NATURE PEI

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IN THIS ISSUE:

NATURE PEI – NATURAL HISTORY SOCIETY OF PRINCE EDWARD ISLAND
P.O. Box 2346 Charlottetown, PE C1A 8C1

Cover Photo- Leopard frogs photographed by John te Raa in Mount Stewart, PE on June 19, 2024.

Monthly Meetings
These take place the first Tuesday of each month from October through June at the Beaconsfield Carriage House in Charlottetown starting at 7:30PM (the corner of Kent and West Street). There is a short introduction at the start of every meeting, followed by a raffle break and a presentation from a guest speaker. Both members and non-members are welcome to attend.

Membership
New members are always welcome; anyone with an interest in nature. If you would like to join as a member, please contact the Treasurer, Keisha Holmes at 902-393-1256 or keishaholmes2002@hotmail.com. There is an annual fee of $20 to join, and for current members, membership renewal fees are due in January of each calendar year. Please visit the website (www.naturepei.ca) if you wish to renew your membership online. Donations are always welcome for use in conservation projects. Those giving donations will receive a tax receipt. This non-profit organization is run by a volunteer executive, as listed below:

2024 Executive Committee Members:

Position	Name	E-mail	Phone Number
President	Jason Woodside	woodside.jason@gmail.com	902-394-1833
Vice President	Rosemary Curley	rcurleypei@eastlink.ca	902-569-1209
Past President	Gerald MacDougall	eagle.dynasty@gmail.com	902-316-0837
Treasurer	Keisha Holmes	keishaholmes2002@hotmail.com	902-393-1256
Secretary	Robert W. Harding	peihardings@gmail.com	902-313-1699
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Director Field Trips	Sarah Hirtle	sarahvhirtle@gmail.com	506-654-2900
Newsletter Editor	Morgan Olivia McNeil	morgan.mcneil@dal.ca	902-324-2650

Newsletters are typically published 4 times/year; available in Acrobat Reader in colour through e-mail or hard copies on recycled paper in black and white sent by mail. Articles, reports, notes, plant records, bird sightings, pictures and other entry items can be sent to the current Editor, Morgan McNeil. The next submission deadline is **December 15, 2024.**

The organization's website is: www.naturepei.ca and a Facebook page is available at: https://www.facebook.com/NaturePEI. Nature PEI would like to thank the PEI Department of Education and Early Years for their help in getting the newsletter into many places across the island, including libraries and schools.

***Solidago canadensis* – Goldenrod** **Family Asteraceae (Aster or Daisy)**

Submitted by: Joyce Hein

I. Botanical Name & Authorship

Solidago canadensis (L.) 1753. – Asteracae[1]

Solidago is derived from the Latin word *Soldago* from the word *soldare* which means to make whole.[2] *Canadensis* is a Latin word meaning from Canada.[3]

II. Botanical Synonyms	III. Common Names	Taxonomic Tree: [5]
Aster Canadensis L. [1]	Woundwort[4]	Domain: Eukaryota
Doria Canadensis L. [1]	Gerbe d'Or[7]	Kingdom: Plantae
	Goldrute[11]	Phylum: Spermatophyta
	Woundwort[11]	Subphylum: Angiospermae
	Aaron's rod[11]	Class: Dicotyledonae

Figure 1.
Solidago Canadensis

IV. Plant Description

Goldenrod is a prolific growing plant found throughout North America and Europe. North America boasts between forty and sixty species, while Europe has a single native species. [8] *S. canadensis* is a perennial with beautiful golden yellow flowers opening from the bottom and flowering upward with an alternate leaf pattern. The yellow flower grows on one side in clusters, which is unlike the flowers of the European variety, *S. virgaurea*, which blooms all around the round stem. The alternate leaves of the plant are elliptical, and tooth edged. The leaves are smaller near the top than those at the base. The plant often has downy, erect stems which branches at the top. [5, 18] The rhizomes are knotty and cylindrical in shape.[18] Goldenrod loves to grow in groups and blooms from August to October in Atlantic Canada. Spending time with goldenrod will encourage you learn to appreciate its pungent smell and astringent (drying) taste.[6,7]

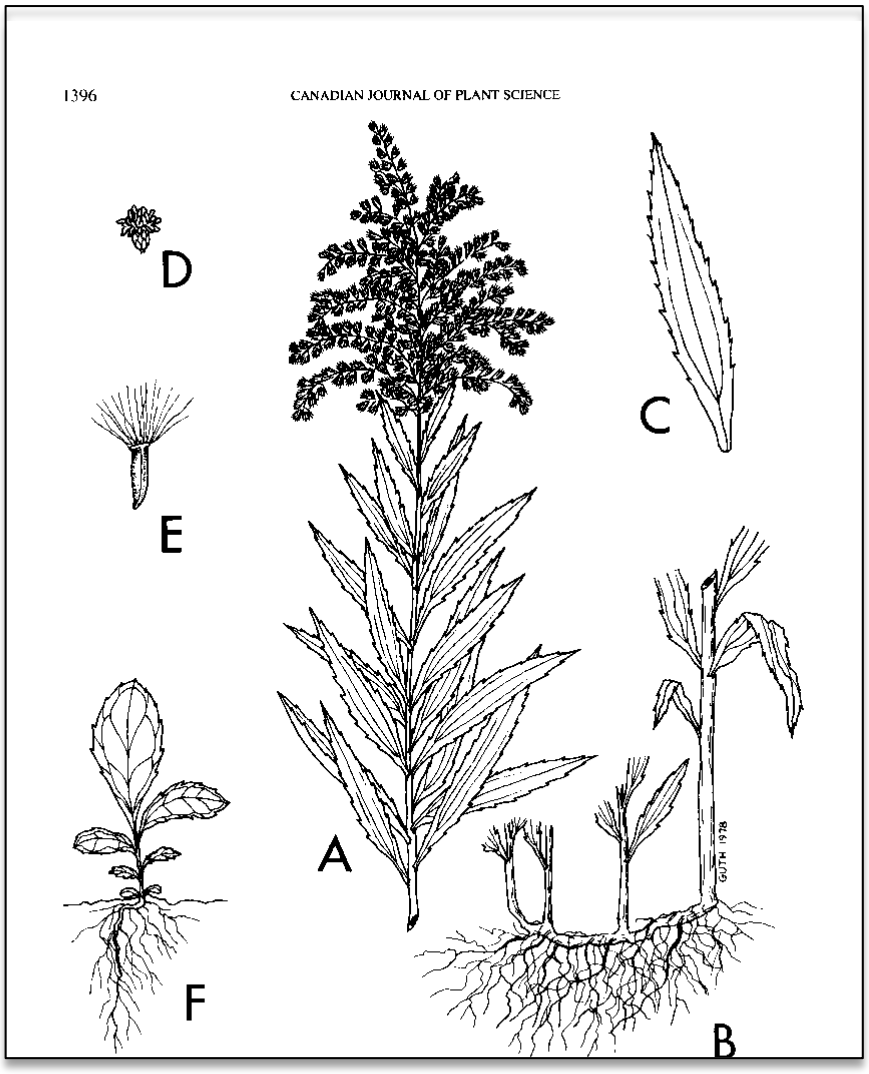

Figure 2. *Solidago Canadensis.* (A) Flowering habitat, upper portion. (B) Lower portion showing rhizome and roots. (C) Leaf (D) individual flower with approximately 12 florets. (E) Achene with pappus (F) young seedling.[21]

V. Habitat, Ecology and Distribution *S. canadensis* is native to North America and found throughout Canada and USA except in the states of Alabama, Florida, Georgia, Hawaii, Louisiana, and South Carolina. It is considered evasive in many parts of Europe and in China. Although mostly found in moist conditions it can be found growing in a variety of habitats such as abandoned farmlands, pastures, fields, thickets, prairies, waste areas and along roadsides. It prefers slightly acidic soil, that is moderately rich and well-drained. It prefers full sun but does tolerate light shade.[8] In Atlantic Canada, goldenrod can grow in a variety of habitats such as dry fields, wetlands or marshes. [5] Taking a walk in central Prince Edward Island one can see the plant growing in all three habitats within 1 km of each other. A prolific plant that can easily be grown by seed, goldenrod has the potential to grow up to 6 feet tall and with this height can easily crowd out more delicate plants. Its rhizomatous roots (spreading quickly by runners and seed) have a rather tenacious growing pattern, so it is not recommended to grow *S. Canadensis* in formal gardens. [6,7, 10] Goldenrod blooms at the same time as ragweed, and sadly goldenrod is mistaken for the seasonal hay fever that many people suffer from in the fall. Even though they are both part of the daisy family, goldenrod is too heavy to be distributed by the wind so it is pollinated by insects; whereas the lightweight ragweed is pollinated by wind. As Colleen Codekas so beautifully put it "Blame the ragweed for allergies, goldenrod is beautifully minding its own business!"[23] If you plan to grow Goldenrod from seed, stratify the seed for three months before planting. The seed should not be sown beneath the soil, but rather on the surface of the soil. Divide the roots in spring as needed. [11] Some companion plants you may consider planting by goldenrod is chicory, red clover, catnip and potentilla. [16]

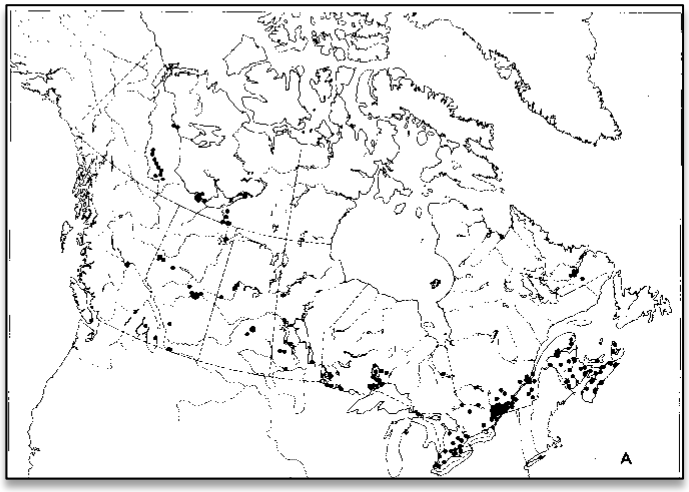

Figure 3. Distribution map of *Solidago canadensis*.[21]

Ecological Connections:

According to Mark Wexler, "Belying a bad reputation, goldenrods do not trigger allergies – but do benefit pollinators". Monarch butterflies, along with 115 other butterfly and moth species and 11 native bee species, depend on Goldenrod for its nourishing nectar. Monarchs complete a long fall migration and goldenrod is one of the very important foods for them during this migration.

VI. Harvesting, Collection & Preparation

Healthy leaves that haven't been affected by powdery mildew should be harvested before they flower. Trim the top one-third to two-thirds of the flowers, just as the blooms are about to open in the fall. In consideration of pollinators and plant regeneration, leave half of the plant intact. Flowers are best used as a fresh extraction in alcohol, however if you wish to dry the goldenrod for a tea, it's best to harvest when they are in bud, so the flowers don't turn into puffballs. It is helpful to be aware that you can still use the plant in puffball form. To easily dry the plant, hang in a dark and well-ventilated area to dry. When the leaves and flowers are crisp-dry, strip them from the stem.[9,10,11]

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Library proposal to Nature PEI membership

Submitted: June 6, 2024

Dear Nature PEI Executive Board and Members:

I am grateful for my time serving to date this year as your President of Nature PEI, and I would like to ask for your assistance in establishing a Nature PEI Library. When I first came to this organization I was interested in learning everything I could about PEI's geography/nature/wildlife, and I spent a lot of time searching for PEI nature books. A small library of book/papers/studies relevant to PEI nature would be a valuable resource for our membership.

I would like to ask you, the members of Nature PEI, if you would be willing to donate any materials for our library; whether they are books, pamphlets, booklets, papers, having these materials available (especially to new members), which is so valuable to our core values.

These resources would be stored with Nature PEI and made available at each monthly meeting as an opportunity for members to view them, and sign out to read if you wish. We are also considering making a collection at the Charlottetown Library Learning Centre for members to borrow directly there when time permits in your schedule. Please reach out if you have any questions. Happy book hunting!

Warm regards,

Jason Woodside
Nature PEI President 2024

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1-902-394-1833

An Abundance of Northern Leopard Frogs
by John te Raa

Submitted: July 25, 2024

For the second time this summer I have come across a large gathering of Leopard Frogs in a pool of water along the Confederation Trail 1 km west of Mount Stewart at marker 202km.
On June 19, I counted 42 frogs and on July 22 I counted 37 frogs. On both occasions the frogs stayed put with very little movement, giving me a chance to take pictures as documented on iNaturalist.

After the first observation on June 19, I have kept an eye on that pool as I bike by the spot frequently. On June 21 a large number of frogs jumped into the grass when they saw me coming. On July 2, I counted 8 frogs jumping into the grass. Two days later 4 frogs jumped into the grass and one stayed put with its head out of the water watching me.

On July 10, I observed one frog watching me. After that, I didn't see any until July 22 when I saw 37 of various sizes and shades of green sitting in and around the pool of water. This pool of water is surrounded by woodland, blueberry fields and the Hillsborough tidal wetlands on the other side of the Trail.

There are 33 days between the high-count days. Lunar/tidal cycles don't appear to be related to these events. More pictures can be seen on: iNaturalist. https://inaturalist.ca/observations/231031270

Two New Dragonfly Species for PEI

By: Robert W. Harding and Denis A. Gallant

Submitted: August 22, 2024

Above: Seaside Dragonlet (*Erythrodiplax berenice*) D.A. Gallant, June 22, 2024

Above: Blue Dasher (*Pachydiplax longipennis*) R.W. Harding, July 10, 2024

Recently published checklists of Odonata (Dragonflies and Damselflies) report 72 species known from PEI. Two new dragonflies discovered on the Island this summer now bring that number up to 74 species of Odonata for the province.

On June 22, 2024, Dennis found the Seaside Dragonlet (*Erythrodiplax berenice*) in salt marshes along both sides of the Percival River in Prince County. Discovering this saline-tolerant species in the province was somewhat surprising; historically it has been limited to southwest Nova Scotia and the southwestern corner of New Brunswick. Then in 2021 an unexpected population was found in salt marshes in Pictou County, Nova Scotia. Still, these PEI records mark a 167km northwestern expansion of its known range – significant for a species that requires such a specialized habitat. Have they been hiding there all along, or is climate change helping them expand their range?

On July 10, 2024, Robert found the Blue Dasher (*Pachydiplax longipennis*) in a kettlehole bog pond near High Bank in Kings County. This species of still and slow-moving waters are known to be expanding their range in the northeast in recent years. It is generally accepted that the warming climate is contributing to this species' range expansion. The first Cape Breton Island record was also found earlier this summer, so its eventual presence on the Island was somewhat anticipated.

When the Atlantic Dragonfly Inventory Program (ADIP) was established in 1993, there were 39 species of Odonata known on PEI. The increasing popularity of the community science app iNaturalist has increased our capacity to share what we see, helping track range expansions. In addition, iNaturalist observations are gradually helping to inform our understanding of the overall biodiversity of PEI.

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August 2024 Bird Photo Collage:

Top: Savannah Sparrow photo by Donna Martin in North Cape on August 27, 2024.
Middle Left: Lesser Yellowlegs by Michele Lawlor in Montague on August 23, 2024.
Middle Right: Kestrel photo by Mark MacDonald at McKenna's Marsh (48 Road) on August 25, 2024.
Bottom Left: Little Blue Heron by Ron MacDonald in Pinette on August 20, 2024.
Bottom Right: Ruddy Turnstones by Cindy Esau in Montague on August 23, 2024.

Species at Risk Profile – Bank Swallows (*Hirundo rustica)*

by Chris Ortenburger
Species-at-Risk Project Coordinator

Submitted: September 14, 2024

Barn Swallows are experiencing a housing shortage of their own on Prince Edward Island. As their name suggests, they make their cup-shaped mud nests in barns and other human-made structures along rough vertical beams or ledges. They often find collapsed old sheds or shiny, airtight facilities where wild birds are not wanted.

They've also had decreases in available food; like the other aerial-foraging insectivorous birds in our region. Their main diet of insects has been affected by agricultural pesticides and habitat destruction. Climate change likely also plays a role. A study placed these causes in the order of importance as follows: "(i) habitat loss and conversion to intensive agriculture and urbanization; ii) pollution, mainly that by synthetic pesticides and fertilizers; iii) biological factors, including pathogens and introduced species; and iv) climate change." (Nebel et al. 2010).

Barn Swallows, being a bit larger than Bank Swallows, are striking with their steely blue upper wings and back, their "rufous" throat and forehead, and broad blue breast band. The long V-shaped tail is distinctive, with a line of white spots. A theory is that the spots can give the illusion of the tail being longer (which influences female mate selection) without decreasing aerial manoeuvrability. Female Barn Swallows' colours are a bit more muted, and with shorter tails.

Barn swallows have been noted on every continent (as a "vagrant" in Antarctica). They overwinter in the southern United States, Mexico, and Central and South America. They are here in the spring, build nests and raise their babies (usually mid-June), often with a second clutch. They often reuse nests, and on average live four years.

Despite habitat and diet constraints, they are now listed as a Species of Special Concern, reclassified a decade ago from Threatened. This means some levels of protection and plans are not required anymore. While this is good news, it doesn't mean the Barn Swallow is likely to recover to levels seen in generations past. Islanders can do a lot to encourage and protect the Barn Swallow.

Document sightings of the bird with iNaturalist and by contacting Island Nature Trust. This helps track numbers. Landowners can help encourage nesting by leaving some buildings open for them, installing ledges if rough vertical surfaces are not available, and keeping bird-hunting cats away. If it's particularly dry, making a muddy spot is helpful! Barn Swallows provide insect-eating services we don't even compute, and this likely affects animal and human health. They are a country person's air show, giving both a thrilling and bucolic feeling when you see them twirling around.

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Young Naturalists' Club Pilot Project in Summerside – August 2024

by Chris Ortenburger,
Nature PEI Species-at-Risk Project Coordinator

Nature PEI has long toyed with the idea of a Young Naturalists' Club, and Forested Landscape Priority Places funding helped to get the idea in motion in 2023 and 2024. Filling a gap in nature education and encouraging kids to go outside to observe and record nature were two goals of our pilot Young Naturalists' programming in Summerside.

What age group seemed to have the least nature programming? What setting offers kids fewer nature opportunities? What area of the province has fewer programs based in it? We explored these questions and determined that the "middle-school" group (aged 10-14), city kids and Summerside in particular had few options for nature programming.

We first hoped to partner with a local youth organization but then found a warm welcome from librarian Minerva Gamble-Hardy at the Summerside Rotary Library, where we were able to book a room weekly as a base for presentations, discussion and demonstrations. The nearby Veterans Memorial Park, in spite of its tidy landscaped appearance displays a tremendous variety of plants and animals with its pond, trees and plantings.

Events were set for Saturday afternoons in August, 2024. Publicity for new projects in summer is never easy, but we found ready supporters through social media and The Buzz. Rosemary Curley and Chris Ortenburger were interviewed on CBC's Island Morning. We had several families inquire, and a handful sign up. (Some Charlottetown families were interested in a program there!)

Fortunately, Summerside is the home of Donna Martin, an excellent naturalist, photographer, and communicator and she agreed to be our main expert for the series. We also invited Nature PEI Executives to come talk about their particular passions and also about their jobs and hobbies, to highlight careers and avocations in science and nature. Julie-Lynn Zahavich, Morgan McNeil and

Keisha Holmes volunteered, along with Chase Guindon from the PEI Invasive Species Council. Among other topics, Julie-Lynn shared fascinating information and photos of lichens, Morgan talked about the citizen science recording app iNaturalist, and Chase explained native, non-native and invasive species. The structure of the first three sessions was to gather at the Library meeting room, present and discuss a few topics, and head to a nearby park or green space. There we spent a short time exploring and collecting, and headed back to the Library for identification and nature journalling.

Nature Journalling is a particular interest of Chris's, and focuses on observation, attention, and recording the particular outing in a few words and sketches.

No artistic talent is necessary, but skills in basic sketching were offered. As the sessions progressed, participants were given a Nature PEI kit bag with quality portable sketchbooks and pencils, hand lens, and some classic Golden Guide pocket identification books.

Circumstances threw us a few curve balls. Forecasted thunderstorms kept us inside for one session, and a power outage in town postponed Donna's excellent slide presentation on birds. A public disturbance caused the Park to be closed for another session. Still, even right outside the Library door, Julie-Lynn pointed out a wealth of lichen on trees, and the hand lens opened new worlds, delighting the kids and their families coming to get them. This reaffirmed our goal to show that nature is really just outside your door!

The fourth session was held at Rotary Friendship Park, as parents/guardians were able to provide transportation for their kids. Rosemary and Keisha offered extra expertise where even a small group can have lots of interests, questions and findings. Rosemary shook invertebrates out of bushes and showed the kids how to identify several tree species. Donna made a "scavenger hunt" list which reinforced much of what they soaked up during the month.

Everyone learned during the pilot project, and we feel confident we can adjust this program for another time and place. Challenges included reaching kids and families to let them know about the program, and families making time for it. We tried to do too much in each 90 minute session, and we really just touched on nature journalling. Still, one of the participants drew a blue jay during the week based on a simple "how to draw a bird" handout, and it was exceptional. In another iteration, we'd probably extend the time and number of sessions for a bit more depth in topics and time spent journalling.

Our main objectives were achieved. We introduced half a dozen kids in an overlooked age group to exploring, recording and enjoying nature. Instead of always being inside online, we believe "Making Nature Second Nature" will be part of their future!

Arthropod Architecture
By: Barry Cottam

Submitted: September 20, 2024

Human architects study for years to learn their profession and go on to design pretty much the entire built environment we live in, so the idea that arthropods – insects and spiders, primarily – are capable of creating architectural objects may seem like a stretch. However, consider the tiny brains these animals have, their lack of tools and scientific notions, and the simple fact they build anything at all becomes amazing. Birders will have no difficulty with the basic idea, of course – birds construct many different kinds of nests, a profitable study in its own right. Here we'll take a further step down the scale of size, on a short journey into the constructions we can find in the natural world around us.

Let's start with the insects. Three resources are available for construction – silk, mud, and wood. Silk is used primarily for creating shelters, often by leaf-tying or leaf-curling caterpillars and other larvae, for example. Mud and wood get us more clearly into what we can call construction – taking materials to build something. These materials are used most dramatically by wasps, both social and solitary. Once you know what to look for, you will find the mud nests of various species of solitary wasp everywhere there is the slightest sheltering spot to build one. These nests vary from simple mud plugs in existing holes to tubes used year after year to round pots attached to a weed stem or other support and turrets that look like miniature medieval castle redoubts.

Mud is a relatively easy resource, it seems – moistened soil, gathered up and transported to the site. Wood is rather more of a challenge: find a good source; scrape up a thin roll; fly it to the site; masticate it into a pliable, papery material; add it to the structure – and repeat, who knows how many times, following an instinctive plan. The scraping results in long tell-tale lines of lighter colour than the surrounding wood. The other steps are hidden from us until the structure begins to take shape. Hopefully the site is one that doesn't interfere with us humans!

Nests built this way can take many forms. The most familiar will be the large globes of vespid wasps. The queen starts her nest in the spring and then, as it develops and she mates to produce female workers, she can get down the business of egg production while the nest grows in size. If you have ever looked at the interior of one of these globes, you were likely impressed by the hexagonal shape of the cells that provide growth sites for individual larvae. Mathematically it is the most practical in terms of efficient use of space. I'll save spiders, the true specialists in silken architecture, for another topic of discussion.

Raising temperatures threat the condition and sustainability of Basin Head's unique giant Irish moss

Emily Gibbons, Paula Tummon Flynn and Pedro A. Quijón
Coastal Ecology Laboratory, Department of Biology, University of Prince Edward Island

The protection of a rare strain of Irish moss

Basin Head was designated as a Marine Protected Area in 2005 with the intention of protecting a unique strain of Irish moss (*Chondrus crispus*), the "giant Irish moss." This strain is considered unique due to its morphological and reproductive differences from the typical coastal strain of Irish moss. The giant Irish moss also exhibits broader, wider fronds than those of the coastal strain and relies solely on fragmentation to reproduce (Tummon Flynn et al., 2019) (Fig. 1). Additionally, the giant Irish moss lacks a holdfast, the base structure present in most algal species to anchor themselves to rocks or other stable surfaces. The lack of anchorage is solved through a relationship with another species, the well-known blue mussel (*Mytilus edulis*). Mussels produce byssal threads that adhere these bivalves to rocks, other mussels, and, in this case, to the fronds of giant Irish moss. This association keeps the algae on the seafloor, preventing them from free-floating within or outside the limits of the lagoon.

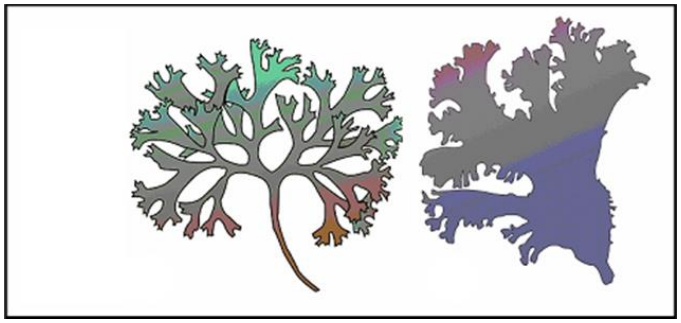

Figure 1. Coastal and giant Irish moss (*Chondrus crispus*; left and right respectively) strains. Redrawn from various sources.

Unfortunately, the Basin Head giant Irish moss population suffered a sharp decline in the 1990s and 2000s, with some recovery taking place in recent years thanks to replanting efforts by Souris Wildlife and Fisheries and Oceans Canada. While the exact cause of the initial decline is unknown, various potential culprits were proposed, including agriculture runoff, eutrophication and subsequent sea lettuce blooms, as well as the establishment of the non-indigenous European green crab (*Carcinus maenas*) late in the 1990s. An additional threat becoming more evident during the past few years is the increasing frequency of weather events and the warming of ocean temperatures. Raising temperatures in this shallow lagoon may have contributed to the initial decline of the alga, and it has been hypothesized that the same factor may also be hindering the recovery of giant Irish moss populations (Gibbons, 2024). The uniqueness and vulnerability of the giant Irish moss have gained attention among researchers and conversation groups, calling for the protection of its unique strain and its natural ecosystem.

The role of the alga and the threat of raising temperatures

Many macroalgae, including the giant Irish moss, play essential roles in their coastal environment. They constitute the foundation of their food webs, capture Carbon dioxide emissions, and provide shelter or habitat for small marine organisms (Gibbons and Quijón, 2023). In fact, the habitat created by giant Irish moss and blue mussels is important for supporting local biodiversity (Gibbons et al., In press). The giant Irish moss-blue mussel habitat offers more structural complexity and, therefore, more services (i.e., nutrients, refuges against predators, and shelter for reproduction) than other habitats in the lagoon, even mediating some of the interactions among key species (Vriends et al., 2024). That is why many of these species are being protected or have been identified as concerns for conservation purposes. However, climate change, particularly warmer ocean temperatures, continues to create a source of stress for these species (Ainsworth et al., 2018). Raising sea surface temperatures (SSTs) could be detrimental if they reach and pass the alga's thermal thresholds, hindering their condition, growth and function. While all seaweed species have likely been affected by rising temperatures, rare or threatened seaweeds, such as giant Irish moss, are among the most vulnerable.

Recent experiments have examined how the giant Irish moss responds and adapts to temperatures above their optimal range, which represent water temperatures that could be potentially reached in the coming years due to climate change (Gibbons, 2024). Like coastal Irish moss, giant Irish moss has an upper thermal limit nearby 28°C, with optimal growth around 15°C. However, data collected from Basin Head has already shown water temperatures reaching 28-29°C on multiple occasions during the peak of the summer season. As a proxy for giant Irish moss frond condition, surface area and weight change were measured in two different types of experiment (exposure to a range of temperatures and exposure to short-term spikes of temperature) to determine how this strain is responding to higher than optimal temperatures (see Fig. 2). The data has shown a concerning outcome for giant Irish moss if temperatures in the Basin Head lagoon continue to rise. These trials found that when the alga experienced water temperatures towards the upper range examined in the study, the fronds experienced a gradual loss of surface and weight due to bleaching (See Fig. 3).

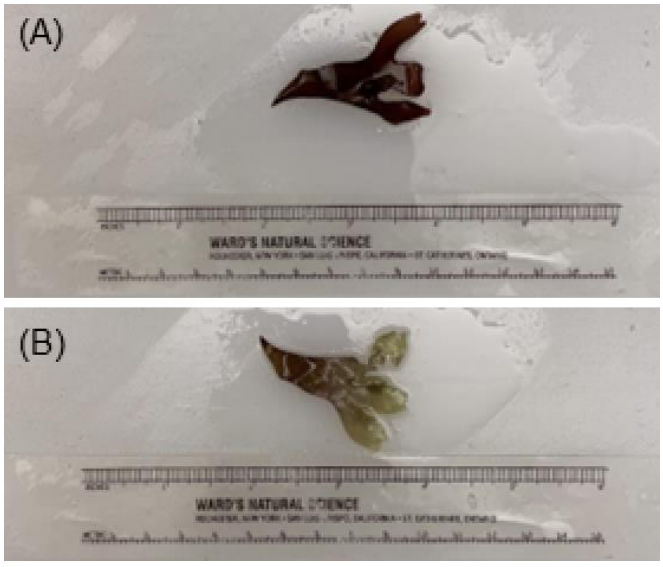

Figure 2. An Irish moss frond exposed to spike temperature trials, (A) before, and (B) after enduring high temperatures.

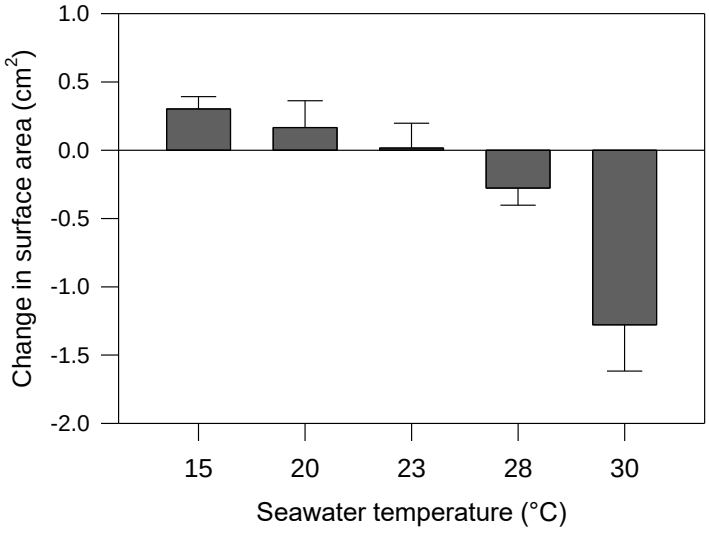

Figure 3. Boxplots illustrating the change in giant Irish moss (*Chondrus crispus*) surface area when exposed to a range of sea water temperatures.

The responses measured in the giant Irish moss are concerning, as summer temperatures are increasing and are predicted to continue to increase in the future. This may challenge the ability of this alga to adjust and recover from heat waves, potentially causing the giant Irish moss to fall back into a severe population decline. Following the drastic decline (almost collapse) observed during the 1990s, and the designation of Basin Head as a MPA, conservation efforts were put in place in Basin Head to try to recover the algal population to pre-decline levels. Its role in the Basin Head ecosystem suggests that the decline or loss of this algal strain may have consequences for the ecology of the species that rely on the habitat it creates. Future research in this area should explore the effects of temperature on the giant Irish moss conditions in longer-term experiments and carefully examine the resilience of this unique strain to changing water temperatures. Such experiments should also consider the influence of temperature on the associated blue mussels, given the importance of this bivalves on the survival of the giant Irish moss. The work of researchers and other stakeholders may help in the search for temperature-mitigation measures, and ultimately, the sustainability of this unique seaweed.

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Vriends, B.J., Tummon Flynn, P., and Quijon, P.A. (2024). Habitat-mediated direct and indirect interactions in a marine sedimentary system from Atlantic Canada. Marine Ecology Progress Series. 745: 1-12. doi: 10.3354/meps14687.

Photos by: Dale Murchinson in PEI during September 2024 including Piping Plover, Buff-breasted Sandpiper, Common Tern, Little Blue Heron and Caspian Terns.

Book Review by Barry Cottam

Hymenoptera: The Natural History & Diversity of Wasps, Bees & Ants

By Stephen A. Marshall. 2023. Firefly Books. 640 pages and 1000+ colour photos.

Submitted: September 19, 2024

Stephen Marshall's Hymenoptera is the first book to tackle the entire world of this large and highly diverse order for the interested public. It's his fourth magnum opus in a series beginning with *Insects* (Firefly Books, First Edition 2006; Second Edition 2017), followed by *Flies* (Firefly Books, 2012) and *Beetles* (Firefly Books, 2018). Each of these volumes is subtitled "Natural History and Diversity", and the books deliver the goods on both. As with its predecessors, *Hymenoptera* is written with the lay person (like me) in mind. Technical terms are used only when necessary—"this book is for naturalists, not taxonomists (p. 9)—and Marshall's light and casual humour frequently spices the text. The subtitle to *Hymenoptera* could have included Sawflies, but as Marshall notes in his Preface, although "the order is often awkwardly referred to as the 'ants, wasps, bees, and sawflies,' they are all wasps ..." (p. 8). If you think you hate wasps, you better update that file!

Each of the suborders and superfamilies making up the Hymenoptera is richly complex and diverse. The reader's journey begins with Part 1, Life Histories, Habits and Habitats of Hymenoptera, comprised of six chapters. The first, "Form & Function", describes the origins and anatomy of the characteristic 'wasp waist' and the many variations on behaviours of mating, egg laying, and nest making and provisioning. These topics lead into the next chapter, Hymenopteran Parasitoids & Predators, that opens with the line "Most wasps are killers ..." (p. 37), reflecting their ancestral parasitoid lineage. Those that are not "have changed their ways to become vegetarians, predators, omnivores or kleptoparasites (thieves) …" (p. 37). Chapter 3 discusses hymenopteran interactions with plants and fungi. These include phytophagy, gall formation, pollination – wasps' elaborate role in fig production being especially interesting - and the symbiotic protective relations shared by several ant and plant species.

The extensive interactions of hymenopterans with vertebrates – (we humans, primarily) – are covered in Chapter 4, which opens with the obvious: wasps capacity to sting. While many species are stingless, the most dangerous pack extremely painful stings. The news isn't all bad - honey bee venom is an ingredient in some face creams. More importantly, wasps are useful as sources of food and medicine and agents of biocontrol. On the downside, human movements have turned some wasps into invasive, others into endangered species. Wasps, in the form of beehives, have been used as weapons of warfare in medieval and more ancient times. And given the ambiguities we humans experience toward them, it is no surprise that they been sources of inspiration in art, culture, fiction, and film.

The fifth chapter discusses Conflict & Cooperation within the order. Wasps are not only killers and thieves; many have varying degrees of sociality and social organization. Research and popular interest generally tend to focus on social hymenopterans, such as ants and honeybees, but less than 2% of all hymenopteran species are eusocial (p. 121). One result is a huge imbalance in our knowledge of the other 98%. Part 2 covers Diversity in 14 chapters, starting, as in his previous volumes, with Classification & Phylogeny. This short section on the shifting sands of taxonomy is summarized in a two-page chart that broadly outlines the current thinking. It also provides, as Marshall suggests, a table of contents to the chapters on the various suborders and superfamilies. These chapters each open with a brief but more detailed look at the taxonomy of the subject groups. Throughout, this information is presented with the lay reader in mind.

Organization of these chapters also follows previous volumes: several pages of text outline the major groups, followed by pages of photos illustrating and providing further details on their respective families. Each group has their own frequently unique natural history, and Marshall provides many stories from the familiar to the almost unbelievably exotic, in recounting their life ways. However, despite the great mass of information, much remains unknown; a fact he readily acknowledges.
As in Marshall's other books, Part 3, Studying Wasps, contains sections on collecting, photographing, and identifying wasps. The first two sections are short and to the point; the third provides simplified keys focussed on the most common families. Part 3 also includes the back matter: Acknowledgments, References, and an Index. Here and throughout the book, Marshall is generous in his attributions of assistance from other experts and specialists in making and confirming identifications, an indication in itself of how large the field is.

The book is illustrated by thousands of excellent photographs. The use of photographs in identifying insects has long been controversial, and Marshall cautions that photos alone can seldom be relied upon for accurate identification to the species level. His work shows that they can be extremely useful in getting to the higher levels, helping us develop gestalts for particular groups. Few of us are able to place a specimen under a microscope and use the arcane language of specialists to locate and determine the nature of identifying characters. Furthermore, taxonomists are increasingly in short supply while citizen scientist numbers grow apace, allowing the specialists to collect data otherwise unavailable. Appreciation of this reality is increasing, and books such as this are terrific aids to that end. Marshall is to be congratulated on yet another signal achievement in both the entomological literature and the continuing building of bridges between the worlds of professional and citizen scientists. Anyone interested in the Hymenoptera will benefit from reading this marvellous—and marvel-filled—book and using it in further study of an amazing part of life on this planet.

The full version of this review was originally published in the *Canadian Field Naturalist*, Vol. 137, 2023, pp. 291-29.

2024-25 Christmas Bird Count Dates

Dec. 14 to Jan. 5 - For decades, Nature PEI has participated in **Christmas Bird Counts** (CBCs). These can be registered counts through Audubon and Bird Studies Canada (BSC) or unregistered counts. Both field and bird feeder watchers can participate and there is no fee. There are four Christmas counts on Prince Edward Island (see map and the list below). To participate or obtain more information, contact the coordinator noted below. Those bird feeder watchers who live within the count circle are asked to contribute their sightings for the count day. There is a three day period before and after the count day for these individual counts where birds not found on the count day can be included,

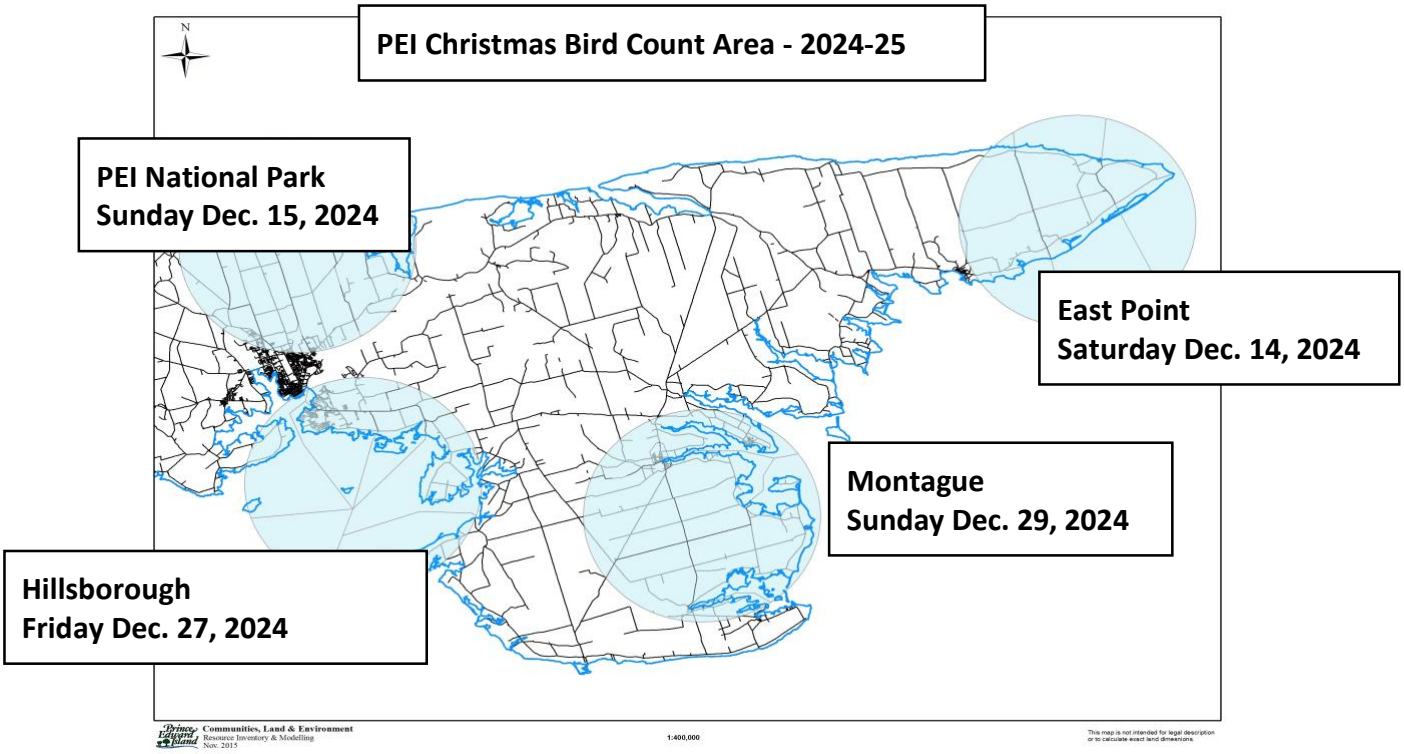
Note: The date may change in the advent of severe weather so please contact your coordinator.

Dec. 14 (Saturday) - **The East Point Christmas Bird Count**. Please contact Dwaine Oakley dwaine.oakley@gmail.com for details and to register.

Dec. 15 (Sunday) - **The Prince Edward Island National Park Christmas Bird Count** - This count features a lunch time potluck at a location to be announced in Dalvay. Please contact Dan McAskill at 569-4351 or E-mail at jdmcaskill@pei.sympatico.ca for information or to register.

Dec. 27 (Friday) - **The Hillsborough Christmas Bird Count**. We hope there will be a potluck after the event for participants at 6 p.m. (Place to identified). Please contact Dan McAskill via e-mail at jdmcaskill@pei.sympatico.ca for information or to register.

Dec. 29 (Sunday) - **The Montague Christmas Bird Count**. Please contact Scott Sinclair via e-mail at scsinclair@hotmail.com for information or to register.



Note: Shaded circles denote the outside boundaries of the count circle.

PLANT AND ANIMAL SIGHTINGS: (Spanning July 20, 2024- September 20, 2024)

Compiled by: Morgan Olivia McNeil

Each list is provided in alphabetical order based on common name of the sightings provided.

PLANTS:

Alderleaf Buckthorn- August 23, 2024 in Riverton (JLZ); **Barnyardgrass-** August 8, 2024 in Elmsdale (MOM); **Birdsfoot Treefoil-** July 21, 2024 (MOM); **Broadleaf Arrowhead-** August 24, 2024 in Summerside (MOM); **Christmas Fern-** August 3, 2024 in Wellington (KS); **European field pansy-** August 19, 2024 in Middleton (MOM); **Jack-in-the-Pulpit**- August 23, 2024 in Riverton (JLZ); **Lamb's Quarters-** July 24, 2024 in Piusville (MOM); **Mountain Fly-Honeysuckle**- August 23, 2024 in Riverton (JLZ); **Nodding Trillium**- August 31, 2024 in Mill River (MOM); **Oxeye Daisy**- August 20, 2024 in Middleton (MOM); **Pineapple Weed**- August 12, 2024 in Freetown (MOM); **Prickly Sowthistle**- August 19, 2024 in Middleton (MOM); **Red Maple**- August 31, 2024 in Mill River (MOM); **Sandpiper**- August 5, 2024 in Linkletter (JJS); **Shephard's purse**- August 14, 2024 in Summerville (MOM); **White Spruce**- August 31, 2024 in Mill River (MOM); **Wild Carrot**- August 19, 2024 in Middleton (MOM); **Wild Cucumber**- August 8, 2024 in Bedeque and August 12, 2024 in Tryon (MOM); **Yellow Birch**- August 31, 2024 in Mill River (MOM).

FUNGI:

Artist's Bracket- September 3, 2024 in Tignish (RC); **Black Tar Spot-** September 4, 2024 near Mt. Herbert (RC); **Bolete Mould-** July 28, 2024 near Riverdale (KS); **Brittlegills-** September 5, 2024 near Stratford (RC); **Common Mazegill-** September 3, 2024 in O'Leary (JLZ); **Common Stump Brittlestem**- September 12, 2024 in Millvale (JJS); **Conifer Mazegill-** September 4, 2024 near Mt. Herbert (RC); **Elbowpatch Crust**- September 3, 2024 in Tignish (FRC); **Elegant Polyphore-** July 28, 2024 in Strathgartney (KS); **Green Wood Cup-** July 12, 2024 near Ascension (FRC); **Meadow Mushroom-** August 6, 2024 in Stratford (LO); **Mossy Maze Polyphore**- September 3, 2024 in Tignish (FRC); **Mustard Yellow Polyphore**- September 3, 2024 in Tignish (FRC); **Northern Red Belt**- July 30, 2024 near Pleasant Grove (RWH); **Old-Man-of-the-Woods-** July 21, 2024 near Strathgartney (KS); **Orche Bracket-** September 4, 2024 near Mt. Herbert (FRC); **Orche Spreading Tooth-** September 3, 2024 in Tignish (RC); **Rosy Crust-** September 5, 2024 near Mt. Hope (RWH); **Silky Parchment**- July 21, 2024 in Strathgartney (KS); **Tawny Grisette**- September 4, 2024 in O'Leary (JLZ) and September 12, 2024 in Millvale (JJS); **Thin-walled Maze Polyphore**- September 3, 2024 in O'Leary (JLZ); **Tinder Polyphore**- September 4, 2024 near Mt. Herbert (RC); **Turkey Tail**- August 5, 2024 near East Royalty (RWH); **Upright Coral-** July 21, 2024 near Strathgartney (KS); **Veiled Polyphore-** September 3, 2024 in O'Leary (JLZ); **White Coral**- September 12, 2024 near Millvale (JJS); **White Cheese Polyphore-** September 6, 2024 near Mt. Hope (RWH); **Yellow Fairy Cups-** September 3, 2024 in O'Leary (JLZ).

LICHENS:

Common Sunburst- July 21, 2024 in Charlottetown (RWH); **Globe Ball-** August 21, 2024 in Valley (JLZ); **Methuselah's Beard-** July 31, 2024 near Brae Harbour (IC); **Powdered Fringe**- August 29, 2024 in West Devon (IC); **Powdered Sunshine-** July 27, 2024 near Mt. Albion (LO); **Rough Speckled Field**- August 21, 2024 in Stratford (FRC); **Varied Rag**- July 28, 2024 in Bedford Parish (LO) and August 28, 2024 in Lennox Island (FRC); **Yellow Specklebelly**- July 31, 2024 near Brae Harbour (IC).

INSECTS:

Amber-winged Spreadwing damselfly – July 10, 2024 in Abney (RHW); **American Dagger-** August 16, 2024 in Corraville (BC); **American Idia Moth-** July 20, 2024 in Millvale (JJS); **Arched Hooktip Moths-** August 6, 2024 in Fortune Bridge (LO); **Banded Tussock Moth**- August 16, 2024 in Corraville (BC); **Blackjacket**- August 26, 2024 in Corraville (BC); **Black Swallowtail-** July 28, 2024 in Strathgartney (KS); August 5, 2024 in Linkletter (JJS); **Black-rimmed Prominent**- August 8, 2024 in Mount Stewart (JH); **Blue Dasher** – July 10, 2024 in Abney (RWH);

Carrot Seed Moth- July 20, 2024 in Millvale (JJS); **Chocolate Prominent**- July 20, 2024 in Millvale (JJS); **Clouded Sulphur**- September 4, 2024 in Rustico (MOM); **Common Arial Yellowjacket**- August 26, 2024 in Corraville (BC); **Crocus Geometer Moth**- July 20, 2024 in Millvale (JJS); **Dogbane Leaf Beetle** – July 27, 2024 in New Perth (RWH); **Double-banded Grass Veneer**- July 20, 2024 near New Perth (RWH); **Erratic Small Dung Beetle** – June 3, 2024 in Summerville (RWH); **Eurasian Drone Fly**- July 25, 2024 in Corraville (BC); **Eye-spotted Lady Beetle**- August 16, 2024 in Corraville (BC); **Flame-shouldered Dart**- August 4, 2024 in Mount Stewart (JH); **Gem Moth**- July 20, 2024 in Millvale (JJS); **Gray Spruce Looper Moth**- August 4, 2024 in Mount Stewart (JH); **Hemlock Looper Moth**- August 23, 2024 in Riverton (JLZ); **Horned Spanworm Moth**- July 20, 2024 near Riverton (JH); **Japanese Beetles**- August 5, 2024 in Charlottetown (RWH); **Large Gray Dagger**- July 31, 2024 near Dromore (JLZ); **Large Yellow Underwing**- August 23, 2024 in Summerville (RWH); **Marsh Dagger**- July 20, 2024 in Millvale (JJS); **Mint-loving Pyrausta Moth**- July 20, 2024 in Millvale (JJS); **Morning Glory Plume Moth-** July 21, 2024 near Riverton (RWH) and August 12, 2024 in Charlottetown (MOM); **Pale Beauty**- August 22, 2024 in Saint Peters Bay (RWH); **Reddish Aethes**- July 20, 2024 near New Perth and August 23, 2024 in Summerville (RWH); **Red Twin-spot Carpet**- July 20, 2024 near New Perth (RWH); **Seven-spotted Lady Beetle-** September 20, 2024 in Fortune Cove (MOM); **Sharp-angled carpet**- July 20, 2024 in Millvale (JJS); **Slender Meadow Katydid**- August 14, 2024 in Orwell (MOM); **Small Magpie**- July 20, 2024 in Millvale (JJS); **Soothsayer Dart**- August 5, 2024 in Mount Stewart (JH); **Spanworm Moth**- July 20, 2024 in Millvale (JJS); **Spotted Grass Moth**- August 4, 2024 in Corraville (BC); **Spotted Tussock Moth**- August 16, 2024 in Corraville (BC); **Strawberry Seed Beetle**- September 20, 2024 in Cascumpec (MOM); **Twice-stabbed Stink Bug-** August 14, 2024 in Greenfield (MOM) and August 26, 2024 in Corraville (BC); **Sweetfern Geometer Moth**- July 20, 2024 in Millvale (JJS); **Typical Aphid Wasps-** August 26, 2024 in Corraville (BC); **Viceroy**- August 6, 2024 in Stratford (LO); **Wandering Glider dragonfly** – August 8, 2024 in Summerville (RWH); **White Admiral**- August 26, 2024 in Corraville (BC); **White-blotched Clothes Moth**- July 20, 2024 near Riverton (JH); **White-dotted Prominent**- July 20, 2024 in Millvale (JJS).

ARTHRPODS:

Lady Crab- September 6, 2024 near Summerside (RWH); **Marbled Orbweaver-** August 23, 2024 in Riverton (JLZ); **Yellow Garden Spider-** July 25, 2024 in Corraville (BC), September 5, 2024 in Victoria (MOM) and September 12, 2024 in Brackley (MOM).

INVERTEBRATES

Winter Flounder- August 16, 2024 near Rice Point (SH).

ANIMALS:

MAMMALS:

Brown Rat- July 11, 2024 in Crapaud (DD); **Short-tailed Weasel-** September 30, 2024 in Crapaud (DD); **Skunk**- August 27, 2024 in Charlottetown (MOM).

BIRDS:

American Kestrels (3)- August 6, 2024 in Covehead (AA); **American Redstart (female)-** September 6, 2024 in Millvale (JJS); **Bald Eagle-** August 29, 2024 in Brackley (ML); **Barn Swallows-** August 6, 2024 in South Lake (RP); **Bay-breasted Warbler**- August 27, 2024 in Tignish (DMa); **Black and White Warbler**- August 27, 2024 in Tignish (DMa); **Black-bellied Plovers-** August 4, 2024 in Borden and Chelton (DMa), August 11, 2024 in Borden (JJS) and August 24, 2024 in Tryon River (RM); **Blackpoll Warbler-** August 27, 2024 in Tignish (DMa); **Black Tern-** September 11, 2024 in Souris (SS); **Black Vulture** – August 16, 2024 in Pisquid (RWH); **Boreal Chickadee-** August 27, 2024 in Tignish (DMa); **Blue Herons-** August 30, 2024 in Cove Head Bay (RM); **Brown Creeper-** September 6, 2024 in Millvale (JJS); **Buff- Breasted Sandpiper-** September 16, 2024 in Wood Islands (DMur); **Canada Geese-** August 10, 2024 in Wood Islands (JSu) and August 24, 2024 in Tryon River (RM); **Cedar Waxwing-** August 25, 2024 near New London (JS); **Common Terns**- September 6, 2024 in Cardigan

(CE); **Common Yellowthroat-** August 27, 2024 in Tignish (DMa); **Cormorants-** August 25, 2024 in North Cape (AA); **Dark-Eyed Junco**- September 6, 2024 in Millvale (JJS); **Dowitcher**- August 24, 2024 in Tryon River (RM); **Eastern Bluebirds (3)-** August 31, 2024 in Cardigan (MM) and September 6, 2024 in Cardigan (CE); **Eastern Wood-Pewee**- September 6, 2024 in Millvale (JJS); **Gray Catfish**- September 9, 2024 in Millvale (JJS); **Gray Partridge** (15) – August 26, 2024 in Summerville (RWH); **Greater Yellowlegs**- August 24, 2024 in Tryon River (RM) and September 6, 2024 in Cardigan (CE); **Hairy Woodpecker**- September 6, 2024 in Millvale (JJS); **Herring Gull**- September 1, 2024 in Mill River (MOM); **Hummingbirds**- August 8, 2024 in Roseville (JA); **Kestrel**- August 25, 2024 near New London (JS); **Killdeer-** August 4, 2024 in Cavendish Farms Wetland (DMa); **Kingfisher-** August 24, 2024 in Tryon River (RM); **Least Sandpiper-** August 4, 2024 in Borden (DMa), August 8, 2024 in Montague (CE) and August 25, 2024 in Borden (DMa); **Lesser Yellowlegs**- August 23, 2024 in Montague (CE) and August 24, 2024 in Tryon River (RM); **Little Blue Heron-** August 16, 2024 in Belfast (DMur), August 16, 2024 in South Pinette (RC), August 17, 2024 in Belfast (JJS), August 17, 2024 in South Pinette (DMA, MMc) and August 18, 2024 in South Pinette (DMur,VB); **Magnolia Warbler**- August 27, 2024 in Tignish (DMa); **Merlin**- August 10, 2024 in Yankee Hill (BS); **Nelson Sparrows**- August 4, 2024 in Borden (DMa); **Northern Flicker**- August 25, 2024 near New London (JS); **Northern Mockingbird**- July 27, 2024 in Wood Islands (SC); **Northern Waterrush**- August 27, 2024 in Tignish (DMa); **Ovenbird**- August 3, 2024 near Covehead (JtR); **Pectoral Sandpiper**- August 4, 2024 in Cavendish Farms Wetland (DMa); **Peregrine Falcon**- August 10, 2024 in Yankee Hill (BS); **Red-breasted Nuthatch**- August 27, 2024 in Tignish (DMa) and September 6, 2024 in Millvale (JJS); **Red-eyed Vireo**- August 27, 2024 in Tignish (DMa); **Red-tail eagle**- August 25, 2024 near New London (JS); **Ruddy Turnstones**- August 4 and 6, 2024 in Chelton (DMa), August 23, 2024 in Montague (CE) and August 27, 2024 in North Cape (DMa); **Ruffed Grouse**- August 20, 2024 in Pinette (RM) and August 23, 2024 in Riverton (JLZ); **Sandhill Cranes (5)-** September 15, 2024 in Malpeque (DMc, GMc); **Sandpiper(s)**- August 4, 2024 in Borden (DMa) and August 5, 2024 in Summerside (DMa); **Semi-palmated Plovers**- August 11, 2024 in Borden (JJS) and August 27, 2024 in North Cape (DMa); **Semi-palmated Sandpipers**- August 4, 2024 in Chelton (DMa) and August 24, 2024 in Tryon River (RM); **Sharp-tailed Grouse (3)-**September 16, 2024 in Mount Herbert (RWH); **Short-billed Dowitchers**- August 4, 2024 in Borden and Chelton (DMa) and August 11, 2024 in Borden (JJS); **White front goose**- August 10, 2024 in Wood Islands (JSu); **White-rumped Sandpipers**- August 4, 2024 in Borden (DMa) and August 25, 2024 in Borden (DMa); **Wilsons Snipe**- September 3, 2024 in Summerside (JJS); **Yellow-bellied Sapsucker**- September 6, 2024 in Cardigan (CE); **Yellow-crowned Night Heron**- September 5, 2024 in Mermaid (MMacK, WMacK, AD, RD); September 7, 2024 in Mermaid (VB) and September 8, 2024 in Mermaid (CE); **Yellowlegs**- August 8, 2024 in Montague (CE) and August 11, 2024 in Borden (JJS); **Yellow-rumped Warbler**- August 27, 2024 in Tignish (DMa); **White Underwing**- August 28, 2024 in Millvale (JJS).

Thanks to the following contributors who provided records for this listing, namely: AA-April Adams; JA- Jodi Arsenault; VB- Vanessa Bonnyman; SC- Sharon Clark; BC- Barry Cottam; IC- Iain Crowell; DD- Daphne Davey; AD- Alice Driscoll; RD- Randy Driscoll; CE- Cindy Esau; FRC- Rosemary Curley; JH-Jake Harding; RWH- Robert Harding; SH- Sarah Hirtle; MM- Mark MacDonald; MMacK- Marnie MacKinnon; WMacK- Wade MacKinnon; DMa- Donna Martin; DMA- Dan McAskill; MMc-Melanie McCarthy; DMc- Don McLelland; GMc- Glenda McLelland; MOM- Morgan Olivia McNeil; DMur- Dale Murchinson; LO- Laura O'Connor; RP- Roberta Palmer; KS- Ken Sanderson; JtR- John te Raa; JS- Jennifer Stenhouse; BS- Bruce Stewart; JSu- Jim Sutton; JJS- Jean-Jacques Strydom; SS- Scott Sinclair; JLZ- Julie-Lynn Zahavich.

ENVIRONMENTAL CALENDAR:

Saturday, October 5, 2024- Mushroom Walk & Talk with Ken Sanderson from 10:00 AM- 12:00 PM at the Buote Heritage Natural Trail, Queens County. See Island Nature Trust website for more details.

Saturday, October 12, 2024- Macphail Woods Ecological Forestry Project ″Autumn in the Forest″ Event at 10:00 AM. See their website for more information.

Saturday, October 19, 2024- Island Nature Trust. Understanding Land Conservation Walk & Talk at Jenkins Complex Natural Area. See their website for more information.

Saturday October 19, 2024- (RAIN OR SHINE) Mushroom Walk with Rosemary Curley from 1:30-3:00PM at Trout River Natural Area, Carleton, 36927 Western Rd, PE, Canada. (If heading west, the location will be on your left. Register in advance with Chris@naturepei.ca

Saturday October 19, 2024- Macphail Woods Ecological Forestry Project Mapping Your Land Intermediate GIS Mapping Event from 9:00 AM- 3:00PM. Register on their website. Talk to Daniel McRae by phone at 902-651-2575 or e-mail at danielmcrae@macphailwoods.org

Sunday October 20, 2024- (RAIN OR SHINE)- Ken Sanderson will lead a blitz of Strathgartney Provincial Park from 10:00AM- 1:00PM. Participants will spread out to various different trails and habitats in the area and reconvene to go over what was found. Registration in advance is required by emailing: ken@mushroomsofpei.ca

Wednesday October 23, 2024- East Coast Environmental Law Association ″Coastal Law″ public information session from 6:00-8:30 PM at the Farm Centre (420 University Avenue, Charlottetown).

Saturday October 26, 2024- Fall Colors Walk at Bonshaw Park at 10:00 AM. Meet in parking lot. Dress for the weather.

Tuesday, November 5, 2024 – Nature PEI Monthly Members Meeting with guest Jean-Jacques Strydom discussing Birding & Photography. Starts at 7:30 PM with speaker at 8:00 PM.

Thursday, November 7, 2024- Island Nature Trust (INT) Trivia Night for Nature Nerds from 7:00 PM-9:00 PM. See INT website for more information.

Tuesday, December 3, 2024 – Nature PEI Monthly Members Meeting with guest PEI Invasive Species Council discussing Hemlock Woolly Adelgid Early Detection Rapid Response. Starts at 7:30 PM with speaker at 8:00 PM.

See page 18 of newsletter for registration details relevant to events listed below:

Saturday, December 14, 2024- East Point Christmas Bird Count Event.

Sunday December 15, 2024- PEI National Park Christmas Bird Count Event.

Friday, December 27, 2024- Hillsborough Christmas Bird Count Event.

Sunday, December 29, 2024- Montague Christmas Bird Count Event.