



President's Report

Welcome to 2021. We have so much to be thankful for and so many individuals being active in the club.

Our birders really did a fabulous job doing the recent count. Making it work was a real team effort; Jim Goodwin, Susan Knoerr and Lynne Brookes were amazing. Sandy, the work you did by yourself was astounding as those who laboured on this year count can attest. Well done all of you.

Nancy Randall, Duncan Campbell and Sylvia Riessner are to be thanked for getting us online to host the monthly general and board meetings in Zoom. What a gift. Zoom allows us to invite speakers from just about anywhere; we're no longer limited by location.

If anyone would like help getting on Zoom (if I can do it you can too!) please send a message to arrowsmithnats@gmail.com. The world is operating on Zoom these days and there are advantages. Doesn't cost much and no winter driving! I would ask everyone, for safety, please don't share the invitation to zoom meetings outside the club. *There be monsters!*

Nancy Randall is also taking part in BC Nature's Climate Action group representing our club. It comes at a much needed time and hopefully a plan will result to help us go forward. One Parksville councillor has called it a hoax so lots of work to do locally!

Lynne and Ceri Peacey are going ahead with great ideas for the Brant Festival so stay tuned for events to follow. Social distancing will be required.

Rosemary, Lynne and I are moving forward to establish bee/butterfly corridors in Oceanside. Lots of work ahead and we're looking for volunteers! If you know anyone with skills in producing small signs, we'd love to hear from you.

[MABR Research Institute](#) is doing a study on SDG's. When I first got the message I had no idea what SDG stood for. So for those who are in the same boat I was, it's Sustainable Development Goals. Dave Hutchings was kind enough to give them a tour of the Englishman River estuary to show what excellent and much needed work he and his crew have done. Dave is also reviving the four year bird count once again. More on that later.

We, as a club, donated \$500 to support the efforts of the French Creek Estuary Land folks to buy a piece of land to protect it from development. They are trying to establish an eagle preserve there as well. Good cause to support.

The Mushfest Committee is (very) tentatively moving very slowly ahead. We've booked the weekend of October 16/17th. At that point we might be able to have some form of public event, so fingers crossed. At least we've got a date!

All in all, when it seems nothing is going on, there's actually a great deal happening. Please consider volunteering for any of the above causes. We welcome your participation and there is always something new coming along.

I hope you've found the nature walks on our website and tried some (there may be a quiz ☺ Keep active, well and kind. If anyone needs help with shopping, etc., please let me know. *Sally Soanes*

Officers and Contacts

President: Sally Soanes	Vice Pres: Derrick Grimmer
Past Pres: Lynne Brookes	BC Nature: Bonnie Mullin
Stewardship: Dave Hutchings	Treasurer: Helen Davidson
Conservation/Enviro. Gary & Ronda Murdock	Speakers: Nancy Randall
Exec.Secretary: Mark Mazurski	Promotion: Maggie Little
Mtg.Secretary: Sue Wilson	Membership: Toni Wyckoff
Archivist(s): Diane & Jim Goodwin	Website: Kerry Baker
Sunshine Contact: Pam Helem	Email: Duncan Campbell
	Zoom: Duncan Campbell
Directors: Claire Summers, Terry Taylor, Rosemary Taylor	Facebook: Tom Constable
	Newsletter: Sylvia Riessner

Please note:

Face-to-face meetings or events are CANCELLED until further notice - due to COVID-19.
Check out the new monthly Zoom online meetings - great speakers each month.

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Club/Membership Information

Check our [website](#) or [Facebook page](#) or request information by writing to:

Arrowsmith Naturalists, Box 1542,
Parksville, BC V9P 2H4



If you know of an Arrowsmith Naturalist who is ill, in hospital or recently bereaved, please contact: Pam Helem at arrowsmithnats@gmail.com

MEMBERSHIP UPDATE by Toni Wyckoff

Our membership is still going strong with 114 naturalists. I want to thank everyone for sending in your cheques and paperwork. Collecting this year definitely had its challenges; personal contact is so much nicer as you get to communicate directly to people.

Our insurance costs increased by fifty cents to \$3.93 per membership. If we resume any in-person activities between April 30, 2021 and May 1, 2022, we are covered for \$5 million. This is needed for things like Mushroom Festival, outings, and car pooling.

Unfortunately we lost 15 members, which is quite understandable with the situation we are in. The good news is we still have people joining. Our membership spans up and down the Island, from Duncan to Comox with one family on the Sunshine Coast; one from the BC Interior; and two families who reside in Ontario.

It is great to have such a diverse membership as every individual brings their unique quality to our club. Some are very specialized and love to teach and then others want to learn. We are very fortunate to have people whose expertise ranges from the microscopic to the gigantic. Whether it flies, walks, swims, crawls, or just sits there, everything has a story to tell.

Unfortunately we are still stuck in our bubbles for a while longer. In the meantime, join us on Zoom - the **4th Thursday** of each month @7pm.

SPRING 2021 SPEAKERS

Nancy Randall

Mark your calendars for these excellent presentations!

*Join us online **7 pm, the 4th Thursday** of each month.*

The Zoom invitation will be emailed to Arrowsmith Naturalists a day prior to the meeting date.

Feb 25th Presentation by Zoom

Topic: Climate Change: Avoiding more extreme changes

Climate change has hit harder and sooner than predicted. We need to support appropriate actions and policies to avoid more extreme climate change.

Dr. Jeff Lewis, an earth and atmospheric science geographer from Vancouver Island University, will highlight the current and future impacts of climate change and discuss what is needed to avoid the most extreme changes.

Mar 25th Presentation by Zoom

Topic: Wildlife Tour to Argentina and Brazil

Duncan Campbell and David Helem will present their photographs and commentary on their wildlife tour to Pantanal in Brazil, Iguazu Falls, and Patagonia in Argentina.

Apr 22nd Presentation by Zoom

Topic: Exciting program in development

May 27th Presentation by Zoom

Topic: Micro-plastics: What We Know and Don't Know

Garth Covernton is a PhD candidate at the University of Victoria studying the source, fate and ecological implications of micro-plastic contamination in the marine environment.

Garth will discuss the tiny synthetic particles, known as micro-plastics, and how they get into the environment, where they are dispersed, the effects on wildlife and shellfish food webs, and what we can do to mitigate these impacts.

"NATURE IS BASED ON HARMONY. SO IT SAYS IF WE WANT TO SURVIVE AND BECOME MORE LIKE NATURE, THEN WE ACTUALLY HAVE TO UNDERSTAND THAT IT'S COOPERATION VERSUS COMPETITION." BRUCE LIPTON



ARROWSMITH INFORMAL PHOTO CLUB

The Photo group is still on going. Due to the weather and Covid restrictions, we haven't been out as much as we would have liked. But stay tuned, better weather is coming and emails will be sent out telling you where and when to meet.

Contact Claire Summers (clairesu@telus.net) or Dave Erickson (Davide1066@shaw.ca)

Stewardship in 2021: Broom and Birds

by Dave Hutchings

By now, most of us are impatient for Covid-19 to quiet down and to get on with a semblance of life as normal. For many naturalists, that means more time in the outdoors and the chance to enjoy longer, warmer days in the company of those who share our appreciation of nature.

For those of us involved in stewardship, "normal" also means a return to the Englishman River estuary and the battle with invasive Scotch broom. The good news is that we are winning the battle! Even though there is still broom to pull or cut in the estuary, most of the vast stands of "old-growth" broom are greatly diminished. Nevertheless, broom leaves a healthy bank of seeds in the soil to produce new seedlings, which means that our efforts to control broom need to continue.

If you feel you can join us twice-monthly (**first and third Thursdays**) or even occasionally, we'd welcome your company. The physical demands can be as light or as heavy as you wish. Until Covid settles down somewhat and our weather is a little more hospitable, we won't be rushing back to the estuary but we hope our return is sooner rather than later. If you'd like more information on just what our efforts involve, or would like to be included on our call-out list, just email me at dhutchings40@shaw.ca or phone 250-752-1613.



And now for the BIRDS! When the ANats began our stewardship at the estuary in 2005, one of the first efforts was to complete a survey of the birdlife, both land-based and aquatic, which used the estuary for breeding or feeding. Beginning in March, the survey group met once each month at the estuary and split into two groups, one to survey the water side and the other to walk the meadow and forest. The results of this multi-year survey provide a solid baseline with which to compare the results of a more up-to-date survey.



Courtesy of R.Hocken



Courtesy of R.Hocken

We would like to organize the next bird survey this Spring 2021. Lynne Brookes has indicated an interest in conducting an online opportunity to review bird-watching skills, equipment and practice bird identification if we have sufficient interest.

If you would like to join us in a survey beginning this Spring, and/or participate in an online birding review, contact me at dhutchings40@shaw.ca or phone 250-752-1613.

Highlights - Christmas Bird Count *(article on p4)*

Rare or Unusual Birds

- 2 - Eared Grebe
- 1 - Jaeger sp.
- 1 - Palm Warbler
- 6 - Yellow-rumped Warbler

Count Week Birds

- 1-Common Pochard (female)
- 1-Swamp Sparrow

James Goodwin High Count

- 326-Brant
- 461-Northern pintail
- 104-Black Oystercatcher
- 16-Sharp-shinned Hawk
- 1040-Bufflehead
- 2268-Dunlin
- 1807-Ancient Murrelet
- 35-Rhinoceros Auklet
- 202-Red-breasted Nuthatch
- 3118-Dark-eyed Junco
- 419-Spotted Towhee

A big THANK YOU to ANat's volunteers: Tom Constable, Maggie Green, Maggie Little, Penny Marshall, and Sally Soanes for calling 60 last year's CBC Feeder Count participants. You helped make this the most successful CBC FC yet!

Lynne Brookes



Fox Sparrow - J Goodwin

30th Annual PQB Christmas Bird Count

James Goodwin

The 30th annual Parksville Qualicum Beach Christmas Bird Count was held on Sunday, December 20, 2020. Sponsored by the Arrowsmith Naturalists, 50 keen birders in the field as well as 76 feeder counters surveyed a 24 km diameter circle centred at French Creek Marina. Due to COVID-19 protocols the count strategy changed slightly this year to encourage smaller count teams and personal social distancing.

Near perfect weather and sea conditions contributed to the record high count of 123 species observed on count day and also the most individual bird count, **37,893**.

Not surprisingly there were 14 species with record high numbers and six species recorded as rare or unusual. The most notable was a **Common Pochard**, a duck found in Europe and a rare visitor to Alaska, it has only been seen once before on Vancouver Island. Other unusual species were Eared Grebe, Glaucous Gull and Swamp Sparrow.

Off shore there was an incredible **1,807 Ancient Murrelet** and **35 Rhinoceros Auklet** reported flying. Dunlin were the most common shorebird tallied at 2,268. At the feeders, the most common bird was Pine Siskin with a total of 2,200. Combined with the field count results, the total Pine Siskins was 6,559, far short of the historical high for PQB of 10,420.

Feeder count participants make an important contribution to the overall success of this endeavour as much of our count circle contained private residences.

****78 observers put in 154.5 hours of effort, identified 62 species and counted 6,062 birds****

Besides the many Pine Siskins at the feeders, there were 1275 Dark-eyed Juncos, 266 Chestnut-backed Chickadees, 206 Spotted Towhees and 168 Anna's Hummingbirds. Some unusual observations included 1 Hermit Thrush, 2 American Goldfinches and 2 Yellow-rumped Warblers.

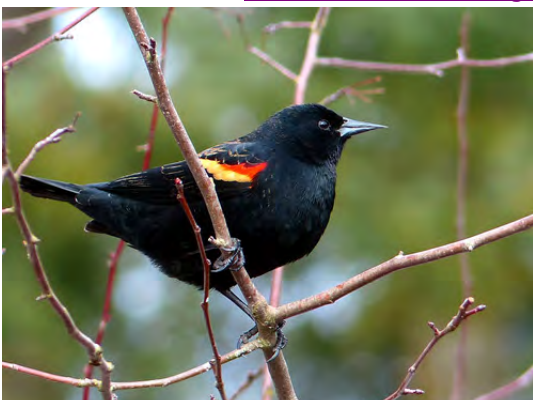
Support for the feeder count was provided by [Buckerfields](#), [The Mulberry Bush Book Stores](#), [Cultivate Garden & Gift](#) and [North Island Wildlife Recovery Centre](#).

Our count results contribute to the 121st [National Audubon Society Christmas Bird Count](#), North Americas longest-running citizen science project. Each year upwards of 2,000 circle counts are held in the Western Hemisphere by volunteer groups, with British Columbia conducting more than 90 counts.

A summary of the Christmas Bird Counts held in British Columbia can be found on the [BC Field Ornithologists website](#) (click on CBC's.)



Spotted Towhee—D Erickson



Red winged Blackbird – D Erickson

The success of the 30th annual PQB Christmas Bird Count is the result of the hard work by Lynne Brookes coordinating the feeder count, the experience from past counts shared by Sandra Gray, and the organizing and compiling by Susan Knoerr.

Thank you, to the Arrowsmith Naturalists members and the local bird enthusiasts that contributed their time and knowledge to this citizen science project. **We also greatly appreciate the field count support of private landowners as identifying birds on large tracts of farm and other land is crucial to a successful CBC.**

Observing the Jupiter–Saturn Conjunction

Terry Taylor

Why was the recent conjunction of Jupiter and Saturn so unique, and why were we so motivated to see it? And what is this celestial event called a conjunction?

A conjunction occurs when one planet passes another. It takes place when both planets have the same celestial longitude (right ascension). The time when one planet is above the other.

This was a very special conjunction. We would never have a chance to see something like this ever again. But there were a couple of problems. Most days in December are cloudy. The second problem was that both planets were low in the southwest in the evening twilight. Most things close to the horizon are obscured by trees. We needed a clear sky and an unobstructed horizon. Dave Erickson suggested the Qualicum Beach airport. Wednesday December 23, 2020 looked promising, so Claire, Dave, Rosemary and I met at sunset at the airport. We were amply rewarded for our visit.

Why was this event so special? The planets move through the constellations of the zodiac in almost the same plane, but not quite in the same plane. Depending on where they are located in their orbits, they may be close to each other, or farther apart. For this particular conjunction they were exceedingly close together. This, however, is an illusion. Although they looked close to each other, Saturn is actually twice as far from the sun than is Jupiter.

Dave's 25X telescope was able to have them in the same field of view, and we could see the shapes of both planets at the same time. This is why it was so special. Jupiter takes 12 years to orbit the sun, and Saturn takes 29. By the time Jupiter arrives back in the same constellation as 12 years before, Saturn has also advanced across the sky, so conjunctions of these two planets do not occur very often. The planes of their orbits are not exactly the same, so you are very unlikely to see both objects in the telescope at the same time. They were actually somewhat closer together two days before.

The last time these planets were this close was almost 400 years ago, but nobody saw that. It occurred during the daytime, on the other side of the sun from the earth. The previous close conjunction was about 700 years ago. People probably saw that, but they did not see the actual shapes of the two planets; they saw points of light. Like seeing a street light across the way on Texada Island. A street light that far away is too small to see, but you can see the light from it. Or like seeing a star. You see the light from the star. Nobody has ever seen the surface of another star, even with a powerful telescope. Stars are too far away. But you can see the surfaces of most planets, with even a small telescope. Jupiter and Saturn are gas giants. They do not have surfaces, so what we saw were the surfaces of their atmospheres.



Image by Claire Summers

Claire's photograph shows essentially what we saw through the telescope. The largest and brightest object, **to the left**, is Jupiter. To its **lower right** is one of Jupiter's moons. There are two other moons just visible, on either side of the planet, and close to it. The orbits of Jupiter's four large moons are roughly in the same plane, so when you see these moons they are in a straight line.

To lower right is Saturn. It is an elliptical shape, because at 25X we could not actually see the space between the planet and its rings. This is how Galileo saw it with his 20X telescope in 1609. He wrote that

Saturn had handles. Saturn is slightly smaller in diameter than Jupiter, but is twice as far away, and also receives only one quarter the amount of sunlight as Jupiter does. That explains the difference in magnitude of the two.

This is what we did on our night at the airport.

A NEW SECTION – A NEW PLACE TO SHARE ?



A couple of members suggested that we offer a section of the newsletter called "Sightings" or "Observations" or "Nature Bites" (lol, that last one is mine – not really seriously). A place for people to share something they thought might interest others but that wasn't as in-depth as many of our articles have been. **What do you think?**

I'll share two examples in the next pages – please email me sylvia at educomm.ca to let me know what you think.

ENCOUNTERS WITH NATURE

My Unexpected Visitor (Bonnie Mullin)

In early October I had this spider appear on my patio. It just sat there for me to take pictures!!! It was about 1.25 inches long (counting the legs). I was surely glad it was outside!!!!

Not knowing what it was I sent the picture to Lynne Brookes. Of course she knew.

Lynne's reply: I've seen some of these guys (or similar) over the years trotting around outside hunting. I believe it is one of the introduced "Hobo Spiders" *Tegenaria agrestis*

Bonnie adds from Samantha Vibert, UofAlberta: "What people attribute to spider bites are often not, and more likely bacterial infections picked up from other sources." She tries to counteract myths about spiders – "I do this by getting people interested in their forms of communication, which they do through smell, percussion, silk spinning, and dancing."

See also Wikipedia article: [Hobo spider](#)



Remembering Our Trip to Horne Lake Caves (Teri Hitch)

(pre-COVID images)



The Cave Buddha

A few reasons why I love Splunking

The magic of the unexpected
 No wireless
 Being in a "different" world
 The mysteries...

The pure air
 Beautiful formation
 The quiet, except for a few water droplets

Cave animals, for whom we need to keep our light away from their no-light adjusted eyes.
 The sense of peace

Teri

Pollen Bees: *We can help pollinator bees survive and hopefully thrive.*

Connie Kuramoto's Recommendations

Buy organic.	Don't use pesticides.	Leave your yard messy.	Build brush piles.	Create bee mini-mansions.
Get rid of your lawn.	Plant wildflower mixes.	Plant all types of flowers.	Leave the dandelions.	Garden with native plants.

Highlights of Connie's Zoom presentation during Jan 2021 ANats meeting. *Nancy Randall*

Pollination Ecology Lab at SFU <https://www.sfu.ca/people/eelle.html>

The 'Bee Info for the Public' and 'Pollinators of Southern British Columbia' sections provide images of myriad varieties of pollinator bees as well as pollinator-attractive plant.

Habitat Acquisition Trust: <http://hat.bc.ca/gardening-with-native-plants>

Many helpful articles about gardening for nature.

If you wish to have a PDF copy of Connie's presentation, contact Connie connie.kuramoto@gmail.com

BEE AND BUTTERFLY POLLINATOR PLANT PROJECT

Rosemary Taylor



As spring approaches, we encourage you to take time to plan what to plant for the bees and butterflies in our area. Even the smallest space or a few potted plants can help.

You'll find helpful guides on the [Island Pollinator Initiative](#) website – look for [Western Vancouver Island Guide](#).

For lots of good ideas for planting and plants, check out the August 2020 presentation (56:40) by North Vancouver's Sally Hocking – [Butterflyways – Plants & Butterflies](#), on the Vancouver Naturalists Youtube channel.

BRANT WILDLIFE FESTIVAL

Lynne Brookes

This popular "Celebration of Nature" will again take place this spring—but of course, differently! Ceri Peacey, BWF Community Coordinator, and others are working with The Nature Trust of BC to foster awareness of the important peak March—April period when Brant and other migrating birds' depend on the resource rich shores of the PQB Wildlife Management Area (PQBWMA).

This year the BWF is migrating into social media with a series of new videos, into the local newspaper with a number of timely articles, and appropriately (and responsibly)—outdoors! For one, there is a newly developed PQBWMA and Nearby Inland Areas "Bird Trail" for all to enjoy over this period. With a downloadable guide and checklist, an individual or small "bubble group" (check current Covid-19 recommendations) can visit eight bird-watching "hot spots" to enjoy seeing birds in our area.

For another, the Mount Arrowsmith Biosphere Region (MABR) team at VIU will hold a virtual Bioblitz over a three day period in April. People can send images of plants and wildlife they see within the Biosphere adding to the MABR flora & fauna database. The North Island Wildlife Recovery Association will also provide an enjoyable and informative virtual Eagle Release. A "Brant Invasion" is planned too in Parksville & Qualicum Beach where 25 beautifully painted Brant cut-outs will be displayed. Take and send a selfie and enter a prize draw! For details and up-to-date information visit: <https://brantfestival.bc.ca/>

Great Horned Owls and Pillow Talk

The Great Horned Owl (GHO) is noted for its ferocity as a hunter and willingness to kill and eat about anything possible—including members of its own species. Twice this past January I witnessed another side of this raptor's behaviour.

Our home lies within the territories of many fascinating bird species and we enjoy watching them daily as they go about their life activities. Over the last two years we've been privileged to share this recovering forest space with a pair of GHOs. We have been thrilled by the many, mostly daytime, encounters we've had with these impressive raptors. For their part, they probably just consider us to be too large to eat, flightless, non-threatening, and therefore, not of much interest. However, this pair does seem to recognize that the local ravens, their daytime nemesis, are wary of us. I say this as it appeared the owls purposely and repeatedly used our proximity to keep the ravens away from their fledglings last year. (*See related articles in the June & Sept. 2020 ANats newsletters .*)

This past January 21st I was outside just after sunset and noticed a slight movement in a nearby tree. In the lingering light I saw a large female owl perched precariously atop a willow just across from where I was standing on our driveway. Suddenly, a second owl, her mate, appeared and landed on another wispy tree near hers. They hooted briefly to each other. He then flew over to her treetop and perched close to her side. For a moment, they hooted more quietly back and forth. Next, carefully balancing on the flimsy branches, he worked himself around behind her and they mated. He came back to her side and they then closely faced each other. Astonishingly, they began uttering a series of quiet, gentle, short semi-hoots to each other for nearly a minute. After this intimate moment the male flew off into the darkening evening. Soon after, the female flew from the willow top in the same direction.

Three nights later, just at sunset, I noticed the female standing on the flat top of a small diameter snag. Pausing to admire her silhouette against the drizzly snow-flecked graying sky, I saw the male fly out of the forest to land close to her on an adjacent thin, leaning tree. They hooted to each other for a moment. He then flew up to and behind her fluttering close above to mate (as there wasn't room for both to stand.) He dropped down to perch again on the same nearby leaning tree and faced her. The two proceeded to quietly and gently semi-hoot back and forth to each other. After a minute or so, he flew off and was soon followed by his mate.

Wow...

French Creek Estuary Eagle Preserve—Update

Many thanks to the Arrowsmith Naturalists Club and individual members for your generous donations to the Eagle Preserve at French Creek estuary land. Support from such a dedicated and respected group is much appreciated!

Good news! Trevor and Eileen Wicks and two anonymous donors pledged to match donations up to \$28,000 until Jan 15th. Thanks to many generous donors the goal was exceeded, over \$56,000 raised and a donation pledge of \$20,000 received. A fantastic start toward raising \$500,000 in community contributions for the Eagle Preserve.

Next Steps: Watch for "Help Eagles Soar" posters going up at local businesses soon. Donation letters and brochures for businesses are underway. Zoom video presentations showcasing the amazing wildlife of this area will be available soon.

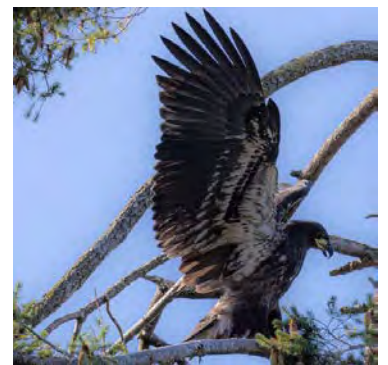
For more info, to volunteer or donate please visit: ffccs.ca or savefrenchcreekestuaryland.ca

Lynne Brookes



Juv. GHO – Dave Erickson

contributed by Denise Foster



Join us February 12-15, 2021

Connect to Birds, to Nature, and with People around the world!

You are invited to participate in the Great Backyard Bird Count, a citizen science project conducted annually in mid February. Count the birds you see in favourite places at home or in your community for as little as 15 minutes on one or all four days. Then, submit your bird list and be part of a global movement to better understand how bird populations are doing. Your participation matters as this count helps scientists better monitor and protect birds around the world.

New to the Great Backyard Bird Count or using eBird? Check out the "how to" guides and other information about how to participate at <http://gbbc.birdcount.org> .

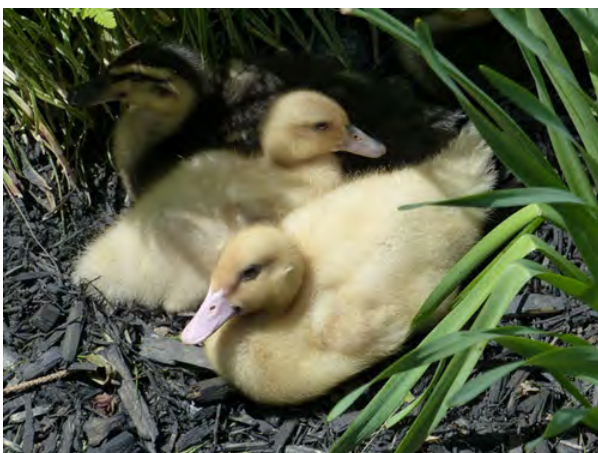
A "rose" by any other name...

Spotted by James Craig walking through the Englishman River estuary. What do you see?



Looking forward to spring!

Teri Hitch



A Self-guided Naturalist

Sylvia R

Some suggestions for nature activities you might try on your own, or with your small bubble-people?

- **Nature Conservancy** – [Nature bingo or scavenger hunts](#) or [#Take5withNature activities](#) or [make something](#) useful – a bee hotel, a pinecone feeder?
- **Sierra Club**: try the [Coastal Plant Bingo](#) or the [Winter Adventure Hunt](#) or the [Nature Memory Game](#)?

Suggestions from Teri Hitch:

READ article by well-known botanist and medical researcher Diana Beresford-Kroeger – [How a Famous Tree Scientist Seeks Well-Being in Nature During the Pandemic](#), Andrew Nikiforuk, The Tyee, 2020/12/31

Watch on Netflix (Youtube channel) – [Our Planet | One Planet](#), David Attenborough – full episode)

Suggestions from Rosemary Taylor:

WATCH OR READ:

Informative evening presentations available on Nature Vancouver 's You Tube channel

<https://naturevancouver.ca/videos-of-evening-presentations/>

Fun fungus resources from Cumberland Forest:

<https://www.cumberlandforest.com/fungus-fest/fun-fungus-resources/>



List of links from articles

- p1 Mount Arrowsmith Biosphere Region Research Institute - <https://mabrri.viu.ca/overview>
- p4 Support for Christmas Bird Count from:
 Buckerfields <https://www.facebook.com/Buckerfields/>
 The Mulberry Bush Book Stores
https://mulberrybushbooks.com/?q=p.about_us
 Cultivate Garden & Gift <https://cultivategarden.com/> and
 North island Wildlife Recovery Centre
<https://www.niwra.org/>
- National Audubon Society Christmas Bird Count
<https://www.audubon.org/conservation/science/christmas-bird-count>
- Summary of BC bird counts - BC Field Ornithologists website <https://bcfo.ca/> (click on CBC's)
- P6 Hobo Spiders https://en.wikipedia.org/wiki/Hobo_spider
- p7 Pollination Ecology Lab at SFU
<https://www.sfu.ca/people/eelle.html>
- Habitat Acquisition Trust: <http://hat.bc.ca/gardening-with-native-plants>
- Island Pollinator Initiative guides
<https://islandpollinatorinitiative.ca/resources>
- Vancouver Naturalists Youtube channel – see video
 Butterflyways – Plants & Butterflies
<https://youtu.be/hSE6BBamBRc>
- French Creek Estuary Eagle Preserve - <https://ffccs.ca> or
<https://savefrenchcreekestuaryland.ca>
- Brant Wildlife Festival - <https://brantfestival.bc.ca/>
- p8 French Creek Conservation Society - <https://ffccs.ca/>
- Save French Creek Estuary Land -
<https://www.savefrenchcreekestuaryland.ca/>
- Great Backyard Bird Count - <http://gbbc.birdcount.org>
- p9 Nature bingo - <https://www.natureconservancy.ca/en/what-you-can-do/bring-nature-home/kids-corner/nature-bingo.html>
- Take5 with Nature -
<https://www.natureconservancy.ca/en/what-you-can-do/bring-nature-home/take-5-with-nature.html>
- Nature DIY- <https://www.natureconservancy.ca/en/what-you-can-do/bring-nature-home/learn/diy/>
- Sierra Club** activities: <https://sierraclub.bc.ca/parents/>

List of images:

- p3 – images long-billed dowitcher and western meadowlark courtesy of R. Hocken
- p4 – Fox sparrow, James Goodwin; Spotted towhee and Red-winged Blackbird, Dave Erickson
- p5 – image of Jupiter-Saturn conjunction, Claire Summers
- p6 – hobo spider, Bonnie Mullin; images from Horne Lake trip, Teri Hitch
- p7 – Juvenile Great-horned Owl, Dave Erickson
- p8 – eagle – shared by Lynne Brookes
- p8 – estuary creature – James Craig
- p8 – spring images – Teri Hitch

List of links from articles (cont'd)

- p9 Diana Beresford-Kroeger –
<https://thetyee.ca/News/2020/12/31/Tree-Scientist-Seeks-Nature-Well-Being-Pandemic/>
 Andrew Nikiforuk, The Tyee, 2020/12/31
- Our Planet | One Planet, David Attenborough – full episode <https://youtu.be/GfO-3Oir-qM>
- Nature Vancouver 's You Tube channel
<https://naturevancouver.ca/videos-of-evening-presentations/>
- Fun fungus resources from Cumberland Forest:
<https://www.cumberlandforest.com/fungus-fest/fun-fungus-resources/>