Beyond THE Tides

The Seasonal Journal of the Blomidon Naturalists Society

FALL 2026
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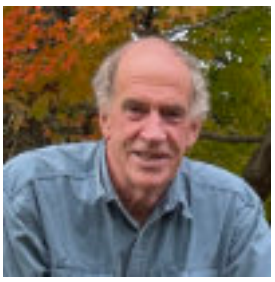
Caring for Tree Swallows

Protecting Small Woodlots

Fracking and Energy Policy

FROM THE EDITOR: BIODIVERSITY IN THE AIR



This issue of *Beyond the Tides* features some of the creatures that are flying above our heads—birds, bees, and bats. Aerial species seem to have a particular attraction for people. They are easy to spot and humans are captivated by flight—it took a long time for our species to achieve it. Birds often sport bright colours and have calls that attract our attention. Bees are easy to find amidst the beauty of flowers. Bats are mysterious yet also drawn to various types of human dwellings. So, the articles leading off this issue invite you to consider the wonder of each of these groups while sharing a bit about what makes them special. I hope that the wonder and learning might lead to greater caring. I learned a tremendous amount about swallows in editing the swallow articles (p. 3-7) and in compiling the available information to provide the best plan for building nest boxes for them. In fact, the original idea was to provide plans for bat boxes to accompany the bat article (p. 15), but Lori Phinney, who co-authored the bat article, pointed out that bat boxes are only valuable under certain conditions given their low numbers and special needs. Understanding the dynamics of each species is important.

Knowledge is power and there is much to be gained in this issue. For example, Terrell Roulston clearly communicates the beauty, diversity, and importance of native bees while Lori Phinney reminds us that bats play an essential and unique role in ecosystems. I encourage you to use that knowledge for the benefit of these fliers. How about refocusing the landscapes from grass and non-native plants to native plants that support birds, bees and other wildlife? Swallow boxes are an intriguing option, and reporting bee and bat observations is a valuable service. The Nova Scotia Working Woodlot Trust (p. 12) provides a valuable path to habitat protection while Slow Birding (p. 32) is an option for everyone. Finally, at a macro level, understanding the challenges and threats from fracking described in the interview with David Wheeler (page 18) might lead you to action to ensure habitats are protected from it. In short, understanding can lead to doing and I hope this issue helps with both.

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.

Cover: *Out to Sea,* Wolfville, N.S.
PHOTO: TESSA SERRY.

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MAKING A DIFFERENCE

It is easy to get dragged down by the state of the world: climate change, species and habitat loss, and political situations. Conversations with friends often turn to these issues. We seem drawn to the negative. How do you feel when taking part in such interactions?

I recently listened to a panel discussion on climate policy put on by the Canadian National Observer. There was no shortage of the "dire situation" conversation, but one panel member talked about being "annoyingly optimistic". His point was that focusing on the negative does not motivate people to action. It made me think of the concept of "imagining an ideal future". What about considering the kind of world you would like to live in, what kind of world to leave to your children, and/or grandchildren. Imagining a positive future gives your brain the motivational energy needed to make it real.

It is not enough to just sit at home imagining a positive future. Everyday Pia and I go for a 3 km walk in the Centreville white pine forest. Breathing the forest air is calming and soothing, and the exercise invigorates us. There is so much beauty in nature, and it inspires me to imagine an ecological future where people live harmoniously with nature.

Another way to appreciate and get inspired is through art. Human artistic expression has drawn from nature all the way back to neolithic cave paintings. It is still frequently nature inspired today. For example, the work of local artists such as Ron Hayes and Allan Bateman near Canning, and Liz Bateman (not related) in Wolfville. Nature photography can be practiced by anyone with a smart phone—just about everyone. There will be beautiful examples of this at the BNS annual Sharing Nature Together Photo Exhibition at the Benjamin Bridge Winery on Sunday, October 25th.

Most of the issues with the state of the world are beyond our control so there is little point in getting weighed down by them. Each person can have an impact locally, in local communities, and in nearby nature. This is where we need to focus our energy.

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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Tree Swallows: Graceful, Insect-Eating, and Dedicated Parents

Tree swallows are iconic and beautiful, birds worthy of our appreciation and support.

BY LUCY VAN HAAFTEN

Poised for takeoff at Miner's Marsh. PHOTO: JANA O'DONNELL.

A welcome presence in meadows, wetlands, and fields, tree swallows swoop gracefully through Nova Scotian skies in spring and early summer. The species' Latin name, *Tachycineta bicolor*, means "to move quickly" and be "bicoloured", an apt name for these skilled flyers. These birds have striking, iridescent, blue-green heads and backs, and white underneath. Each weighs approximately 20 g (about the same as a large strawberry). Individuals can live up to twelve years, but most live only about three years in the wild. Tree swallows nest across most of Canada and the northern US, migrate through the central US, and overwinter in the southern US and Mexico. For a small bird, they have a long way to travel each year at the end of summer!

Nesting and Raising Young

Tree swallows typically arrive at nesting sites in Nova Scotia in late April. They seek two main features in a nesting site: proximity to bodies of water and available cavities for their nests. As aerial insectivores, the first feature is crucial: tree swallows feed almost exclusively on flying insects, many of which emerge in their adult form from bodies of water and accumulate in dense groups. Think of flies, dragonflies, and damselflies. Secondly, tree swallows have evolved to be secondary cavity nesters, meaning they nest in cavities in trees that were excavated by other species. For example, tree swallows will nest in cavities created by woodpeckers once the woodpeckers have abandoned them. Tree swallows also readily use artificial wooden nest boxes in the absence of natural cavities.

Once swallows have chosen a suitable neighbourhood in which to raise their chicks, males claim territories and try to woo females. Tree swallows do not mate for life, but they do have high site fidelity, meaning that

Left above: Pairs are socially bonded for a season though the males and females may have "affairs". *Right above:* A clutch of eggs in a feathered nest including one freshly hatched chick. PHOTOS: L. VAN HAAFTEN.

they often return to the same nesting site year after year. Sometimes, if both the male and female in a pair return to the exact same nest spot as the previous year, they will mate together again. Although tree swallows are considered socially monogamous (i.e., each male is socially bonded to one female within a season), males and females will often have "affairs" resulting in genetically diverse broods.

Female tree swallows lay one egg per day, usually in the morning, for 4 to 7 days (most commonly 5–6 eggs in total). Females are solely responsible for incubating eggs which takes an average of two weeks. Once chicks hatch, males become more involved, delivering mouthfuls of insects to their hungry offspring (up to 7000 insects per day!). After 12 to 14 days of nothing but eating, sleeping, and pooping, chicks outweigh their parents by several grams and leave the nest. Just as many human parents continue to feed their children after they move out, tree swallow parents continue to deliver mouthfuls of insects to fully-fledged chicks until the young depart the nesting site in mid-summer to migrate.

Tree swallows are often described as the "wild bird version of lab rats" because they are very easy for researchers to study. They nest in nest boxes and return to the same general area, making them easily accessible to researchers year after year. The scientific community has been able to study their mating systems, survival, and behaviour in detail. Tree swallow research has allowed for a better understanding of the impacts of issues such as climate change and environmental contamination on nesting songbirds.

A clutch of five tree swallow nestlings that are only a few days old. They have a lot of growing to do. *These birds were handled under appropriate scientific permits. It is illegal to handle or disturb migratory birds in Canada. PHOTO: L. VAN HAAFTEN.

Tree swallows are accessible for research since they return to the same general area each year. PHOTO: L. VAN HAAFTEN.

Tree Swallow Challenges

Despite being widespread and common across their nesting range, tree swallows face several human-induced challenges which are resulting in declines in some population. First, changing climate has led to a phenomenon known as phenological (or timing) mismatch in which a species or resource that an organism relies on is no longer available when it is needed. For swallows, warmer winters can cause insects to emerge earlier than usual, so they are no longer as available when tree swallows require them in high volumes to feed chicks. Similarly, more unpredictable and severe weather events can impact swallows before, during, and after migration, and can alter their habitats. Due to their close association with freshwater ecosystems, swallows can also be exposed to myriad contaminants from aquatic environments (such as mercury and PCBs). If accumulated in high enough concentrations, these contaminants can impact their reproductive success. Lastly, the destruction of both nesting and foraging habitat has extremely negative impacts on tree swallows. The loss of forests, meadows, and deadwood limit natural nesting cavities, and destruction of aquatic habitats such as wetlands can reduce available insect prey.

I do not include these sad details to discourage you. In fact, it is quite the opposite. There are actions that can help these beautiful birds. Learn about and become an advocate for Nova Scotia's forests and wetlands (check out regional initiatives such as Nova Scotia Forests Forever and the Chain Lakes Wilderness Area[1]) to help

ensure tree swallows will always have nesting and foraging habitat in this province. If you own property near wet areas, you can establish and maintain nesting sites using wooden nest boxes, which increases available nest locations. Build your own nest boxes with the plans on page 7, or as part of a BNS workshop!

Tree swallows serve important ecological roles as predators of insects and prey for birds, snakes, and mammals. To ensure these iconic birds remain part of our local fauna, they need all the help they can get.

Lucy van Haaften is an MSc student at Acadia University studying oil pollution in Arctic tern and black guillemot eggs from the Maritimes and the Arctic. She is passionate about getting folks outside to enjoy and appreciate nature, and intends to work in bird research and conservation moving forward.

[1] The Chain Lakes Wilderness area has been proposed by the Blomidon Naturalists Society and partner organizations as a protected wilderness area in Kings County as part of the program to protect 20% of Nova Scotia lands by 2030. Further information on this is available at: https://blomidonnaturalists.ca/protect-the-chain-lakes-wilderness-area/. Nova Scotia Forests Forever is an information campaign that supports protection of old forests, sustainable forestry policy, and protection if wilderness areas, including the Chain Lakes. Information can be found on Facebook and Instagram and at https://sites.google.com/view/nsforestsforever/home.

Jacques Giard and Grenville Jones installing a nest box at Miner's Marsh. PHOTO: JOHN BURKA.

Making A Difference—Gren Jones and Saving the Tree Swallows at Miner's Marsh

BY JACQUES GIARD AND JOHN BURKA

Some tree swallow populations are declining, and the species is in trouble in Atlantic Canada. Grenville Jones, a long-term friend of the Blomidon Naturalists and a passionate wildlife advocate, was well aware of this through his volunteer work with Ducks Unlimited Canada. He wondered if some proactive initiative, however small, could be taken to help mitigate the situation Gren had been a driving force in the development of Miner's Marsh and was aware that swallow boxes had been previously installed there. Unfortunately, those boxes were not the best design, had not been maintained, and swallows were only using a few of them. A different approach was needed.

Gren approached the Kings County Wildlife Association (KCWA) in 2023 and suggested that together they could build swallow boxes and install twenty or more at the Marsh. A work party was organized and a design for a better swallow box was sourced. Building materials were also needed, and Ducks Unlimited Canada agreed to pay for lumber and metal poles.

A few boxes were built and installed in May 2024 as a trial before moving ahead with production of all 20 boxes. The new design was successful; swallows nested in all boxes. Members of the KCWA then went to work and a dozen volunteers put 20 boxes together over two winter evenings—one for pre-cutting the material and another for the assembly.

Tree swallows normally arrive at the Marsh in mid-April which provided KCWA with a deadline for the installation. The first group of 20 boxes was put into

Swallow box at Miner's Marsh donated by the Blomidon Naturalists Society. PHOTO: JOHN BURKA.

place in early April 2025 followed by a second group of 8 boxes in April 2026. The first set of boxes was cleaned in 2026 as well. Cleaning the swallow boxes will become an annual ritual for KCWA and BNS volunteers.

Installation of swallow boxes this past April had additional significance. Gren passed away in spring 2025. Over decades, he had been involved with countless projects in the community and deserved to be honoured. Consequently, the KCWA invited people to donate to commemorative plaques honouring Gren, which were affixed to individual swallow boxes. The Blomidon Naturalists Society and several of its members were donors. Many of the donors, as well as Gren's family, attended a modest ceremony last March when plaques were affixed.

Here is a brief quote from Rebecca Jones-Boudreau about her dad: "His plans were many and I know the installation and care of these swallow boxes is one of them. My mother, my sister, and I are all so glad that this is one of his plans that was realized on his behalf. Today was truly special and I love seeing his legacy live on in the Marsh—truly one of his favourite places".

All boxes had swallow families this year, including the BNS box seen in the photo.

Jacques Giard is a recent member of the BNS. You can often find him at Miner's Marsh, always with his camera. John Burka, a long-standing BNS board member, frequents Miner's Marsh to enjoy nature and visit with friends (and dogs).

How to Build a Tree Swallow Nest Box

BY ALAN WARNER

A key criterion for swallow breeding success is a safe and suitable nest box. The plans on the next page are from the Cornell Lab of Ornithology with some adaptations from Barb McLaughlin, who has been managing boxes for thirty years in Nova Scotia. Here are key points that supplement the illustrations.

• **Materials:** These dimensions assume the wood is 1.9 cm (¾ inch) thick. Adjust the dimensions if the thickness varies from this. Use screws, not nails.

• **Roof Overhang:** Provide a roof overhang of at least 7.6 cm (3 inches) on the front, 3.8 cm (1.5 inches) on the back, and 2.5 cm (1 inch) on the sides. Extending the overhang on the roof of the box helps prevent raccoons from being able to reach into the box, provides shade for the entrance, and prevents water from seeping into the box around the lid. Score a 0.3-cm (1/8-inch) groove on the under side of the front and back of the roof to minimize dripping.

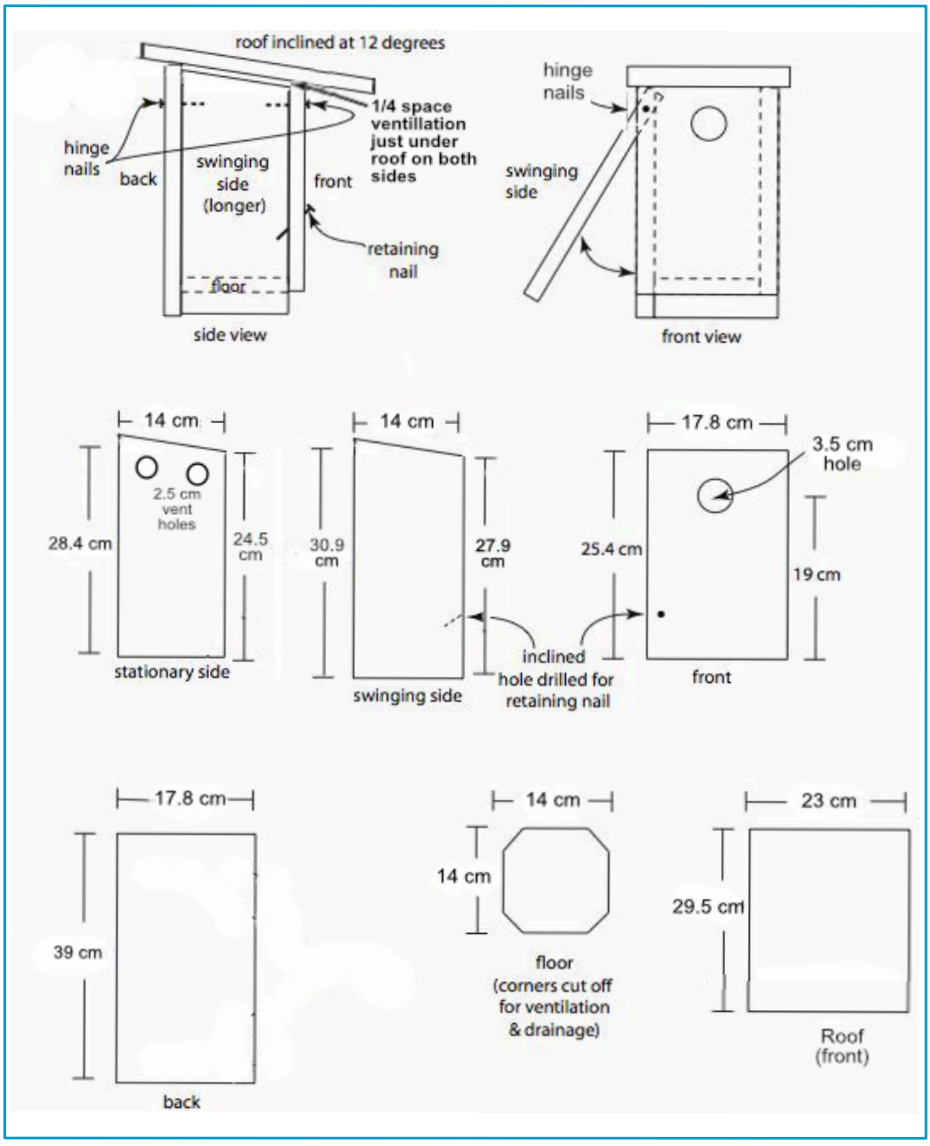
• **Ventilation:** The illustrated plans allow for two 1.9-cm (¾-inch) diameter vent holes at the top of the stationary side. Ventilation is critical for warm summer days but is a problem in Nova Scotia during cold spring days. Put a wooden tab (see photo at right) over the holes that can be swung open when weather starts to get hot (above 25 C°). You must be reliable at opening it when the weather gets hot. If you paint the box, make it white or light gray because dark colours overheat more quickly. If you cannot reliably open the vents during the nesting season, then leave a 0.6-cm (1/4-inch) opening on the side just beneath the roof instead of drilling vent holes.

• **Interior Cuts for Climbing Fledglings:** To make sure young can climb to the entrance for feeding and fledging, make half a dozen shallow cuts to roughen the inside of the box under the hole.

• **Swinging Side & Cleaning:** The hinge for the swinging side is made with two aligned nails at the same level at the top of the side, perpendicular to the side of the box. The swinging side is held in place with a nail placed into a slanted drilled hole that goes through the front side and penetrates the swinging side ("keeper nail"). This hole should be drilled after the box is assembled, making it difficult to tell that the box opens. Clean the box each year in early spring.

• **Posts and Predators:** Predator control is a key to success. Avoid putting boxes on trees or buildings because critters such as raccoons and squirrels climb them. Use posts that get the box 1.5 - 2 m above the ground. The two main options are wooden fence posts (from the building store or home-made), or a smooth, round metal post. These plans assume the wooden post (see photo) and give you ample material on the back to screw the box on top of the post. Another option is to attach the back of the box to a metal pole with two hose clamps. In either case there still must be a way to stop mammals from climbing the posts. Either a stove pipe baffle or a cone baffle is best. The details can be found at: nestwatch.org/learn/all-about-birdhouses/dealing-with-predators/ and www.sialis.org/baffle/. One advantage of fence posts is that they come in different circumferences that correspond with stove pipe sizing. Sixty cm or more of stove piping screwed around tops of posts can eliminate climbing predators (see photo this page). It is easier to drill holes in the stovepipe on the ground.

Completed swallow box with predator-resistant post as per the plan below. PHOTO: BARB MCLAUGHLIN.



This plan is from the Cornell Lab of Ornithology with some adaptations for Nova Scotia from Barb McLaughlin, who has been managing boxes in the province for thirty years.

A Guide to Native Bees in Nova Scotia

Explore the wondrous, important and diverse world of native bees.

BY TERRELL ROULSTON

Most people think of honey bees when someone mentions "bees"; the species is practically synonymous with the word. Yet this non-native species is only one among more than two hundred bee species in Nova Scotia. Native bees come in almost every colour and size imaginable, from tiny metallic green sweat bees only a few millimetres long to the more familiar larger-bodied fuzzy bumble bees buzzing through gardens. Unlike honey bees and bumble bees that live in colonies with a queen, workers, and males, the vast majority of bees are solitary single moms raising their offspring independently, and bachelors looking for mates. Many native species spend their lives nesting underground, and none of them make honey. Despite being overlooked, these mighty insects are fundamental to the health of ecosystems and pollinate many of the foods people need and enjoy. Here is a primer introducing and exploring the wondrous world of native bees, explaining why they are so important.

Five Unique Native Bee Species

I couldn't possibly introduce every species of native bee in the province, but here are five species (or groups) that I think every bee-lover should know!

The green jewel bee (*Agapostemon virescens*)
PHOTO: SHIRLEY ZUNDELL, VIA WIKIMEDIA COMMONS.

• **The Big Fuzzy Bumble Bees (*Bombus*) species.** These familiar garden giants include fifteen species in the province. From late April to early June, lone queens emerge from hibernation to start new nests. Queens are noticeably chunkier than their worker offspring which can vary in size. Bumble bee species are distinguishable by the patterns of colours on their bodies. Several species of bumble bees are in decline in Nova Scotia, including the yellow-banded bumble bee and the gypsy cuckoo bumble bee. Spotting them and uploading photos to iNaturalist or Bumble Bee Watch (see box p. 10) can help conservationists.

Left above: A half-black bumble bee (*Bombus vagans*) worker visiting seaside goldenrod. *Right above:* Nest aggregations of the bicoloured striped sweat bee on the Wolfville Dyke, with a female hard at work creating a new entrance. PHOTOS: TERRELL ROULSTON.

• **The Green Jewel** ***(Agapostemon virescens*****).** If I had to pick my favourite bee in Nova Scotia, this would be it. The bicoloured striped sweat bee has a distinctive iridescent (or metallic) green body and head, with black and white (sometimes yellow) striped tails (see photo at left). Although solitary, they form a community of nests with communal entrances with their kin. Moms share the load of guarding offspring and maintaining tunnels. I regularly spot their nests in June while walking local dykes, because the species prefers hard-packed, sandy soils. Other green metallic sweat bees include *Lasioglosum* (Dialictus)*, Augochlora* and *Augochlorella* species.

• **The Bee with Fabulous Pants (*Andrena*) species**. These ground-nesting bees (photo above right) are known as mining (or miner) bees and represent the most diverse groups of bees in the province. Females collect pollen in dense hairs called scopae on their hind legs, giving them what I call "fabulous fuzzy pants", which appear yellow, white, orange, or even pink depending on the flowers being visited.

They are the first bees to emerge in spring and are especially important pollinators for fruit trees such as apples. Some species specialize in collecting pollen from a single plant species. For example, the Carolina miner bee, *Andrena carolina*, is a specialist on low bush blueberry. Mining bees are not the only bees with pollen pants. Other bees that have scopae include colletes, melissodes, and many halictid sweat bees.

A miner bee visiting an aster. PHOTO: CC0 FROM INATURALIST.

• **The Leaf Cutter (*Megachile*) species.** These bees are talented builders with fascinating nesting behaviours. Using powerful jaws, females cut nearly perfect circles from leaves to build nurseries for their larvae (see photo on the next page). They fly home with each leaf piece in their jaws, meticulously lining hollow stems or underground cavities with neatly fitted leaf chambers before laying an egg inside. Their group of cousins, Megachilidae, is easily identified by the dense hairs (scopae) on the underside of their tail, giving them a yellow belly when loaded with pollen.

• **The Nest Thief (*Sphecodes*) species.** Cuckoo blood bees don't collect pollen or build their own nests. They get their name from their distinctive blood-red abdomen (not from sucking blood), and have a wasp-like appearance, lacking the fuzzy hairs of most bees.

Why do flowers and bees need one another?

Every flower needs to move pollen from one flower to another so it can produce seed and fruit. To encourage bees, flowers reward pollinators with nectar, a sugary energy source, and pollen, protein which is essential to development of bee offspring (larvae). As bees move between flowers collecting these rewards, pollen sticks to their fuzzy bodies, and is carried to the next flower.

This mutualistic relationship began 150 million years ago in the Cretaceous period when the first bees evolved from their carnivorous wasp-like ancestors. Every bee has a favourite flower, and every flower has its favourite pollinator. No single bee species can pollinate every flower; it takes hundreds of species working together.

SOURCE: YPSILANTI DISTRICT LIBRARY

Instead, they quietly sneak into nests of other solitary bees, such as sweat bees, and lay their eggs alongside the host's eggs. Their larvae consume the pollen provisions intended for the host offspring before developing into adults. This remarkable strategy, known as kleptoparasitism, may seem sneaky, but spotting them is a sign of healthy bee communities and a reminder that bee diversity includes far more than just pollinators.

Definition of "beeing" (verb):
The recreational observation, identification, and appreciation of wild bees in their natural habitats. Like birding.

Why Bee Diversity Matters

Every bee species has its own story. Some emerge in early spring, whereas others fly through late summer. Some nest underground, others in hollow stems, and a few even rely on the nests of other bees. Some specialize on a single flower, whereas others visit dozens of plant species. Together, this diversity creates a resilient pollinator community that supports our forests, farms, gardens, and wildflowers. There is no single "super bee"; healthy ecosystems depend on many species working together.

A simple way to think about biodiversity is that it is akin to financial investing. A well-diversified portfolio is more resilient to market ups and downs than relying on a single stock. Likewise, healthy ecosystems depend on many different bee species rather than relying too heavily on any single pollinator, including honey bees. Diversity provides stability when environments change.

Top: A leafcutter female bee removing a piece of leaf with her teeth. PHOTO: HERWIG WINTER VIA WIKIMEDIA COMMONS.

Just Above: A cuckoo blood bee emerging from an unsuspecting host's nest. PHOTO: CC-BY INATURALIST USER: MAX MCCARTHY.

Tips for Noticing Native Bees

My favourite outdoor pastime is beeing! Much like birding, or botanizing, there is something meditative and fulfilling about noticing and recognizing different wild bee species in surroundings. Look closely and you will discover that every patch of flowers is home to an incredible diversity of shapes, colours, and behaviours. If an insect resting on a flower seems to be a fly or a wasp, take a closer look; does it have long hairs, is it covered in pollen? It's probably a bee!

Beeing doesn't need expensive equipment. A smartphone camera, a bit of patience, and a patch of flowers are all that is required. Sunny woodland edges and forest trails, where beams of sunlight catch shimmering wings, are some

Getting involved in bee citizen science

Bumble Bee Watch: This digital collection of bumble bee observations is a collaborative effort to track and conserve these invaluable species in North America. It also includes identification guides for species by region, and every observation uploaded is verified by an expert. The platform is available online as a website and as a smartphone app.

iNaturalist: This is the citizen science standard many people already use. All bee observations can be identified by crowd-sourced iNaturalist identifiers. Identifying non-bumble bees to species-level is more difficult, but contributions are still significant!

of my favourite places to go beeing. Spend a few minutes watching a single plant in flower, rather than moving from flower to flower. Notice which bees are large or small, fuzzy or shiny, metallic green or jet black. Look at how they collect pollen, where they carry it, and which flowers they seem to prefer. To elevate your beeing, consider purchasing an insect net with fine mesh, and vials to collect bees.

Many native bee species can be identified from a photograph, making apps such as iNaturalist and Bumble Bee Watch excellent tools for beginners. Posting observations contributes valuable records that scientists can use to map bee distributions and monitor species of conservation concern.

The next time you pass a patch of wildflowers, pause for a minute. Watch carefully. That tiny metallic flash, shimmer of a wing, or fuzzy visitor may not "bee" what you expected, but it could be one of Nova Scotia's remarkable native species quietly keeping our landscapes in bloom. Happy beeing!

Terrell "beeing" during a Bee Walk at the Harriet Irving Botanical Gardens. PHOTO: SAM JEAN, HARRIET IRVING BOTANICAL GARDENS.

Terrell Roulston is an ecologist interested in the conservation of native pollinators in agricultural landscapes. He is currently a PhD student at the Dalhousie Agricultural Campus in Truro and has organized and led public Bee Walks at the Harriet Irving Botanical Gardens.

Small Woodlots Can Help Restore the Wabanaki Forest

The Nova Scotia Working Woodlands Trust enables small woodlot owners to work in their forests while protecting them for future generations.

BY ELLEN RIOPELLE

Walk almost anywhere in rural Nova Scotia and sooner or later you'll cross into someone's woodland. Unlike many Canadian provinces where public land dominates the landscape, more than 65% of Nova Scotia's land is privately owned, one of the highest proportions in the country. Over 30,000 small woodlot owners hold title to half of the province's forests. Forests here are, in a very real sense, the peoples' forests.

For generations, these woodlands have been managed quietly and carefully—harvested selectively, preserved, and passed down to children and grandchildren, tied to a rural way of life that runs deep in this province. These traditions are now under pressure. Many aging woodland owners lack a clear succession plan. Development and subdivisions loom as attractive financial avenues. Too often, these carefully tended family woodlands are sold, only for the forest to be liquidated by the new owner, erasing generations of care and stewardship.

It's within this uncertain landscape that the Nova Scotia Working Woodlands Trust (NSWWT) emerged, offering a solution for landowners who want to continue working on their woodlands while ensuring

it remains protected and responsibly stewarded for generations to come. NSWWT's vision is ambitious: to build a province-wide network of healthy, resilient woodlands through a community of landowners with a shared commitment to long-term stewardship. Here is why and how it works.

Two-thirds of Nova Scotia forests are privately owned and landowners are a part of the solution to sustainable management for biodiversity, climate mitigation, and economy. PHOTO: NSWWT.

Filling a Gap

There is no shortage of conservation organizations in Nova Scotia. The province's conservation strategy has long been built around public land—national parks, provincial wilderness areas, and nature reserves. These are vital, but they only cover a part of the landscape. The Wabanaki forest ecosystem that spans much of the province—red spruce, eastern hemlock, sugar maple, yellow birch—exists predominantly on private woodlots. To protect this ecosystem at the scale the landscape requires, private landowners must be a part of the solution.

For a long time, the primary avenue for private landowners to participate in conservation was to give up ownership of their land, either by selling it to a conservation organization or by donating it. While this approach has helped protect many important natural areas and has its place, it was never the right fit for landowners who wished to remain actively involved in caring for and working their woodlands.

Nova Scotia Working Woodlands Trust staff collecting data to help develop the forest stewardship plan for a landowner. PHOTO: NSWWT.

Conservation easements offer another path: a legal mechanism allowing landowners to retain ownership while placing permanent restrictions on how the land can be used. In Nova Scotia, these agreements are governed by the Conservation Easements Act and held by organizations like the Nova Scotia Nature Trust. In practice, this option has two significant limitations for working woodlot owners. First, conservation easements in Nova Scotia are not easy to access—they typically require the presence of rare ecological features or species at risk, excluding many well-managed but ecologically important properties. Second, the model is designed to leave land undisturbed: conservation easements prohibit all commercial activity, including timber harvesting, making them a poor fit for landowners who want to keep actively managing their forest.

How can private landowners who want to maintain ownership of their land and keep working in their forest ensure it is permanently protected?

This is exactly the gap that NSWWT aims to fill. The organization's mission is to provide landowners with a pathway to ensure their land is protected long term, while still allowing them to work and make a living

from their woodland. Land stewards who partner with NSWWT retain full ownership of their property. They can sell, lease, leave it to their heirs, and control public access.

How is this done? The mechanism at the heart of NSWWT's work is the Working Forest Community Easement—a legal agreement between a woodland owner and the Trust, held under Nova Scotia's Community Easement Act. Think of a Working Forest Community Easement as a constitutional document that is tied in perpetuity to a woodland. It records, in precise legal language, what can and cannot happen on the land—now and forever. Certain activities are simply prohibited: property subdivision, liquidation, and unsustainable harvesting practices. Others are restricted—requiring 60 days' notice and approval before proceeding—including forest harvesting, new road construction, and restoration projects. Other activities are freely permitted: hiking, trail clearing, and non-commercial foraging.

The easement is attached to the land title itself, not to the individual owner. So, when the land is sold, when it passes to the next generation, when the original steward is long gone—the easement remains.

Stewardship in Practice

Putting a forest under easement involves far more than signing paperwork. Each participating property begins with a detailed Baseline Documentation Report. Field staff spend time on the land mapping forest types, identifying wildlife habitat, assessing soils, and documenting the ecological condition of the property. This creates a snapshot of the forest at the time the easement is signed.

From there, a Forest Stewardship Plan is developed in collaboration with the landowner. The plan outlines how the woodland can be managed using ecological forestry principles—often including selective harvesting, encouraging long-lived species, and maintaining habitat diversity. These plans are typically updated every decade, ensuring the forest continues to evolve and thrive over time.

Determining the age of trees is important for the Baseline Stewardship Report for a land steward. PHOTO: NSWWT.

Once an easement is in place, the Trust conducts ongoing annual monitoring of the property to ensure the agreed stewardship practices are maintained. The relationship between land stewards and the Trust is an equal partnership. Landowners lead the way, guided by their deep knowledge of the land, while the Trust offers support, tools, and insight to help ensure that stewardship continues for generations.

Each land steward comes from a different background and has a unique vision for the future of their woodland. The organization works with

Celes and Susan Davar,

South Mountain, Kings County

"We joined the Nova Scotia Working Woodlands Trust to help protect the forest we currently steward for future generations. The team at NSWWT was immediately responsive—clarifying conservation opportunities, outlining the process, and providing invaluable technical support. We realized we had a chance to conserve the forest forever, and we see this as an investment that facilitates private landowners to help protect forests for the future."

landowners from many walks of life: farmers, foresters, retirees, outdoor enthusiasts, and families hoping to pass their land to future generations. Despite their differences, they share a common belief: their forest is more than just property; it's a legacy worth protecting.

Learn More & Get Involved: *The NSWWT welcomes woodland owners interested in easements, as well as Nova Scotia residents who want to support ecological forestry through membership. Visit nsworkingwoodlandstrust.org or contact the Trust directly at info@nsworkingwoodlandstrust.org to learn more.*

The Road Ahead

The forests of Nova Scotia are constantly changing. Hurricanes reshape canopies. Invasive species arrive. Climate change alters growing conditions and increases stress on already vulnerable ecosystems.

At the same time, rural land ownership itself is shifting. Rising land values, increasing development pressures, and the economic uncertainties facing many woodland owners make long-term stewardship a difficult commitment to make and keep. For some families, subdivision, or intensive harvesting may feel like the most practical financial option, particularly when succession plans are unclear or the next generation lives elsewhere.

Against this backdrop, entering into a Working Forest Community Easement is a significant decision. An easement is permanent, attached to the land title itself and binding future owners long after the original steward is gone. That permanence is precisely the point, but it also requires landowners to think very carefully about their long-term goals, family succession, and how they want the woodland to be managed generations from now. For some, that commitment feels deeply aligned with their values. For others, it may not fit their circumstances or vision for the land.

Protecting working woodlands also requires navigating a broader policy landscape that continues to evolve.

Organizations like NSWWT depend on legislative frameworks that recognize the value of long-term conservation on private land. Recent public debate over proposed changes to Nova Scotia's conservation legislation highlighted the importance of strong, stable legal protections for both landowners and conservation organizations. As interest in private land conservation grows, ensuring that these tools remain effective, accessible, and durable remains an important part of the work.

Despite these challenges, the interest keeps growing. More woodland owners are looking for ways to balance active forest management with lasting ecological protection—to work their land without losing it to development or liquidation. In just 3 years since gaining the ability to hold easements, the Trust has preserved more than 3,000 acres in the province.

Together, these properties are forming a growing network of conserved woodlands—places where ecological forestry, biodiversity, and long-term stewardship go hand in hand. In a province where so much forest is privately owned, this network can prove essential to the future health of the Wabanaki forest itself.

Ellen Riopelle is the Outreach and Communications Coordinator at the Nova Scotia Working Woodlands Trust.

Jake and Melissa,

Lunenburg County

"Putting a Working Forest Easement on our land was important because we don't know what the future holds. We don't know what the next generation will bring and what kind of development will be surrounding our property in the future. We don't anticipate selling this property, and we don't anticipate our kids selling this property, but life changes. Knowing that no matter what happens to us, or our family, this place will continue to be a working woodland 50-100 years from now gives us tremendous peace of mind."

Nature's Night Shift: What's Up with Nova Scotia's Bats?

Bats play critical ecosystem roles and need support to recover in numbers.

BY ADRIAN FILICE AND LORI PHINNEY

Bats are among Nova Scotia's most important nighttime wildlife: they help keep insect populations in balance, rely on connected forests and waterways, and continue to recover from devastating disease. Understanding their ecological role, the pressures they face, and the actions people can take are essential to supporting their long-term recovery.

Ecosystem Impacts of Bats

Bats play a unique role in ecosystems as nocturnal aerial insectivores, meaning they consume insects in flight at night, controlling populations that daytime insectivores do not encounter. If unchecked, these insects can become harmful. For example, they eat the pale winged grey moth, a native species to Nova Scotia that feeds on a variety of important trees such as sugar maple, paper birch, and eastern hemlock. When populations of this moth are high, they can cause severe damage to trees. Bats eat and naturally manage insect populations without our direct observation and knowledge, including beetles, gnats, midges, caddisflies, mosquitoes, moths, and other flying nighttime insects. They naturally mitigate the potential harm caused by these insects in an outbreak. In the absence of natural population control, species like the spruce budworm, forest tent caterpillar, corn earworm, and many others can have detrimental effects. One study found that excluding bats but not birds from forests at night resulted in a threefold increase in insect density and a fivefold increase in seedling defoliation compared to controlled areas where bats were present. These findings demonstrate the role of bats in forest health.[1] No insect species is inherently a "pest", but if its population size and demand for food outgrows the available supply, it can cause excessive harm. Bats help to keep this supply and demand dynamic balanced.

A photo observation of a *Myotis* bat (a little brown bat or northern long-eared bat) submitted to the Nova Scotia public bat report database for conservation efforts (batconservation.ca) in summer 2025. PHOTO: HAILEY SINGER.

A hibernating little brown bat; their population has declined by 95% in Nova Scotia in the last 15 years. PHOTO: BEN SHEFFLER.

Bat Populations 15 Years Later

Over the past fifteen years, bats in Nova Scotia have experienced one of the most dramatic population declines ever recorded since European settlement. The spread of white-nose syndrome, an introduced fungal bat disease native to Eurasia, has devastated cave-hibernating populations. Within a few years of its arrival in 2011, Nova Scotia lost 95% of its hibernating bat populations, including the little brown bat,

northern long-eared bat, and tri-coloured bat. Today, surviving bat populations remain far below their pre-2011 numbers. Their numbers are no longer necessarily in decline, but their recovery will take decades rather than years. Female bats typically produce only a single pup each summer. Even under ideal conditions, populations increase slowly. White-nose syndrome is still present throughout the province (meaning that bats must continue to coexist with the fungus rather than simply outlasting it each winter).[2] Biologists are just beginning to understand how the fungus persists in caves in North America after close to two decades since its introduction. A recent study[3] found reduced fungal levels in Nova Scotia and New Brunswick bats and caves, suggesting that there is hope for a long-term recovery.

Batty Homes

Despite the common association between bats and caves, all six species of bats in Nova Scotia rely on trees as homes in the summer, which are called "roosts". Among regional bats, little brown bats are adaptable as they roost in a wide variety of habitats including structures like barns, attics, and patio furniture. If a snoozing *chiroptera* flies off when an umbrella is opened on a patio, it's likely a little brown bat! In contrast, other bat species are all forest-dependent, with some having a preference for old-growth forests. For example, northern long-eared bats roost in large trees such as eastern hemlocks. The tri-coloured bat is exceptional as it prefers spruce trees with extremely dense clumps of old man's beard lichen. Similarly, hoary bats and Eastern red bats prefer to roost in the foliage of tall trees and snags. Finally, silver-haired bats tend to roost in dead and decaying deciduous trees such as aspens and poplars. One tree is not a sufficient roost for a bat; they require a network of roosts including dozens of trees when they are active, from spring until fall. In their "roost neighbourhood", a little brown bat switches trees every 1-3 nights on average. They determine the right spot depending on the weather and the nature of their current daily activities, such as grooming, socializing, foraging, mating, and raising young.

A Multitude of Challenges

Although white-nose syndrome remains the greatest challenge facing Nova Scotia's bats, it is not the only one. Habitat loss continues to reduce suitable roosting and foraging areas. The widespread use of insecticides is another concern because it reduces the flying insects that bats depend on for food and can expose bats to contaminants that may affect their health and reproductive success. Climate change affects bat populations by altering insect emergence, increasing the frequency of severe weather events, and changing conditions within winter hibernation sites. Human disturbance of caves and abandoned mines during hibernation can awaken bats prematurely, causing them to burn through the fat reserves they need to survive the winter. Wind turbines also pose a significant hazard to migratory species through direct collisions with rotating blades. Turbines can also cause pressure-related lung injuries through rapid air-pressure changes near the blades. Migratory bat species fly south in late summer and fall, encountering an increasing number of wind farms along migration routes. Bats also seem to be attracted to turbines, though the reasons are unknown. To combat these impacts, bat biologists and the wind industry have developed operational practices, known as "curtailments", which can significantly reduce bat

A little brown bat maternity colony in NS with more than 100 bats in a single bat box. PHOTO: BEN SHEFFLER.

fatalities if fully implemented. These practices often result in negligible energy loss to power companies because bats are most active on warm nights with low wind speeds.[4]

How We Can Help

Nova Scotians have a long history of supporting bat recovery, including more than 7,000 public observations reported to the Nova Scotia bat report database (batconservation.ca) from 2013-2026. This website, managed by the Mersey River Tobeatic Research Institute (MTRI), is one of the longest running public bat observation databases in Canada! Citizen science has become an essential component of bat conservation, helping researchers locate previously unknown colonies and track changes in distribution across the province. Every observation, whether of a single bat feeding at dusk or a colony emerging from a building, adds another piece to the recovery puzzle. Through these reports, MTRI has worked with dozens of individuals to help monitor surviving bat colonies on their properties and in their communities, identifying sites that are key to bat recovery in the coming years as bats adapt to their disease and habitat challenges.

Monitoring old barns and other buildings and reporting observations is important to facilitate bat research and recovery. PHOTO: BEATRICE MURCH, VIA WIKIMEDIA COMMONS.

Beyond reporting bat observations, it is important to protect their habitat by leaving mature trees that contain natural cavities, monitoring old barns and buildings where maternity colonies may roost, reducing or eliminating pesticide use, and installing well-designed bat houses.[5] Over 70% of land in Nova Scotia is privately owned so there is enormous potential for people to play a role in ensuring healthy habitats. If there are bats living in buildings such as an attic or barn, provide them with alternative options by checking out the best practices for the design and placement of bat boxes.[5] This includes tips such as building multiple large boxes and placing them three to four metres high on buildings.

Bats are wondrous to watch and play a critical and unique role in regional ecosystems. They seem to be gaining some immunity to white-nose syndrome, but recovery will be long and slow and they will need support along the way if they are to thrive once again.

Note: If you see a bat in NS, please report it to batconservation.ca. If there is a colony of bats nearby, please email bats@merseytobeatic.ca. If you have any health concerns about bats or see a bat in other provinces of Atlantic Canada, call 1-833-434-BATS (2287). For more info visit https://mtri.speciesatrisk.ca/content/bats.

Adrian is a student in the Radio Television Journalism program at the NSCC Ivany Campus and a volunteer with MTRI. Lori is MTRI's Species at Risk Program Coordinator, leads their NS bat conservation program and sits on the provincial bat recovery team. MTRI's bat work is currently funded in part by the Nova Scotia Habitat Conservation Fund.

Notes

[1] Beilke, E. & O'Keefe, J.M. (2022). Bats reduce insect density and defoliation in temperate forests: An exclusion experiment. *Ecology*. doi: 10.1002/ecy.3903.

[2] Muldoon, T. (2023). Spaciotemporal analysis of the causative agent of white-nose syndrome and intestinal macroparasites from Nova Scotian bat guano. Bachelor of Science thesis in Biology submitted to Acadia University.

[3] Vanderwolf, K.J., McAlpine, D.F., Ryan, C.C. & Broders, H.G. (2025). *Pseudogymnoascus destructans* environmental reservoir decreases 11 years after an outbreak of white-nose syndrome. *Ecosphere*. doi.org/10.1002/ecs2.70149.

[4] https://www.nasbr.org/wind

[5] https://cwf-fcf.org/en/conserve/bats/bat-house.html

Fracking and Energy Policy in Nova Scotia—An Interview with David Wheeler

The Chairperson of the 2013/2014 Review Panel on Fracking in Nova Scotia addresses current fracking and energy policy issues.

INTERVIEW BY ALAN WARNER

Hydraulic fracturing (fracking) is a technique for extracting underground methane gas.[1] Large amounts of water, sand, and chemicals are injected under pressure into rock formations to crack the rock and allow the release and collection of the gas. It has been a controversial issue in Nova Scotia for decades with respect to the health, community, and environmental impacts, and economic benefits. It had garnered little attention in the past decade though. because a previous Nova Scotia government banned the practice in 2014.

This all changed in March 2025 when the current government suddenly repealed the ban without public consultation and initiated a process to begin exploratory drilling. Premier Tim Houston noted that the province needed revenue from resource extraction and that new technology had mitigated past concerns so that fracking could be a boon to economic development. In early 2026, Dalhousie University was given a $30 million dollar contract to design, recommend, and promote a program for exploratory onshore fracking by industry in Nova Scotia by April 1, 2027. Dalhousie contractors are to determine *how* best to conduct fracking, not *whether* fracking should be initiated in light of the potential benefits and impacts. There has been extensive opposition to the government initiatives from local communities and health and environmental critics.

David Wheeler. PHOTO: PNI ATLANTIC.

In light of these events, *Beyond the Tides* sought out and interviewed David Wheeler, who was the Chairperson of the 2014 Nova Scotia Independent Review Panel on Hydraulic Fracturing, which submitted its detailed report to the government based on extensive public consultation. This report concluded that not enough was known at the time to proceed with fracking. Ongoing research to assess impacts in Nova Scotia would be required, along with a process to obtain community permission, before any program of exploration could be initiated. Neither of those conditions has been met since that time, in part because the Nova Scotia government passed a legislative ban on fracking in 2014.

David Wheeler is an academic and former dean at Dalhousie University, and former president of Cape Breton University, who has an extensive background studying and writing on energy policy. He has served as a consultant over many years with numerous governments, including former Nova Scotia governments, as well as with various industry and non-profit organizations in this sector. He now lives out of province but visits frequently and follows energy policy issues closely. He offers an independent and expert perspective on fracking and energy policy issues in the past and current contexts.

Alan: To start, could you give me a brief sense of your background and expertise that led the Nova Scotia government to select you to lead the 2014 panel on hydraulic fracturing?

David: Well, I think my previous work on Nova Scotia's renewable electricity strategy and on setting up Efficiency Nova Scotia were seen as good reasons to consider me for the fracking panel. This work was very successful and continues to provide benefits today. So, when it came to finding someone to run an

independent process assessing hydraulic fracturing, the government turned to me. I was then President of Cape Breton University.and I had run several similar independent, stakeholder, and evidence-driven inquiries that made recommendations to government.

Alan: It would be helpful to understand a bit about this panel and its work in relation to the current issues with fracking. Could you talk about the political and social context in the province with regards to fracking at that time?

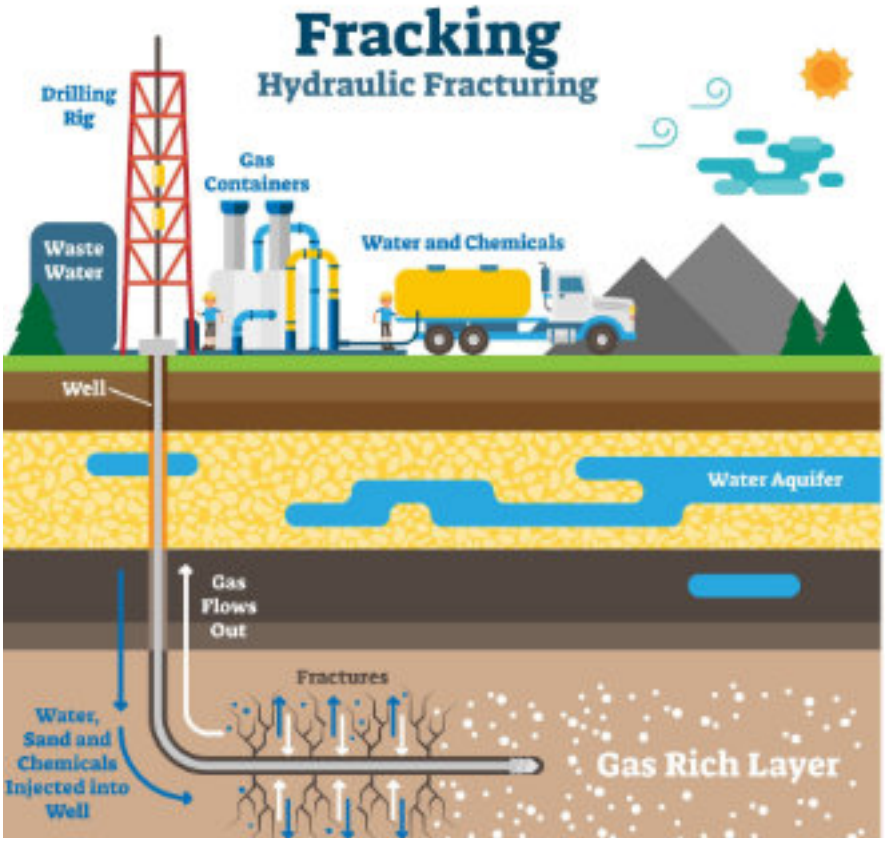
David: This was in the later stages of Darrell Dexter, NDP government, with an election scheduled that year. The NDP government decided that it needed a piece of independent research to advise the government, whoever that government might be, on what to do about this topic.

Of course, the NDP subsequently lost that election and the baton passed to the Liberal government which continued the panel. My earlier work included work on energy efficiency, which was commissioned by a Conservative government and completed by the NDP government, so political continuity matters regardless of the political platforms involved. If energy policy is going to stick and be meaningful, it needs to be developed through a cross-party, consultative approach, that engages all stakeholders.

Alan: Could you talk about how the panel went about its work?

David: I have done a lot of theoretical and practical work in stakeholder management spanning several decades and have a strong sense of how to do this ethically and properly. That was how I ran the previous two projects on energy efficiency and renewable electricity. For the hydraulic fracturing project, the panel took a series of steps to ensure that the process would be ethical, transparent, and evidence based.

The panel designed a statement of ethical principles that informed all the work. The panel members were nominated independently through a general call for nominations, and I chose those who were best qualified and had diverse backgrounds and expertise. The process was open, transparent and inclusive, and we got a great panel as a result. Panel members had strongly divergent and indeed completely contradictory views in many cases, but we still came up with a consensus report through much dialogue.



Hydraulic fracturing schematic vector illustration with fracking gas rich ground layers.
PHOTO: VECTORMINE/GETTY IMAGES.

Alan: I noted in my review of the report that there is a matrix near the end that assesses risks and leads to the final recommendations. Could you briefly explain the nature of that matrix and the rationale for the recommendations?

David: The matrix looked at all the potential risks of fracking, with the likelihood of risk occurrence on one axis and the severity of impact on the other axis. If something is more likely to occur and has more severe implications, that sets off the flashing red lights versus things that are very, very unlikely and perhaps won't have so much of an impact. So, the matrix summarises all of the research we did and sets out where the risks were most pressing and needed to be addressed through regulation and community consent, because in the end only affected communities can decide to accept the risks.

Governments can make proposals, but communities ultimately have to accept or reject the risks in their backyards. My starting point for any review of where we are 12 years later would be to update that matrix based on the latest scientific and engineering knowledge in the context of the actual circumstances for fracking in Nova Scotia. That work has not been done, though the panel recommended it. Instead, the Liberal government of the day decided on a moratorium. I think in retrospect, that decision has been problematic given that there is now a government trying to rush through development without the required research, and is using Dalhousie University as their agent to make it happen. A more thoughtful approach would have continued the knowledge generation.

Public meetings for the 2013-2014 Review Panel were attended by more than 1000 people. PHOTO: DAVID WHEELER.

At the heart of this is the precautionary principle. One never knows what's going to happen in the future. So, with scientists, engineers, social scientists, and an Indigenous knowledge member on the panel, we all took the view that we needed to keep an open mind and update and apply that matrix to the specific circumstances in the future. That matrix was based on general knowledge from around the world and not necessarily applicable to places like Windsor or Kennetcook. So, the matrix needs to be redone in the context of local conditions.

Governments can make proposals, but communities ultimately have to accept or reject the risks in their backyards.

Alan: Given that you follow these issues in a general way, are you aware of any fundamental breakthroughs or developments in the knowledge about and technology of fracking within the past decade?

David: Well, the industry will sometimes claim breakthroughs, but remember that the industry is decades old and the technology optimization curve has more or less played out. Over time, risks are accepted, risks are managed and mitigated, and regulations are updated to try and ensure that negative impacts are minimized. In my view there have not been materially groundbreaking technology changes since 2014.

I think the one thing that has changed fundamentally since 2014 is that the evidence for the climate crisis is far more obvious today than it was even in 2014. It was pretty clear then that Nova Scotia increasing its climate impacts wasn't a good idea. But there might have been ways of mitigating that. Phasing out coal and ramping up renewables was happening. One could have said then, "Nova Scotia is going to come out all right, even if it does a little bit of fracking".

Today, 12 years on, we know the world is in a severe climate crisis and any fossil fuel resource that has not already been developed is not a responsible idea to pursue. While the climate impact might have been a flashing red light on the matrix in 2014, now it is a solid red light. Personally, I wouldn't recommend developing new fossil fuel resources given the climate crisis.

Alan: Let's move forward and talk about the present. What do you see as the differences in the political context now relative to 2014?

David: Well, it was a big surprise when Premier Tim Houston suddenly launched into this fracking and natural resource extraction agenda. It was not expected based on the government's re-election platform. Political developments south of the border have empowered fracking proponents, including in little provinces like Nova Scotia, to pursue the fracking option as part of a broader geopolitical argument for greater energy sovereignty for Canada. I believe that greater energy sovereignty for Canada is better secured in other ways, but the context in 2026 is different relative to past years given Mr. Trump's actions.

Alan: Could you talk about how today's government-defined process involving Dalhousie University is different from the process of the previous panel?

David: It certainly isn't a process like the one we did. This is commissioned research with a result in mind and is absolutely not best practice for stakeholder inclusion, evidence-based decision making, or risk management. Dalhousie University is the hand maiden in this process. If anything goes wrong during this exploratory drilling phase, Dalhousie is going to be on the hook. Let's hope there aren't accidents. Dalhousie is paying industry to undertake the work, but the risks are shared.

The government has been very clear that they want to fast track the development of fossil gas in Nova Scotia, and they also want to persuade communities that it's going to be safe. Clearly, based on my reading of the contract between the government and Dalhousie, they want Dalhousie to soften up public opinion. Dalhousie is not going to be involved in seeking local social license to conduct the work. So, goodness knows how that's going to happen. I fear for everyone in the process with drillers just showing up in communities and wanting to start work without social license.

Shale gas drilling rig. PHOTO: DAVID R. TRIBBLE, VIA WIKIMEDIA COMMONS.

This is not a serious piece of academic research or stakeholder engagement. It is a piece of commissioned research to deliver a particular result. That is extremely clear.

Alan: Do you see dangers for communities and a danger for the government in this process?

I fear for everyone in the process with drillers just showing up in communities and wanting to start work with no social license.

David: There are dangers for everybody and for the natural environment. The whole approach to risk has been cavalier and one wonders what the Board of Governors of Dalhousie University is thinking. An august institution, a couple of hundred years old, is now a plaything of the oil and gas industry. The risks have not been thought through. Tim Houston appointed himself energy minister so he's obviously accepting those risks to the extent that he understands them and is proceeding regardless.

Alan: Okay, let's step back from this immediate issue of fracking. If you had a magic wand, or if you were the premier, what do you think would be the best broad energy mix moving forward for Nova Scotia?

David: Taking a long-term view, including what's happening in Asia, it is obvious that building LNG plants and going after fracked gas is a short-term bet which is unlikely to pay off. Most parts of Asia, China and India especially, are now pursuing energy sovereignty through electrification. They are making good money on this, based on electric vehicle and solar panel manufacturing and distribution.

Fossil fuel production is peaking in the next few years and will be on a downward trajectory. So, it doesn't make any sense for Nova Scotia to be developing new fossil fuel infrastructure.

Electrification is the ultimate answer and Canada is going to need to double the amount of electricity it produces in the next few decades, so everything should be about storage for renewables. Of course, the key is to start with efficiency because that's how to minimize consumption. The federal government seems to have a blind spot on efficiency because it likes big capital projects.

Efficiency is the starting point but then there has to be a massive ramp up of renewables and storage, as well as an upgraded grid, to ensure that Canada benefits from its diverse and large landmass and climate. There must be a national electricity strategy which delivers grid connections across provinces. There is also the need to connect more effectively into the US, which can help Canada build a resilient and self-sufficient energy system.

Alan: Given these realities, what are your thoughts on the Nova Scotia government's plan to build new gas plants in Pictou County? The province argues that they are a necessity as a backup system due to inconsistencies in solar and wind energy generation.

David: Well, these plants would not be a stop-gap measure as they have a 50-year lifespan and lock Nova Scotia into liquified gas over that time span. A much smarter approach would be what the Premier's already said he would champion—offshore wind. It has been hugely successful for the United Kingdom.

Massively increasing offshore wind could become a federal nation-building project, because to get that offshore wind electricity into the Canadian system requires much more grid connectivity. It would justify better grid connections with Quebec and the United States as part of a continent-wide system. Nova Scotia would draw on electricity from Quebec, Newfoundland and Labrador, and the US when needed, and they would draw from Nova Scotia's offshore wind, building a balanced and resilient system.

The Nova Scotia government faces ongoing opposition to its fracking agenda from rural communities. From left to right: Rev. Marian Lucas-Jefferies, Ana Balbino. Jeanine Goulet, Janet Baker at a June, 2025 rally outside NS Minister of Environment Tim Halman's office. PHOTO: MADIHA MUGHEES/HALIFAX EXAMINER.

NS Premier Tim Houston addressing the Halifax Chamber of Commerce on May 26, 2026. He promoted gas extraction and said that "Natural gas is a way to reduce the power bills of Nova Scotians".[2] PHOTO: TIM KROCHAK, HALIFAX CHRONICLE HERALD.

The real solution is better interconnectivity. The notion that Nova Scotia can build a sovereign cottage industry for liquefied gas is naïve. If that idea ever had any merit, it was 60 or 70 years ago.

> Nova Scotia needs to commit to efficiency first while building out renewables and storage and then link the grid more effectively to the rest of the country.

Alan: Are batteries a back-up storage solution?

David: Yes, the case for batteries is unassailable. Hydroelectricity is also incredibly valuable for storage, though this is not as directly applicable in Nova Scotia as it is in Quebec and Newfoundland and Labrador. That's why you need good interconnectivity with other jurisdictions where different forms of energy and electricity storage can be accessed.

Alan: One of the other arguments that the Premier has made for gas development is that it would help maintain relatively low provincial electricity prices over time. What are your thoughts on this?

David: Well, there is no evidence for this. In fact, that was a similar promise that failed to materialize in Pennsylvania where they have a lot more experience with fracking than Nova Scotia. One of the key reasons is that gas, like oil, is sold on international markets. Fracked gas in Nova Scotia will be sold to the highest bidder, whether they are in China, Europe, or elsewhere. That's how that industry works. The idea that

the government could tell a gas producer to sell the gas at a discount to Nova Scotia Power is unrealistic. Nova Scotia Power is a private monopoly that also works through international markets, and they will pay as little as possible for gas.

Alan: Do you see renewables, such as solar and wind, offering a greater likelihood of keeping prices low?

David: Yes. There is massive evidence for that. That's why the world is now developing far more renewable energy and storage compared to oil and gas. That is happening because the prices are low compared to fossil fuel development and because renewable technologies have more predictability. Nova Scotia needs to be smart for the long term. It needs to commit to efficiency first while building out renewables and storage and then link the grid more effectively to the rest of the country and the rest of North America. This will provide for lower cost and genuine resiliency.

Alan: Finally, is there anything that you want to add?

David: The one thing to note is the direct risks to communities and how they should be gearing up to play roles in these decisions. It's very important that communities stay informed, vigilant, and ask questions through their representatives, be they municipalities or Mi'kmaw First Nations. They will have to deal with the potential developments and will need to assert their rights. I hope the Mi'kmaq will assert their rights and bring constitutional challenges to the province's proposals.

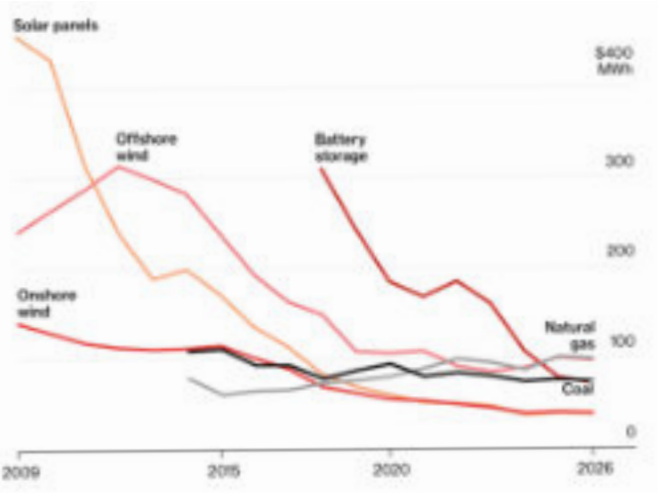
> It's very important that communities stay informed, vigilant, and ask questions through their representatives.

A coalition of informed political forces and communities needs to unite and stand up for the precautionary principle and defend their health and environmental well-being.

Alan: Are there positive examples of other jurisdictions that have done good work in defining what social license or giving permission is for a community, and how it's obtained?

David: Yes, there's a huge amount of best practice information out there. It isn't always followed. Talk to any large oil and gas or mining company and they know what it takes to achieve community consent. It's a lot of work and it often involves compensation. It involves sharing royalties and providing guarantees if things go wrong. I've also done a lot of work over the years for the World Bank, the International Finance Corporation, and others, where things have not been done well by international companies.

Global Levelized Cost of Electricity
$ per megawatt-hour



Solar, wind, and battery storage are now cheaper than gas, and are projected to drop further relative to gas and coal. *Note:* 2026 data is an estimate. Levelized cost of electricity measures the long-term break-even price a project needs to recoup all costs and meet the required rate of return. SOURCE: WWW.BLOOMBERG.COM/GRAPHICS/2026-EXTREME-HEAT-CLIMATE-CHANGE-DATA/

It's very clear that riding roughshod over community rights and concerns can end in disaster. Large oil and gas companies will not be coming to Nova Scotia to frack at this point. The community pushback would be so enormous that a large company wouldn't touch that because they know what best practice looks like. But small drilling companies and some operators in the fracking industry do not have international brands to protect. They don't have international best practices in their guidelines. It is very clear what best practice looks like, and that is not what Nova Scotia is doing.

Alan: This has been very helpful to hear your thoughts on the current issues with fracking and energy policy in the province. Thank you!

Alan Warner is Editor of Beyond the Tides.

[1.] Please note that the term "natural gas" is often used (not here), but it is predominantly methane, a potent greenhouse gas. Whether it is "natural" or not is irrelevant to its impacts and this discussion.

[2.] https://www.saltwire.com/nova-scotia/nova-scotia-expands-push-onshore-natural-gas-exploration-economic-development

Moores Brook Falls—Short, Sweet, & Nearby

A natural gem and short adventure within a stone's throw of New Minas.

BY PETER WALLACE

Moores Brook is a beautiful, short hike with a series of three waterfalls off Prospect Road in New Minas. The brook valley is a classic V-shape and winds through fractured and loose slate with water depth that varies according to the season and the amount of recent rain. The trail follows along this valley near the base of the brook, including fairly narrow places along a steep slope next to the stream. Trees in the valley are small (good for holding onto for balance). Further up the slope, larger conifers dominate initially but give way to deciduous trees at the end. I would rate the trail from moderate to high difficulty on account of the narrowness of the trail and the sections of steep slope. The pathway and rocks around the falls can be wet and slippery when traversing up or down. Children from about age 7 up enjoy the stream, the short walk, and climbing about the falls; younger children and elders with balance problems are advised to stay away. For those young at heart, there is a large dry tunnel under the highway to traverse as well. On hot summer days traveling in the stream under the canopy is cool and fun, but unfortunately the pools at the bottom of the falls are shallow and not swimmable.

Directions

The trail is about 3 km west of Kent Building Supplies on Prospect Road, or 1 km east of where Prospect Road junctions Highway 12. The trailhead is poorly marked as there is no bridge on Prospect Road over the brook, and the trailhead is very narrow and obscure. It is on the east side of the brook opposite the westernmost entrance to Morris Crescent. Park on Morris Crescent, out of the main traffic flow on Prospect Road, making sure you are not blocking the super mailbox access or the driveways of the nearby houses. Be extremely vigilant crossing Prospect Road, cars move fast around a bend in the road.

Description

It is an in-and-out trail, 450 m to the top of the last waterfall on the south side of highway 101. All of the falls have water cascading down steep slopes across the fractures perpendicular to the flow. The first waterfall, 150 m up the trail, is small with about a meter drop, and the next waterfall is a further 70 m along from there. This second waterfall is impressive, and the drop of about 3 m appears even higher. The

Left above: The waterfalls are impressive and a highlight for kids, including Emery and Izzy Warner. *Right above:* The slopes along the trail are steep in places and require steady balance. PHOTOS: ALAN WARNER.

trail goes up the left side of these falls and is quite steep, but there is a rope attached to the trees to help in getting up. I never trust unknown ropes and would not use this one except as an aid for balance—do not put your full weight on it!

The trail above the second waterfall passes by a deep-water channel in the bedrock and then around a large depressed area below the highway. Here the trail becomes obscure but look carefully to discover a vague path up and over the large culvert containing the brook. A short distance ahead from there is another smaller but walkable dry culvert which goes under the highway to the last waterfall. Much of this area looks like it was modified when highway 101 was constructed, leading me to believe that the dry second tunnel was originally the culvert put under the 101 for Moores Brook, but then it was replaced for an unknown reason. This tunnel is a perfect, mysterious, and safe way of getting to the third waterfall. Upon exiting the culvert, make your way left down the road bank and over the large boulders to the base of the last waterfall. Alternatively, go right to a farm road and then bushwhack down to the river and waterfall. The stream remains charming and attractive further upstream with an informal path along the shore for those keen to explore it.

Moores Brook trail map. SOURCE: GOOGLE MAPS.

A spooky tunnel adds to the adventure. PHOTO: ALAN WARNER.

To return, after exiting the dry culvert, stay straight and find the trail to the west of the brook heading downstream. Past the second falls, descend into the valley, cross the brook, and rejoin the original trail on the east side. Do not stay on the west side of the brook all the way back to the Prospect Road above the valley because the trail ends up in a pasture with electric fencing at the road. The other option upon exiting the culvert is to return exactly as you came up the valley. Be careful of the slippery footing if descending this way.

The valley is interesting with its steep V-shape in bedrock that developed during storms in recent times. This contrasts with many of the wide valleys draining north off the South Mountain that were formed by melt water of the glacial ice that lay across central Nova Scotia during the end of the last ice age. There are lots of interesting mosses and plant life along the stream where they have found shaded, cool, and moist homes. This hike is great for older kids and youth as it is short, full of twists, turns, and possible climbs. For adults, it is a quick, beautiful, and memorable get away from the bustle of town.

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

Collaborative and Timely Decision-Making for Environmental Challenges

eOceans® is a Nova Scotia-based digital platform that bridges the gap between knowledge generation and evidence-based decision-making.

BY CHRISTINE WARD-PAIGE

Pressures on our landscapes and coasts are accelerating in Nova Scotia. Climate change, development, and infrastructure expansion are reshaping ecosystems and communities. Species are shifting—invasive species are spreading, commercially important fish stocks are moving, and extreme weather are becoming more frequent. Conflicts over land, water, and energy use are now frequent. At the same time, millions of dollars and enormous effort are being invested to protect biodiversity, restore habitats, manage fisheries and wildlife, respond to invasive species and pollution, and support a resilient, diversified economy.

There is expertise available to address these issues. Nova Scotia leads Canada in per capita graduates in engineering, applied science, math, and physical sciences. A key challenge lies in how knowledge is generated, shared, and translated into decisions. Data tend to be fragmented, siloed, and inconsistent; analysis is often delayed and dependent on experts, while ecosystems and human systems change rapidly. In many cases, the tools used to collect and manage information have not evolved at the same pace—relying on phone hotlines, spreadsheets, and manual workflows, or on expensive proprietary software for analysis and mapping that require specialized expertise. Organizations trying to innovate are building standalone apps and dashboards for individual species, issues, or activities—lobster, salmon, invasive species, whales, fishing, tourism, and more—costing hundreds of thousands of dollars per project while creating new silos instead of shared data collection.

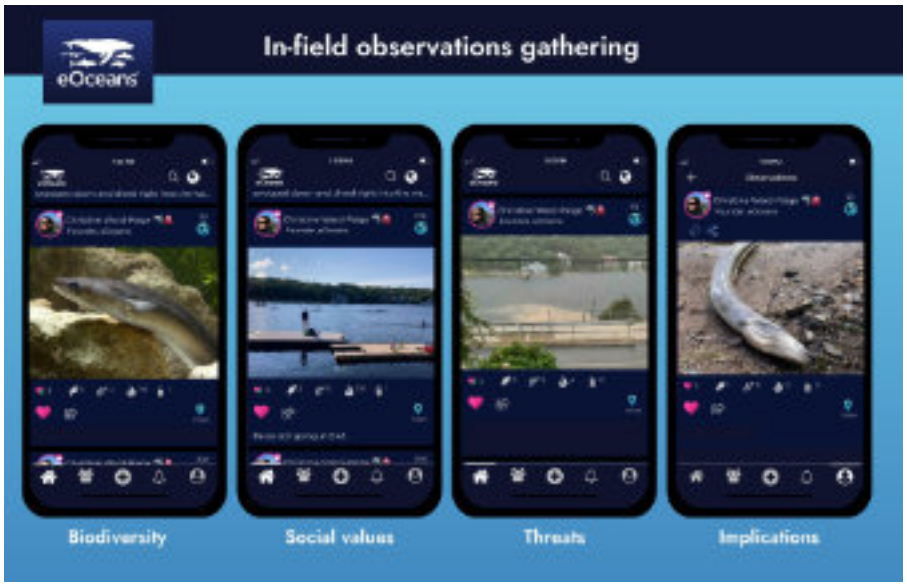
This article describes eOceans®—a Nova Scotian app, software platform, and knowledge-flow process—which is one tool to address these issues, facilitate collaboration, and bridge the gap between knowledge generation and its use in evidence-based decision-making.

Shared Infrastructure for Action

Headquartered in Nova Scotia and developed by PhD ecologists from Dalhousie University and the University of Victoria, eOceans® is a new kind of knowl-

The home page for the *We Love Banook Project* that monitors and integrates data on Lake Banook ecosystem health in Dartmouth, Nova Scotia. PHOTO: CHRISTINE WARD-PAIGE.

edge-flow system designed to transform distributed data into the shared understanding needed for better decisions. It works across land, freshwater, coastal, and marine systems, structuring data on species, human activity, pollution, and environmental conditions to generate near real-time insights at multiple scales.



The screenshot illustrates the diverse types of field observations that are integrated for the *We Love Lake Banook* project. Photo: Christine Ward-Paige.

Data sources, questions, participation, and transparency are flexible. Trained experts, citizen scientists, local and traditional knowledge, and technical monitoring—including sensors, eDNA, drones, and other tools—can contribute to building a more holistic picture of conditions at any site. Built-in data-sharing agreements protect privacy, sensitive locations, species, knowledge, and business-significant information, while contributors retain ownership and control of their data.

The system does not replace scientific expertise, personal or community knowledge, or regulatory authority. It provides shared infrastructure that allows diverse perspectives to work together more effectively and transparently. In practice, this can support environmental impact assessments, monitoring programs, fisheries management, marine and land-use planning, renewable energy siting, and long-term ecosystem stewardship.

How eOceans® Works

eOceans® was originally designed to document changes in ocean ecosystems by bringing together observations from scientists, ocean users, and coastal communities. In 2023, an unexpected event prompted the team to explore how the same tools and approach could be used closer to home, expanding the applicability of the system.

At Lake Banook in Dartmouth, Nova Scotia—a lake used daily for paddling, swimming, and youth camps—residents began noticing dozens of large American eels dead along the shoreline. The sightings were concerning. Eels are known to be hardy and resilient animals, capable of surviving in challenging conditions and migrating thousands of kilometres during their life cycle. Seeing multiple individuals die within a short period raised urgent questions about the health of a lake used by hundreds of children.

In response, the *We Love Lake Banook* monitoring project was created using eOceans®. Community members, paddlers, and local scientists began documenting observations: species sightings, wildlife health, unusual events, and environmental conditions. These records provided a shared baseline of what has been happening in and around the lake, helping identify patterns and changes that might otherwise go unnoticed. The project is still evolving. One priority now is integrating environmental sensor data—such as oxygen levels, temperature, pH, and other water quality indicators—that are already being collected by the city, university researchers, and non-profits. These data complement the lake health observations and may help identify environmental conditions associated with the die-off.

eOceans® provides shared infrastructure that allows diverse perspectives to work together more effectively and transparently.

The same framework has also been deployed in Dartmouth Cove, Halifax Harbour, and Maynard Lake, where observations from different users are documented in one place. Over time, these efforts help build a clearer picture of how biodiversity, environmental conditions, and human activity interact across Nova Scotia's urban waters. Rather than providing instant answers, the goal is to create a shared system where observations accumulate, patterns emerge, and communities and decision-makers can respond with clearer, shared evidence.

Technology That Builds Capacity

eOceans® provides shared digital infrastructure to lighten that load. It automates technical tasks—data validation, mapping, visualization, and reporting—so organizations can focus on understanding and acting on their observations. Importantly, data ownership and governance remain with individuals or organizations. Contributors control what they share and with whom, allowing insights to flow purposefully without forcing all data into a single pool. This makes it possible to run multiple projects simultaneously, see patterns across sites and objectives, and let learning accumulate over time.

For example, a multi-year Atlantic salmon fish health dataset that once took seven years to compile can now be updated and visualized in near real time—at all spatial scales, from Nova Scotia and New Brunswick to Europe. This frees up research teams from repetitive manual work and enables quicker reporting times. It can help reveal patterns, identify early warnings, clarify trade-offs, and evaluate interventions while adaptation is still possible—helping decision-makers to move from reacting to crises to proactive, collaborative, evidence-based management.

By investing in shared knowledge-flow systems, stakeholders can strengthen transparency, accountability, and efficiency in decision-making—to help ensure scarce resources are used wisely, ecological integrity is maintained, and social and economic objectives are met in a rapidly changing world.

Christine Ward-Paige is an ocean scientist, researcher, and the founder of eOceans®.

BLOMIDON NATURALISTS SOCIETY

2026-27 Membership Fees & Order Form

Members receive three print issues of *Beyond the Tides* per year plus the monthly e-newsletter and the opportunity to participate in a range of nature programs and field trips, and support our environmental education work. As a registered charity, BNS issues receipts for donations. The membership fee is not tax-deductible. Annual membership fees are due January 1. Visit *blomidonnaturalists.ca* to join, or use this form and send an e-transfer, or cheque, or money order payable to Blomidon Naturalists Society at its address (see bottom right).

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NO.	DESCRIPTION	PRICE	TOTAL
_____	Advocacy annual membership	$50.00	$_____
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_____	Wabanaki Forest book	$40.00	$_____
_____	Wildflowers of Nova Scotia	$20.00	$_____
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Please send funds by e-transfer to **treasurer@blomidonnaturalists.ca**, or cut out this form and make out a cheque or money order payable to Blomidon Naturalists Society and mail to:

Blomidon Naturalists Society
P.O. Box 2350, Wolfville, NS B4P 2N5

Earth Day in Wolfville's Reservoir Park

Forest restoration goes hand in hand with building community.

BY HILLARY NETTE

For several years now a Blomidon Naturalists' team of hard-working people has been pulling buck-thorn trees and seedlings along with other invasive plants out of Wolfville's Reservoir Park. They have then been re-planting native tree species to repopulate and support a more thriving forest. On the Saturday after Earth day in April, our family of five had the opportunity to contribute to the effort. We packed up our wheelbarrow, shovels and spades, put on splash pants and boots, and headed over to the "Celebrate Earth Day with the Blomidon Naturalists Society and Town of Wolfville" event. This was after we had, most importantly, come up with our 'team name', which was excitedly decided on as "The Leafy Buttercups" by Nell, our four-year-old.

We arrived at Reservoir Park to find an impressively organized system: a table to check us in, supplies to make a team name on a poster if we hadn't already done so, and a wagon or wheelbarrow if we needed it. We were then placed in a short line to choose our trees from a wide variety: maples, willows, birch, pine, and oak among others. Children laughed and ran around, and adults of all ages were gathered by their wagons and wheelbarrows with team names such as "Branch Managers", "The Foxes", "Team Fun", and "The Swifties". David Steele welcomed us with a short speech, and we paraded down the Reservoir Park path with a bag piper leading the way.

Oggie Nette planting the tree and Nell watching. PHOTO: H. NETTE.

Nell Nette with a tree to plant. PHOTO: H. NETTE.

Once gathered at our planting location, we could see the holes had been pre-dug and were ready to go. All of our trees were numbered and assigned their rightful holes. Bags of compost were at the ready, along with a giant pile of wood chips. After another lovely speech and instructions by David Steele, some experienced planters gave us a demonstration: refill the hole to a proper level for the tree with a mix of dirt and compost, loosen the roots of the tree with various tools (our children loved this job), plant the tree, fill in around it with more dirt, and then spread wood chips in a circular shape around the surface. Our team planted a lovely little willow and a sturdy maple. We plan to go back and check in on the growth of the trees. The kids enjoyed helping, as well as painting wooden birds at a nearby table set up for children (and jumping in the wood chips!).

This was a particularly special Saturday for us. It was a way to feel more connected to our community and give back to the earth. Hats off to the hard workers and organizers from the Town of Wolfville and The Blomidon Naturalists Society. This was no small feat! And not only was it incredibly well organized, it was also really fun!

Hillary Nette, her partner, and three children are community-minded Wolfville residents.

Spring and Summer Weather 2026

There's nothing like "normal" for good growing conditions and time in nature.

BY LARRY BOGAN

When it comes to weather, the media tends to focus on the extreme events, so it might come as a bit of a surprise that the spring and summer temperatures in this region were quite normal compared to the 30-year average. The precipitation was scattered and the total was 86% of the expected value for the period—this data do not include the wet September.

Temperatures

April and May were slightly below normal with respect to temperatures while the summer period was slightly above normal. August was the most deviant by being 1.3 C° above normal temperatures.

Looking more closely at the data (see the table at right and the temperature chart below), I noted some interesting deviations. In May, the average maximum daily temperature was 0.5 C° above normal while the average minimum daily temperature was 0.5 C° below normal. This means the temperature spread in May was larger than usual. For example, May 20 had a daytime high of 30 C°, and then just 3 days later the low was 1 C°, a spread of 29 C°. That is a large swing. In contrast, after the warmup in June, July and August had very constant daily mean temperatures around 20 C°.

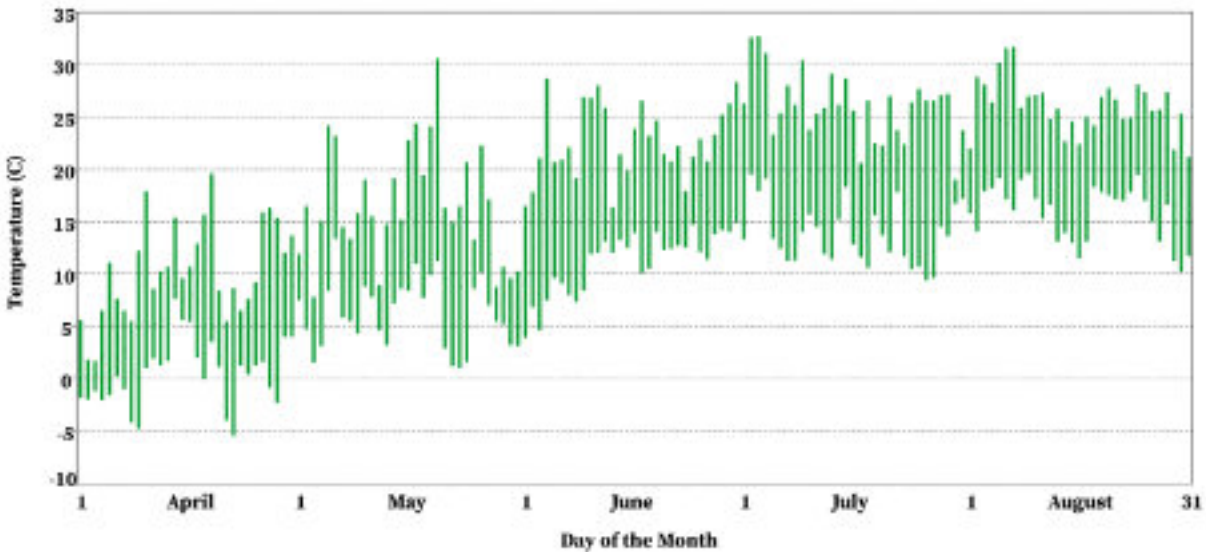
Monthly Temperature & Precipitation
Spring-Summer 2026, Kentville, N.S.

	Max °C Temp	*Min °C Temp*	*Mean °C Temp*	*Precip. mm*
April	*10.3*	*0.4*	*5.4*	*56.6*
30-year avg.	*10.4*	*0.6*	*5.5*	*89.5*
May	*16.7*	*6.2*	*11.4*	*116*
30-year avg.	*17.2*	*5.7*	*11.5*	*87.5*
June	*22.7*	*11.1*	*16.9*	*42.4*
30-year avg.	*22.2*	*10.7*	*16.5*	*86*
July	*26.1*	*13.8*	*20*	*94.4*
30-year avg.	*25.9*	*14.6*	*20.3*	*78.8*
August	*26.1*	*15.8*	*21*	*56.6*
30-year avg.	*25.5*	*13.8*	*19.7*	*86*
Total Period	*20.4*	*9.5*	*15.0*	*366*

30-year avg.=1991-2020, from Environment Canada, at Kentville, N.S.

Precipitation

Two months (May and July) had above average precipitation while the other three months had below average amounts. June was the driest with only half



Minimum and maximum daily temperatures for April through August, 2026, Kentville Nova Scotia.

Day of he Month

its expected rainfall, including a two week period in late June and early July with no precipitation. Both April and August received only two-thirds of expected rainfall. To balance things a bit, on May 1 there was 27 mm of rain, and if that had occurred a day earlier, then both April and May would have had near normal monthly precipitation. Except for the two-week dry period, the distribution of rainfall was fairly uniform throughout the late spring and summer.

Given there was less rain than normal this year, and last year was the extreme drought, I wondered if there is a trend toward drier years. The table at right gives the annual total precipitation for the last six years compared with the 30 year (1991-2020) average annual precipitation. Last year was the driest year in many with only 65% of normal precipitation. The average of all 6 years was 95% of normal so total precipitation has been a bit lower in recent years with 2023 being a wet outlier.

Average Annual Precipitation 2020-2025

Kentville, N.S.

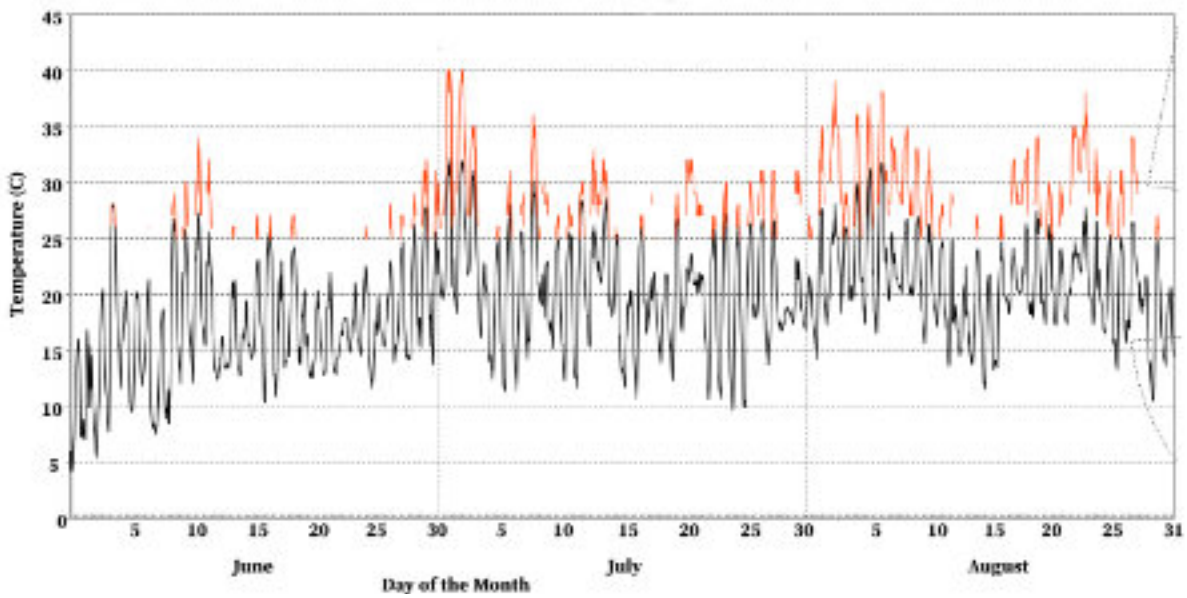
Year	*Annual Precip. (mm)*	*Percent of 30-yr avg. of annual precipitation*
2020	*1047*	*0.86*
2021	*1233*	*1.01*
2022	*1168*	*0.96*
2023	*1469*	*1.21*
2024	*1163*	*0.96*
2025	*790*	*0.65*
2021-25 average	*1145*	*0.65*
30 yr average. 1991-2020	*1216*	*0.95*

Humidity

Environment Canada reports humidity in the hourly reports and not in the daily ones that I use for these analyses. As a result, I usually don't discuss the humidity, yet in the summer it is an important factor for human comfort. The chart below documents the hourly humidex (the "feels-like" temperature) for Kentville plotted with the hourly temperatures (black lines) for June, July, and August. The red lines in the chart show the hourly humidex values. In early July the humidex touched 40 C° on two days and reached or exceeded 35 C° on about 11 days. There was a very large fraction of days this summer with a high humidex rating, making for a humid season. These are the uncomfortable conditions one tends to remember when thinking back to this summer's weather.

Overall, this spring and summer were relatively "average" weather wise, which made for a good growing season and numerous opportunities for people to get out and enjoy nature.

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



The chart documents the hourly humidex (the "feels-like" temperature) for Kentville plotted with the hourly temperatures (black lines) for June, July, and August. The red lines in the chart show the hourly humidex values.

Slow Birding: The Art and Science of Enjoying the Birds in Your Own Backyard

The more you pay attention, the more you see.

REVIEW BY ANNA SAROLI

This book is for anyone who finds birds a source of curiosity and entertainment. If you have ever wondered why Northern flickers have to be so noisy or which birds cheat on their mates, you will enjoy this delightful read. It offers treasures for complete novices as well as for expert birders. Comparing the idea of slow birding to the slow food movement, the author, Joan Strassmann, challenges us to take time to really see what is going on in our own backyards or nearby parks.

Focussing on sixteen common birds found within a few kilometres of her home in St. Louis, Strassmann draws us in with a description of the most noticeable characteristics of each bird ("robins look sturdy, like the kind of bird a child would draw..."), what they eat, where to find them, and why they are so fascinating.

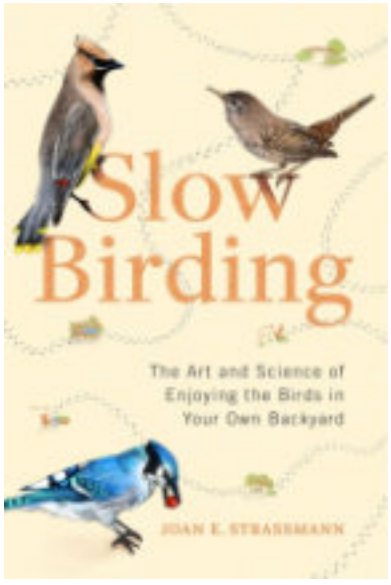
The second section of each chapter describes the investigation of arcane questions probing into the mysteries of bird life: what cedar waxwings do with the eggs that cowbirds sneak into their nests; what makes a male dark-eyed junco a magnet for females; do white-throated sparrows really have four sexes; what happens if a blue jay eats a monarch caterpillar.

The chapter ends with suggested "Activities for Slow Birders". Some of these are things to do in your own back yard, like watching to see exactly what robins do when they hunt for worms or tracking dominance interactions at the feeder. Other suggested activities are more social such as gathering your community to get rid of invasive plants like the multiflora rose, which can be an ecological trap for birds like the Northern cardinal.

Bird life is not always kind. The prevalence of brood parasitism among American coots can lead to non-preferred chicks dying of starvation. Snow geese have become so successful that their colonies may destroy vulnerable habitats in the North. The European starling appears on the International Union for Conservation of Nature's list of "100 of the World´s Worst Invasive Alien Species". As Strassmann points out though, "...starlings rob woodpeckers of their cavities ...[but] habitat change caused by humans has the bigger impact. So if you love your fellow human beings in all their imperfections, perhaps there is a space in your heart for starlings."

This engaging and eminently readable book includes personal observations showing Strassmann´s affection for our feathered neighbours. Watching cedar waxwings, she comments, "I just love the image of the two birds peering down in amazement at their newborn chicks and then getting to work." Her lively and conversational style and extensive knowledge suits anyone who enjoys birds. Who knew there was so much drama going on at our backyard feeders! Strassmann asks us all to slow down, take a chair (and this book), and just sit and watch the birds.

Anna Saroli is a longtime member of the Blomidon Naturalists Society.

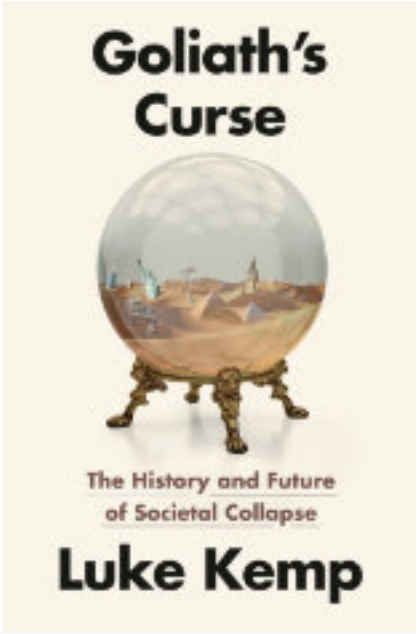


Goliath's Curse: The History and Future of Societal Collapse

Deeply sobering and strangely inspiring.

REVIEW BY HEATHER MAYHEW

Given daily reports of wildfires across the globe, catastrophic flooding, cascading biodiversity loss, the climate refugees crisis and war, one could be forgiven for escaping into one of the many light summer reading list options. *Goliath's Curse* is not on those lists, but tucking this hefty read under your arm will avail great conversation, an in depth look at who we really are as a species, and possibly relieve some of the anxiety brought on by the evident existential risks. Kemp's comprehensive description and discussion considering the history and future of societal collapse provides an unconventional perspective grounded on substantial, credible data. Including over 125 pages of academic references and notes, Kemp's 580 page sweeping overview of human history stretches over three hundred thousand years, offering profound and often counterintuitive insights into societal collapse.



In this radical retelling of human history, Kemp redefines civilization as a social system characterized by non-hierarchical, democratic cooperation as opposed to the general idea that civilization occurred relatively recently with the building of cities and other dominance models. Refreshingly, Kemp acknowledges Paleolithic cultures for making group decisions democratically and provides evidence that democracy is humanity's default system. Sharing resources, not hoarding, was the survival strategy that allowed our species to survive for millennia without destroying the very systems on which we rely. Explanations regarding our ancestral past draw from a range of disciplines including evolutionary biology, behavioural biology, ecology, psychology, sociology and archeology.

Despite the grim title Kemp chose for this masterful, compelling story, his warnings concerning the precipice on which we teeter are peppered with positive thoughts on humanity's inherent attachment to equity and compassion. Unsettling as the outlook remains, the possibility that we can turn this ship headed towards catastrophe around remains as a kernel of hope in Kemp's writings. The fall of goliaths, those interconnected hierarchies in which a few individuals dominate others to control energy and labour, always creates shock and hardship. However, the vast majority of humans throughout history benefit as a result—the outcome is more peaceful and equitable. The goliath we now face will fall; there is no question, according to Kemp, and his prescription for surviving this fall is clearly defined in the epilogue. In summary: stay within planetary boundaries, control AI, say no to nuclear weapons, democratize, make the world equal again, be a 'David', and place your vote against the apocalypse. And read this book.

Heather Mayhew is a biologist and grandmother living in Nalikitquniejk (Antigonish).

Blomidon Naturalists Society
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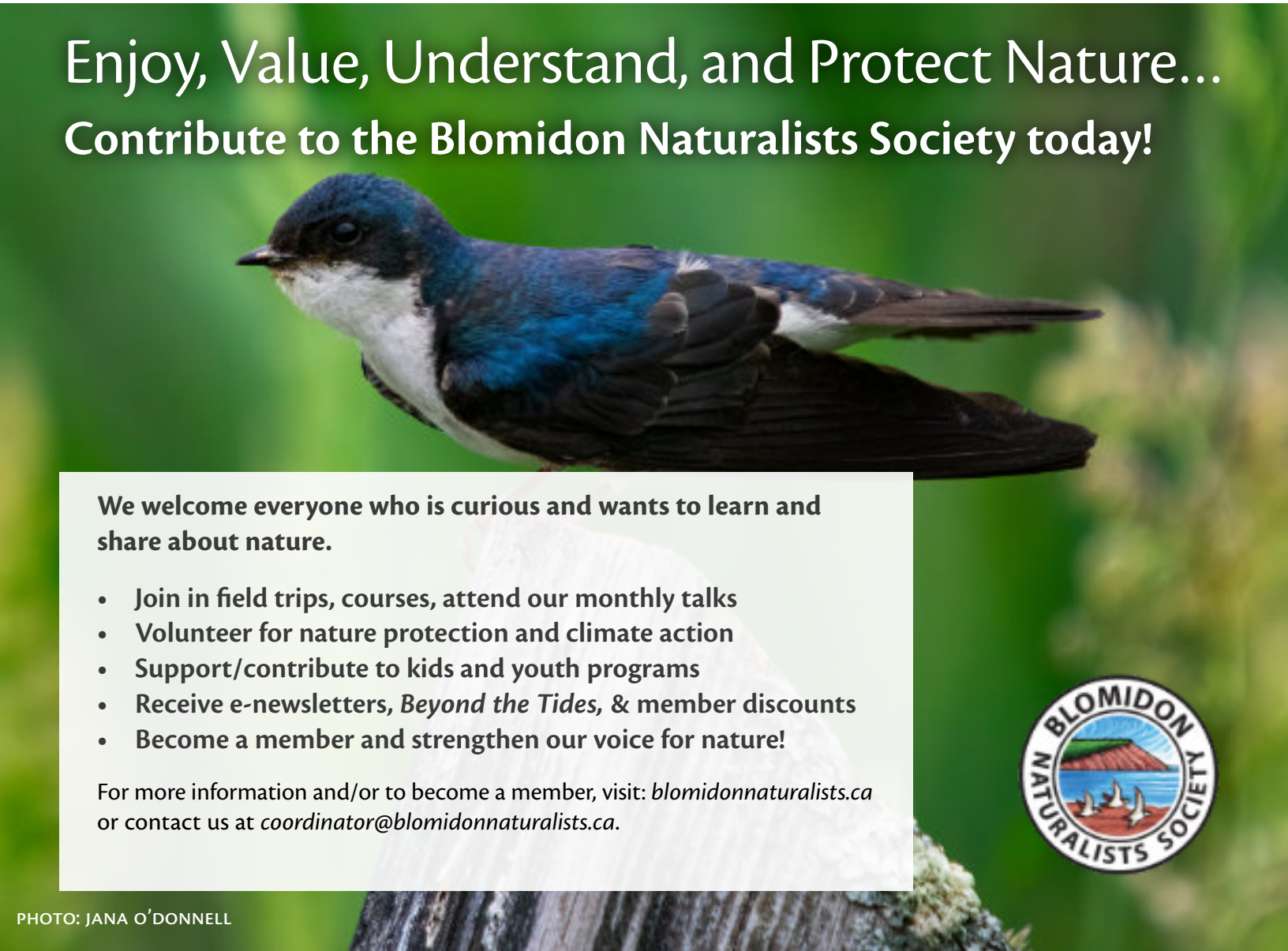

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