened. The downpour had now passed. At first, I only heard a few mosquitos whining by, and the heavy droplets falling from the canopy above. Then a small fidgety songbird

An old yellow birch, Chain Lakes area. PHOTO: ALAIN BELIVEAU

caught my eye, so I focused on it and waited some more. It whispered its song, a timid version that reflected the poor weather. With a bright yellow belly and an elegant and broad black necklace, it was a Canada warbler, a species at risk of extinction. And then there was another one, and another... By the end of the surveys, over 50 Canada warblers were observed. I didn't know of any other place in Nova Scotia where so many were present in such a small area.

Then more species at risk: olive-sided flycatchers in open wetlands, blue felt lichen on red maple next to wisqoq (black ash) and other rare lichens. There were snapping turtle nests, eastern wood-pewees in mature to old hardwood forests, foraging chimney swifts and nighthawks above wetlands and lakes, and even the very elusive rusty blackbird. The sites had beautiful lakes, rivers, bogs, and rare examples of old forests. My expectations were blown away.



Map showing lands (yellow, public; and orange, private) matching the criteria outlined to reach the goal of protecting 20% of the lands of Kings County. Public lands in the the Chain Lakes area are the best fit for protected area designation.

Nova Scotia's goal is to protect 20% of the province, not 20% of each county, and 20% of Kings County is not necessarily realistic. However, it is clear that these areas represent an opportunity where science, collaboration, hard work, and good old-fashioned letter-writing (a.k.a. democracy!) can have a positive impact on the region's biodiversity and wilderness recreation opportunities. It is my hope that further research and collaboration may help to better define areas in southern Kings County that may benefit from protection, with a focus on the Chain Lakes area.

Alain Beliveau is a biologist and member of the Blomidon Naturalists Society.

Can We Protect the Chain Lakes Area?

BY ALAN WARNER

Why not? The Blomidon Naturalists Society has established a committee to take on this challenge. We are submitting a proposal imminently for the Chain Lakes Wilderness area, which is to be placed exclusively on public lands. We will then work to increase public awareness about the initiative and contact our government representatives and officials to advocate for it. We are planning a BNS field trip there (stay tuned for details), and are encouraging everyone who is interested to visit. This is a long-term initiative given that the wheels of government turn slowly. The first priority is to demand a moratorium on logging in the area. If it is cut, then it is immediately lost as an oasis of ecological integrity. Currently, resource extraction is starting to occur along the edges of the area, and this will undoubtedly continue unless many hands pull on the steering wheel and set a new direction. BNS is joining the provincial Save Our Old Forests coalition to demand a moratorium on cutting all old forests (over 80 years) in the province until Nova Scotia defines the 20% of its lands for protection. We are not opposed to forestry, but we are opposed to logging forests that should be protected. We will need lots of help in many ways.

Asitu'l̶isk—Developing the Foremost Place of Indigenous Learning, Healing, and Gathering in Mi'kma'ki

Windhorse Farm, a land-back initiative, has been renamed Asitu'l̶isk to reflect the land's meaning and importance. It is to be a place that builds a connection to nature and educates youth in science, ecology, forestry, health, & wellbeing.

BY ANDREA DURFEE

An enchanting natural landscape sits quietly on the shores of Atuomkuk (Wentzell's Lake) and the Pijnuiskaq (LaHave River), one of very few ancient Wapane'kati forests in this region, featuring generations of untouched trees, nearly 600 years old. It is a place where the Mi'kmaq ancestors once flourished on the land and winding waterways for thousands of years. Since its return to the Mi'kmaq, Asitu'l̶isk flourishes as the rhythmic drum resonates through the forest. Ceremony once lost, returns to awaken, restore, and call the ancestors back to the land.

Those who have walked through the hemlock grove at Asitu'l̶isk, or seen the purple spring meadows and heard the flowing clear streams of the riparian areas, have felt the abundance of life here. For many, this special place is represented by the majestic grandmother maple that stands in the heart of the forest (see the cover). This place provides a grand sense of connectedness to nature. One is awestruck and at peace.

Since its historic purchase back into the care of the Mi'kmaq in 2021, through a land-back initiative and partial gift transfer, Windhorse Farm has been through a transition. It was recently renamed Asitu'l̶isk (pronounced ah-see-dew-lisk), a Mi'kmaw verb meaning "that which gives you balance." This word was carefully chosen to reflect the land's meaning and importance. It is poised to become the foremost place of Indigenous learning, healing, and gathering in Atlantic Canada.

As part of the Ulnooweg Education Centre, elder and youth events, featuring ceremonial and cultural gatherings, have already been held on the land. This has included the first ancestor ceremony held in the region for over 100 years, calling back the ancestors to the land. The vision is to transform Asitu'l̶isk into a place that builds and nurtures a strong connection to nature that is intertwined with ceremony and Indigenous culture. In addition, it will educate youth in science, ecology, forestry, health, and wellbeing. It is to be an open space for learning Indigenous ways of knowing, reawakening elders, and inspiring youth.

Dr. Albert Marshall is a well known and respected Elder of the Mi'kmaw community, who is guided by Mi'kmaq knowledge and ways of knowing. He speaks of the benefits of Etuaptmumk (two-eyed seeing). He states that "if we (Mi'kmaq) seek the power of the spiritual domain, the combination of the two physical

and spiritual aspects allows us to fulfill our inherent responsibilities. The gifts we are given are for the benefit of all and every action we take must be in harmony with nature."

Christopher Googoo, Ulnooweg's Chief Operations Officer states that "this transfer has helped Ulnooweg and the local communities move through reconciliation into conciliation. Our vision is to create a peaceful environment with open arms. We want to host our communities and their education programs and events. We want to celebrate culture and language and share knowledge with our communities at large. Asitu'lɨsk is a place to connect with Mother Earth; to learn, heal and grow. Under the care of the Ulnooweg Education Centre, this ancient forest will be protected forever. Asitu'lɨsk will be a place for all to gather for the next seven generations and beyond."

Over the last year, Ulnooweg has worked to revitalize Asitu'lɨsk through developments like establishing a new team, maintaining and repairing the buildings and landscape, and creating new initiatives, programs, camps and events. These include Melkiknuawti, a new land-based education camp for youth in grades 9-12, held in August, and an Ancestor Ceremony held

Mi'kmaw Language Key			
Mi'kmaw word	*Pronunciation*	*Translation*	*Post-Colonial Name*
Asitu'lɨsk	Ah-see-dew-lisk	That which gives you balance	Windhorse Farm
Atuomkuk	Ah-doo-wum-cook	At the sandy lake	Wentzells Lake
Etuaptmumk	Ed-do-up-dim-moomk	Two-eyed seeing	
Pijinuiskaq	pee-gee-nu-wee-skawg	River of long branches	LaHave River
Wapane'kati	Wah-bah-nah-kay-dee		Acadian Forest
Sin So'sepe'katik	Sin So-say-bag-gud-deek	At Saint Joseph's place	Bridgewater
Mi'kma'ki	Meeg-mah-gee	Land of the Mi'kmaq	Atlantic Canada, some of Maine & the Gaspé

Jim and Marg Dresher (former land stewards) and Chris Googoo (Chief Operations Officer, Ulnooweg) at the Opening.

annually in October. For the next several years, Ulnooweg plans to incorporate more educational programs on the land. It will repurpose the barn to be an Indigenous Performance Arts Centre. It will incorporate ceremonial contributions from our communities such as building a traditional sweat lodge, wigwam, sacred medicine gardens, and more. As a registered charitable organization, support from private and public donors is essential to our work.

Asitu'lɨsk is a place to bring balance to life, restore, and celebrate all cultures and languages. It is open for all to explore and connect with Mother Earth. Whether you are an avid nature lover, artist, or simply wanting to roam throughout this uniquely beautiful forest—all are welcome to explore and book a stay at Asitu'lɨsk. To donate or learn more, visit *asitulsk.ca/donate/*. We encourage you to help bring the vision and dreams for Asitu'lɨsk to life.

Andrea Durfee is the Communications Manager of Ulnooweg. Ulnooweg is an established and innovative, not-for-profit, Indigenous-led organization, dedicated to a transformative and complex, community-centered approach. Graphics contributed by Ulnooweg.

The barn as a performance space.

Exploring on the forest SoundWalk. PHOTO: CANOPY CREATIVE

Food, Art, Nature

Crafting healing visitor experiences that are medicine for our times

BY CELES DAVAR

On a beautiful day last October amidst the autumn colours, we were gathered in a field with curious goats staring at us, a nearby horse, a historic barn, and some large food-producing gardens. We were at Tipsy Toad Farm on South Mountain near Kingston, learning about Sue Earle's approach to sustainable agriculture that produces food for fifteen weekly food boxes for customers. She has twenty varieties of vegetables and grows some experimental foods each year. Last year it was epazote, which she puts into her salsas as a replacement for cilantro.

Storytelling is one of the distinguishing elements of a cluster of new, local, visitor experiences that has been launched this spring on a website entitled Food, Art, Nature.[1] The Wolfville Farmers' Market Cooperative, Blomidon Naturalists Society, and Earth Rhythms (a Gaspereau Valley experiential tourism operator) have developed a collaborative venture to provide visitors to the area with new "slow travel" encounters. Carefully crafted and curated, 15 new visitor experiences feature guided walks and connection to nature, hands-on activities, creative crafts, and personalized storytelling from local producers, artists, and makers.

Underlying all of these experiences are regenerative tourism practices that invite travelers to adopt a light environmental and cultural footprint, and give back to various community initiatives as part of the price of admission. Sue led us on a meandering walk into the gardens and introduced us to the old farm with over twenty-five acres of wooded, Acadian, or Wapane'kati (in Mi'kmaw) forest. We prepared to walk with the goats!

We picked our own adventure stick, put a leather handle on it, and personally decorated it with a variety of feathers, beads and other found objects. This adventure stick became our walking companion as we explored how goats forage on seasonal plants, as well as discovering wild foods that humans can eat. Upon reflection, one of the participants in this first run of the experience said, "We all need to take the time to step back from the rush of life, and like your animals (on the farm), enjoy every day, rain or shine, and live life to the fullest. This experience transports one to that 'happy place,' especially if you are lucky enough to go there with a goat."

In yet another new experience, Juno-nominated singer and songwriter Kim Barlow, and her songwriting companion Freya Milliken, led a dozen intrigued guests into another patch of Wapane'kati forest in the Gaspereau Valley, where older growth hemlocks, white

pines, red maples, and white ash drape the steep slopes of a creek that cuts through black shale cliffs. We paused in a circle on a crisp winter day and were invited to close our eyes and simply listen. This was a new SoundWalk and SongCrafting experience, hosted by Music in Communities, a Valley organization formed in 2019 to promote music literacy, present great live music, support under-represented voices, and strengthen communities through shared musical experiences. We heard crows, a raven, and the nasal calls of a red-breasted nuthatch. We felt the snow dusting us from the hemlocks above. The creek was murmuring under a thin layer of ice, and we noticed fox, vole, coyote, squirrel, and other tracks.

Next, we split up to find our own places among the large trees. We listened to the forest, recorded the small creek scrambling noisily under the ice, and then wrote some words and phrases that reflected how we felt. One participant shared, "I've heard of song-writing, but assumed it was for songwriters. I learned that we humans tune out sounds. Reflecting on that, and then being invited to walk in the woods with ears wide open, I learned about myself (tuning out) and

> Food, Art, Nature experiences cultivate opportunities for producers & community to connect, engage, and be nourished.

had an immediate opportunity to try something different. This was deep listening, and the group singing was new for me as well. Feelings were bubbling up and I was relieved to receive a notebook

Walking with goats at Tipsy Toad Farm. PHOTO: CANOPY CREATIVE

to write what was bouncing in my mind from the forest experience."

We returned to the nearby West Brooklyn Community Hall, sipped on fresh white pine tea, and created hand-made percussion shakers from re-purposed plastic pill bottles. The shared experience of having just spent an hour together in the forest listening intently filled us with wonder. Surprisingly, we quickly assembled words that we wrote into three verses in three separate groups. We tentatively strummed a couple of simple chords on ukuleles, guided by Kim and Freya. They then added melody to our words, neatly stitching them into a song. Suddenly, we were singing a beautiful new song accompanied by shakers, guitars, and other instruments. It had been an hour!

Kim and Freya engaged with the SoundWalk group. PHOTO: CANOPY CREATIVE

Another experience that has been crafted is an inspiring discovery-based lunch, created by Port Williams chef Ian Thompson (Herb and Feather Catering). We were welcomed with an aromatic herb tea, walked the farm to harvest

Joe Doiron, participant, with Chef Ian Thompson

ingredients for the meal, and shared and learned about local food throughout the experience. An innovative adaptation of farm dinners, one local venue on the Kingsport peninsula is the 145 acre, sustainable, Longspell Point Farm. A pre-lunch touch-and-taste walk with our host farmer, Jeff McMahon, was a sensory affair as we bathed ourselves in rows of mature kale and tomatoes, harvesting and munching fresh vegetables along the way. Jeff explained the unique management practices that they use. Ian's lunch was served in a greenhouse, including a non-alcoholic aperitif with hand-crafted bitters, Longspell salad ingredients, braised tomatoes with whipped feta, potatoes, and wood-fired Longspell beef and pork. A seasonal dessert featured Annapolis Valley apples and plums. As Ian says, "if you eat local, you become local." This type of culinary experience raises the bar on farm-to-table by having guests learn, harvest, and dine in-place. Through these pop-up meals, Ian's commitment is "to advocate for farmers, celebrate their values and morals, and have people eat on the farms. These meals are about relationships for sustainable agriculture—one part advocacy, one part storytelling, and one part art."

These unique experiences have been carefully crafted and pilot-tested across a year, including photograph and video documentation by the team from Canopy Creative, a storytelling visual media and marketing company in Wolfville. The project emerged from the shared vision of Kelly Marie Redcliffe (Wolfville Farmers' Market Cooperative), Soren Bondrup-Nielsen (Blomidon Naturalists Society), and Celes Davar (Earth Rhythms). Backed with financial support from the Atlantic Canada Opportunities Agency, these three organizations worked with their boards, vendors, and community partners to initiate a year-long investigation into what makes a legendary visitor experience, then created and tested them with local community members. Kelly Marie Redcliffe explains that "the new Food, Art, Nature experiences are ways to cultivate opportunities for producers and community to connect, engage, and be nourished. This is how we build trust and how we learn to value the work our amazing producers do to feed our bodies and souls with a deep love of the land."

What is experiential tourism? It is best to step back and explain. Tourism has a major impact on the planet, including high carbon emissions and large amounts of waste and ecological destruction brought about by travel and hospitality services. It becomes unrestrained economic development, and endlessly aims to increase numbers of visitors and revenues. The pandemic stopped travel and tourism in a dramatic manner and offered the opportunity to re-examine its goals and potential. What if tourism experiences were nested into their local ecology, and communities with clearly defined capacity limits that do not over-tax municipal infrastructure systems and treasured community traditions?

Experiential tourism involves shaping a new narrative, developing a relationship between host communities (destination communities, businesses, residents) and travelers. This relationship involves excellence in

Braised tomatoes with whipped feta by Chef Ian Thompson

hosting and educating guests about local ecology, food, and culture. It involves asking travelers to take active steps to lower their carbon and energy footprints before they arrive, to participate respectfully, and to give back to the community as a part of their visits. Visitors spend money on a variety of unique local services, activities, and retail goods, and the revenues help us to live, work, and thrive here.

Research on sustainable travel reveals "a growing desire amongst global travelers (post-pandemic) to get closer to culture and community when traveling, with 45% believing that protecting and learning about local cultures is part of sustainable travel. This regenerative philosophy is influencing decision-making. By creating and offering more sustainable choices, it's possible to create tourism opportunities that drive positive impact and trip satisfaction."[2] We can start to shift tourism investments devoted to large physical infrastructure projects towards developing new programming with local guides who use storytelling and facilitation skills to host guests in interactive, fee-based experiences. Existing infrastructure (retail businesses, parks, museums, trails, farms) become the stages, with new programming being created that is educational, meaningful, and respectful.

> What if tourism experiences were nested into their local ecology and communities?

Experiences are not self-guided. The ingredients include a host or guide as storyteller and facilitator, who is paid a living wage for sharing their knowledge and expertise. Within a defined time period, guests are invited to participate in a sequence of activities involving walking, making, reflecting, learning, and using their senses for discovery. These new experiences offer visitors opportunities for 'ahah' moments of personal growth and delight. These are not discount programs; they are not meant to be all inclusive, cheap, or for mass markets. They offer a different value proposition in which the guide changes their approach, from being a presenter or knowledge expert, to carefully choreographing a series of activities in which travelers can make discoveries of their own. One participant shared, "these new experiences are healing, they are medicine for our times."

The Bean to Bar Chocolate experience with Petite Patrie

While these experiences have been designed specifically for travelers, there will be many opportunities to adapt them into special events and annual outings for local residents. The Annapolis Valley has a wonderful array of producers, makers, creative business enterprises, and community organi-

Soil to Soul, Robertson's Farm and Apothecary. PHOTO: CANOPY CREATIVE

zations, each of them with unique stories. These experiences showcase the storytellers, lands, and practices of local people, for whom sustainability is the foundation upon which their business or organization operates.

In the midst of the global climate crisis, travel and tourism must change. Providing visitor experiences that emphasize walking, tasting local foods, being in nature, and helping guests to stay longer in a destination, will start to decarbonize tourism. We are poised to share and amplify our existing community values, sustainable agriculture, and protection of biodiversity. By doing this, community members (like the Food, Art, Nature partners) will help shape a new direction in tourism that gives back to communities and delivers on the promise that tourism can be a force for good.

You can get involved. The Food, Art, Nature website features many new and unique local experiences, including the making of botanical castings on a flower farm, permaculture gardening, bean to bar chocolate making, Acadian heritage stories, making tinctures, fire ciders, and, elixirs, forest bathing, night time artistry with charcoal, and new experiences at the Wolfville Farmers' Market (see the full list below). These experiences are not only for visitors from away. Check out the website[1] for opportunities whereby you can learn more about local cultures and ecology through fun, engaging, hands-on experiences facilitated by your neighbours!

Celes Davar is the founder of Earth Rhythms, Inc., an award-winning experiential tourism company. He coaches tourism businesses and community partners throughout Canada on how to craft legendary visitor experiences. He contributed the photos unless otherwise noted.

Notes

[1] Learn more about these experiences at: foodartnature.ca.

[2] https://www.gstcouncil.org/booking-com-2022-sustainable-travel-report/

Making Fire Cider at Robertson's Farm. PHOTO: CANOPY CREATIVE

Food, Art, Nature Experiences

Host/Guide Organization	Experience Title
Petite Patrie Chocolate	Bean to Bar, a Chocolate Experience
Sister Lotus Herbals	Evangeline, Expulsions, Enchantment, & Elixirs
Herbal Hill Farm	Nourished by Nature
Tipsy Toad Farm	Rambling with Ruminants: A Small Farm Immersion on the South Mountain South Mountain Goat Walks
Ross Creek Centre for the Arts	Forest Shadows and Light—A North Mountain Experience
Two Birds One Stone Farm	Saving The Seasons, A Botanical Casting Adventure Overlooking the Bay of Fundy
Softpine Wellness	Nature Immersion Deep Invitation
Andrée-Anne Bédard	Medicine of the Acadian Forest
Music in Communities	SoundWalk and SongCrafting
Herb & Feather Catering	Planting New Roots in the Annapolis Valley—A Guided Farm to Fork Culinary Experience
Robertson's Farm & Apothecary	Soil to Soul Workshop
Wolfville Farmers' Market	Wolfville Farmers' Market Welcome Experience Wolfville Farmers' Market Cultivation Days

Was COP 27 Worth It? One 'Child's' Experience

Everyone tells me that it is going to be up to my generation to solve this problem, but it's not. This problem needs to be solved now.

BY OLIVER BAKER

COP 27 was this year's rendition of the annual United Nations climate change conference that aims to eradicate an issue that gets worse by the day. The 27th Conference of the Parties (COP) was held in Sharm El-Sheikh, Egypt, in November. I traveled there with a group of high school students from all over the world, called #Decarbonize. It's a project run by the Centre for Global Education, which focuses on climate education. Here is a reflection on my experiences and the lessons I took from it.

My trip began with the four-day "Conference of the Youth" (COY17), a sort of pre-event to COP27. It included workshops presented by people from all around the world on climate change topics, targeted for "youth," who are defined by the United Nations as 18-35 year-olds. I was considered a 'child,' being just 17 years old at the time. Beyond the workshops, local climate-related organizations were showcasing their work, and there was an exhibit of artwork created by Egyptian students that was made out of recycled materials. This event prepared me for the bigger conference and enabled me to network with people

doing fascinating work, including Michael Bäcklund, the president of an online education platform called Climate Science. It' provides an app like Duolingo, but for climate education. It is easy to understand and based on peer-reviewed research.

After COY, we headed to the Green Zone at COP27. The other zone at COP was the Blue Zone, where all the negotiations took place, including country offices, pavilions, and official exhibits. The Green Zone had many different exhibits, artwork, activities, and some presentations. It was overwhelming and exciting to see the venue lit up, with lights flashing everywhere.

> My very first impression left me feeling very inspired... After spending several days there, it was much easier to see through the facades.

There were big signs, large art displays, free bottled water, and recycling stations for many different materials. The Green Zone exhibits were separated into five tents, each air-conditioned, using non-renewable energy. In fact, the only labeled renewable energy was the connections that used solar power to charge phones. The exhibits showcased the activities of different organizations and businesses in Egypt. Most of the representatives sat in their booths on their phones or were otherwise preoccupied, until you stood in front of their booth for a short period. Our group did not attend any of the presentations in the

Green Zone as schedules were always changing and quite a few of them were canceled.

My first impression had me feeling very inspired about the climate change action that was taking place in Egypt and around the world. After spending several days there, it was much easier to see through the facades. For starters, the artwork on display was made up of the garbage created in constructing the conference venue. The bottled water, called Good Water, was advertised to be environmentally friendly, and made from a bioplastic with a plant-based cap. However, the water itself was imported from Europe. This showed me that Egypt does not have sufficient drinking water that would be perceived as clean, and instead, they imported it at a high emissions cost. Lastly, there were seven different recycling containers that had labels for each type of material, but all of the bags in the bins was black. This suggests that the products were probably headed to the landfill rather than being recycled.

> My generation is essential to pressuring those in power to do what is needed now.

To sum up, the Green Zone felt like a side-attraction for COP. There were few people for the size of the space, which could have resulted from the tension and controversy associated with the conference itself, prior to the start. Nevertheless, it was an eye-opening experience to see how adults run climate change conferences and how seriously they take the situation.

The highlight of the trip was the side-events, which were not affiliated with the United Nations, but still on the topic. We attended the New York Times Climate Forward Event, which featured an Oxford-style fossil fuel debate. The motion was: "This house believes that fossil fuel expansion is a prerequisite for a just transition." Even I was convinced that the team "for" the motion won. They were so convincing and realistic while the team "against" the motion was unable to provide a clear plan or idea of how we could get off of fossil fuels. This was alarming and reflects the difficulty of eliminating fossil fuels.

Another presentation at the Climate Forward Event focused on air quality. There were people from Asia that spoke about the air pollution in their countries. A surgeon told us that he was finding black lungs in non-smoking patients that had passed away, which looked like they had smoked their entire lives. A pregnant mother told us that she was worried about her baby because babies are now being affected by pollutants from the air while still in the womb.

The second event was called Extreme Hangouts, where we could interact with panelists and ask questions after their sessions. This was a great way for our group to engage with environmentalists and learn more about what they do. It gave us the chance to share our own perspectives and experiences while learning from others.

These conferences are only starting to become more inclusive. What does it mean to be a child at a climate change conference of youth and adults? For children in elementary and middle school, learning about

climate change for the first time, how is it that their parents are representing their voices? Their parents could be defined as youth! This was the second conference that allowed children inside the Blue Zone. Many people came up to our group after presentations to let us know that it was the best presentation they had seen at the entire conference. The voices of "children" need to be heard. Everyone tells me that it is going to be up to my generation to solve this problem, but it's not. This problem needs to be solved now. By the time I could be in a position of power to make changes in this country, it could be too late. My generation is essential to pressuring those in power to do what is needed now.

The conference enabled me to network with young people from all over the world who care about this problem. It made me realize that sometimes we can't even see the damage impacting our communities. How can the kids at my school start to care if they don't see how it is impacting them individually? Adults and kids alike may not be motivated to change for the better if they don't see the pieces of plastic washing up on the beaches every twelve hours, or see all the coal being mined to power our communities. Clearly, many of the officials who organize these conferences don't get it. Climate change education needs to be emotional education, helping people to care by showing that it affects them individually. Many students don't change because they don't know. Our curriculums are changing, teaching more about climate change at younger ages, but there is still not

enough about the problem and solutions in high school. It's a topic that's scary and gives me butterflies in my stomach every time I give a presentation. It's not something that can be breezed over in one lecture or one article. When talking about this topic, we need to connect with people's emotions, including their fear and courage. Powerful presentations can be the spark to light a movement, because like Greta Thunberg said, "our house is on fire," and we need to act now.

Oliver Baker is an 18-year-old, grade 12, French Immersion student from Kentville, who is passionate about the environment and the growing concerns of plastic pollution and sea-level rise. He contributed the photos.

The Decarbonize team at COP 27.

Black Rock Community Trails... A Hike to the Bay of Fundy for Everyone

BY PETER WALLACE

Looking for a beautiful set of trails that will lead you to the Bay of Fundy for a lunch break? Look no further, the Black Rock Community Trails fit this bill and then some. They are some of the best trails for family outings, as well as for experienced hikers looking for a challenge. Their length varies from less than a kilometre to over 10 km, and the degree of difficulty varies from easy to difficult (some parts are only for masochists!). They are well-marked, but you still have to pay attention to avoid getting lost. Some are true walking trails through the woods, others are roads and ATV trails. The trails are on private land, but community supported, so respect the forest and the owners by leaving only your footsteps and sticking to the marked trails. The trails are open year-round, except during deer hunting season.

The terrain varies from open hardwoods to mossy spruces and hemlocks, and from cobble beach to steep cliffs, with streams and brooks along the way. Some trails are level and high and dry, others have small hills, while some have brooks to cross and small swampy areas to traverse. This variability gives rise to a multitude of plant species, fungi, and lichen, and the animals and birds feeding off them. This area has been settled for centuries, so expect to see feral and alien plants such as columbine (genus *Aquilegia*) and hawkweed (genus *Hieracium*) bordering the trails. They provide a bit of colour along with the native plants. You can spend hours just looking around and enjoying the variety. The beach portion of the blue trail is the most difficult. It is over 2 km long, almost entirely covered by cobbles and boulders, and is entirely tidal. Do not attempt this part unless you are following the tide out (about 2 hours before low tide), and have very good ankles with proper foot wear for wet rocks.

Trail Directions: There are 4 trails: pink, orange, blue and yellow, and they are all accessed from behind the Community and Recreation Centre on Black Rock Road, heading to Canada Creek. There is ample parking, a trail map, toilet, and covered picnic tables here. The map of the trails is current, and some trails have been recently added to and other parts dropped, so older maps are in error. This is especially true for the yellow trail, where there is an ongoing logging operation in the southeast portion as of spring 2023. All trails are well traveled and well-marked with colour blazes.

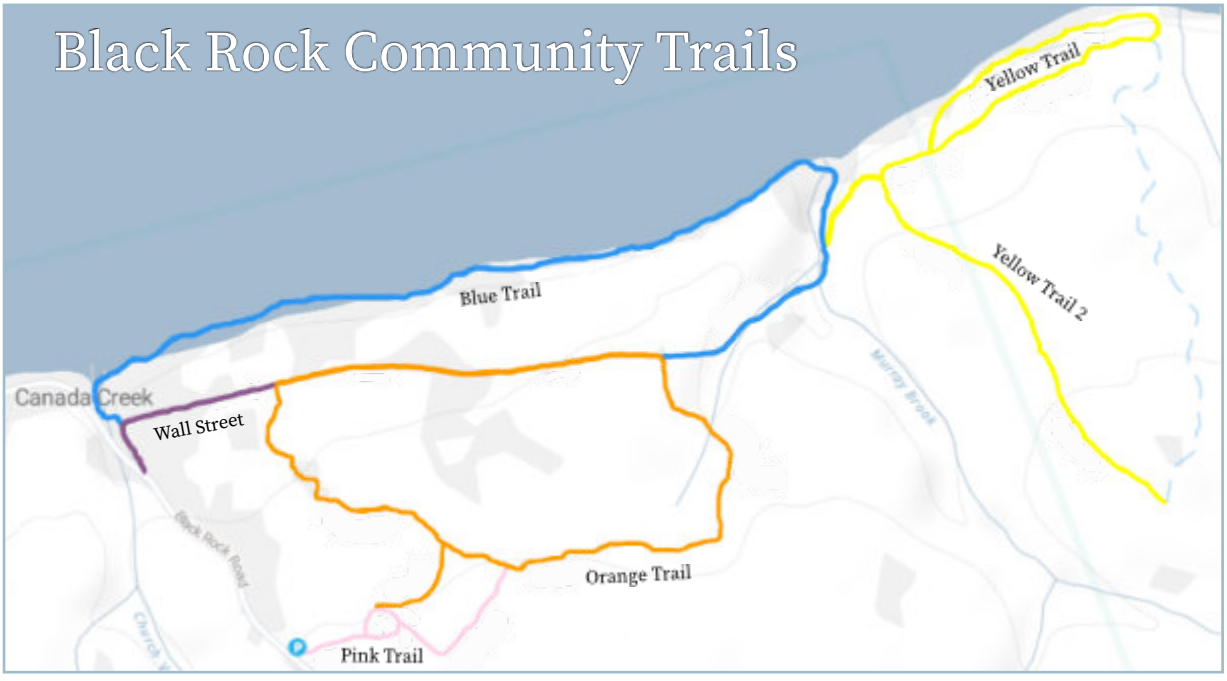
The pink trails follow small loops and are the easiest and shortest. They include lots of interesting plants, as well as things for children to see. The orange trail loops back before reaching Murray Brook and the shore. It has some junctions that are not on the map, since they lead to private property that is off limits to hikers. Take care here. There are a couple of wet areas to cross, which are interesting for the

plants growing in these wet spots. A part of this trail is Wall Street, a road with houses, and the trail continues between two of the houses.

Access to the Fundy Shore follows the blue and yellow trails to Murray Brook, and then across the bridge to the east side. These are the most difficult and longest trails. The portion that goes down Murray Brook and crosses the bridge contains a hemlock forest where once I saw a bobcat. Keep an eye out for these exotic animals. At high tide, the brook's estuary is flooded, making the shore inaccessible. From mid to low tide, you can walk along the east bank and have a lunch sitting on the flotsam or rocks at the shore. Be sure to have a look at the cliffs of basalt at the shore, but don't continue on the blue trail along the shore unless you have a burning desire to cobble-hop for over two kilometres. The yellow trail continues up the brook's bank as an ATV trail. At the top, there is a junction where you can either turn east along the top of the cliffs for great views over the water, or go due south along Balsor Road. The eastern trail is now a loop and the part that heads south is a dead end. These parts of the yellow trail are wet and muddy at times, and the forest is heavily wooded with conifers, maple, elm, and poplar trees. To return, retrace your track out, or take a different part of the orange trail loop once you are out of the brook area.

Overall, these trails offer something for everyone. Enjoy!

Peter Wallace is a retired geologist who lives on the South Mountain and leads a weekly hiking group of retirees to areas of natural beauty and interest in the region. Peter contributed the photos and map specifications.



Why Support Pollinators in Your Garden

A new approach to conservation that starts in your yard

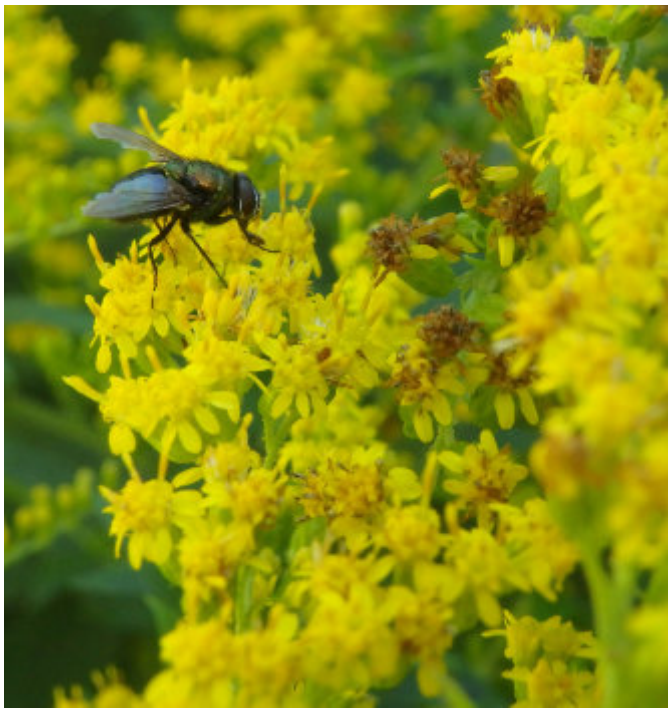
BY CAROLYN GREEN

The biodiversity crisis has helped all of us to realize the need for more land conservation. The Canadian and Nova Scotian governments have set ambitious targets, but can we trust them to follow through? We don't have to just wait and hope for land conservation. We can start protecting nature right now—in our own yards. This is the message from the USA-based, Homegrown National Park movement, which in turn inspired the David Suzuki Foundation's Butterflyway Project, and our work on this through the Blomidon Naturalists.

The Homegrown movement is based on the teachings of Douglas Tallamy as outlined in his books *Nature's Best Hope* and *Bringing Nature Home: How Plants Sustain Wildlife in Our Gardens*. Traditionally, many gardeners have tried to keep wildlife out of their gardens and off their lawns, which are pollinator deserts. Instead, Tallamy argues for welcoming them. He argues that this traditional disconnect with nature is based on two mistaken assumptions. First, gardeners assume that there is still plenty of nature "out there" to preserve. He points out that in the USA (lower 48 states), only five percent of the land is untouched nature. Many of the fields and woodlands are degraded and unable to support biodiversity, often due to the presence of invasive plant species.

The second misguided assumption is that the biodiversity crisis and loss of insects have little to do with human survival. In fact, we need insects to pollinate our food plants and we need plants to generate oxygen and sequester carbon, which are just a few of the myriad of services provided by nature.

Tallamy argues that we need to return our landscapes to nature. We can start with our own yards, putting in native wildflower patches to feed pollinators and making other changes to create shelter for insects. If our neighbours follow suit, we will create a series of connected habitats—a butterflyway.



A fly on goldenrod. PHOTO: CAROLYN GREEN

If you do not own land, you can lobby your local town to change their park landscapes, or find opportunities for "rewilding" in public areas. A wonderful example of this is Mississauga, Ontario's "Blooming Boulevards" initiative.[1]

Want to learn more before you start? Check out "Resources" in the Butterflyway Project section on the Blomidon Naturalists web site, including a link to a list of recommended books held by the Annapolis Valley Regional Library.[2] Or, visit the "National Homegrown Park" web site,[3] and watch a free Tallamy webinar. Happy habitat gardening!

Carolyn Green is an avid native plant gardener, the coordinator of the BNS Butterflyway project, and a BNS board member.

Notes

[1] http://www.bloomingboulevards.org

[2] https://blomidonnaturalists.ca/butterflyway-project/

[3] https://homegrownnationalpark.org

Downsizing Your Lawn as a Spring Project

"Everybody has to do something, nobody has to do a lot."

BY JOHN LELIEVRE

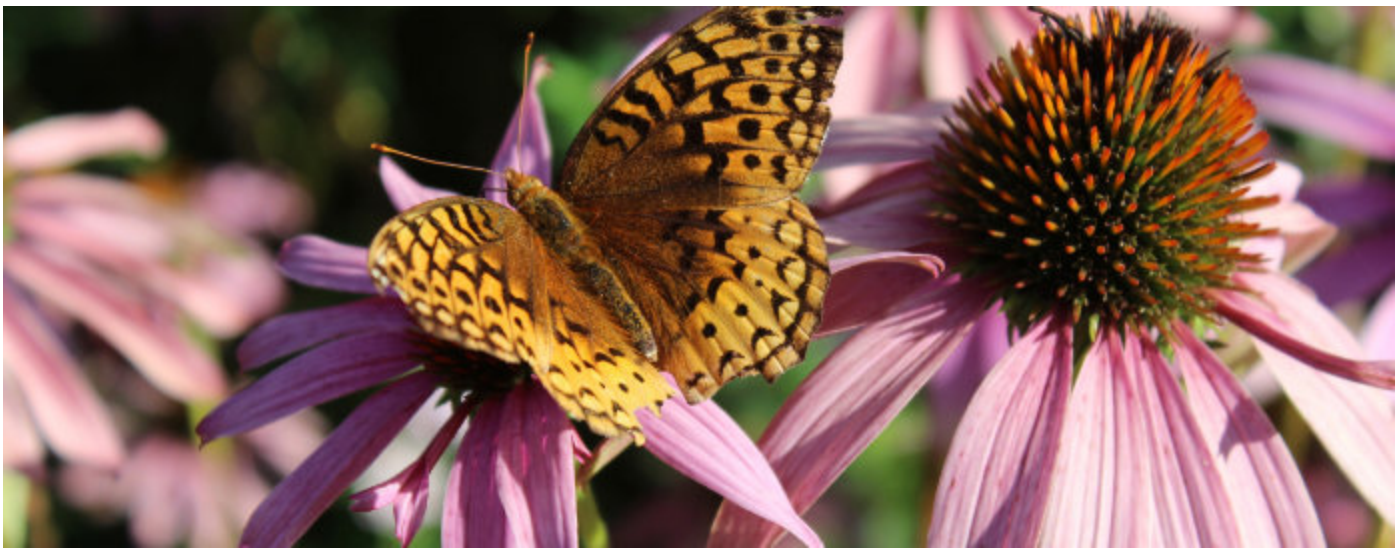
While out cycling a while ago I noticed a home with a sign supporting the campaign to "Save Owl's Head," the provincial park that is a prime example of a natural environment with a wide range of native plants. Yet the home was surrounded by a large, manicured lawn, an example of the opposite sort of ecosystem—a monoculture of an introduced species. We need only look around to realize that a move to change the way many people think about lawns is still necessary. Traditional lawns should become a thing of the past, though disaster awaits if that past is replaced by artificial turf.[1]

Organizations such as Pollinator Partnership Canada and the Butterflyway Project of the David Suzuki Foundation, which includes the Blomidon Naturalists Society, champion the demise of the classical lawn. The 2023 Pollinator Partnership campaign focuses on the connections between climate change and loss of pollinator domain.[2] The All-Ireland Pollinator Plan puts the onus on all of us to participate.[3] The plan states "everybody has to do something, nobody has to do a lot," and makes practical suggestions as to what that something could be. The suggestions include simple projects such as planting a pot for pollinators and designing your garden for pollinators. There are also larger team projects such as making an ecological corridor network, or making a biodiversity walking trail. The emphasis is on local action.

The something that everybody has to do could, in many cases, be as straightforward as replacing lawn space with pollinator habitat. That said, the benefits of lawns should not be overlooked. A small neatly-kept grass area can provide a foil for colourful native-flower beds. Lawns can be important for recreation. Although the idea is outdated, some citizens still use lawns to signal conformity and respectability. However, classical lawns will always require energy to maintain, as the forces of nature drive disorder and diversity. Without such energy, lawns would revert to some kind of forest, although these days a tangle of invasive plants is another possible outcome.

> There is no need to have a lawn without a broad-leafed plant in sight.

So just how much lawn does a home need? One suggestion is that the area between the house and the road should be pollinator-friendly, while the



A painted lady resting on a cone flower. PHOTO: CAROLYN GREEN

remainder is lawn. That said, even a small pollinator patch of a couple of square metres can provide an insect feeding station.[4]

There is no need to have a lawn without a broad-leafed plant in sight. Dr. Nancy McLean, from the Agricultural Faculty at Dalhousie University, does research on making grasslands insect friendly, be they pasture or lawn. Professor McLean notes that small-leaved white clover is a great species for lawns. Their short corolla tubes allow access by a wide range of bees with short tongues. If a mower blade is set higher, then most of the blooms should survive. There are many other desirable plant species besides clover that can make a home in lawns.

There is no need to have an obsessively manicured lawn either. Delaying the spring clean up and the first mow till there have been seven to ten days at around 10 C is another method of limiting the negative effects of lawns. This avoids the unintended destruction of native insects. By this stage, the insects that emerge in spring will have left their winter quarters, be they underground, or in the stalks of dead plants or fallen leaves.

The Nature Conservancy of Canada has further suggestions. For example, move slowly to allow insects, frogs, and other wildlife to scramble out of the way, and then mow less often. Use rotational mowing so that some patches are left to support wild flowers. However, it is worth noting that native bees don't like to hunt for flowers in very long grass.[5]

A common objection to limiting mowing is that this may allow ticks to thrive. For sure, ticks do prefer long damp grass. However, the work of Vett Loyd, a professor of biology at Mount Allison University, demonstrates that ticks are a critter rather than a grass problem. Ticks can be managed by suitable plantings and landscaping. The strategy is to ward off the host animals, such as deer, mice, birds and raccoons, which carry the ticks into areas where humans might come into contact with them. Plants that repel ticks and their host animals include rosemary, chrysanthemum, mint, lemongrass, sage, lavender, garlic, onions, marigold, petunias, brown-eyed susan and juniper.[6] Tick-repelling landscaping solutions include bark mulching and stone paths, since ticks avoid crossing dry zones. There is no need to clearcut the lawn to avoid ticks. Keeping the grass between three and four inches tall will do the trick, while permitting the lawn to provide some beneficial ecosystem services.

Lawns are convenient and easy to mow, but the mower pollutes the neighbourhood with both fumes and noise. If pollinator gardens are challenging for any reason, you can focus more on planting native trees and less on native flowers. Trees don't need much, if any, maintenance. Trees such as red maples and willows are valuable to bees while red oaks support all kinds of life. So planting native trees and protecting those already in existence makes sense. The Booker School in Port Williams has planted both pollinator trees and native flowers. Good on them. Spring is a good time to get started.

John Lelievre is a member of the Blomidon Naturalists Society and an avid explorer and photographer of the Annapolis Valley. Photos taken by Carolyn Green.

Notes

[1] https://phys.org/news/2022-09-experts-lawns.html

[2] https://pollinatorpartnership.ca

[3] https://pollinators.ie

[4] https://www.lanarkstewardshipcouncil.ca/have-a-4x4-patch-free-in-your-yard-help-protect-pollinators/

[5] https://www.sciencedirect.com/science/article/abs/pii/S0006320717306201

[6] https://www.gardensall.com/plants-that-repel-ticks/

Saving Old Growth… A Glimmer of Hope

Some progress is being made towards landscape-level planning, yet the cutting continues in old forests.

BY NINA NEWINGTON

On the summer solstice in 2022, the Forest Protectors and members of Extinction Rebellion who had camped out by Beals Brook in Annapolis County since early December declared a win. We had kept the logging equipment at bay long enough for citizen scientists to identify sufficient Species at Risk (SAR) lichens to put 60% of the forest we were protecting off limits to all harvesting. The 100m buffers that the Department of Natural Resources and Renewables (DNRR) applied to each occurrence of the SAR lichens eventually overlapped to the point where there was nowhere available to cut.

Unfortunately, even while Beals Brook was going on, DNRR was in the process of approving plans to log a much larger area of even higher conservation value, 16 km to the west. Forest ecologists, biologists and local people were stunned to see harvest plans for 464 hectares of forest around Goldsmith Lake come up for comment on the province's Harvest Plan Map Viewer (HPMV) in March and April of 2022. A respected conservation planner had submitted a proposal to protect the area months earlier, to no avail. He and others objected vigorously to the plans, both on the HPMV and in letters to the Minister, pointing out the rarity and ecological importance of the area. DNRR itself had previously recognized two small patches of forest on the western shore of the lake as old growth. Yet they went ahead and approved the harvest plans for the surrounding forest.

The lichen hunters' skills were needed again. New people with other areas of expertise joined in and the group got to work, documenting the rich biodiversity of the hardwood and mixed wood forest around the lake. In early November, calling ourselves Citizen Scientists of the Southwest Nova Biosphere, we submitted a proposal to protect the area surrounding

Citizen science in the Goldsmith forest. PHOTO: N. NEWINGTON

Goldsmith Lake to the Minister of Environment and Climate Change. We argued that the area was eminently suited for inclusion in the 20% of Nova Scotia's lands and waters the government has committed to protecting by 2030. The minister replied that, in a year or so, the department would be releasing plans to develop the process to decide on which areas to protect. That's too late for Goldsmith.

By now the group had discovered that a 2 km long, 30 m wide strip, had been clearcut into some of the old forest and a new logging road built. We redoubled our efforts. By late November, we had identified seven Species at Risk in or next to cutblocks around the lake. We put out a press release and CBC covered the story. DNRR put a hold on the harvests and ordered WestFor to hire a lichenologist to survey the area.

Throughout the winter, the lichen hunters kept searching and finding SAR lichens. Every new discovery was reported to DNRR. By the end of February, we were up to 16 confirmed SAR identifications. Then we discovered logging had begun on the cutblock furthest from the lake and there was big harvesting equipment on the new road. Alarmed, I called Ryan McIntyre, DNRR's Resource Manager for

the Western Region. What I learned was a relief. Ryan told me there was a hold on all harvesting on any cutblock touched by our SAR finds, which meant no logging in any of the forest around the lake. Better yet, he said the department was going to revise their plans for the area. He noted that where there were multiple SAR lichen occurrences, they would "have to think in a broader sense" about "what is a reasonable response." This is progress from the "slap on individual buffers and log around them" approach that DNRR took towards the lichen finds at Beals Brook.

When I checked in with Donna Hurlburt, head of the Wildlife Division at DNRR, and therefore responsible for SAR, she replied, "At some point, I hope we can move away from this lichen-by-lichen approach to conservation… and develop habitat modelling for each listed species so we can better predict occurrences, with the intent to use that to identify future core habitat and to guide special management practices. The progress is slow, and my team isn't flush with resources to help things move along faster, but it's in motion."

So progress is being made. There is a glimmer of hope that the Department might be moving towards the landscape-level planning that the Lahey Report recommended. The problem is the damage that's already been done at Goldsmith Lake, and is being done in all the old forests that citizen scientists haven't been able to get to ahead of the logging equipment. The damage done here doesn't just affect those specific lichens that are old-growth forest indicators. There are many other species at risk, from blackburnian warblers to American marten to mainland moose. Fragmenting previously intact forest severely degrades its value as wildlife habitat. The damage will take a century to undo. This is particularly tragic in light of the province's legislated commitment to protecting 20% of the province by 2030.

Fortunately, there is a simple solution: Pause harvesting and roadbuilding activities in all forests over 80 years old on crown land until such time as 20% of Nova Scotia has been protected. This is what the new Save Our Old Forests campaign is asking for. The nonprofit Arlington Forest Protection Society, working with Citizen Scientists of the Southwest Nova Biosphere, launched the S.O.O.F. campaign in Bridgetown in late March. The initial focus is on Annapolis County, but we hope that other counties will join in and the campaign will go provincewide. For more info, contact soof@arlingtonforestprotection.ca.

Nina Newington is a citizen scientist and member of Extinction Rebellion Mi'kma'ki/Nova Scotia.

Winter Weather 2022-23—Warm & Wild

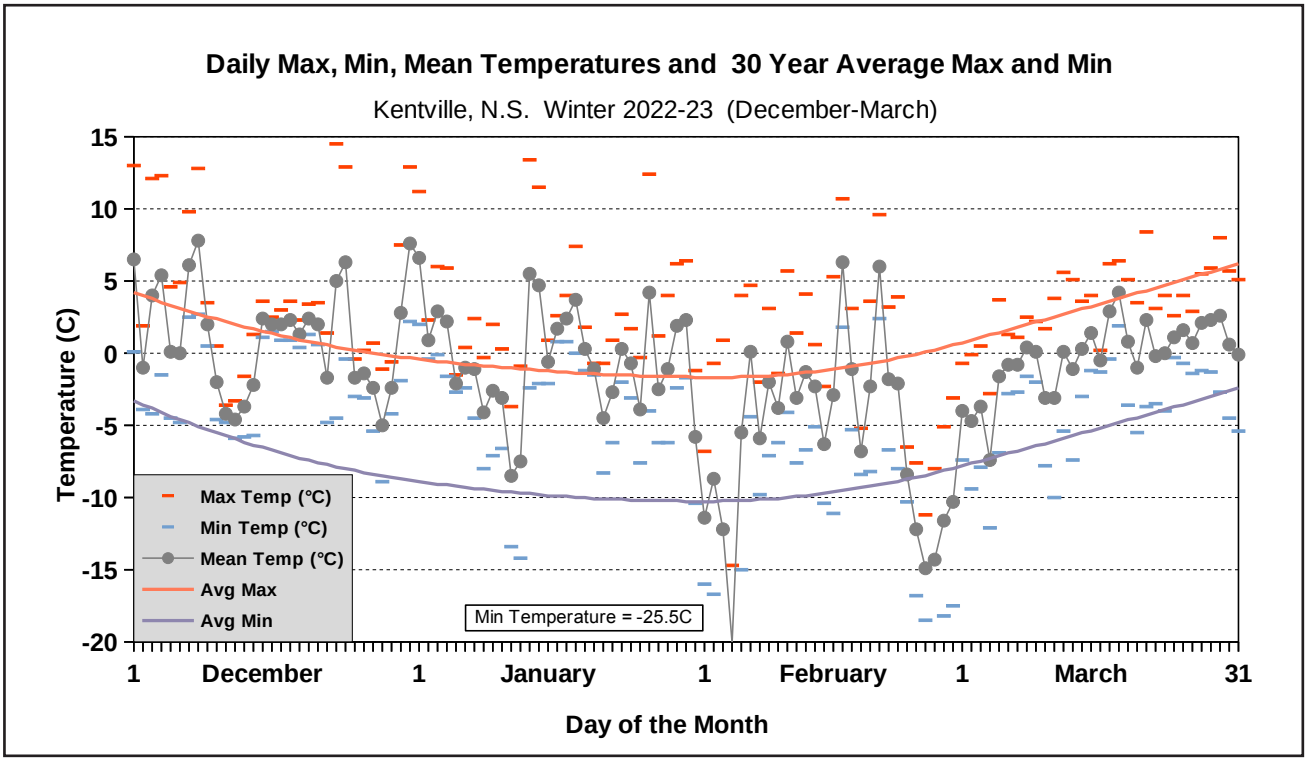
Mother Nature served up warmer average temperatures, little snow, more rain, and brief, cold, polar vortexes.

BY LARRY BOGAN

For this report, I have included four months for the meteorological winter, December through March. The highlights of this winter's weather data for Kentville from Environment Canada are the daily temperatures and depth of snow on the ground. The daily temperatures graph on the next page includes the mean daily minimum and maximum temperatures for the 30 years, 1980 through 2010. This allows a comparison of the daily temperatures with normals.

The temperatures for February and March are interesting to compare. Both months were only slightly warmer than normal (0.7 and 0.9 C), but in different ways. In March, the temperatures almost all month were only very slightly higher than normal. The grey circles represent the mean daily temperature and are about in the middle of the two lines representing the normal mean minimum (blue line) and maximum temperatures (red line). The red dashes give the maximum daily temperature and the blue dashes the minimum daily temperature for each day.

Next, examine the February data. The days in the middle of the month had above normal temperatures,



but at the beginning and end of the month there were short, extreme, cold periods. These were times when the cold polar vortex briefly extended over Nova Scotia. In contrast, two days in the middle of the month had maximum temperatures near 10 C. When all of this is averaged out, the month had a near 'normal' average temperature. This illustrates how the monthly averages can be deceptive in describing the month's temperatures. Both highest and lowest temperature records were set in February. February 3rd had the lowest temperature in the last 30 years for that day, while on the 16th, the temperature was higher than any in the previous 30 years.

December and January were much warmer than normal. December averaged 3.5 C above normal while January was 5.2 C above normal. January 13th had a high temperature of 13.4 C, which set a record for the last 30 years. The winter season was overall 2.3 C above normal.

We had a 'moist' winter with 10% more precipitation than normal, but this was mostly rain. February was driest, with only half the expected precipitation.

Winter snows did not really come until March. Snow-Depth-on-the-Ground data showed that we had white on the ground on and off in January and much of February. Only in March were there heavier snow falls of up to 30 cm, which stayed until April. Last year we lost the snow during the first week of March.

Below is a table summarizing the monthly mean temperatures, total precipitation and heating degree days for Kentville from Environment Canada data. Degree days is the number of degrees the daily mean temperature is below 18 C for each day, totaled over the month. It gives a measure of the energy needed to heat our homes. This winter was 10% lower than the 30 year average so it should have required only 90% of the usual energy to heat buildings this winter.

	Max Temp	Min Temp	Mean Temp	Precip mm	Heat C Days
December	**4.5**	**-2.2**	**1.2**	**129**	**522**
30 yr avg.	*1.5*	*-6.1*	*-2.3*	*122*	*629*
January	**3.2**	**-4**	**-0.4**	**226**	**571**
30 yr avg.	*-1.3*	*-9.8*	*-5.6*	*115*	*731*
February	**-0.4**	**-10.9**	**-5.6**	**49**	**662**
30 yr avg.	*-0.5*	*-9.2*	*-4.9*	*101*	*646*
March	**5.1**	**-5.4**	**-0.1**	**90.3**	**567**
30 yr avg.	*3.4*	*-5.3*	*-1*	*110*	*588*
Season	**3.2**	**-5.5**	**-1.1**	**494.3**	**2322**
30 yr avg.	*0.8*	*-7.6*	*-3.4*	*448*	*2594*

Larry Bogan is a long term member and contributor to the Blomidon Naturalists.

Canada Warbler—A Bird and All It Represents

Canada warblers are a synecdoche—the part that represents the whole.

BY JAMES CHURCHILL

Each year, after a long, maritime winter, a taste of the tropics arrives about mid-May. Surfing the tide of new leaves surging up the continent is an explosion of colour and sound. Flying at night, the warblers find, and reinvigorate, our once-frozen forests. Among these arrivals, Canada warblers are perhaps the most special of all, not just because of what they are, but because of what they represent.

Much like nature writer David Quammen's trout,[1] Canada warblers are a synecdoche—the part that represents the whole. They are spectacular creatures in themselves—strikingly plumaged, trans-continental voyagers with a song so unique it defies mnemonic device. In our region, they also represent much more than this. To find one in the breeding season signifies that you are standing in a special place.

Of the roughly 23 warbler species that breed "within the view of Blomidon," Canada warblers are likely among those you've encountered least. Canadas won't appear at your feeders and are rarely found on the Valley floor. To find them, you need to be swimming through head-high shrubs, where each step is wet, squishy, uneven and mossy... where lichens are richer, air more pure, humans more scarce... where raven croaks and wind dominate the soundscape. In our region, Canadas are emblematic of those still-remote places.

These places still exist in our region. Within a sea of human impacts, some of these special wetlands have continued for hundreds of years. Individual trees grow, senesce, and fall, but these old, wet places have endured. They have been culturally significant since time immemorial. They are habitat and refuge for some of our most vulnerable wildlife—like Canadas,

wisqoq (black ash), moose and wrinkled shingle lichen. They are vital to connectivity and carbon sequestration in a warming world. They are places you should experience for yourself—rich in biodiversity, wilderness and solitude.

When we think about our identity as a region, and what makes this region great, perhaps we think of culture, communities, agriculture, and coastlines. But our riches are greater still. There are wild, valuable lands just beyond our backyards, but still within reach. As these special Canada warbler places degrade—through forest cutting, wetland loss, climate change—we lose a bit of biodiversity, a bit of wilderness, a bit of heritage... a few Canada warblers and all they represent.

Finding Canada Warblers

Late May: Warbler Corner at Miners Marsh. *June & July*: In the trees on the edges of swamps or bogs off the Valley floor (i.e., Chain Lakes area, see p. 3). *Late August*: Scan mixed-migrant flocks at the tip of Cape Split at first light. Or, listen for their distinctive migration flight call after dark on clear, quiet nights.

James Churchill is a biodiversity enthusiast from Kentville. He works as a Conservation Data Analyst and Field Biologist with the Atlantic Canada Conservation Data Centre. He contributed the photo.

Notes

[1] Quammen, David (1999). Synecdoche and the Trout. In W*ild Thoughts from Wild Places*, Simon and Schuster.

What's Up with the Kentville Ravine?

The Ravine has experienced a series of acute and potentially devastating threats in the recent past, none of which have been resolved.

BY PETER HICKLENTON

Many readers will be familiar with the "Kentville Ravine", more properly titled the Elderkin Brook Ravine for the stream that flows through it to join the Jijuktu'kwejk (Mi'kmaw, meaning "Narrow River"), and ultimately the Minas Basin. This much beloved sanctuary from the hustle and bustle of the nearby commercial and residential districts is also home to a rare old growth forest dominated by stately white pine and eastern hemlock. Unfortunately, the Ravine has experienced a series of acute and potentially devastating threats in the recent past, none of which have been resolved. Severe and changeable weather in February 2022 destabilized land to the west of the Ravine, resulting in a catastrophic landslip that deposited soil and debris from Agriculture and AgriFood Canada's (AAFC's) Research Farm to a depth of several meters. AAFC and the Town of Kentville closed the Ravine trail out of a justifiable concern for safety. Today the trail remains closed, but significant progress has been made in restoring stream flow, and removing root-suffocating silt. The effects on trees close to the area most directly affected are yet to be determined.

A second threat to the Ravine is the Hemlock Wooly Adelgid (HWA), a tiny aphid-like invasive insect, which has been recently discovered in storm-severed hemlock branches in the Ravine. This is a sad development, though the pest's arrival was expected given it is already in the Kentville Gorge Park, a mere 5 km west of Elderkin Brook. However, work to mitigate the lethal effects of the HWA infestation, which will kill hemlocks across Nova Scotia, is underway. Establishing key refuges for the eastern hemlock is essential to buy time to develop biological control strategies, and to investigate the long term potential to develop trees that are genetically resistant to HWA. A broad consensus exists to preserve hemlock forests in Kentville with targeted chemical treatment of trees in the Gorge Park and in the Ravine. Meanwhile opportunities for scientific cooperation among agencies and universities, including the Canadian Food Inspection Agency, the Canadian Forest Service, AAFC and Acadia University, are being explored. Future old growth forests will look different, but with a diverse and carefully considered strategy, we can retain key hemlock elements of this natural legacy.

Dr. Peter Hicklenton is a member of the Friends of the Elderkin Brook Ravine.

PHOTO: ALAN WARNER

Foraged Topical First Aid For Nature Adventures

BY CAROLINE BEDDOE

As nature lovers, we are all about getting outside. Yet life happens and outdoor adventures, whether a multi-day trip, or a short jaunt in the woods, can sometimes lead to sunburns, rashes, stings, cuts, and other ailments.

The good news is that the natural world is an amazing first aid kit (in addition to the one you've brought along), and getting to know useful herbal allies is another way to appreciate plants and connect to the natural world. This article describes three common plants that you can forage for and use directly 'in the field' for acute and minor situations, so you can carry on enjoying your nature adventure. Please note, this article isn't seeking to provide first aid training or advice for serious issues, but rather to share the wonders of these plants and some of their uses.

Get to know these plants! Use a guidebook, iNaturalist, or ask a naturalist friend if you are unsure. Learn to identify them before needing to use them in a first aid situation, and pay attention to what they look like throughout the season, especially when they are not flowering and may be trickier to identify. These plants are common, but be considerate and only take what you need.

Plantains (*Plantago* spp.)

Plantains (picture at right) are low-growing and extremely common perennial herbs, originally from Europe. They have a basal rosette of long tapering leaves and small greenish, white flowers that form a dense spike. Common plantain (*Plantago major*) has wide leaves with prominent parallel veins with long stalks, whereas narrow-leaved plantain (*Plantago lanceolata*) has, as the name suggests, narrow lance-shaped leaves. Plantains grow widely in many habitats—if you're around roadsides, meadows, disturbed sites, lawns, gardens—plantain is likely nearby.

When mashed or chewed up to form a fresh, juicy poultice (yes, it's edible), plantain is extremely useful for treating insect bites and stings, sunburns, stinging nettle or poison ivy rashes, blisters, scrapes, and minor wounds. Plantain is cooling and soothing,

anti-inflammatory, and anti-septic. It helps bites and wounds heal quickly, and provides soothing relief. It helps draw out venom from bites and stings. A plantain poultice can also help draw out splinters.

For kids in particular, a poultice makes a fun natural band-aid. Get them to chew up a leaf or two and make a spit poultice to soothe bug bites or minor scrapes. Apply the chewed, moist, leaf matter to the wound, and cover it with an intact leaf (you can also use an actual bandage to hold the poultice in place).

Jewelweed (*Impatiens capensis*)

Jewelweed (centre picture), also known as spotted touch-me-not, is a valuable plant to know, especially on adventures in the woods or near rivers or lakes, since jewelweed likes damp, shady spots. Jewelweed has alternate leaves that are coarsely toothed, and when flowering, the orange flowers with reddish spots dangle on long stems.

If you crush the stems and leaves of a jewelweed plant, you will notice a cooling, mucilaginous fluid, similar to aloe vera. Crush some jewelweed stems and apply them to the skin after a poison-ivy or stinging nettle exposure. It will help neutralize the irritating toxins from these plants, which are often found growing in similar areas. Jewelweed is also soothing on insect bites and sunburns.

Yarrow (*Achillea millefolium*)

Yarrow (top, opposite page) is abundant, and an extremely important and widely-used medicinal herb. Its name comes from Achilles, the Greek hero, who is said to have saved lives by applying yarrow to soldiers' wounds in battle. Yarrow has alternate, lance-shaped, and very finely divided leaves (almost feather-like), and small aromatic white or pink flowers that form flat-topped clusters. Yarrow can be found in fields, along roadsides, and in other open and disturbed areas.

Most important to note for open wounds is that yarrow is styptic, meaning that it helps to reduce and stop blood flow from cuts and gashes. Crushed or broken-up leaves (or chewed into a spit poultice) can be applied to bleeding wounds to slow blood flow.

> There are many plants that are useful in a first aid context, and getting to know the plants around you and their uses is a great way of connecting to the natural world.

Yarrow is astringent, analgesic (lessens pain) and antiseptic. It will help heal wounds more quickly, so it is useful for cuts, scrapes and gashes that can occur on outdoor adventures. A spit poultice of yarrow can also sooth bug bites.

If you see some yarrow on your camping adventure or nature walk, be sure to take note of it. It is always good to know where it is in case of bad cuts. If you aren't familiar with yarrow, do know that there are other plants with clusters of white flowers and divided leaves, including poisonous ones like poison hemlock. Note that yarrow is much smaller plant, has much denser flower clusters, and far finer leaves than poison hemlock. Always get help with identification if you aren't sure.

The medicinal uses of plants abound, and planning ahead by keeping herbal salves (like plantain salve for bug bites) or dried herbs (a packet of dried yarrow) at hand as part of your first aid kit is certainly a good idea. There are many more plants that are useful in a first aid context, and getting to know the plants around you and their uses, is a great way of connecting to the natural world. Enjoy the natural world and give thanks for the ways it can support us.

Caroline Beddoe is the current coordinator of the Blomidon Naturalists Society and an avid explorer and photographer of the Annapolis Valley. She contributed the photos.

Let's Go on an Earth Adventure!

We are the animals of this town.
Join us among the trees,
Around the houses unseen.
Our eyes are keen,
Our noses sharp,
Our ears perk up at every bark.
Be sneaky, sure and smart.
Ready now? Let's start!

BY ALAN WARNER

PHOTO: SARAH LAVALLÉE

A couple of adults and a small group of kids are huddled behind the Wolfville Tourist Bureau, ready to head uphill towards the Recreation Centre and the Millennium Trail. They have been 'invited' by the animals of the area to explore the 'wild side of town.' They are to think and act like animals as they begin their journey up the trail to the Wolfville Reservoir. First, they are transformed into a group of young raccoons and begin with a quick tag game, and then the new recruits scamper up the hill and head behind the Rec Centre. They quietly sneak among the trees along the playing fields to avoid dangerous dogs and people, before plunging into the forest. Once on the trail, they become skunks and search for insects along the stream, discover raccoon tracks by the pond, and later become squirrels, collecting cones and berries in the hemlock forest.

This adventure is one of nine earth adventures in Kings County. These are self-guided nature outings for kids and families on some of the best nature trails in the region (there are 24 more adventures in Halifax County). The detailed, but simple, trail guides are all posted on a free website at *earthadventures.ca*. The instructions are downloadable and printable, and also formatted for mobile phones. Each trail guide has a storyline for the kids, who then progress along the trail doing specific story-based activities at particular locations, culminating in achieving an overarching mission. On the Wolfville trail, the animal kids have to avoid being caught by humans and make it to the final stop to demonstrate their animal skills. At the very end, they discover a secret plaque and make a rubbing of its creature in their adventure journal. They enter the creature's name on line to receive the trail emblem.

Earth adventures are short trails (one to four kms) designed to get kids, families, and youth groups out into nature having fun, learning, and exploring together. They are designed for children ages five to

GRAPHIC: LOIS BEARDEN

twelve, and undertaken in groups of no more than seven or eight, with at least one parent or adult leader. They are a wonderful way for kids and families to get off their screens and have fun exploring together. Too often, adults want to go for "a hike" and the kids groan. Adults tend to want travel distances for exercise, while kids get enamoured with small holes, trees, streams, ponds, etc., and want to explore nearby. Earth adventures give license for the kids to use their imaginations and explore their surroundings, with adults serving as facilitators and co-participants.

No particular leadership expertise is required for the parents or adults. The only criteria are a willingness to be enthusiastic, and to play along and participate with the kids. The leader prepares by downloading, reading and following the instructions (there are some leadership tips on line). Often, there are one or two simple props needed beyond the typical water bottles and snacks. For example, the kids need a 'scope' for the Millenium trail, and an empty toilet paper cardboard tube suits the purpose. The kids can decorate it at home beforehand if they choose. Beyond the simple activity instructions, there are various information boxes sprinkled through the trail guide. These include boxes on every trail that provide some Mi'kmaw cultural knowledge, plus background on specific natural features or creatures of the area. The Wolfville trail highlights skunks and spotted touch-me-not plants, along with the traditional Mi'kmaw and Acadian uses of the salt marshes and dykes of the Minas Basin. Each trail guide also highlights one environmental issue and suggests steps people can take to address it in their lives.

Earth adventures can be undertaken any time without snow on the ground, but are best on warm and pleasant days. Children under five can join in, though frequently they may need help moving along the trail and understanding some of the activities. Kids who have reached the "cool" stage of early adolescence struggle at times with the animal role playing and fantasy, which are so appealing for children. Teens can be great at serving as leaders for children.

So why not head out on a few earth adventures with your favourite kids this spring and summer? The Millennium trail in Wolfville is an easy, nearby trail. How about venturing further afield? Have you ever been to the Glooscap First Nation Nature Trail where you can become part of the Mi'kmaw legend of Nukumi and the Fire? You might want to head to Chute Park in Berwick to become part of the "Restoration Research Squad," discovering how life claws back after an apocalypse. Or, how about venturing to Stronach Park in Kingston to become alien explorers arriving from outer space? There are lots of adventures to pick from below. Visit *earthadventures.ca* for details. Enjoy!

Alan Warner is the team lead in designing earth adventures and editor of *Beyond the Tides*.

Valley Locale/Trail	Synopsis
Berwick/Chute Park	A great 'asteroid' destroyed this landscape. But after this apocalypse, life has slowly started clawing its way back and recolonizing the terrain. You are part of the *Restoration Research Squad* and are returning to discover the secrets of how these plants and animals are surviving.
Canning/Bigelow Trail	The coyotes of Canning need your help! A litter of seven pups was playing in the woods near here and one pup got lost. Can you learn coyote skills and find the lost pup? Available in June 2023.
Glooscap First Nation Nature Trail	You are on a forest journey based on a Mi'kmaw legend about the importance of learning from Elders and respecting all of the creatures on these lands.
Kentville Ravine (Closed in 2023)	This forest is special because it is full of dragons! Along the trail, you will discover the four secrets of dragon survival, and at the end, unscramble the letters to learn the final message from the forest dragons.
Kentville/Miner's Marsh	Step into a duck's world and search for four clues to a mystery: the black duck's secret of survival. Discover the clues along the trail and then unscramble the letters at the end to figure out the secret word.
Kingston/Stronach Park	As an alien explorer on a spaceship from the planet 'Hanwavel,' your mission is to find life forms on other planets in the Milky Way. One solar system has a very lively planet called Earth. Use this guide to discover new life forms here.
New Minas/ Lockhart Ryan Park	Take up the challenge and play the Nature Games! Test your skills as you meet each nature challenge and learn even more about nature in your community.
South Mountain/ McMaster Mill	The Planet Earth has a secret message. Your challenge is that our 4.5-billion-year-old planet left the clues at seven different times in history! To figure it out, walk through this time-travel adventure.
Wolfville/ Millennium Trail	The animals of Wolfville invite you on an adventure into their world. Can you survive as an animal in town? Use your animal senses to explore the paths ahead and try not to get caught!

Braiding Sweetgrass:

Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants

REVIEW BY SCOTT OLSZOWIEC

Braiding Sweetgrass is a provocative series of stories that beautifully interlaces Indigenous and scientific ways of knowing with the author's own journey and experiences. It was written in 2014 by Robin Wall Kimmerer, a plant ecologist, poet, and member of the Potawatomi Nation. In this acclaimed national bestseller and winner of the Sigurd F. Olson Nature Writing Award, Dr. Kimmerer weaves two distinct worldviews together and offers a way to address our ecological crisis in a rapidly changing world. We are encouraged to reclaim our membership in cultures of gratitude formed in our old, sometimes forgotten, relationships with the earth.

In the early 1960s, western societies were starting to glimpse the impact of our lifestyles on the environment. Sigurd Olson, and a growing body of scientists and activists, were urging us to consider the challenges of a new frontier where economic growth and consumption were in direct conflict with a planet of finite resources and ecological limits.

Dr. Kimmerer reminds us that settlers viewed ecological understanding as a new frontier in the 20th century while it has always been central to the lives of Indigenous people. They have observed and revered the earth's natural rhythms of gift giving, and developed economies and epistemologies through a recognition of the earth's generosity. Lessons in reciprocity are provided to us by the plants and animals.

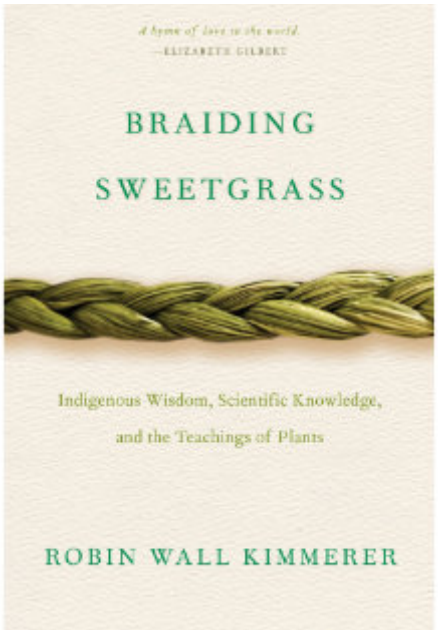
In the years since the western world's environmental awakening, civilization has been steaming on from James Watt's legacy into the Anthropocene on an increasingly unpredictable planet with decreasing biodiversity. *Braiding Sweetgrass* offers a slower, more comfortable, and less destructive set of prescriptions for living on this earth.

Beginning with a maple seed pirouetting on an autumn breeze, Dr. Kimmerer's writing is captivating, and asks us to consider the generosity of the world through the eyes of science and the sacred. She kindly, and warmly reminds us that a sustainable way of living in the world has been here since Skywoman's journey to earth.

> Braiding Sweetgrass encourages us to ask why the asters and goldenrod look so beautiful together.

Dr. Kimmerer ceremoniously delivers lessons through plants that teach us about a gift economy that can sustain and connect us to the land. Key to this is engaging in an honourable and responsible harvest. We learn that by braiding science, respect, and gratitude together, being human becomes something strong, sweet, and sacred.

Scott Olszowiec is a Student Services Advisor & Indigenous Support at NSCC. Originally from Nisichawaysihk Cree Nation with European settler connections in Cape Breton, he has been in Mi'kma'ki most of his life.



Swamplands:

Tundra Beavers, Quaking Bogs, and the Improbable World of Peat

REVIEW BY HEATHER CRAY

Peatlands have been greatly underappreciated throughout history, but these critically important ecosystems have been and are home to resilient people and other amazing species. This book about peatlands by Edward Struzik profiles these under-loved places that provide so many benefits. Global in scope, it examines peatlands in Europe, Asia, and Africa, including a 145,000 square kilometre peatland in the Democratic Republic of the Congo, unknown in the West until 2017. However, the primary focus is on North America.

Using a mix of historical account, first-person experience, and curated knowledge, Struzik writes about peatlands mainly through the lens of human stories, including biographies of those who have negatively affected them and of those working to restore them. From swamps in the southern United States to the Canadian tundra, the history of peatlands is often depressing. Struzik describes a maddening combination of short-sighted decisions and greed-fuelled plundering—including the plans to detonate nuclear bombs on the Hudson Bay Lowlands and the loss of the tundra peat to the oil and gas industry.

To his credit, Struzik does not shy away from the violent history of peatlands, including how colonization and slavery were used as means to drain, clearcut, and farm them. He also tells the stories of how formerly enslaved people displayed incredible resilience, forming communities and economies in the United States under the most challenging conditions. Swamplands were a refuge from slave catchers and patrols for over 200 years, from the early 1600s until 1865.

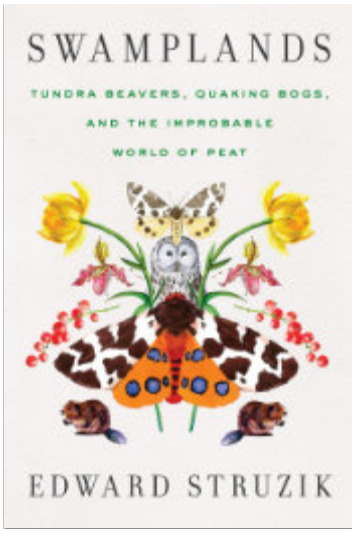
Beyond describing the history of peatland destruction, Struzik tells us of the local and global importance of peatland ecosystems, and the challenges of restoring peatlands and their associated ecosystem services (e.g., carbon sequestration, flood control, critical habitat).

Unfortunately, while there is some effort to include the women who are footnotes in a male-dominated history, the present-day accounts of researchers, conservationists, and naturalists are overwhelmingly male. I know many of the Arctic researchers and peatland specialists included in this book, but somehow women make up only a small fraction of the specialists that Struzik engages with, cites, or describes.

> "Without peatlands, most of North America's finches and warblers, and 80 percent of the waterfowl, would be forced to find another place to nest" (p. 24).

Swamplands is more cultural history than natural history. I would have preferred more about peatland ecology and less about the people who have damaged or maligned peatlands, but it is an interesting account of the historic and current state of these ecosystems in North America.

Dr. Heather Cray teaches at Dalhousie University and loves to read and learn about underappreciated things. Her favourite *Lepidoptera* are saturniids and sphinx moths.



Biological Control and HWA—More Questions than Answers

Although the research looks promising, how biocontrol will unfold in Nova Scotia is uncertain.

BY LUCA VOSCORT

Eastern hemlocks in Nova Scotia are facing an existential threat. The invasive hemlock woolly adelgid (HWA) is quickly spreading across the province, causing widespread mortality among hemlocks, and jeopardizing the unique and valuable ecosystems that this mighty tree supports.

Invasive pests like HWA are typically fought with a multifaceted approach, also known as integrated pest management (IPM). There are multiple tools available to manage HWA, and one is the chemical treatment of infested trees with insecticides. Tree injections with imidacloprid are used in Nova Scotia to protect trees as the injections are fast-acting and highly effective at controlling HWA. Yet there are obvious downsides to chemical treatments: treating trees is time consuming, costly, and the non-target impacts

A key HWA predator fly—*Laricobius nigrinus*.
PHOTO: BRIAN MUDDER

HWA on hemlock needles. PHOTO: LUCA VOSCORT

are still not fully understood. It is neither practical nor ecologically responsible to treat each and every hemlock.

One possible long-term solution for the HWA infestation is biological control. Biological control (or biocontrol) is the introduction of living organisms into an environment to control (often invasive) pests. The introduced organisms are often natural enemies of the pest, such as predators or parasitoids. The United States has been dealing with HWA for decades. In Canada, we are able to build upon robust U.S. research regarding biocontrol that otherwise would have taken decades to conduct. A good understanding already exists of which predators are most effective, how to rear these predators, and effective release strategies.

Among multiple candidates for HWA biocontrol, two groups of insects seem well suited for use in Eastern Canada: *Laricobius nigrinus* beetles and *Leucopis* silver flies. These two HWA predators stand out from others for multiple reasons, the first one being location. Both predators are native to Western Canada where they are closely associated with HWA. This eliminates the need to introduce new exotic species. Another benefit is their respective feeding patterns and timing. They complement each other by predating HWA during different times of the year. *Laricobius nigrinus* adults feed on HWA throughout the fall and winter, and the larvae feed on HWA eggs during early spring. *Leucopis* silver flies pick up where *Laricobius* beetles leave off and feed on HWA during late spring and early summer. Additionally, both are specialist predators and feed exclusively on adelgids, limiting the **impact**

their introduction may have on other species and communities. In the United States, hundreds of thousands of *Laricobius* beetles have been reared and released since 2003, and monitoring shows that the beetles have successfully established themselves and suppressed HWA populations. *Leucopis* silver flies have only been released since 2017, but results look promising. Together, these insects may prove a great tool for long-term management of HWA in Canada.

The biggest current limitation for biocontrol in Canada is a lack of available predators for release. Predators can be hand collected in the West and brought to Nova Scotia for release, but such operations are very time consuming and difficult. One might, quite literally, return empty handed. Instead, HWA predators can be reared in laboratory facilities and field insectaries in Atlantic Canada, which could provide consistent numbers of readily available predators for release.

Although the biological control research from the United States looks promising, there is one caveat—it is slow. It took years for biocontrol populations to build up in monitored settings, and given their small size, predators will likely not travel long distances to spread into neighbouring stands. Furthermore, released predators will only naturally spread into adjacent stands and establish there when enough food (i.e., HWA) is available. Even many years after the start of biological control releases, predators are unlikely to inhabit stands that contain no HWA. This means a freshly infested site that is far away from any previous biological control release sites will likely have no biocontrol predators for protection. Thus, releases have to be done at many individual locations, especially at the beginning of biological control programs.

Exactly how the biocontrol situation will unfold in Nova Scotia remains to be seen. Nova Scotia's unique landscape, climate, geology, and ecosystems make it difficult to predict potential timelines and effectiveness. More clarity can be provided once it has been tried and tested here, which will still take some years. Until then, chemical control may continue to serve as a bridging solution to preserve ecologically and culturally valuable hemlocks on the landscape, and it may remain an essential part of managing HWA as a rapid protection tool in the future.

Luca Voscort is completing a master's degree in Biology at Acadia University.

BLOMIDON NATURALISTS SOCIETY

2023 Membership Fees & Order Form

Members receive three issues of *Beyond the Tides* per year plus the monthly e-newsletter and the opportunity to participate in a range of nature programs and field trips. As a registered charity, BNS issues receipts for donations. Please note that BNS membership is not tax deductible. Annual membership fees are due January 1. Send payment by e-transfer if possible, or use this form and send a cheque or money order payable to Blomidon Naturalists Society at its address (see bottom right).

NAME: _____

ADDRESS: _____

_____

EMAIL: _____

TELEPHONE: _____

NO.	DESCRIPTION	PRICE	TOTAL
_____	Individual/family annual membership	$30.00	$_____
_____	Student membership	$15.00	$_____
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_____	2023 BNS Calendar	$15.00	$_____
_____	Natural History of Kings County	$10.00	$_____
_____	Within the View of Blomidon	$10.00	$_____
_____	Wildflowers of Nova Scotia	$20.00	$_____
	Postage: $4.00 (calendar), $6.00 (parcel)		$_____
	Tax-deductible donation (registration number: 118811686RR0001)		$_____
		TOTAL PAYMENT	$_____

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Blomidon Naturalists Society
treasurer@blomidonnaturalists.ca
P.O. Box 2350, Wolfville, NS B4P 2N5

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For more information and/or to become a member visit: *blomidonnaturalists.ca* or contact us at *coordinator@blomidonnaturalists.ca*.

BLOMIDON NATURALISTS SOCIETY

PHOTO: CAROLYN GREEN

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Wolfville, N.S. B4P 2N5