Beyond THE Tides

The Seasonal Journal of the Blomidon Naturalists Society

SPRING 2026
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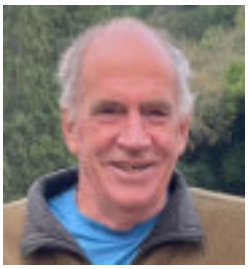
The Trouble with Uranium

Wandering through the Trees

Regenerating the Land

FROM THE EDITOR: NATURE RELATIONSHIPS



One of Premier Tim Houston's strengths has been his ability to focus government messaging on one priority topic. In his first term, it was health care. Once re-elected, the focus abruptly shifted to Nova Scotia's relationship with nature, or in his terms—prioritizing "resource extraction". In short, nature exists for the extraction of resources by multinational corporations who reap profits and share some of them with the government and indirectly all Nova Scotians. It is a top-down, utilitarian, economic approach absent of empathy, feelings, or caring for nature and rural communities. It returns the province to the economic models of the 20th century where the next successful mega project was always around the corner. The approach was less explicit in those days, and a far greater proportion of the population lived in rural communities and depended on natural resource extraction for their incomes. Now, Halifax businesses, services and industries dominate the provincial economy. Rural livelihoods are diversifying and rural relationships with nature are changing. This issue of *Beyond the Tides* looks at resource uses from diverse perspectives.

Elisabeth's Kosters lead article, *The Trouble with Uranium,* confronts the Premier's resource extraction focus head on—it is critical and pragmatic, emphasizing the need for rationality in uranium mining decisions. In contrast, the articles on sustainable woodlots and restoring land through rotational grazing express a caring spirit to working with natural resources. Nature is providing an integrated lifestyle and there is reciprocity beyond the dollars and cents. The articles emphasize local individual and community contributions while anyone exploring for uranium would probably be flown in for the work. I suggest reading these three articles first and consider their resource approaches in relation to the artwork about trees that Doug Pope shares in the piece entitled *Wandering through Trees.* All the themes are embedded in the artwork—it is worth reflecting on how you see them. Finish off with reading Soren Bondrup-Nielsen's reflections on how he uses natural resources in his home (firewood) and how Marcel Rochon considers nature as a pathway to mental health. Hopefully, this issue will leave you reflecting on how you use "natural resources" and connect to nature in your life.

Alan Warner
editor@blomidonnaturalists.ca

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 set 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 in 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.

Beyond THE Tides

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PHOTO: BOB SHIELDS.

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GIFTS RATHER THAN RESOURCES

The term “resource” is so loaded. We talk about natural resources (are there “unnatural” resources?), renewable (wood fibre, fish, etc.), and non-renewable resources (fossil fuels). We treat resources as if they are exclusively for human consumption. All renewable resources are part of ecological food chains, where nutrients originate from the soil and pass through numerous living organisms, sustaining them, and then eventually return to the soil. When we use renewable resources, we may disrupt ecological processes, eliminating biological links (organisms) that previously participated in the transfer of energy and nutrients. We are typically reducing biodiversity when we use resources.

Nova Scotia has a premier who is gung-ho on maximizing the extraction and use of both renewable and non-renewable resources. Renewable resources can indeed be used sustainably if we do not overexploit them. BUT, I am reminded of the supposedly "sustainable" cod fishery, which collapsed in 1992 due to overfishing. It took 34 years for the cod to recover somewhat, but they are now only half the size they used to be. The Wabanaki forest is being used unsustainably, changing it from a forest dominated by old shade-tolerant species to one dominated by young shade-intolerant species, a process termed borealization.

The fishery and forestry industries argue that they manage resources sustainably, but their claims are distorted to maximize profitability rather than ecological sustainability. Economics underlies the arguments, not science.

Robin Wall Kimmerer, the author of *Braiding Sweetgrass*, views resources as "gifts from nature", which changes one's perception of them. We need to change our terminology. When we treat a resource as something we can take and possess and do with as we please, then we bypass the concept of sustainability. As a gift, on the other hand, it becomes something that one treasures and protects. Yes, Nova Scotia has many gifts from nature, but let's treat them as gifts, not as ‘resources’ for exclusive human use.

Soren Bondrup-Nielsen
Past President, Blomidon Naturalists Society

The primary objective of the Blomidon Naturalists 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, water, air, plants, animals, 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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The Trouble with Uranium in Nova Scotia

Uranium mining has returned to the political agenda and citizens deserve factual information on the geology, mining practices, economic promises, and environmental and public health risks.

BY ELISABETH KOSTERS

Uranium mining hadn't been on the minds of Nova Scotians for decades and certainly not since the provincial government legislated a ban on its exploration and production in 2009. The issue returned with a vengeance last spring when Premier Tim Houston, having won a supermajority, lifted that ban and opened the province to uranium exploration in three designated areas. A whole new generation of concerned citizens needs factual information when questioning the government's actions.

I am only one of many scientists, medical doctors and community members who have provided the public with information. I have attended and given half a dozen presentations at community meetings about the geology and associated presence of uranium and radon in the Nova Scotia subsurface.[1] This article has the same goal: to help readers understand the origin and behaviour of uranium and describe where and why radioactive uranium and its decay product radon occur. I also summarize the public health risks as documented in the scientific literature. This is factual, science-based information. I then analyze whether the Nova Scotia's government's move to end the ban on uranium exploration and mining makes sense, both economically and for public health and well-being. I'll spill the beans: I don't think it does.

Others do think it makes sense, including the Mining Association of Nova Scotia, and Premier Houston (a former accountant), who appointed himself as energy minister in the fall of 2025. Yet as recently as 2019, then-Department of Natural Resources (DNR) executive director Don James (a geologist) stated publicly that uranium exploration would not result in additional necessary knowledge regarding radon risk and that exploring for uranium itself would have no additional benefits. He has since retired.

A History of Uranium Exploration

The Ecology Action Centre provides a detailed outline of the history of uranium exploration in Nova Scotia[2] which I briefly summarize below as a foundation for understanding the current context.

Conservative premier John Buchanan first executed a moratorium on uranium exploration and mining in 1981. This action was prompted by pressure from rural Nova Scotians who had been confronted with uranium exploration activities near where they lived. In 1982, Premier Buchanan initiated a public inquiry on uranium mining, led by Judge Robert McCleave, a former Progressive Conservative MLA. The inquiry consisted of 44 public meetings across Nova Scotia and resulted in a well-known 1985 report,[3] which cautiously advised against uranium exploration and mining for at least five years.

> Uranium is a critical mineral deemed essential for the transition from a fossil-fuel dominated economy to a carbon-free economy... Is it necessary and sensible to open Nova Scotia to uranium exploration and mining to facilitate the energy transition and meet Canadian needs?

This report predates the end of the Cold War and the collapse of the Soviet Union in 1990. It is still worth reading: it wasn't altogether opposed to further uranium exploration and mining, if the right caveats were in place. It said: "the inquiry considers that much public anxiety would be alleviated should peaceful purposes be found for Nova Scotia uranium. Unrest cannot be entirely eliminated because the uranium industry has been noted for its secretiveness and has thus laid itself open to misrepresentation and mistrust..."[3]

In 1994, Premier John Savage convened an interdepartmental committee to re-examine the issue. The committee recommended removing the ban, but the premier ignored this recommendation. Fast forward 15 years: in 2009, NDP Premier Darrell Dexter signed the ban into law.

Premier Tim Houston lifted the ban on uranium exploration on March 25, 2025, having announced that he would do so in his letter to the caucus a couple of months earlier. DNR opened a call for exploration in three locations (Figure 1).[4] Each of these sites had been subject to research and exploration in the 1980s and 1990s. The deadline for bids was May 15, 2025, but none were received by that date, and the issue has receded—at least for now, but there is no reason why the Premier can't restart this process anytime he chooses. After all, Premier Houston promised he would take the 'No' out of Nova Scotia shortly after being re-elected in late 2024.

The call for bids for uranium exploration was a hastily and poorly put-together process: a company would be required to bid on all three sites, and the successful bidder would also have to do the required public consultation. This was clearly unattainable in such a short time frame. Exploration companies have summer field work planned nearly a year in advance. It was unrealistic to expect a company would comply with all the requirements in a matter of weeks.

The issue may return in the near future and citizens deserve factual information on the geology, mining practices, economic promises, and environmental and public health risks.

Uranium—The Basics

Uranium is one of the heaviest elements. Elements are made up of a core of protons and neutrons, surrounded by a cloud of electrons. In nature, most elements occur connected to other elements as molecules. Probably the best-known example is water, written as H_2O. Each water molecule contains two hydrogen (H) ions and one oxygen (O) ion. An ion is an element that isn't neutrally charged. In water, the two hydrogen ions (each with a +1 value) share an electron with an oxygen ion (with a -2 value). In the water molecule, these three ions are bound together in a molecule that has a neutral charge and is stable.

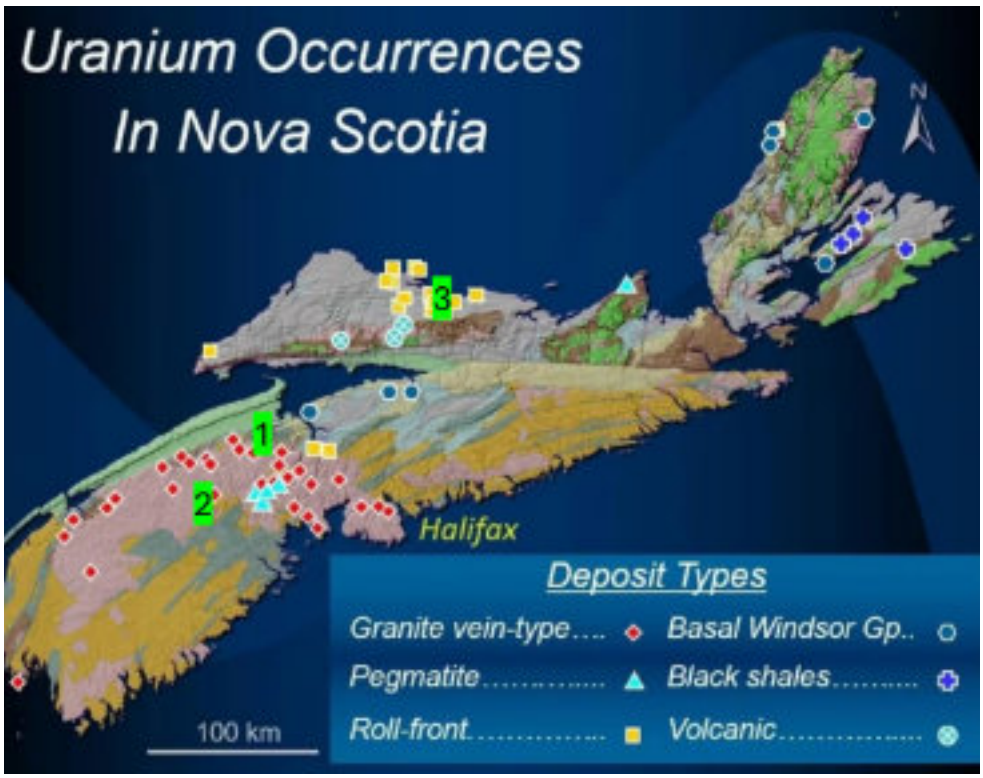


Figure 1. Uranium occurrences in Nova Scotia. The different land shading indicates different rock types. Pink indicates granites. Grey indicates sandstones. The numbers indicate the sites the Nova Scotia government identified for exploration in the Spring of 2025. They are: Millet Brook/Vaughn, 2 East Dalhousie, and 3 Louisville/River John. In sites 1 and 2, uranium occurs as uraninite in two different types of veins in the granite (granite vein and pegmatite). At site 3, uranium occurs as a "roll-front" in subsurface sandstones. The other three types of deposits are not relevant at the moment because no exploration sites have been declared for these areas.[4]

Most uranium occurs in a mineral called uraninite (also known as pitchblende), a uranium-oxide, in which the uranium ion is unstable. If an element is unstable, it ejects protons or electrons until it reaches a stable state. In doing so, it changes into other elements. This process, the constant ejection of protons and electrons (called "alpha" and "beta" particles) releases energy. This energy is what is called radioactivity and can be harnessed as nuclear power.

The "half-life" of an unstable element (an "isotope"), such as uranium-238 (U-238), is defined as the time it takes for the radioactivity of that isotope to fall to half of its original value. U-238 decays to lead

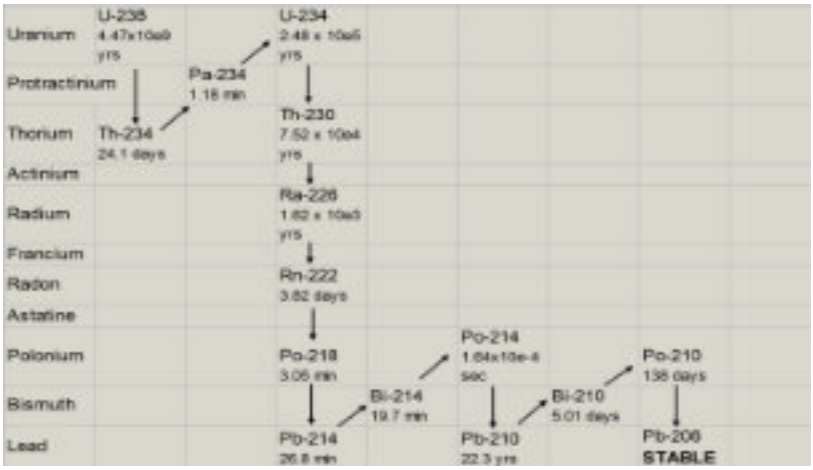


Figure 2. The decay of unstable uranium-238 to stable lead-206 takes 14 isotopic changes during almost 4.5 billion years. Most of this time is taken up by the first decay step to thorium-234.

(Pb-206), a stable element, through fourteen intermediate steps, one of which is radioactive radon gas (radon-222,Figure 2). Radon gas is a public health risk. The first step in that decay chain, from U-238 to Thorium-234 takes almost 4.5 billion years. All the other decay steps together take about 76,000 years.

The earth is 4.5 billion years old, so half of all the radioactive U-238 that was present when the earth formed has now decayed to stable lead. It will take another 4.5 billion years before another half (1/4 of total) of the earth's radioactive U-238 becomes lead, and so on. Radioactive decay is an exponential process, and this means that the earth will never be without radioactive uranium. Uranium is distributed unevenly throughout the earth's crust due to geological processes. Nova Scotia was dealt a sizeable portion and the aim should be to live with it as safely as possible.

Since uranium is mobile, particularly in this moist climate, it seeps from its host rock into groundwater. According to a recent report,[5] more than 26,000 private wells in Nova Scotia are at risk of having more uranium than the safety standard. Too much uranium in drinking water may affect kidney functions. The Canadian guideline for uranium in drinking water is 0.02 mg/litre; levels in some Nova Scotia private wells were found to be between 0.005 and 0.83 mg/litre. A carbon filter built into the well head may provide sufficient protection.

One of the decay products of uranium is radon-222, a gas. Radon gas is heavier than air. As uranium decays, radon gas escapes from the earth's crust. In open air, it quickly dissipates, but it can accumulate in poorly ventilated basements. Lingering radon gas may cause cancer in respiratory organs (throat and lungs). The Nova Scotia Department of Natural Resources has created a radon risk map that is accessible online (Figure 3).[6] Radon test kits can be obtained from public libraries. If a home is in an area of high radon risk, it's a good idea to get it tested.

The Canadian Association of Physicians for the Environment (www.cape.ca) is the recognized authority on the public health risks surrounding uranium, both as it occurs naturally and as a consequence of mining.

Uranium Occurrence

The source of uranium in Nova Scotia is its granitic rocks. Granite mostly consists of three different minerals, all silicates (composed of silicium and oxygen). Granites usually contain all kinds of additional minerals including uranium. Because

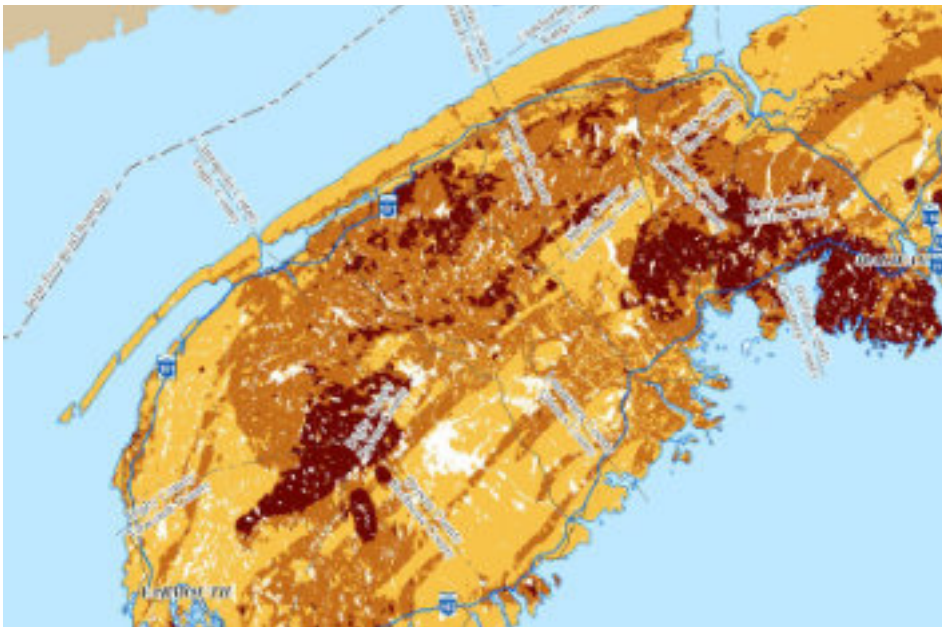


Figure 3. Part of the Nova Scotia Radon Risk map, published by the Department of Natural Resources. This is a screenshot of the interactive online map. The darkest colours indicate areas with highest radon risk. Compare this figure with Fig. 1 (p. 4) and it becomes evident that the highest risk of radon exposure coincides with areas that are exposed in granites.[6]

uranium is mobile, especially in the presence of water, it migrates slowly through the granite and into other rocks that are the product of erosion and redeposition from a granite. These processes take hundreds of millions of years.

Uranium prefers to attach itself to silicate minerals. Most of the earth's crust is made up of silicate minerals, and the most common one is quartz. The earth's crust is not homogeneous and hence neither is the distribution of uranium in it. Nova Scotia's granite bodies are all around 400 million years old (Figure 1, p. 4). The granite bulged up from deep in the earth's crust at a time when the piece of continent now called the southern Nova Scotia mainland was at a tropical latitude. This wet tropical climate caused deep weathering, and when the granite was exposed to this deep weathering, it crumbled and turned into a thick weathered cover, a common component of which is an iron-rich soil named "laterite". Thick laterite layers are found today in tropical Brazil and the Guyanas on top of and near large granite bodies. In those countries, the laterite is mined for aluminum.

In Nova Scotia, the soils that covered the granites eroded away after millions of years and were redeposited in low lying areas surrounding the granites. Research suggests that this was a relatively fast process from a geological perspective.[7] The uranium was redeposited as a part of this process, and both the uranium and its decay product radon-222 now exist in the granite as well as in the sedimentary rocks surrounding the granite bodies. Given these processes, the manner in which uranium occurs in granite bodies is different from the way it occurs in the sedimentary rocks surrounding the granite bodies. In the granites, it preferentially occurs as enriched zones in the bedrock. In the sedimentary rocks, it occurs as a uranium-enriched front, formed as a result of uranium-enriched groundwater seeping through the bedrock (Figure 4). As a result, the mining processes in the granite would be very different from mining processes in the sedimentary rock.

Mining Methods

The Nova Scotia government invited an exploration proposal for three different sites in May, 2025. Historic exploration and research had identified each of these sites (as well as others) as potentially holding significant amounts of uranium ore. The Mill Brook and East Dalhousie sites are in the granite body of the southern mainland, and the River John site is in sedimentary sandstone on the Northumberland shore (Figure 1, p. 4).

The manner in which uranium occurs in granite and in sandstone is very different and this means that the mining methodology would also be different. If it ever came to it, the granite bodies would likely see open pit mines and the sandstone bodies would see solution mining. Open pit mining is attractive when the resource is relatively close to the surface but thinly distributed, as in the case of uranium in granites. Solution mining is optimal for uranium that occurs as concentrated deposits in sandstones deep underground, such as in the River John area.

Open pit mining and subsurface practices carry a risk of radioactive dust in the area surrounding the mine as well as ground and surface water contamination. Given that homes in all three Nova Scotia exploration areas are predominantly on private wells, this process would increase the known risk of well water contamination. Mining creates waste piles and because

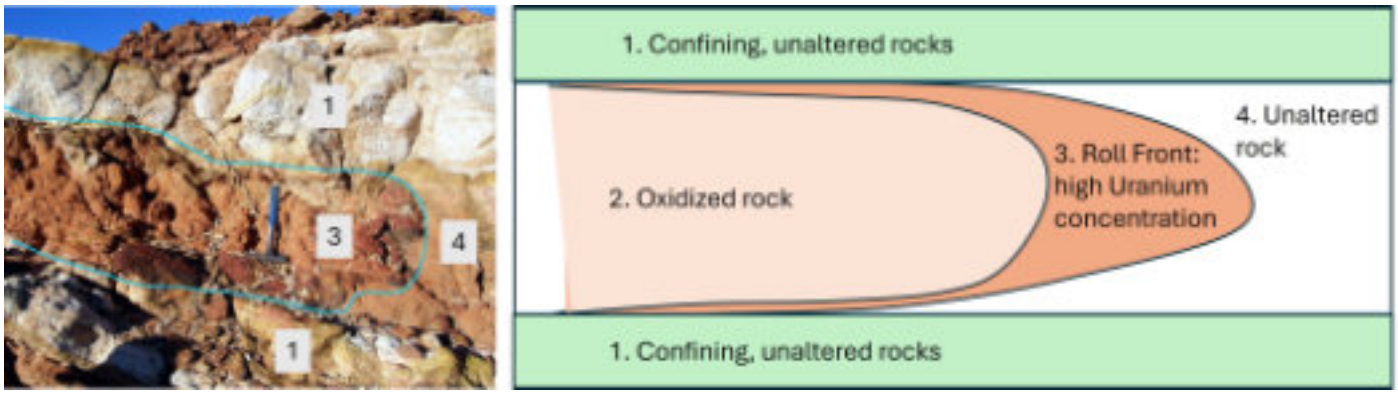


Figure 4. To the left is an example of a very small uranium roll front deposit in a rock outcrop. Note the hammer for scale. The uranium is present as a dark coloured zone. To the right is a diagram showing the interpretation of such an outcrop. SOURCE: WWW.GEOLOGYFORINVESTORS.COM/AN-INTRODUCTION-TO-URANIUM-DEPOSITS.

uranium isn't nicely concentrated, it's hard to extract it completely. This means the waste will remain radioactive until the end of times. No matter how well waste containment is implemented, stored uranium mine waste is always a serious public health risk.

Figure 5. Cigar Lake uranium mine, Saskatchewan. PHOTO: DAVID STOBBE, REUTERS.

The uranium in the sedimentary rocks presents itself as "roll front" deposits (Figure 4, p. 6) in which the uranium moves through the rock—a very slow process! Exploration seeks to locate the nose of the front, where the highest concentration of uranium is found. If such a roll front is located and worthy of production, a solution mining plant is constructed to extract it (Figure 6). The uranium in the River John area would be mined using this method. A solution-mining plant needs large amounts of water to extract the ore in solution, and such wastewater is radioactive and must be stored until the end of times.

Uranium Mining in Nova Scotia

Uranium is a critical mineral as defined by the Geological Survey of Canada. These are minerals deemed essential for the transition from a fossil-fuel dominated economy to a carbon-free economy. Society must move away from a carbon-based economy urgently, because the excessive burning of fossil fuels causes global warming. So, is it necessary and sensible to open Nova Scotia to uranium exploration and mining to facilitate the energy transition and meet Canadian needs?

Canada was the world's largest uranium producer until Kazakhstan increased its production in recent years. All Canadian uranium is mined in subsurface mines in the Athabasca Basin in Northern Saskatchewan, an area the size of the southern Nova Scotia mainland. All of the mine waste is stored above ground. Eighty percent of Saskatchewan uranium is exported. The Athabasca Basin area is uninhabited except for the Indigenous community of Wollaston Lake/Hatchett Lake, population 1,200. Wollaston Lake is at least 20 km from the nearest uranium mine. A 20-year health monitoring project shows that the local people can safely consume the fish they catch and the game they hunt, unlike the communities around Elliott Lake, Ontario, site of a uranium mine that operated between 1960 and the early 1990s. Wildlife in the Elliott Lake mine area is unsafe for consumption because the wildlife contains too much uranium.

Uranium is mobile, and more so when more water is present. The Athabasca Basin experiences an average of 200 mm of rainfall per year. In contrast, Nova Scotia receives an average of 1,400 mm of rainfall per year. The Nova Scotia climate creates a greater risk for unwelcome uranium mobilization than Northern Saskatchewan. Thousands of Nova Scotia homes that rely on provate wells are within spitting distance of uranium reserves. There are also uranium deposits in British Columbia and Québec, and both of these provinces have bans on uranium exploration. If uranium is going to be mined, it is best to concentrate the effort in Saskatchewan. It has enormous uranium

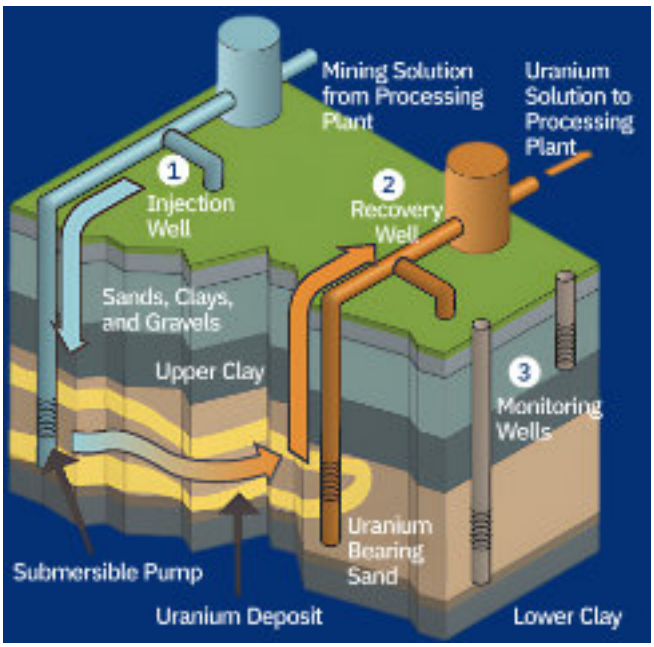


Fig 6. Uranium solution mining underground processes. SOURCE: UNITED STATES NUCLEAR REGULATORY COMMISSION.

deposits, and the mines seem to have less potential for negative health impacts on human communities.

Although most of the top quality Saskatchewan uranium is exported, Canada won't have a shortage of uranium for domestic use. If Canada needs more uranium to feed future domestic need, exports can be reduced. Canada won't ever run out.

The Global Context

Let's look at the global picture (Figure 7): Kazakhstan has 14% of the world's known uranium reserves and produces more than 40% of the world's uranium. The United States imports almost half of its uranium from Kazakhstan, Russia and Uzbekistan. An additional quarter comes from Canada and a quarter from elsewhere. Thus, the US supply is somewhat insecure. The state of Virginia has large, high quality uranium deposits, but has a moratorium on its exploration and production because of health risks. The current US government supports both the nuclear sector and the power-hungry tech sector. Because artificial intelligence and cryptocurrency require vast amounts of electricity and demand is surging, the United States government sees nuclear power as one solution to meeting this increasing energy demand.

Together with other political insecurity, the added US demand has caused the price of uranium on stock markets to rise, which encourages uranium exploration. A company doesn't earn any money until it starts selling the resource, but it gains investment/stock value during the exploration phase: mineral exploration is glorified game of roulette. Economically, uranium mining in Nova Scotia will never compete in costs and scale with deposits in Saskatchewan, but exploration could bring companies increased investment. Opening up densely populated Nova Scotia to uranium exploration simply makes no sense from an economic point of view, and it would put rural communities and their businesses at a risk of radioactive pollution.

Dame Jane Goodall passed away when I began work on this article. Despite the enormous popularity of her conservation message, the extraction of earth resources and the destruction of natural habitats on the planet has accelerated at a massive pace over the past few decades. It is ever more important to be selective and cautious when considering whether to extract the earth's resources. Proceeding with uranium extraction in Nova Scotia would not contribute to making Canada more energy independent. The recognized health risks outweigh any marginal economic gain.

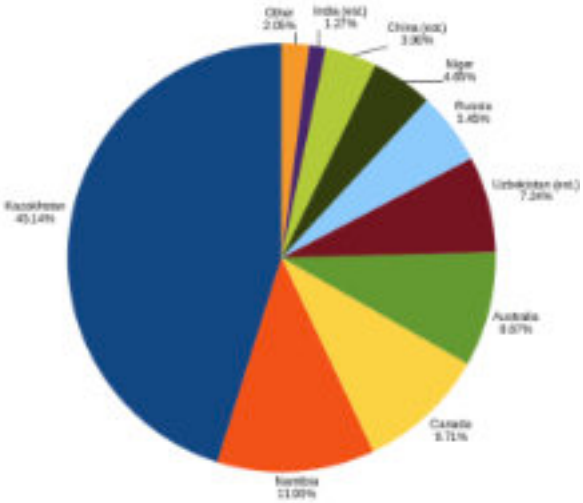


Figure 7. 2021 global production of uranium by country.
SOURCE: WORLD NUCLEAR ASSOCIATION.

Elisabeth Kosters is a retired sedimentary geologist who studied and worked in the US, the Netherlands, and Canada.

[1] I wrote articles in the Halifax Examiner and submitted statements to municipalities. All these, and my powerpoint presentation, are at www.earthsciencesociety.com. Select 'uranium' in the right column.

[2] https://ecologyaction.ca/sites/default/files/2025-03/Uranium_Mining_Factsheet_v3.pdf

[3] McCleave, R.J., 1985, Report of the commission of enquiry on Uranium. Nova Scotia Open File Report ME 612, 345 p. https://novascotia.ca/natr/meb/pdf/ofr612.asp

[4] Rushton, T., 2025, Request for proposals for Uranium mineral exploration, , May 14, 2025. Closing date June 11, 2025, 22p. https://novascotia.ca/uranium-exploration-request-for-proposals/docs/uranium-exploration-rfp-millet-brook-en.pdf

[5] Kennedy, G.W. and J. Drage, 2020, A Uranium-in-well-water risk map for Nova Scotia based on observed Uranium concentrations in bedrock aquifers. Department of Natural Resources, Open File Report 202-01. www.novascotia.ca/nse/water/uranium.asp

[6] Nova Scotia Department of Natural Resources: Radon Risk map. https://fletcher.novascotia.ca/DNRViewer/?viewer=radon

[7] O'Beirne-Ryan, A.M. and M. Zentilli, 2003, Paleo-weathered surfaces on granitoids of southern Nova Scotia: paleoenvironmental implications and saprolites. C*anadian Journal of Earth Sciences, 40,* p. 805-817. https://cdnsciencepub.com/doi/10.1139/e03-016

Regenerating the Land with Grazing Animals

Restoring biodiversity, addressing the climate crisis, and producing quality, healthy food through local meat production.

BY SILAS & LOUISE HANAVAN

Fresh pasture forage daily makes for happy and healthy sheep.
PHOTO: ALYSSA RAY TAN.

In Gaspereau (Sikunme'katik), White Rock Farm is part of a movement towards regenerative farming that responds to climate change by working with natural processes rather than against them. At a human scale, we raise sheep and poultry on pasture in a way that supports soil life, plant diversity, and animal health, while providing high-quality food to nourish our community. Animals play a major role in restoring the soil's ability to capture carbon and sustain future food production. The various forms of support from the broader community make our small-scale effort viable. Many people have not thought carefully about how domestic animals interact with the land they graze; many simply enjoy the meat they consume while others avoid meat in their diets due to environmental concerns. The aim here is to share how regenerative farming practices can foster climate resilience, biodiversity, and health.

We raise sheep, layer chickens, and meat chickens on pasture in a rotational grazing model. This means moving them every day onto fresh pasture that no animal has grazed for at least 30 days, and only allowing enough space and forage to feed them for one day. Their new daily pasture is clean, fully recovered from previous grazing, and rich in high-quality biodiverse forage. Rotational grazing mimics what ancient grassland animals would have done before domestication when they continuously moved to new areas and stayed together in a herd. This approach is dramatically different from modern-day conventional pasture management, which tends to keep animals in a large area for weeks or months at a time, or in a barn with access to the same pasture daily, or in a barn and feed animals only harvested forage and grain-based feeds.

Early spring grazing shows evidence of sheep impact and daily movement over a pasture.
PHOTO: SILAS HANAVAN

Rest periods allow some plants to go to seed fostering a diversity of natural pasture perennials. PHOTO: SILAS HANAVAN.

Mid-season fallow forage, not yet grazed, offers a good stock pile for late-season grazing. PHOTO: SILAS HANAVAN.

Practicing rotational grazing can seem like a lot of work at first glance, but the benefits to animal, plant and soil health, and food quality and production far outweigh the workload. When the animals don't stay too long in one place, they only eat the freshest and tastiest top portion of pasture plants that are further away from the soil. Because most animal parasites live on the soil surface, this practice greatly reduces the need for chemical deworming. It also fulfils the animals' natural desire for fresh new forage, which keeps their bodies clean and healthy. The approach distributes manure evenly over the whole pasture rather than having the animals over-fertilize and trample one favourite hang-out spot. They are provided fresh pasture daily, appropriate for the number of animals and the size of the area (the stocking density). This gives them a balanced diet, as they eat the tops of all the plants in the small area rather than just the tastiest "ice cream" plants in a large area.

As a piece of land is reverted to a perennial forage base with rotationally-grazed ruminant animals, the number of head per acre can grow; as the soil is healed, the forage becomes more plentiful, nutritious and palatable with better resilience to extreme weather...

Benefits for the Plants and Climate

Rotational grazing uses the magic ratio of thirds to help plants thrive in a more natural way. The aim is for the animals to take one-third of the available plants, trample a third, and leave a third. We try to keep the length of the plants equal to the depth of the roots. Our pastures had been lying fallow for many years before we started farming on them, which meant that the roots had grown deep into the clay soil. We spot cut some of the lesser-quality plants but have never fully cut the pasture, so we haven't lost the root depth as happens when plants are cut short. This has left a lot of plants standing, shading the ground. Some of these plants may be trampled during grazing, adding more protection to the soil, providing food for the worms, and incorporating carbon into the soil, where it is held in place. In contrast, pastures that are over-grazed or cut short year after year have a far shallower root base with more chance for moisture evaporation. This results in poor plant health and is a particular problem in drought conditions such as last summer. It also releases the stored carbon back into the atmosphere.

The practice of providing adequate resting time before the animals return allows plants to recover from being grazed, which helps them keep the energy stores high in their root systems. They can then send out vigorous regrowth with more leaves than previously, resulting in more food for the next grazing. Keeping the proper number of animals on the pasture for the area size is essential to support regrowth. If the animals graze too long in one space, they take too much of a plant, which loses almost all the leaves that capture energy from the sun. If all those leaves are eaten or cut short, the plant must rely on the energy from its roots to start the regrowth. This drains the roots and some die off, resulting in less regrowth and less food for the animals when they return. This can

The chicken tractor moves twice a day offering chickens protection from predators and ample fresh forage and insects, complementing the sheep's impact on the soil.
PHOTO: ROBERT WAGNER.

become a vicious cycle when the animals return, as they again take too much of the plants and weaken them further. Eventually this cycle leads to the plant dying and the pasture being "overgrazed", which adds a whole host of additional problems for the remaining plants and the soil. In contrast, if a moderate amount of plant material (about a third) is grazed off and adequate time for regrowth is provided, the plant thrives.

Enough rest time for the pasture is also a key to parasite management. If the animals come back to an area too soon, the parasites are ready and waiting for the animal host, and the parasitic cycle continues. If there is adequate rest time (at least a month), the parasites are left waiting longer than their life cycle allows, mostly dying off before the animals return. There will always be some parasites, but providing adequate rest for each area greatly reduces their numbers and allows the animals' bodies to stay healthy such that chemical deworming is not required.

Leaving some of the plants standing after animals have passed through also benefits the pasture and soil. It allows some of the plants to fully go through their natural cycle and reseed themselves, which means that new plants will sprout in future years. The standing plants left in the pasture also help shade the soil from moisture evaporation and are a good insurance policy in case the regrowth of grazed plants is stunted by, for example, a drought. In addition, the leftover standing plants are available for the animals when they return in the next rotation. This forage left standing is often called "stockpiled forage". In the later months of the year, the animals are happy to continue feeding on the stockpiled forage until deep snow arrives, which saves on hay costs later in the fall after regrowth stops. The stockpiled forage also helps protect the pasture over the winter from soil erosion due to heavy rains and freeze-and-thaw cycles. These plants grow until everything shuts down in the cold at the bitter end, setting the plants up for quick and full regrowth during the spring flush.

Industrial versus Rotational Costs

At first glance, industrialized farming techniques seem to produce far more animals on a much smaller area with the use of machines and advanced barn technologies that involve far less physical labour. With the use of chemical-fertilized grain feed and harvested forage, many more animals can be raised in much less space. This is all true—at the beginning. Looking at the bigger picture though, vast amounts of acreage and energy inputs are needed to cultivate, grow and harvest the grains and forage that support these systems. Massive combustion engine machines and implements are needed to the detriment of the climate and soil life. It means a less natural diet for the animals and incurs massive costs, which often show up as farmer debt and government subsidies to the agri-chemical industry. As a piece of land is reverted to a perennial forage base stand with rotationally-grazed ruminant animals, the number of head per

Late season fallow stock pile. The sheep know there is no new growth left and are perfectly happy to continue to move over older standing forage until the deep snow arrives and they move to hay bales. PHOTO: ROBERT WAGNER.

acre can grow; as the soil is healed, the forage becomes more plentiful, nutritious and palatable with better resilience to extreme weather patterns, yet the human work load stays about the same. These techniques can be scaled up to large operations with only the use of small machines like ATVs to transport portable fencing and some simple haying equipment in areas with deep winter snow. Reverting crop fields to pasture lands can sequester far more carbon in the soil and keep it there, helping the climate, the animals and the humans

It is a work in progress to learn and successfully practice regenerative techniques for the benefit of the animals, the pasture, and the production of meat. We aim to share this knowledge and experience with consumers and producers locally, nationally, and even internationally.

Communities Grow Regenerative Farms

Even for a small, start-up, first-generation farm, the amount of human and financial capital required is massive. Land cost and access, perimeter fencing, portable fencing and shelters, animal stock, and water systems all take considerable investment of money, labour, and expertise. Some of these costs can be subsidized by government grants, which we have been lucky enough to utilize. Programs such as the On-Farm Climate Action Fund recognize the implementation of regenerative practices such as rotational grazing as an important part of addressing climate change and have helped us with some of our infrastructure purchases. Government investment in small-scale regenerative farms still pales in comparison to the subsidies offered to industrial agricultural systems.

We would not be successful without the help and support of many community members—our human capital. For example, we benefit from being able to use pasture without rent, which our practices restore and steward. We are offered front decks and entryways in towns and cities as customer pickup locations for farm products. Volunteers join us for farm work parties to help get tractor-sized jobs completed by hand. Our community supports us in many ways as we help feed them. We use a direct market sales model and call this community the “White Rock Farm Country Club". We try to treat club members well, offering them our high-quality, hard-to-source farm products first, sharing our farming journey/story as we go, and announcing farm events or gatherings. This is a valuable means of sharing farming knowledge about their food products and bringing them along on the ups and downs of our farming shenanigans. In return, Country Club members treat us well by pre-paying weeks and months in advance, buying in bulk, and committing to regular weekly orders. This member support helps us use freezer space efficiently for incoming products, enables us to plan big feed and equipment purchases, and lets us tailor production to the demand without waste. It all enables us to provide for our farm and family.

Silas, Hilda, and Louise Hanavan in their pasture. PHOTO: ELI GORDON.

Silas and Louise Hanavan are co-owners along with their 12-year-old daughter Hilda of White Rock Farm, which is a community-supported effort to produce, distribute, and enjoy food that does right by the soil, the animals, and the climate. To join the White Rock Country Club (free membership), email whiterockfarm.ns@gmail.com.

Sustainable Woodlot Management in Action

My vision is to develop a thriving forest for future generations.

BY GLEN ROSSE

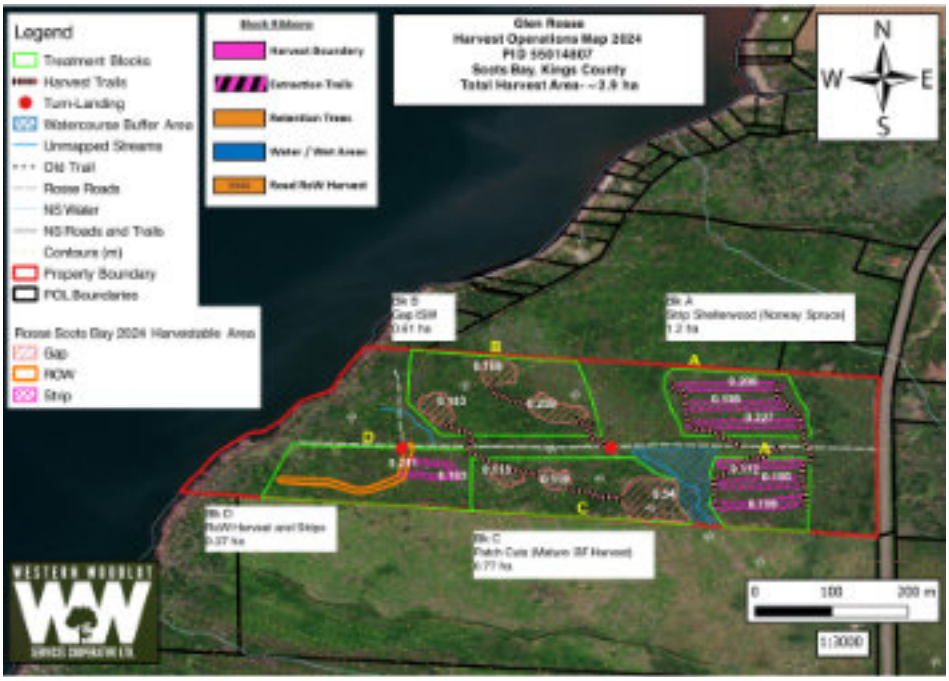
Glen Rosse on the shore below the family woodlot.

I have enjoyed all the therapeutic benefits nature offers through visiting my Scots Bay woodlot over the last thirty years, the changing of the leaves, the smell of the fir, and the calls of birds. There is peace in a forest that shelters me from wind and rain. Nature's life cycle is all around me, from seedlings to older trees. When I slowly look about, gazing from the forest floor to the tops of the trees, I discover bugs and insects down below, small animals moving across the forest floor, and sea birds watching over me from above. The forest has a special feel and character. It is a place that I cherish and try to steward.

Managing this woodlot requires complex strategies to maximize and balance the ecological, social, and economic benefits it can provide over time. My goal is to maintain and enhance the forest for today and for future generations. This article describes my journey over the past few years with my woodlot and hopefully may inspire others to reflect on more sustainable woodlot management practices.

Defining and Implementing a Plan

A long-term plan is key to managing a woodlot. One way to achieve this is to seek professional assistance. The Western Woodlot Services Cooperative (WWSC) provided expert advice for my woods. As a member of WWSC, I worked collaboratively with forest professionals Andrew Oliver and Bronson Joudrey to develop my woodlot in a sustainable way. The planning process required a detailed analysis of the forest inventory, water courses, buffers, and best places for extraction trails. It identified the intervention strategies best suited to maximize the benefits of the land. The stands to be harvested were carefully flagged and mapped using a GPS program. This operational plan resulted in a short-term disturbance in exchange for a healthier forest long-term. It is important to have a clear vision of how immediate activities will impact the forest decades in the future.



This map shows the operational plan for Glen's woodlot. The woodlot was divided into four harvesting blocks by the Western Woodlot Services Cooperative.

The operational plan for my 55-acre woodlot divides it into four distinct sections based on the nature of the forest (see map on the previous page). Block A is 20 acre plantation of Norway spruce that is 40 years old. This species was introduced to Nova Scotia by the Department of Natural Resources in the 1980s to help support the pulp and paper industry. Over the years it was weeded and thinned, and grew into an even-aged forest. The canopy is now preventing light from reaching the forest floor. We decided to harvest six small strips, each being 20 metres wide by 100 metres long. These strips were carefully planned, taking into consideration the direction of the wind, sun and water courses. Shelter wood strips support biodiversity better than a clear-cut. Trees that are shade tolerant will be planted in the shadows of the existing trees and those that require full sunlight will be planted in more exposed areas. The partial canopy helps regulate the temperature from extreme heat, keeps the soil moist during drought conditions, and protects the seedlings from strong winds off the Bay of Fundy. The trees around the perimeter of the strips benefit from more sunlight while offering protection to the next generation of seedlings. A buffer was left around the strips and extraction trails were cut to maximize the aesthetics. The six strips that were harvested totalled approximately three acres, or 15% of the Norway Spruce plantation in Block A. The picture below shows a harvested Norway Spruce strip and the slash that remains.

Bronson Jodrey standing in one of the patch cuts. He helped put together the operational plan for the woodlot.

The other sections of the property defined in the plan, called Blocks B, C, and D, are each 30-acres of mixed species of various ages. These blocks contained a high percentage of mature fir trees. I reviewed the forest management plan dated 1988 that was prepared for the previous landowner. The plan states that this area was clear-cut in the mid 1970s and was left to regenerate, so these patches are now approximately 50 years old. The operational plan flagged six of these stands to be cut as patches along with two more strips. The total amount harvested in Blocks B, C, and D was 4 acres or 15% of these sections. My goal was to maintain the integrity of the principal forest.

The total harvest of the four blocks was seven acres and yielded approximately 225 cords, or 30 cords per acre. Approximately 85% of the woodlot was untouched and the remaining forest should regenerate about one cord per acre per year. The principal stands in Blocks A, B, and C should yield 40 additional cords per year. At this growth rate, the 225 cords harvested could be replaced in six years.

Mike Manning harvesting a strip in the Norway spruce block.

The next stage after the harvest is to prepare the site for the reforestation process. Norway spruce leaves a huge amount of slash when harvested. We will deploy a combination of strategies to deal with this material. Some will be raked and piled, and some will be burnt for fire mitigation. The remaining slash will be left to

decompose and put nutrients back in the soil. Norway spruce does not regenerate on its own. So, the six strips in Block A will be planted with a diverse mixture of climate resistant species. The six patches and two strips in Block B and C will have some regeneration but very few hardwoods were in these blocks. Research determined the best species to survive climate change are red oaks, yellow birch, and sugar maple as well as some white pine, red spruce, and white spruce. It will take years before the new crop of trees will yield any substantial volume, but in due course they will grow into a remarkable mixed stand. To resource the necessary trees, we applied to the Clean Foundation's two billion tree program, and they have committed to planting the strips and patches.

Ecological, Social, & Economic Impacts

This more sustainable approach provides far greater cumulative and long-term environmental, economic, and social benefits relative to clear-cutting.

Ecologically, a sustainable woodlot will continue to sequester and store carbon, clean air and water, and mitigate climate changes, delivering environmental benefits. A clear-cut results in a net loss of carbon from the trees beyond the immediate extraction, as older trees store far more carbon each year than scrub regrowth. Clearcutting also results in major carbon losses from the soil due to increased soil temperature when the land is exposed to the sun. In contrast, I have been growing red oaks from acorns the last three years and planting them in a couple of the strips. Red oaks live a long time and capture more carbon than most other species. Their roots go straight down,

Thoughtful management can help restore a coastal woodlot that has been cut several times over the years.

enabling them to withstand strong winds, which is likely to increase given climate changes. Red oaks produce nuts and seeds, food for squirrels and deer. They also host a large variety of insects which attracts birds. Once the new mixed forest is established, a small rotational harvest could be planned on the principal forest.

Maintaining forests in a sustainable manner also has social benefits. It helps people appreciate community history and lifestyles, strengthening the community's social identity for future generations. When I walk through my woodlot, I often think of the generations who worked this property before me. Historical records reveal that a ship ran aground at Scots Bay in 1749 carrying immigrants from Scotland. With help from the Mi'kmaq, they survived the winter and started their new life farming, fishing, and shipbuilding. Perhaps some timber harvested from this woodlot built their homes, barns, and ships.

The access road for the woodlot.

A forwarding trail was used to transport the logs out of the woods for roadside pick up.

Firewood provided heat in the winter and was used for cooking.

In the 1880s, during the Golden Age of Sail, there were three shipyards and 14 sawmills operating in the Scots Bay area. *The Huntley*, one of the last four-masted ocean-going ships, was built at Lockhart shipyards in 1918. The ship was named after the Huntley family who operated a sawmill in Scots Bay. Huntley is still a common name in the community. As I walk through the trails on my property I wonder if a large red spruce was harvested here a hundred and fifty years ago to become a mast on one of those ships. The relationship to the past is part of the community's social identity.

Andrew Oliver and Mike Manning standing by the harvested wood.

From an economic perspective, sustainable woodlot management creates a long-term revenue stream unlike clear-cutting. It supports an ongoing and sustainable labor force benefiting rural communities. There are jobs for foresters, harvesters, truckers, road contractors, mill operators, and furniture makers that can provide for future generations.

My compensation was determined by a number of factors. It is important to balance the direct financial gains with the long-term investment. The most significant investment was road construction. It was essential to have the infrastructure for logging trucks to access the property. Most of the material to build my road came from a nearby quarry. This cost was spread out over several years by developing the road in phases. I now have easy access into the property for future harvesting treatments and recreation. The upfront cost of the road will provide long-term benefits. This investment should increase the property value over time. Forest Nova Scotia has a road assistance program that provides some funding for private woodlot owners.

The harvest did generate some revenue from the timber sales. Several factors contributed to the bottom line. The rates charged by harvesters varies and depends on their availability, the size of the job, and the location of the property. The cost of trucking also varies. The timber from my woodlot was sold to several different mills. Hauling to a small local mill cost less than the loads that went to Bridgewater or Truro. The mills pay different rates for stud wood and more for larger saw logs. The revenue generated from my harvest didn't cover the initial upfront infrastructure costs. Economic, ecological, and social benefits are all factors affecting sustainable woodlot management. It is difficult to calculate the immediate financial gains without taking into consideration the value added from developing a sustainable long-term resource.

Overall, my vision is to develop a thriving forest that offers ecological, social, and economic benefits for future generations. I feel a sense of responsibility to maintain and enhance this woodlot in a sustainable manner. As more woodlot owners adopt this approach, there can be a larger-scale impacts across the region and the province.

Glen Rosse owns a woodlot in Scots Bay and was the Woodland Owner of the Year for Western Nova Scotia in 2025 for his woodlot management practices. He supplied all of the photos.

Acknowledgements: I would like to thank WWSC staff Andrew Oliver and Bronson Joudrey for developing the operational plan and ongoing collaboration, Mike Manning for his careful harvesting techniques, and Jeff Whitney of Eagle Eye Excavation for his superb road construction. My parents and brother Raymond Rosse shared the vision and provided tremendous support cutting out the main road and silviculture work for many of the early years. My friend Reagh MacIntosh cleaned up the blow downs from Hurricane Dorian and planted several hundred hardwoods. My spouse Judy Beer provided support and encouragement.

Wandering through Trees

An art exhibition that illustrates how trees connect nature and culture.

NOTES AND REFLECTIONS BY DOUG POPE

Trees are valuable resources, symbols, and landmarks. They trigger memories, sense of place, and concern for environment. As forests, trees can ignite the imagination of poets and bring satisfaction and health to hikers, hunters, and householders. Trees encourage wandering: to move and observe without a fixed course or goal. To drift and explore in order to refresh and reorient. With these ideas in mind, the Robert Pope Foundation asked artists for work on the theme of trees. The response was overwhelming and led to the exhibition "Wandering through Tress" at the Chester Art Centre (Fall 2025) that included 22 artists from all four Atlantic provinces, and one international artist from Portugal. The show travels to Artsplace Gallery in Annapolis Royal and the Ross Farm Museum in spring and summer of 2026.

This exhibition invites viewers to wander through a diversity of media and styles of art: sculpture, ceramics, photography, fabric and installation art, books, painting, print and digital media. In this photo essay, I share a small sampling from the exhibition and hope you will be intrigued enough to view the full show in the coming months.

Melanie Zurba. *Fruiting Bodies,* 2024
Ceramic sculpture.

Melanie Zurba has sculpted a pair of feet sprouting mushrooms like the winged feet of the messenger god Mercury (at right). Melanie suggests that fungi are the messengers of the forest, bridging the world of plants and animals.

Alex Livingston creates a powerful sense of scale with a monumental tree under which a human figure appears ant-like in size (at right). This mixed media image combines historical woodcut, brushstrokes, and computer imagery.

Alex Livingston. *The Stillness of Time,*
2024. Digital print, paint, collage.

Luca Jesse Apel. *Muscle Fascia Study,* 2024. Wood sculpture.

Anatomy, Form, History

Artist Luca Jesse Apel depicts tissues, organs, musculature, and cells of the human body, carved from wood (above). Human anatomy shares essential features with other life forms, including trees. At first glance, Luca's sculpture appears to be an abstract design, though there is a matrix-like quality of repeating shapes and interlocking forms reminiscent of the intertwined branches of a tree or star-tipped rays of sun.

Elise Campbell's textile work (below) also has an abstract quality of colliding shapes and textures. Then we learn it depicts bark of rainbow eucalyptus, the world's most colourful tree, encountered by the artist on a trip to Hawaii. Because this species sheds its bark, an inner layer is revealed. Each layer changes colour with age and exposure to light. Transformation and sensitivity to light: these elusive qualities are captured beautifully by the artist in this vibrant and mysterious work.

In the background below, we see one of Ann Manuel's worry ladders, from a series of sculpted installations reflecting on stewardship of our forests. Entitled *Sustainability*, the work features a metal ladder, whose rungs are formed by blades of various saws and axes—all tools of the lumber industry. At the base are antique axes; at the top are teeth of modern cutting machines. This is a wry take on the theme of progress, as the artist suggests historical change through a succession of tools. The subject is trees, but cleverly no trees are ever shown. Like a tree, the sculpture is tall, powerful, and commanding of respect.

Foreground: Elise Campbell, *Rainbow Eucalyptus,* 2025. Fabric and paper.

Background: Ann Manuel. *Sustainability,* 2014. Metal sculpture with cutting teeth, blades, axes, aluminum, steel.

Drew Quon, *Uproot*, 2021. Digital photo composite fabric sublimation print.

Body & Space

For their series, *The Space between Us*, artist Drew Quon recorded a number of daring self-portraits in a wilderness setting. How different the image at left would be if the figure were clothed or on the ground! The figure fuses with the forest, echoing the tree's curved forms and outstretched limbs. The pose captures a sense of balance and fantasy. Drew's work exemplifies many of the notable features of performance photography, a hybrid genre where a landscape is transformed by staging an ephemeral action. Theatre meets nature, to explore themes of identity, body, and space. The artist's staged actions test physical and psychological limits. There is a raw quality, a sense of private gesture, but also something majestic, proud, and beautiful.

This detail of a painting below by Linda Johns shows a cosmic egg or water drop at the root of a tree. The bluish ball sustains a universe of life forms as it explodes outward through water, spider, tree, and stars. It is a picture of hidden energies and emerging life. In Linda Johns' painting, cool colours burst out of darkness. We sense organic transformation evocative of life cycles, growth, aging, and encounters with the unknown. The artist's work can be read spiritually or environmentally, capturing both the interconnections of life as well as the soul's journey to fulfillment.

Linda Johns. *Detail from The New Forest*, 2017. Acrylic on canvas.

Play & Connectivity

The richness of detail in Debra Kuzyk's ceramic tiles (at right) delights the senses and dazzles the eye with colour and activity. Her *Tree of Life* uses local animals to illuminate an ancient theme. Filling every inch of tile, Debra's tree links heaven and earth. It is a playful scene of creation, interconnectedness, and the abundance of life.

Conceptual artist Barbara Lounder and photographer/filmmaker Katherine Knight combine forces to create a series of images called Caribou Studies. Using brightly-coloured cord, the artists link tree to tree in a designated wetland area. Below we see one of many images that map the space. The string appears like a laser to point out details: a fallen branch, a horizon, a body of water. In this image, the lone tree has a single cord, but in the other images in the series, showing clusters of trees, the red lines between the trees becomes denser and web-like. It feels like the artists have invented a game and invited the viewer to play along.

Katherine Knight & Barbara Lounder. *Caribou Studies: Trunk and Branch*, 2016. Photograph.

Debra Kuzyk. *Tree of Life*, 2025. Ceramic tile.

Yawen Zhou. *After the Light Rain: Under a Cherry Tree,* 2013. Illustrated book.

Solitude and Community

Children's book illustrator Yawen Zhou uses spots of colour (at left) to celebrate the arrival of cherry blossoms in a Chinese village. This childhood memory of spring's awakening leads to a journey of discovery and delight.

Mindy Moore's forest of repeating shapes (below) are austere and featureless. Each piece has been raku-fired: the material is exposed to great heat, then placed within combustible material to create searing, unpredictable textures. The artist depicts trees such as tent poles, bones, and fingers. The artist does not show the canopy of leaves overhead; viewers must fill this in themselves. Fragile and mysterious, the work suggests a grove, the strength of community. Most definitions of community—shared location, common interests, cooperation, and mutual support—are aimed at people. We're starting to understand that microbes, animals, and plants also form communities as well as environments essential to human communities.

Mindy Moore, *Forest for the Trees*, 2024-25. Ceramic sculpture: Raku clay, glaze and firing technique. PHOTO: MARVIN MOORE.

Wandering through Trees

Curated by Doug Pope & Sue LeBlanc
Artsplace Gallery, Annapolis Royal, April 18 - May 30, 2026
Ross Farm Museum, New Ross, June 4 - July 31, 2026

This exhibition was initiated by the Robert Pope Foundation. Our bi-annual art shows focus on human interactions with the natural world and bring together fine art, craft, and popular culture. Each exhibition also features a science, educational, or historical perspective, such as the timeline on the following page.

How Trees Influence Western Culture in the Modern Era[1]

1700s. The Enlightenment in Europe: This is a time of scientific enquiry, political revolutions, and the first Industrial Revolution. Wood pulp is introduced to the printing process. This leads to an explosion of books, newspapers, and magazines, as well as the first encyclopedias, all of which support widespread education and ideas of democracy. Fossil fuels, powering the Industrial Revolution, come from the remnants of ancient forests. Trees are the basis of the wooden ships expanding world trade and scientific missions such as James Cook's voyage to Tahiti and Alexander von Humboldt's discovery of the ammonia-rich guano reserves on the Chincha Islands. Oxygen and photosynthesis are discovered, providing the first hint that forests clean the air and give us breath.

1800s. Romanticism & Evolution: Romantic poets and artists critique social effects of the Industrial Revolution and suggest nature has value apart from utilitarian uses. Concepts of evolution and ecology challenge fixed ideas about nature. Darwin invents a metaphorical "tree of life" to illustrate how evolving species branch off from common ancestors. Wood products supply wealth necessary for colonial expansion. North America is stripped of its forests and global populations double. To compensate, the first national parks are created. Urban parks also gain popularity, the first hint that a green city is healthier for its inhabitants.

1900s. The Modern Age: Vitamins are discovered, including Vitamin C, which comes from the fruit of trees. There is a growing awareness that diet, lifestyle, and environment are corner-stones of robust health. Lynn Margulis' theory of endosymbiosis (animal and plant cells form beneficial partnerships with mitochondria, chloroplasts, and fungi) posits that cooperation is as important as competition in the natural world. Climate change is recognized as a global concern and the concept of ecosystem services spotlights the contribution of forests to maintaining our planet's equilibrium and stability. Land artists such as Andy Goldsworthy and Ana Mendieta aim to make cultural objects that reflect a broader environmental awareness.

2000s. New Challenges: Computers and Artificial Intelligence aid the discovery and mapping of human microbiomes. We learn that just as microbes are essential for soil and tree health, microbes within us are the basis of good health and human survival. We also learn that trees have considerably more DNA (up to 50 times larger genomes) than humans. It is revealed that trees are deeply sentient and cooperate closely with other species through rhizospheres and underground mycelium networks. Planetary boundaries, the safe operating space for humanity on earth, are defined by the Stockholm Resilience Centre, and among them is safeguarding forests. Forests are paramount for the protection of soil and wildlife. Trees also store carbon and maintain clean air and circulate water (transpiration).

Doug Pope is President of the Robert Pope Foundation, which fosters art, education, and community health initiatives.

[1] These notes are inspired by the book, *The Age of Wood: Our Most Useful Material and the Construction of Civilization* by Roland Ennos, Simon & Schuster, 2020. Also consulted: https://evolution.berkeley.edu/the-history-of-evolutionary-thought/1900-to-present/endosymbiosis-lynn-margulis/, and https://www.darwintreeoflife.org/news_item/genomes-great-and-small-the-diversity-of-plants/, and https://www.stockholmresilience.org/research/research-news/2023-09-13-all-planetary-boundaries-mapped-out-for-the-first-time-six-of-nine-crossed.html).

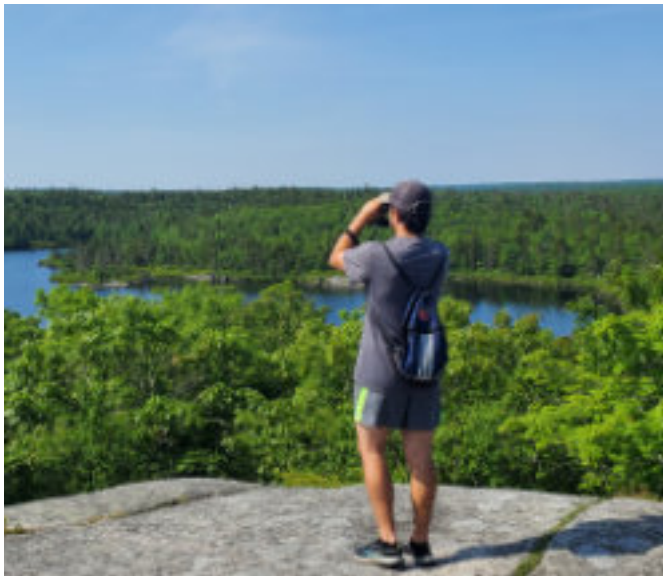
Birding for Mental Health

Reflections on how a love of birds can be transformational.

BY MARCEL ROCHON

I faced a daunting and uncertain future after a life-altering traumatic brain injury in 2016 during a karate tournament. At the age of 26 I was left with a permanent and invisible injury that robbed me of my joy of life. It took many years before I was able to regain my confidence and begin to rebuild my life while living with debilitating pain. The improvements to my quality of life were incremental, but none were as meaningful as the discovery of my love of birds.

It was one late summer afternoon during the early years of the COVID pandemic, while walking in Windsor with my loving wife Karlee, that we came across a flock of cedar waxwings in a tree munching on some bright red berries. They were at eye level only a few feet away and unbothered by us. I couldn't believe what I was seeing— I thought they were figurines and couldn't be real. That feeling of complete bewilderment and awe of beauty was so transformative for me. The impact was clear—in that moment, I forgot about my pain, and I felt such a profound connection to nature. I had found something to help bring back my zest for life and give me purpose again.



"I had found something to help bring back my zest for life and give me purpose again".

Marcel Rochon with his photo at the BNS Sharing Nature Photo Exhibition in November 2025.

It was through this discovery that I embarked on my journey to become more connected with nature, and I searched for organizations that I could join to help me with this healing process. I eventually discovered the Blomidon Naturalists Society (BNS), and through their incredible vision and purpose to educate and connect people to nature and conservation, I've had many meaningful and enriching experiences.

With Karlee, our first experience with the BNS was joining a walk to the vernal pond in a torrential downpour at Blomidon Provincial Park to see fairy shrimp. The dozen of us who braved the elements were guided by Soren Bondrup-Nielsen, who shared an incredible amount of impromptu knowledge about the forest and its many secrets. Standing there at the pond's edge, soaking wet, listening to Soren, we weren't even bothered that the pond was so full of water that we didn't find any shrimp. Looking down, I found what Soren said was a barred owl feather. I wondered with excitement whether it was nearby watching us. Driving home, cold and wet, we were both so glad to have spent our day doing this with such

lovely people, all belonging to the BNS community.

We also fondly remember our excursion last summer with the BNS through the Kentville Bird Sanctuary, seeing and hearing about 45 species of birds in only a few hours. Most recently, Karlee and I also submitted photos for the BNS nature photo exhibit at Benjamin Bridge Winery. We were so thrilled to both be chosen to be in the gallery, and can you guess what my photo featured—yes, a cedar waxwing!

While my life has taken a radical and unexpected turn, I am so grateful that organizations like the BNS exist to help people like me find and nurture an appreciation for the wonders of nature and commit myself to doing my part to protect it. My newfound passion is strengthened by the knowledge-sharing and connections I have made with other members and our shared vision for a healthier and diverse natural environment.

Marcel was born and raised in Hampton, New Brunswick before venturing to Quebec and Ontario for his university studies, where he met his wife, Karlee. Now educators, they live in Windsor, Nova Scotia, where they share their vibrant home with their two cats and dog, living close to their favourite trails and, most importantly, birds. Marcel contributed the photos.

Is It Time to Rethink Heating with Wood?

Heating a home is a personal decision with complex environmental impacts.

BY SOREN BONDRUP-NIELSEN

I am sitting at my kitchen table with a cup of tea. It is -7 degrees outside. The wood stove is on; I can hear the crackling of the fire, and the heat seems to penetrate my whole body—it is comforting. Heat from the wood stove is infrared radiation that directly heats the various objects in the room, such as chairs, tables, counters, and me; it does not directly heat the air, though the air in the room eventually warms. It is similar to being outside on a sunny day in early spring. The air is cool, but the sun's radiation warms your body.

I have lived with wood heat for much of my life. There is an immense pleasure in going into the woods, selecting a few trees, cutting them down with an axe, chopping the logs, splitting the wood, carrying it out, stacking it, and letting it dry. Then, in late fall, I bring some of the wood indoors, light the stove and feel the heat. Doing all of the work myself, I benefit from being warmed in the process four or five times.

Soren loading the wood--fired cookstove.
PHOTO: PIA SKAARER NIELSEN.

When we moved to the farm where we now live, there was a cook stove in the kitchen and an oil furnace in the basement with forced air heat. Due to our son's asthma, we replaced the old oil furnace with a new one that circulated hot water to radiators in every room.

We obtained wood for the cook stove from the farm's woodlot. Someone had cut several red maples but left

them in the woods. I hauled them out with a tractor and bucked up the logs. We heated most of the downstairs of the house with this wood for maybe two years, but then we started buying firewood. I wanted to leave the woodlot intact to see how it developed naturally.

We first got our firewood in 8-foot lengths that I bucked up and split. Then we started to get firewood already split. We asked about the origin of the wood. We were told it came from sustainably managed woodlots, but we were skeptical. The new oil furnace was efficient, but with global warming, it felt wrong to burn oil for heat. It seemed so much better to heat with wood, but with extensive clear-cutting taking place in the province, Pia began to question whether we should be burning firewood. There seems to be a general sentiment that burning wood for heat is carbon neutral. Is it?

The Impacts of Burning Wood

At a recent nature talk hosted by the Blomidon Naturalists Society on forestry and forest fires, someone asked if it was not better in terms of reducing emissions to burn oil for heat than to cut down trees and burn the wood. The tree, after all, is a living organism with a large amount of stored carbon. It sequesters carbon and releases oxygen for its whole life, which may be several hundred years if it is allowed to survive. It got me thinking—should we, at this time in history, with massive clearcuts and increasing carbon dioxide levels, still be burning wood for heat?

Consider how and where the firewood was cut—a former clearcut in western Kings County. PHOTO: ALAN WARNER.

Soren circa 1974 sitting upon a bit of his sustainable firewood harvest. SOURCE: SOREN BONDRUP-NIELSEN.

I discovered a disturbing fact. Wood, when burned, releases more carbon per unit of heat than oil does. Of course, this comparison does not account for the release of carbon in the extraction and transportation of fossil fuels. The release of carbon from cutting and transporting firewood is surely substantially less than that from burning fossil fuels. Wood may be preferable to oil, but is wood a good choice?

> Some woodlot owners manage for sustainable firewood production by carefully selecting trees to be cut, however very few people heating their houses with wood have that luxury.

We live in a climactic zone where we have to significantly heat our homes for up to seven months of the year, from November to May, unless the home is a sophisticated passive solar design. I did some searching on the internet. There are about half a million households in Nova Scotia. A variety of heating methods are used: 165,000 households with oil, 166,000 with electricity (baseboard heaters or furnaces), 94,000 with heat pumps, 29,000 with natural

Three cords of firewood. PHOTO: SOREN BONDRUP-NIELSEN.

gas, and 54,000 with firewood or wood pellets.

Heating with wood consumed about 180,000 cords of firewood in 2024.[1] Using an optimistic estimate of harvesting 100 cubic metres of wood per hectare means that 66 square kilometres of forest must be clear-cut to supply Nova Scotians with firewood each year.

We are dealing with two environmental issues: the impact of cutting wood on the sustainability of forest ecosystems, and the increase in CO_2 levels, which is causing global warming. Intact old forests store massive amounts of carbon, and live trees continue to sequester carbon. Truly sustainable ecological forestry in the Wabanaki forest requires selective cutting, where the forest canopy is left intact. When cutting down a single tree, the canopy gap quickly closes as the adjacent trees expand their crowns. The sun does not reach the forest floor, and the soil is protected. Up to half of the ecosystem's carbon is stored in the soil, enabling long lived and shade-tolerant species to grow and persist. In contrast, clear-cut areas release large amounts of carbon when the sun warms the soil, replanted seedlings do not sequester significant carbon for numbers of years, and saplings do not sequester as much carbon as old trees.

I doubt there will be widespread truly sustainable forest harvesting in the near future under the current economic model and policy framework, including the reliance on expensive harvesting machinery that must operate 24/7. Some woodlot owners manage for sustainable firewood production by carefully selecting trees to be cut, however very few people heating their houses with wood have that luxury.

So, is it time to forego, or at least reduce, the burning of wood to heat our houses? I feel the answer is switching to electricity, but not electric baseboard heaters that are notoriously inefficient. Heat pumps seem the way to go assuming that one has already completed all of the feasible energy efficient upgrades. Heat pumps heat the air, which then circulates by a fan. They are efficient, although circulating warm air feels very different than radiant heat from a wood stove.

In Nova Scotia, electricity was generated in the recent past largely by burning coal, with some hydroelectric power. However, the Muskrat Falls hydroelectric development is now functioning, windmills have been popping up in many places, and many homes have solar panels installed. Nova Scotia Power is slowly switching to renewables to generate power on a massive scale, maybe not quickly enough by some standards, but it is coming.

> Truly sustainable ecological forestry in the Wabanaki forest requires selective cutting, where the forest canopy is left intact.

How I heat my home is a personal decision with climate and environmental impacts. I love the heat from my wood stove; it is an airtight stove and very efficient. BUT, we now have four heat pumps; the oil stove has not operated for three winters, and we will attempt to reduce our firewood use.

Soren Bondrup-Nielsen is a retired conservation biologist and Past President of the Blomidon Naturalists society.

[1] https://novascotia.ca/natr/FORESTRY/registry/docs/registry-of-buyers-annual-report-2025.pdf

Not the End of the World

A clear-eyed case for environmental hope.

REVIEW BY JUSTIN WHATLEY

As a new father, I've been thinking about climate change differently these days. Climate change is not just an abstract global problem, problem but a concrete reality which my child will experience. This perspective makes Hannah Ritchie's book Not the End of the World a refreshing and necessary read. It's a book that pushes back against environmental hopelessness.

Before the release of this book, I'd followed Ritchie's work on Our World in Data, a project produced by researchers at Oxford and the non-profit Global Change Data Lab. The project applies a data-first approach to understanding important global issues like poverty, disease, hunger, climate change, war, inequality, and existential risk, and presents the results using compelling data visualizations. Ritchie brings this same data-first approach to questions of environment and climate in her book.

Without dismissing the urgency of climate change or environmental degradation, Ritchie builds a data-driven case for progress. She doesn't just argue that progress is possible; she shows that in many meaningful ways it has already happened, even as many have failed to notice. It's an important distinction; hope built on facts lands differently than hope built on optimism.

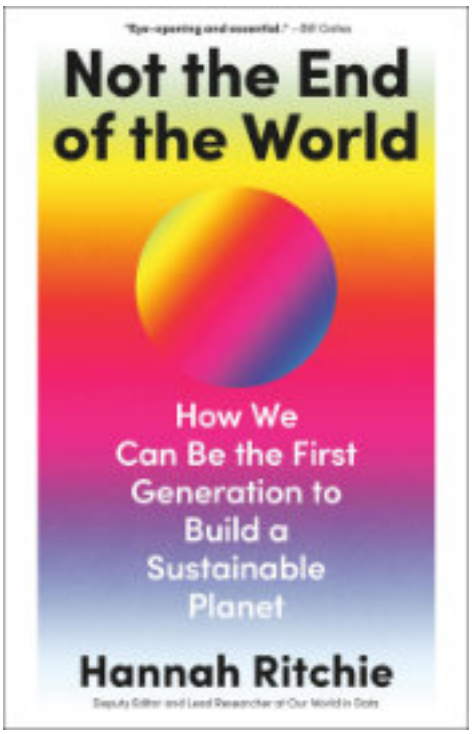
Deforestation is reframed in the book as a land use problem. Progress in land-use efficiency means we now produce far more food from far less land. The book presents studies suggesting human societies may have already passed peak land use for food. In fact, total land use for food is currently lower than it was decades ago. Forests are not being lost to inevitability, they are being lost to a pressure that may be easing.

Ritchie also shows how older forecasts often underestimated the true pace of technological change. The progress in technologies like solar panels, batteries, and electric vehicles over the past decades was not part of the climate models that initially triggered concern for many of us. Solar power in particular scaled faster and became cheaper than almost anyone predicted a decade ago. It is now frequently the cheapest new energy source to bring online. Forecasts on fossil fuel consumption may prove incorrect if they fail to include more affordable options for energy.

Perhaps most actionable, the book offers practical clarity for concerned citizens, with data-driven chapters on personal choices and how they impact the environment. Ritchie cuts through the noise to bring focus to decisions that genuinely move the needle on carbon and environmental impact; mind your "hungry cattle and greedy cars" and worry less about leaving the lights on.

This book helped me weigh climate and environmental problems against true progress, and left me more hopeful about the future.

Justin Whatley is an AI research scientist based in Wolfville, Nova Scotia.



Exploring the Kentville Bird Sanctuary

A beautiful set of all-season trails with easy access points in nearby Kentville.

BY PETER WALLACE

The 200-hectare Kentville Migratory Bird Sanctuary provides a beautiful set of trails on the western edge of the Town of Kentville between Route 1 and the Jijuktu'kwejk (Cornwallis) River. There is forest and marshland hiding small ponds, slack water abounding with cattails, and plenty of wildlife. The trails wind by many beautiful large pines, hemlocks and hardwoods, and offers vistas out over the river. There is good parking with easy access to the trails, which are well trodden and easy to follow with no steep slopes or brooks to jump. There are lots of options for doing a quick walk or a longer hike depending on your feelings, the weather, and the choice of routes. Visit multiple times in all seasons and types of weather to get the full flavour of the sanctuary. It's nice on a rainy day and a great place to ski or snowshoe in the winter. This is a popular trail system for walkers of all ages, along with dogs—who must be kept on leash—and off-road bikers. Be on the lookout for bikers coming up behind you. Be sure to clean up after your dogs and pack out your waste.

Directions

The Sanctuary is on Route 1 east of exit 14 on Highway 101—the Coldbrook/Kentville exit. There are two parking areas with easy access to the Sanctuary off of Route 1. The first is 1 km east of the exit at the end of Mitchell Avenue where it abuts the rail trail (see map p. 29). Turn left and hike 200 m on the rail trail to where the seven bridges trucking road crosses. Go right on the road and cross the bridge over the brook. Don't miss the ponds along the way but realize that they are on private property. Past the ponds, the sanctuary trail proper starts on the left just after the entrance to a sand/gravel pit on the right. A second access to the Sanctuary is off a trail at the back of the parking lot for Evergreen Home for Special Care . This trail quickly crosses the rail trail and bends left into the Sanctuary. There are many other access points, but these two are the easiest and have good parking.

Description

There are lots of trails within and around the Sanctuary and it is easy to get turned around, but it is hard to get lost as most trails circle back to the boundaries where it is easy to re-orient yourself. Most of the Sanctuary has sandy soil underfoot; only a few places along the riverbanks have peat or mud, so there are few puddles. On the western side, most trees are young to intermediate-aged deciduous trees along with some pine, spruce, and fir. There are a fair number of understory shrubs, small immature trees, and native plants and ferns. It's a great place to spot

Looking out over the Jijuktu'kwejk River. Note the diameter of the maple tree on the right.

One of the bridges between ponds .

A conference in the middle of a trail. It's an all-season trail.

fungi if the weather conditions are right—so don't be afraid to go off the trail. The main trail follows along the top of the riverbank with plenty of places to look out to the north for water birds in the ponds and river. The forest along the river and in the eastern part has tall mature white pine, hemlock, poplar, and maple, along with understory growth. The forest floor is generally covered with evergreen needles that are very soft and quiet underfoot. There are small patches with younger hardwoods, spruce, and fir. On the east side, after exiting the forest, the trail passes some concrete structures (a fireplace and chimney) that were once part of a cabin where park personnel stayed when this area was a camping park. Alas, there is no more camping, but it would be a great place for it.

Starting the hike from the Evergreen parking lot, the trails are quite easy to travel until you get to the northwest corner of the sanctuary. Here, if you're not paying attention and miss a turn to keep in the forest, you will end up in a housing subdivision. Not a problem, just go back the way you came and take the first right once in the Sanctuary to get back on track.

The Sanctuary is a special place accessible to all ages. Walk quietly and you will hear birds twittering in the trees and squirrels nattering for some nuts or to tell you to clear out of their territories. Birds of prey can be seen soaring along the edges of the river looking for dinner. Don't ignore the crows who stop in the tall trees and mimic the sounds of everything not bird. In the spring and fall, ducks and geese call across the water. Truly, the Sanctuary is a wonderful all season place to walk.

Map of the Kentville Bird Sanctuary trails. SOURCE: GOOGLE MAPS.

Peter Wallace is a retired geologist and leads a weekly hiking group in the region. Peter contributed the map and photos.

What's Up in the Night Sky?

Highlights for May 15 to October 15

BY PATRICK KELLY

May 16: New Moon
May 18: Venus 3° from Moon (10 PM)
May 19: Moon between Jupiter and Venus (9:30 PM)
May 30: Full Moon

June 9: Venus 1.5° north of Jupiter (9 PM)
June 14: New Moon
June 15: Mercury greatest angle from Sun (eve)
June 16: Venus, Jupiter, Moon, and Mercury together (eve)
June 21: Solstice (5:25 AM)
June 29: Full Moon

July 6: Earth farthest from Sun
July 14: New Moon
July 28–29: Full Moon

Aug. 12: New Moon; Partial solar eclipse (3:00 PM)
Aug. 12: Perseid Meteor Shower (midnight)
Aug. 15: Mercury 0.7° north of Jupiter (5:45 AM)
Aug. 15: Venus greatest angle from Sun (eve)
Aug. 27: Full Moon
Aug. 27–28: Partial lunar eclipse (1:13 AM)

Sept. 11: New Moon
Sept. 17: Venus at greatest brightness (eve)
Sept. 22: Equinox (9:05 PM)
Sept. 26: Full Moon

Oct. 4: Saturn at opposition
Oct. 5: Mars 0.7° from Moon (3 AM)
Oct. 10: New Moon

For the coming five-month period there are a number of interesting events, including two eclipses visible from Nova Scotia. There is a period in May and in June where the sky is "busy" with a number of celestial objects appearing close together.

On the evening of June 15 there will be a "celestial traffic jam" of planets and bright stars. GRAPHIC: PATRICK KELLY.

Moon: On August 12 there will be a partial solar eclipse by the moon. As seen from Nova Scotia, the Moon will begin to cover the Sun around 2:00 PM. Maximum eclipse will occur at 3:00 PM with 28% of the Sun's area hidden. The event will be over at 4:00 PM. It will not be obvious unless you look at the Sun using protective measures (using either protective eyewear or solar projection is a necessity!).

There will be a lunar eclipse two weeks later when the Moon passes into the Earth's shadow. In a total lunar eclipse, the Moon passes completely into the umbra (the darkest part of the Earth's shadow); in a partial lunar eclipse, the Moon does not totally enter the umbra. Technically, we will see a partial lunar eclipse because 93% of the Moon's surface will be inside the umbra, it will make for a nice sight. Nova Scotia is perfectly placed to see the entire event. The eclipse will start at 11:33 PM on the night of August 27 and reach maximum eclipse at 1:13 AM on the morning of August 28.

Mercury can be spotted during two periods, one in mid-June and one in mid-August. Its speedy movement gave this planet its name—the messenger of the gods: Hermes to the Greeks, Mercury to the Romans. Whereas the Earth takes 365 days to orbit the Sun, Mercury takes only 88 days! As seen from Earth it spends a lot of time in front of, behind, or near the Sun, making it often impossible to see. Its quick motion does mean that it briefly swings out far enough from the Sun that there are periods when it can be spotted. The evening of June 15 will one occasions. Find a location with a good western horizon and start looking around 9:20 PM. The two really bright "stars" will be Venus (highest and brightest) and Jupiter. Mercury will be the third "star", dimmer than the other two and below and to the right of Jupiter. To see how quickly Mercury moves, go out at the same time for a few days before and after the 15th and watch how its position changes relative to the other two planets. The crescent Moon will join these three planets on the evening of June 16. You should also be able to see Pollux and Castor, the two brightest stars in the constellation of Gemini as well (see illustration).

Mercury is visible again on August 15, but by now it has passed between the Earth and the Sun to reappear in the morning sky. This time you will have Jupiter to act as your guide. At 5:45 AM, Jupiter and Mercury will appear as two stars of almost the same brightness. They will be only 5° above the eastern horizon, so you will need a very low horizon. Mercury will be 0.7° above and to the left of Jupiter, which is the brighter of the two. The pair should look quite nice in binoculars.

Venus is in the evening sky until late September, when it finally gets too close to the Sun to be easily visible. As usual, its brightness makes it hard to miss. In early June, Jupiter and Venus will "pass" each other, with the two planets being closest at 9 PM on the evening of June 9 when they are only 1.5° apart. A week later, Venus is near Jupiter, Mercury, and the crescent Moon.

Reaching its greatest angle from the Sun on August 15 (46°), Venus will still be above the western horizon at 9:30 PM. A month later, on September 17, it actually reaches its greatest brightness and begins to quickly appear closer to the Sun every evening until it disappears from view in early October.

Mars is not very bright in May because it is on the far side of its orbit as seen from Earth. It rises just before the Sun in late May but by late August is rising a few hours earlier and appears as a brightish reddish star. The biggest problem in spotting Mars is that it is relatively close to a red giant star (Aldebaran) and a red supergiant star (Betelguese). Mars is the one closest to north (or farthest to the left). On October 5, it will be easy to spot because it will be only 0.7° from the Moon. Rise at 3 AM and look to the east!

Jupiter is low in the evening sky at the start of June and near Venus, which is brighter. By early July, Jupiter sinks closer to the Sun and then is behind it for a short time. It re-emerges in the morning sky in late August. It is the brightest object in the eastern morning sky until the end of October when Venus joins it.

Saturn reappears in the morning sky in early May. It moves away from the Sun, and by mid-July it is rising around midnight. It reaches opposition on October 4 (the opposite side of Earth from the Sun), when it rises at sunset. It is highest in the sky at midnight and sets around sunrise.

Perseid Meteor Shower: The Perseids in mid-August are one of the year's more reliable meteor showers. This year, two things combine to make it worth observing. The Moon's phase is new, so it will not be a source of light that would wash out the night sky and hide fainter meteors. In addition, the peak occurs around 11:00 PM. The Perseid's peak is somewhat sharp, so it will happen both when the sky is dark, but not so late that one would lose a lot of sleep. The best way to view the shower is to find a dark location, and face northeast. Any meteor that appears to radiate from the northeast sky is almost certainly a Perseid. There will be more and brighter meteors beginning at 1 AM, because Nova Scotia will be on the Earth's "leading face" and hitting the particles head-on. The higher relative speed is what creates the change. It should be quite a show.

Patrick Kelly has had a life-long interest in astronomy. He has taught first-year astronomy and presented shows at the Halifax Planetarium for over 30 years.

Fall and Winter Weather 2025-26

Hurrah for winter sports as a normal winter follows the summer/fall drought.

BY LARRY BOGAN

The Annapolis Valley had a relatively normal fall and winter for weather once the severe 2025 summer drought was washed away with late October rains—92 mm across 10 days. The previous 50 days of the period dating back to September 1 only had half that much. After that, the weather was relatively normal for later fall and winter. Precipitation and temperatures were close to normal except for February, which received less than 40% of normal precipitation for the month, although there was approximately 25 cm of snow on the ground. In fact, there was snow of the ground from late November until the 2nd week of March except for a week before Christmas and during a mid-January thaw. The other abnormality was the lack of severe fall storms because no hurricanes came near the Maritimes in 2025.

Temperatures

The seven-month chart of daily temperatures below has all the details for the period.

• Note the large span between minimum and maximum daily temperatures in September and October in many instances. There were lots of clear skies in these months with sunshine producing hot days that cooled off at night due to the lack of cloud cover.

• In December and January, spans between daily maximum and minimum temperatures were much narrower given fewer daylight hours and more cloudy skies.

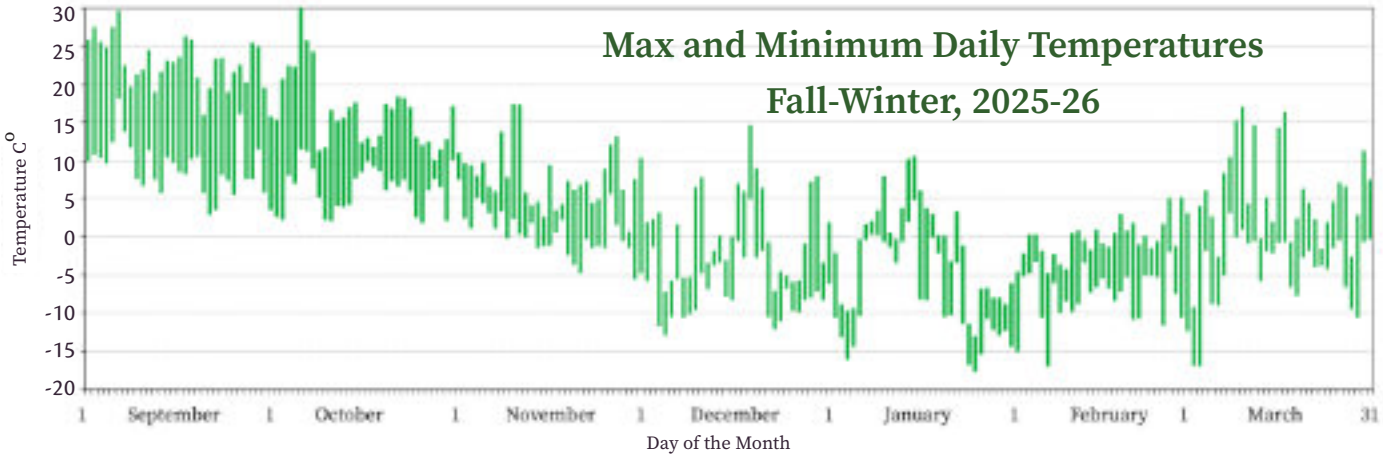
• Note the two-week period in early January with temperatures above 0 C°, indicating the thaw when early snows melted.

• In contrast to January, most of February had very uniform weather and few days above 0 C°.

• A couple of shorter warm periods can be seen in mid-December and early March.

• There were only four very cold snaps below -15 C° during the period: two in January, one in February, and one in March.

The table of monthly temperature averages on the next page shows general trends compared to the 30-year averages. Both fall and winter seasons were only a few tenths of a degree from normal. October was relatively the warmest, being 1.6 C° above the norm. November and December were the only months below normal and only by 0.4 C° and 1.0 C° respectively.



Monthly Temperature & Precipitation
Fall-Winter 2025-2026, Kentville, N.S.

	Max °C Temp	*Min °C Temp*	*Mean °C Temp*	*Precip. mm*
September	*23.0*	*9.2*	*16.1*	*22.4*
30-year avg.	*21.2*	*10.1*	*15.6*	*107.4*
October	*16.4*	*6.1*	*11.3*	*115.6*
30-year avg.	*14.4*	*4.9*	*9.7*	*120.4*
November	*7.9*	*0.5*	*4.2*	*105.2*
30-year avg.	*8.5*	*0.6*	*4.6*	*125.1*
December	*0.7*	*-6.7*	*-2*	*113*
30-year avg.	*2.8*	*-4.7*	*-1*	*133.5*
January	*-1.5*	*-7.6*	*-4.6*	*108.5*
30-year avg.	*-0.5*	*-9.1*	*-4.8*	*113.2*
February	*-0.4*	*-7.8*	*-4.1*	*34.5*
30-year avg.	*0.1*	*-8.9*	*-4.4*	*91.4*
March	*5.3*	*-4.5*	*0.4*	*109.1*
30-year avg.	*4.0*	*-4.9*	*-0.5*	*96.9*
Fall-Winter	*13.5*	*3.5*	*8.8*	*316.8*
30-year avg.	*13.2*	*4.0*	*8.6*	*420*
Winter	*1.3*	*-6.6*	*-2.7*	*291.9*
30-year avg.	*1.3*	*-7.3*	*-3.0*	*368*

30-year avg.=1991-2020 Waterville-Csambridge, N.S.

Precipitation

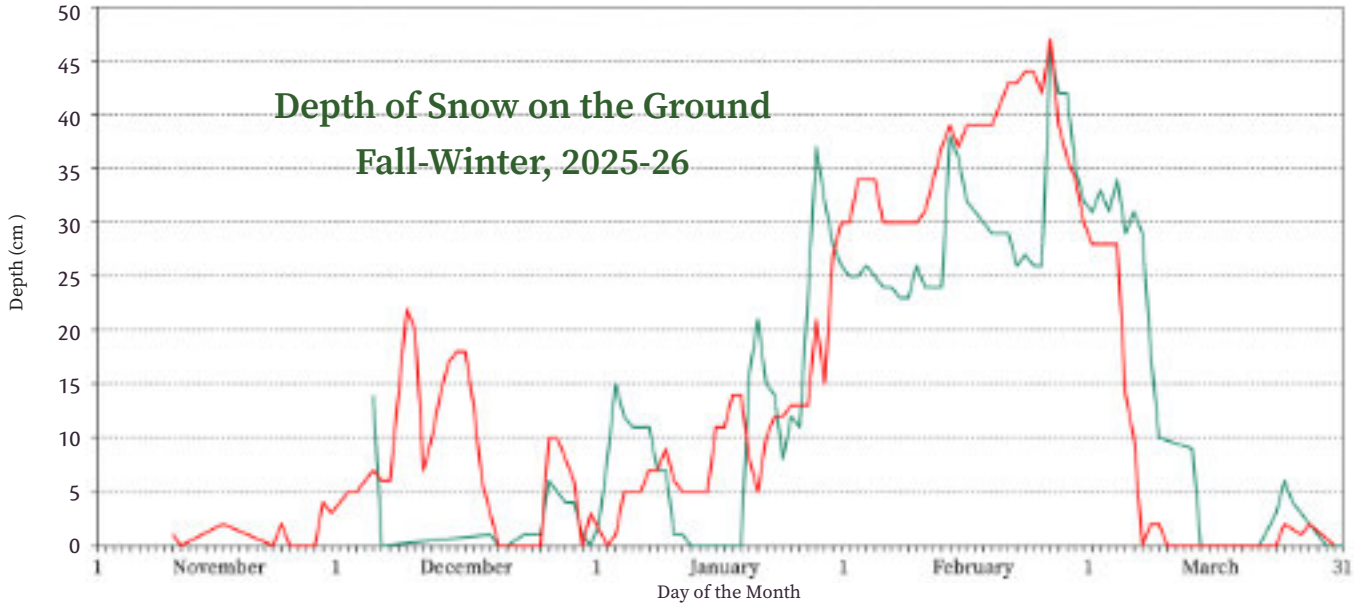
Except for the very dry period in September and October, precipitation was uniformly distributed across these seasons. There was some precipitation on almost 2/3 of the days, but for half of those days it was 2 mm or less. Only 3 days had more than 25 mm of rain.

All months were near normal in precipitation except September and February. March was the only month to receive more than its average for the last 30 years. The area is still in a precipitation deficit from last year, with fall getting only three quarters and winter getting only four-fifths of normal precipitation. Over the entire seven months, there was less than a quarter of the average precipitation.

The chart below indicates daily snow depth on the ground for Kentville and Greenwood, illustrating the difference in precipitation for two stations that are only 50 km apart. The number of days with snow cover are similar but the amounts differ. Kentville had 50 days of decent snow cover averaging between 25 to 30 cm from late January to early March. Notice the peaks in snow cover indicating the four major snowfalls of the period. Greenwood was different because it did not completely lose its snow cover in the January thaw, but in March its snow disappeared sooner than did Kentville's.

This was a good winter for snowshoeing and skiing until late February when rain and cold temperatures created a hard crust on the snow. It is good to see the ponds and streams filled with water again and we can hope they will stay that way throughout 2026.

Larry Bogan is a long-term member and contributor to the Blomidon Naturalists. He provided the charts.



Depth of snow on the ground for Kentville (green line) and Greenwood (red line). Note that there are missing measurements for Kentville in November and December.

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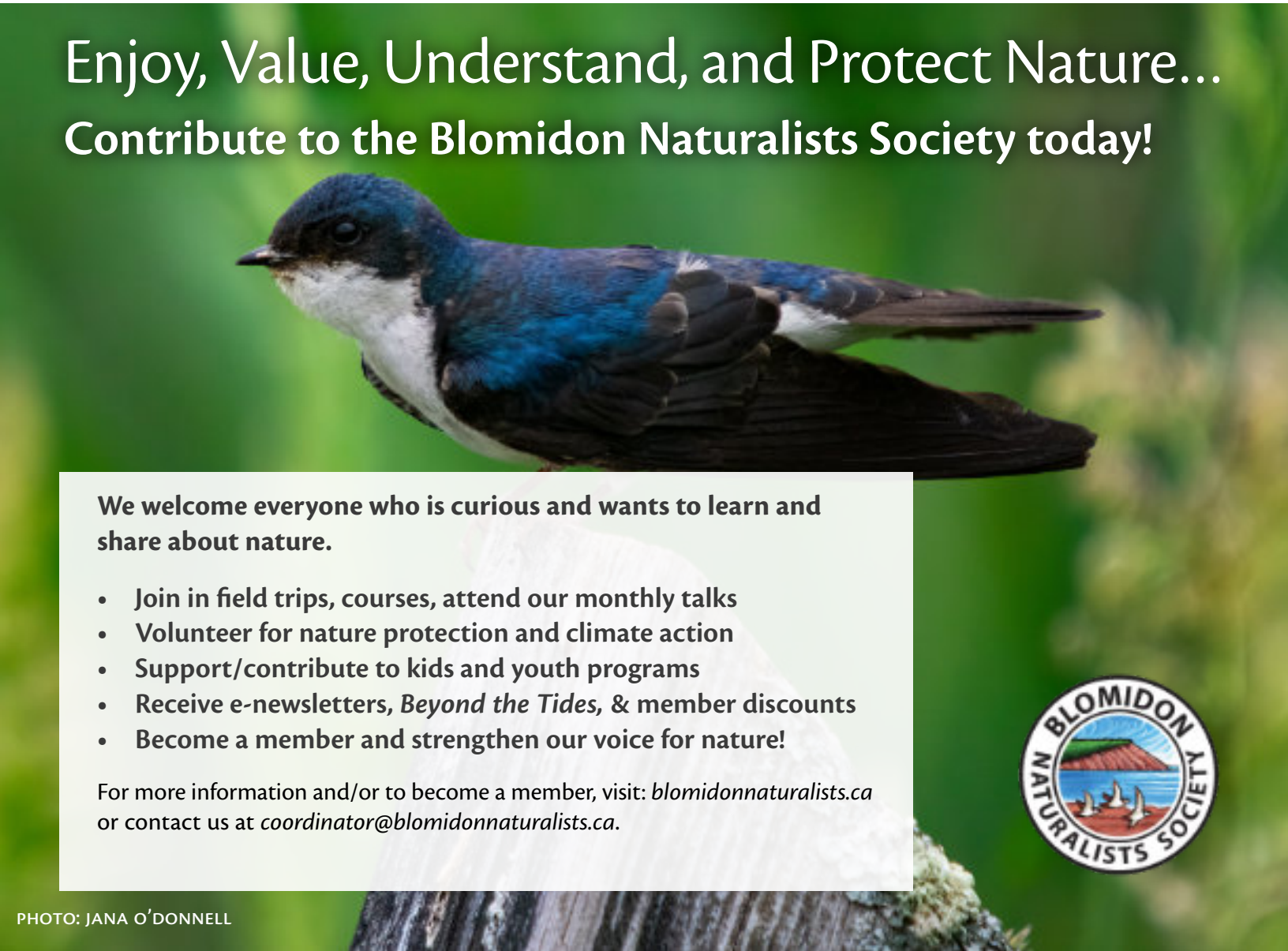

We welcome everyone who is curious and wants to learn and share about nature.

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

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PHOTO: JANA O'DONNELL