



"Know nature and keep it worth knowing"



Canadian Bat Box Program

AGM 2022 - Kelowna

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In This Issue:

Regular Columns

Editorial	3
President's Focus.....	4
Conservation Committee Updates	7
Naturalists' Mentor - Lynn Howard Pollard.....	11
BC Naturalists' Foundation Update	15
Letters to the Editor.....	23
Book Reviews.....	26
North in the Spring #18: Granisle Loop.....	30
Naturalists' Mentor - Daphne Solecki	32

Features

Cowichan Valley Amphibians at Risk from Vehicles	10
Vice President Wanted for BC Nature	12
Nature Club Book Celebrates Beauty of the Region	12
IBA Focus - The Case for ebird	14
New Observation Tower at Swan Lake, Vernon.....	15
Young Volunteers Become Summer Interns	16
Surbhi Ratti - Canada Summer Jobs	16
Grey Seas and Phantom Birds.....	17
Canadian Bat Box Project	18
Wildlifers Wanted	21
Climate Solutions 101: Part 1	22
Quw'utsun Sta'lo' Skweyul	24
Lichens - Winter Wonders	24
The Last Word	31

Events

BC Nature Field Camp - Cathedral Lake.....	20
AGM 2022 May 26,2022	28

Objectives of BC Nature (Federation of BC Naturalists)

- To provide naturalists and natural history clubs of B.C. with a unified voice on conservation and environmental issues.
- To foster an awareness, appreciation, and understanding of our natural environment, that it may be wisely used and maintained for future generations.
- To encourage the formation and cooperation among natural history clubs throughout B.C.
- To provide a means of communication between naturalists in B.C.

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Melissa Hafting (L) being presented the Daphne Solecki Award by Debbi Hlady (R)

Thank you for organizing this Nature BC award, and for Daphne's generous contribution of this beautiful plaque in support of outstanding nature educators. D. Hlady

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Editorial

The Wedge and the Edge, by Ploidy! Part Three

Author: Loys Maingon

There are many lessons that can be drawn from the Southgate River and Big Bar Slides.

The initial reaction of Chief Blaney and the Department of Fisheries and Oceans Canada (DFO) officials at the possible loss of a generation of Coho and Chum salmon to the slide was immediately to re-build the stock from hatchery stock in order to sustain “food security” which is another way to say “the economy”. Similarly, the approval of the construction of an artificial fishway to facilitate future passage at Big Bar has been complemented with a flurry of hatchery enhancement projects. The approach is that the priority is to “rebuild the stocks.” There is no care or craft in supporting even the rapid speciation potential of nature.

However well-intentioned and socially or economically necessary these projects may be deemed to be by stakeholders and politicians, these are really short-term band-aid solutions in an environment of ecological collapses and large systemic changes. There seems to be on all sides little awareness of the changes developing around us and growing the precariousness of our situation. This is all pretending that the habitat systems are stable, or that simplified proxies can be restored or re-engineered at will.

The reality is that the collapse of West Coast salmon lies in the collapse of wild salmon genetics. Notwithstanding the good intentions of DFO’s “Wild Salmon Policy”³ the vast majority of B.C. salmon are now largely hatchery stock. Little attention is given to the diversity of small populations. In spite of decades of promises that the stock would be returned to “historic numbers” B.C.’s salmon collapse continues. As noted by Dr. Bob Rangeley in *Ocean’s Canadian Fish Audit*, “Out of 33 critical stocks, only six have rebuilding plans. A lot more are scheduled for the coming years, but at the rate we’re going it’s going to take 37 years to get through those plans, and that’s assuming no more stocks get into the critical zone.” That assumes, of course, that we can rebuild “the stock” for economic purposes, not necessarily for the purpose of increasing the genetic diversity of small diverse populations back to what it was at the time of contact. That was in fact a problem that Carrie Holt inadvertently highlighted in a webinar presentation for the Canadian Society of Environmental Biologists. The DFO conservation strategy is not intended to prioritize the interest of the salmon populations. It is intended to maintain the diversity of “the stock”, the fisheries stock (not the “populations”) while continuing to make it available as an economic resource. In other words, the economy continues to be the priority and conservation

pays the piper.

What this leads to has been a collapse of population and wild genetic diversity in the Skeena, “Portfolio simplification arising from a century of change in salmon population diversity and artificial production”. (Price *et al Journal of Applied Ecology* 58:1477-1486) Based on long-term data from 1912 onwards, what is reported is that one population, the Babine population, makes up 91% of returns in the Skeena fishery. The Babine population consists mainly of hatchery stock. It now dominates returns with many smaller populations having been extirpated. Population diversity has declined by 70%. Life histories have shifted or disappeared. The return of wild salmon is 31% of historic numbers. As we know from standard fisheries modelling, 30% is the critical limit. Abundance has contracted throughout the entire watershed, and population diversity has declined by 70%. While the raw numbers of returns appear similar to historic trends thanks to hatchery production, the actual low genetic diversity of these sockeye makes them extremely vulnerable to climate change impacts .

Price and co-authors’ work is important because their data on the Skeena sockeye populations is a unique long-term glimpse at the impacts of our fishery management practices. These findings and conclusions drawn from this unique long-term data set are applicable to all of our fisheries, and to all of our resource management practices.

The Skeena fishery is one of our most successful fisheries. Price’s results are

a condemnation of stock management practices for commercial fisheries which have resulted in “the lost stabilizing portfolio effects that this watershed complex hosted a century ago, which ultimately may weaken its resilience to increasingly variable environments” (p. 1484). What Price *et al* ultimately advocates is an abandonment of an approach by “stock management” and its economic correlate: coastal commercial fisheries.

What is being increasingly suggested by research is the closing of the fishing industry as we have known it for the past 150 years, because it is now endangering the viability of the salmon at a time of increased climate change-driven instability. Price *et al*, together with an increasing number of young fisheries scientists, is proposing a return to First Nations’ “terminal-fisheries”. That is in stream fisheries which can target specific returning populations. Management by populations, rather than general stock would increase stewardship responsibilities to the environment and promote the maintenance and enhancement the genetic integrity and resilience.

Fundamental to this reasoning, though largely unarticulated in Price *et al* scientific publication, is the logical reality that the major driver behind the collapse of genetic biodiversity and the dangers that it poses for the survival of B.C.’s salmon, and the First Nations and settler cultures that have relied on the salmon fishery is the need to abandon the practice of putting the economy first. As Donna Macintyre, the fisheries director for the Lake Babine Nation aptly notes, hatchery enhancement and the artificial spawning

Continued page 4

Editorial continued from page 3

channels that flow into Babine Lake are “a blessing and a curse. While they feed Lake Babine’s people, they create a false understanding about the overall health of the watershed’s sockeye population”⁷

And that reflection is as applicable to all of B.C., as it is to our global situation. Prioritizing the economy is a short-term blessing and a long-term curse that undermines the protection of biodiversity which future generations will need times of growing adversity and environmental extremes.

However, in B.C. our government appears to have little concern for the state of the environment or the sense of the need to understand our environmental limits. It prioritizes economic considerations. What it does not understand is that there is a need to show economic leadership, as First Nations and young biologists appear to be doing when they recognize that it is the time for the coastal commercial fisheries to be closed and for recreational fisheries on First Nations territories to be heavily regulated to preserve ecological values. The point that our politicians do not seem to understand is that First Nations are not necessarily interested in being integrated in the prosperity of a failing colonial economy. The signals indicate that in signing United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) the Horgan government only understood it as an avenue to First Nations integration, rather than as an integration into economic and cultural

diversity.

The government’s monolithic thinking has been obvious in its handling of fisheries, conservation, and energy projects. It endangers us all.

After dubious promises made before the 2017 elections to emulate the State of Washington to remove Atlantic salmon fish farms, the NDP government manipulated the situation to continue to support the fish farming industry. Years of petitions from First Nations were met by steadfast tone-deafness in Victoria; it took a decision from Ottawa to respect the UNDRIP and close down the Discovery Bay farms. This is an estimated loss of 1,500 jobs regionally. The government reaction, in spite of years of prevarication that it would “protect the environment” and close down these farms, was to protest closure because of the loss of “well-paying” jobs.

The government’s recent decision on Site C which has now sky-rocketed from a \$5-billion to an official \$16-billion project, has been based on exactly the same logic: “The premier said more than 4,000 people are currently employed because of Site C construction, and he is not willing to have them lose their work.” Four thousand jobs on a geo-technically unstable dam site that will never pay for itself, and which will be a major contributor to climate change, both through dam site emissions and as an economic driver of the fossil fuel industry that the B.C. government wishes to promote. Four thousand jobs that will end in three years are

traded for the destruction of one of B.C.’s few large and most productive agricultural valleys. Four thousand short-term jobs override 5,000 years of cultural presence in violation of Treaty 8, and as pointed out by the Union of B.C. Indian Chiefs, in clear violation of the government’s own obligations to UNDRIP. Site C, should stand as a monument to B.C.’s geologically and ecologically unstable future built out of short-term economics, with little or no regard for either the environment or the rights of First Nations.

Similarly, after much protestations, and once again after the intervention of the federal government, B.C. recently put a temporary halt on logging old growth that is home to the last three Spotted Owls in the province. That came after a year of petitioning from the Spo’zem Nation on whose territories the last Spotted Owls were found. One can spin this diplomatically as a wonderful last-minute agreement, but the reality is that B.C.’s NDP government’s only priority is jobs for a self-endangered economy that has already destroyed most of B.C.’s natural capital. The stay is only temporary because as long as there is old growth, there will be well-paying jobs to cut down old growth and in B.C., jobs come first, but genetic diversity is always the fulcrum at the edge of things. ♦

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All references that accompany this article are posted at bcnature.org on the complete article.



President’s Focus Know Nature and Keep it Worth Knowing

Author - Harry Crosby

BC Naturalists continue focusing attention on conservation, biodiversity and ecology.

Meanwhile, the Glasgow conference on the Climate

Emergency is one more milestone for the international attempt to address problems of climate change. Unfortunately, countries continue to fall short of targets, leaving earth’s population concerned that the increasing temperature of

the planet will lead to a distressed population. Meeting the needs of the planet will require earth’s population to change the way it earns income, change from fossil fuel dependence to green energy, introduce a carbon budget to replace a carbon tax, change the way we build homes and change to a greater use of public transport.

The provincial government has acknowledged a need

to preserve some of the remaining ancient forest. There remains concern that industry and economic factors will continue to win out over the biosphere and that, in the end, nature, and the world’s the population will lose out because long-range needs are ignored.

The focus of BC Nature is changing.

We now have an active Climate Committee, putting

Continued page 5

on webinars and providing ideas to the Board. This week the Wildlife and Habitat Committee is having its first meeting. We will be addressing our concerns about ancient forests. We are becoming more vocal in our effort to keep nature worth knowing than we have been.

BC Nature is looking for funding to provide increased support to the clubs, assistance with forming societies,

fundraising, membership drives, and easier accounting. We will look for funding to support clubs with existing bat conservation programming and for clubs embarking on new bat programs. We are looking for funding to allow us to assemble information on pollinator programs, butterflies, amphibian mapping, and to deal with invasive species. We continue to develop the website to make resources on nature programming available on-line for

clubs. We have a start on a guide about how to raise funds and conserve nature sites of importance to the clubs.

Nature camps are resuming in 2022, and an annual general meeting is planned for Kelowna towards the end of May 2022.

Let's look forward to a rebounding year in 2022. ♦

Conservation Committee Updates

Author: Peter Ballin and the Conservation Committee

We face stark, grim environmental realities. Seventy-five percent of all land and 66% of oceans are severely altered. A million out of perhaps 8 million species of plants and animals are threatened with extinction (Zakaria, F. 2020. *Ten Lessons for a Post-Pandemic World*. WW Norton: p 16, citing the U.N. Sustainable Development Report: *Nature's Dangerous Decline*, May 6, 2019 <https://bit.ly/3oGJ438>). What can an individual and a member of BC Nature do?

Perhaps you, as I, had a "George Floyd moment". A point where something just snapped inside of you and said, "That's it!! I'm as mad as hell and I'm not going to take it any more! I'll act however I can to combat racism." And perhaps you had a similar moment with the report of the 215 unmarked graves at the Kamloops Indian Residential School. We speak and act in line with the ideals for which we strive, while simultaneously acknowledging the much less than ideal ground truths that need to be urgently addressed. What will it take to precipitate the same kind of response to an environmental crisis? Plenty from which to choose. Here's the report of our BC Nature's more recent actions.

In This Report:

- IBA to KBA
- Climate Action
- Roberts Bank Terminal 2
- Fraser River Estuary
- Salmon
- Wildlife Sub-committee
- Bears and Humans

- Caribou
- Wolves
- Old-growth Forest
- Rodenticides
- Species at Risk

IBA to KBA - Liam Ragan reports. The Important Bird and Biodiversity Areas Program (IBA) continues to transition to Key Biodiversity Areas (KBAs), including the hard work of data analysis, survey planning, and grant writing. Soon we will have a new set of resources for our Caretaker Program, most notably a revised Caretaker Manual crafted to provide support on how to better build our community partnerships and collect useful data for Birds Canada and us. We continue to explore First Nations partnerships and hope to expand our work with Indigenous communities in the coming year.

Climate Action - Karen Crosby updates the considerable activities of the Climate Action Subcommittee. The subcommittee started a partnership with Drawdown BC, which conducts public climate education based on the work of the international Drawdown organization (<https://drawdown.org/>), a world leader in science-based climate solutions. For more information about Drawdown, read the article "Climate Solutions 101, Part 1" on their website. The subcommittee publicized two "Introduction to Drawdown" webinars and now has 20+ BC Nature members registered for the full five-session Drawdown workshop "Getting into Action". Subcommittee member Nancy



Randall co-hosted this Drawdown course, and others in the group attended some or all of the sessions to connect with participants, to discuss nature-based climate solutions, and to create a plan to continue the work. The "Getting into Action" workshop will be offered again through Zoom in January; please email Karen Crosby at karencr0@telus.net if you wish to participate.

The West Coast Climate Action Network (WE-CAN) officially launched on October 5, 2021. "WE-CAN and we will influence the B.C. government to treat the climate emergency like the emergency it is." If you missed the great Launch Event, you can find the video at - <https://bit.ly/3CaSoRP>

BC Nature signed on to two open climate action letters, the first with West Coast Environmental Law with 32 signatories and the second with My Sea to Sky with over 240 signatories (<https://bit.ly/3Clrq77>). The latter calls on the B.C. government to recognize the urgency of addressing the climate crisis now as it impacts our communities and our health with deadly heat waves, wildfires, drought, floods, crop failure, fisheries collapse and costly evacuations and infrastructure damage. The letter elaborates upon these 10 points:

Continued page 6

Conservation Report continued from page 5

- Set binding climate pollution targets based on science and justice
- Invest in a thriving, regenerative, zero emissions economy
- Rapidly wind down all fossil fuel production and use
- End fossil fuel subsidies and make polluters pay
- Accelerate the transition to zero emission buildings
- Leave no one behind
- Protect and restore nature
- Invest in local, organic, regenerative agriculture, and food systems
- Accelerate the transition to zero emission transportation
- Track and report progress on these actions every year.

Both letters received media attention, and the first resulted in an invitation to meet with the B.C. Minister of the Environment. More information will be provided in the Spring issue of *BCnature*.

BC Nature members piloted the “Climate Code Red” campaign organized by the Council of Canadians. Starting on October 12th, this country-wide campaign means to flood the Canadian parliament with petitions presented repeatedly to demand that the federal government implement just transition legislation in the first 100 days of Parliament. MPs who receive these petitions can read them aloud in Parliament: a first public commitment to supporting meaningful legislation. Additionally, when an MP tables a petition, the government of the day is required to formally respond within 45 calendar days. Our BC Nature group is piloting this strategy in New Westminster, using the process as follows:

- gather 25 signatures
- deliver the petition to our MP
- repeat until meaningful just transition legislation is implemented

By delivering the minimum number of 25 petition signatures multiple times, we will emphasize the importance of just transition legislation to our MP and pressure him to table the petition in Parliament. We will also use social media to attract public attention to the

demand for a just transition. There is no deadline on this campaign so if you or your club wishes to participate, email Karen Crosby at karencr0@telus.net.

As of this writing, our B.C. government has put forth quite inadequate new climate change policies. By the time you read this, you will be able to access BC Nature’s response on our website.

Roberts Bank Terminal 2 (RBT2) and the Fraser Estuary - Roger Emsley, BC Nature Special Representative for Roberts Bank reports that there is no further progress towards a decision for RBT2 since the last report, and the decision process remains paused as of October 17. As of the November 22, the decision process is now in the hands of the new federal cabinet. Jonathan Wilkinson, who is well briefed on the RBT2 project and is fully aware of the potential impact on biofilm on Roberts Bank, remains in Cabinet as the Minister of Natural Resources. The new Minister of Environment, Steven Guilbeault, shows a very strong environmentalist record. Joyce Murray, former Environment Minister in B.C. is now the Minister of Fisheries, Oceans, and Canadian Coast Guard; she lives in Vancouver and understands the RBT2 issues, and stands against open-net pen fish farms and the TMX pipeline. The RBT2 status as of the end of October, and related activities, events, comments, etc. follow:

Vancouver Fraser Port Authority (VFPA) submitted the additional information asked for in August 2020 by then Environment Minister Wilkinson immediately after the federal election in September 2021. Federal agencies in Ottawa have had the Port’s information since just after the federal election. There has been an ongoing exchange between the scientists and the Ottawa bureaucracy. Apparently a faction in Ottawa wants this project approved.

By the time you receive this magazine, we expect postings of the Port’s additional information to the Impact Assessment Agency Canada (IAAC) registry, along with draft conditions for

approval from the IAAC.

These draft conditions will not likely indicate any feasible remedies for the environmental damage that will result; rather, they are expected to indicate inclusion of follow-up mitigation and monitoring. They might also potentially incorporate some form of compensation. When Deltaport Third Berth was approved it contained provisions for adaptive management; which may follow for RBT2.

With the posting of the information and the draft conditions a further round of public consultation will precede a decision made by the Environment Minister and Governor in Council (Federal Cabinet), expected early in 2022.

The federal government’s decision to either approve with mitigation or reject RBT2 hinges on the Port’s “Achilles’ heel”: biofilm, fatty acids and the fate of an entire species: the Western Sandpiper. At this stage, cumulative effects, economic need and other risks are unlikely to be considered. Either build a port and lose an entire species or deny approval and protect millions of migratory and other shorebirds, not to mention Southern Resident Killer Whales and salmon.

The last federal government denied approval for a container terminal project in Quebec on environmental grounds (as well as other underlying issues). The announcement on behalf of federal government cabinet minister Jean-Yves Duclos, President of the Treasury Board stated, “In the 21st century economic development must take place in respect of the environment”. The potential for significant environmental degradation is far greater with RBT2.

The Quebec decision ought to set a precedent – will it effect the RBT2 decision?

VFPA denies any significant adverse effects and negative impacts to biofilm on Roberts Bank. The Port’s proposals are for offsite habitat replacement,

Continued page 7

Conservation Report continued from page 7
monitoring, mitigation and potentially breaching the causeway to allow tidal flushing.

The latest submission to the registry (April 2021) from the Stó:lō Nation identifies a range of concerns, but not an outright rejection.

VFPA has announced it has reached partnership agreements with several First Nations, including Tsawwassen and Musqueam. No indication as to how this impacts RBT2 approval.

VFPA also announced a \$6 million contribution to the City of Delta's community fund, contingent on RBT2 approval. (Delta is one of three cities that advised the federal government of their opposition to the project).

The Port is using the large container volume increases through Vancouver in 2021 as further justification for RBT2. However, the reason for this traffic surge is straightforward. The pandemic disrupted supply chains and left thousands of empty containers in the wrong place. Those empties are now moving, mostly back to China where they are needed - 70 percent more than in 2020. US ports are heavily congested and Vancouver is handling many more US containers.

DP World should have gone public by the time that you read this with its expansion plans for Prince Rupert, which will result in additional capacity of 5-6 million containers, more than enough to handle West Coast Canada's trading needs for decades to come. Global Container Terminal's (GCT) alternative to RBT2 - Deltaport Berth 4 - has been referred to an independent review panel because of the potential for adverse environmental effects. GCT's legal action against VFPA, which is opposed to the Deltaport expansion, progressed to a four-day judicial hearing that commenced on October 18, 2021. At the end of the judicial review the judge indicated he would reserve his decision. The dedicated page on bcnature.org for the Roberts Bank Terminal 2 issues is here: <https://bit.ly/3qIZvON>

Fraser River Estuary - In late October, BC Nature sent an Open Letter to our provincial and federal representatives in defence of the threatened Fraser

River Estuary. Most of the letter follows, and it's posted on the BC Nature website.

"The natural health and wealth of the Fraser River and its estuary is important to all of B.C.; indeed, to all of Canada. Yet the lower Fraser, from Hope to the river delta, has already lost more than 70 percent of its natural habitat, and is now under further threat from environmental degradation as a result of projects such as Roberts Bank Terminal 2."

In the recent article *Black Swan Summer: Tipping Climate and Biodiversity Destruction*, in the *Bulletin of the Canadian Society of Environmental Biologists* (Fall 2021:73:3), Loys Maignon described the summer of 2021 as a "Black Swan Summer". What is a Black Swan? It is the occurrence of an unpredictable event characterized by its rarity and severe and often devastating impact; an event that in hindsight should have been predictable.

In the Black Swan Summer of 2021, an unprecedented drought swept western North America with record temperatures that killed humans and plants and animals alike, set towns ablaze and caused billions of dollars in damages. The marine environment suffered as heavily as the terrestrial environment. Climate change manifested itself with a punctuation mark. Yet despite all the talk of sustainability, we continue to promote an economy of endless growth while still claiming that we can also retain a healthy environment.

Such Black Swan events are becoming increasingly common; it is beyond time to expose the lie of the concept of endless growth with its disregard for the environment. B.C.'s Fraser River Estuary is a poignant example; one in need of urgent action to maintain ecosystem integrity.

The Estuary simply cannot withstand any more industrial or port development. Scientists from Environment Canada and universities, experts in wetlands and wetland functions, have voiced their deep



Photo: B. Towns

Eelgrass (*Zostera marina*)

concern. Complex systems such as the Fraser River Estuary, while resilient, can reach tipping points that precipitate steep ecosystem function declines.

The letter goes on to emphasize the adverse effects of a Roberts Bank Terminal 2.

Meanwhile, our Conservation Coordinator Simon Valdez Juarez, is working on a BC Nature strategy to help preserve and enhance the integrity of the Fraser River Estuary. His work involves summarizing the history of impact upon the estuary and recommending actions. Simon contextualizes threats to the Fraser River Estuary within the broader context of global and regional threats to biodiversity.

The Fraser Estuary is one of the most important areas for biodiversity as it encompasses several different types of terrestrial and aquatic ecosystems that together host 101 of the 930 imperilled species in B.C. (Austin et al. 2008, Kehoe et al. 2020). Two migratory systems also make the Fraser Estuary important for biodiversity outside B.C.: the Pacific Flyway, used by millions of birds in their annual migration, and the yearly migration of millions of anadromous fish between the fresh waters of the Fraser Basin and the Salish Sea.

BC Nature's vision for the Fraser
Continued page 8

Estuary includes support and coordination of science-based initiatives that preserve and restore the ecological function and the biodiversity of the Fraser Estuary in ways that respect cultural uses and foster sustainable economic development. With 12 member clubs already working towards conservation and restoration of the Fraser Estuary, BC Nature is well-positioned to work towards improving coordination in conservation action in the Fraser Estuary. Strategies that clubs employ include population augmentation (e.g., bird and bat boxes), problematic species management (e.g., invasive plant removal), aquatic habitat restoration (e.g., stream keeping), public land management (e.g., campaigning for protected areas), halting major development (e.g., RBT2), and monitoring (e.g., collecting field data).

Look forward to learning more about the Fraser River Estuary and action from our clubs and BC Nature.

Salmon - Larry Dill drafted a letter that BC Nature sent to government (<https://bit.ly/30uAw6I>) in support of the Connected Water initiative, led by the Watershed Watch Salmon Society, to reconnect 1500 km of salmon habitat currently blocked by out-dated flood infrastructure in the lower Fraser River.

Salmon populations in the Fraser are at historic lows and a major cause of this is loss of habitat, particularly rearing habitat for juvenile fish as they transition from freshwater to the ocean. Many important habitats have been degraded through urbanization and agriculture; access to others has been blocked by flood control structures.

Quoting from the Watershed Watch website: "Most of the flood infrastructure, installed to protect homes and farms from flooding, also block salmon from accessing waterways that once provided valuable overwintering and rearing habitat. The aim of the initiative is to restore salmon habitat by upgrading to fish-



Photo: J. Forster
Grizzly Bear (*Ursus arctos*)

friendly flood infrastructure, and undertaking restoration works such as riparian plantings and invasive species removal."

Salmon-safe flood control includes a suite of proven technologies and designs that allow fish passage to critical habitats. The letter encourages funding decisions regarding flood control upgrades that take salmon fully into account.

Wildlife Sub-committee - Ben van Drimmelen of the Conservation Committee is organizing a small group of members to research optimizing our influence on the conservation of wildlife.

For further information or to volunteer with this committee and their mandate, please see Ben's article on page 21 of this edition.

By the time that you read this, some BC Nature members will have participated in an online discussion called "Wildlife Dialogues" hosted by the Wildlife and Habitat Branch, Forests, Lands, Natural Resource Operations and Rural Development. We will have been advised of the Minister's Wildlife Advisory Council and the Together for Wildlife Strategy activities in their first year and offered input towards new ways of managing wildlife in B.C.

Bears and Humans - Alanna Mackenzie has pursued the escalating issue of human-Black Bear conflicts in B.C. with a letter from BC Nature to B.C. ministers and the Conservation Officer Service. In it, BC Nature

expresses concern about the use of reactive management strategies (killing) to address conflicts with large carnivore species, particularly Black Bears, in the province. While we must protect the public, the means of accomplishing this must be proportionate and reasonable, and a shift away from reactive to proactive management of large carnivores must accelerate. Proactive mitigation measures can protect carnivores and reduce negative impacts on humans, including conflict-related costs. The letter emphasizes that more education programs must be delivered to those living along the borders of forests to mitigate the exposure of food attractants to bears. Existing laws against the feeding of wildlife need to be more strictly enforced, because wildlife is often killed when conflicts arise.

More broadly, it is essential to maintain and enhance connectivity to wilderness for bears and other large carnivores. Creative approaches must be taken to ensure there are intact wildlife corridors, and human-wildlife conflict must be considered in urban planning decisions. The province must show leadership in developing a unified, forward-thinking strategy to address future conflicts involving large carnivores. Read the entire letter on the BC Nature website.

Caribou - Joan Snyder updates us about the Caribou Recovery Program. From September 15 until November 15 2021, the B.C. Caribou Recovery Program engaged with tenure holders and the public within the area of candidate herds to gather feedback for proposed predator reduction <https://bit.ly/3Ckqu5r>.

Below find three very useful information sources:
Mountain Caribou Recovery Program Update, *BCnature Magazine*, Summer 2021: pp 10-11. <https://bcnature.org>.
Province seeks input on continued wolf culls to support caribou recovery, *The Valley Voice*, October 7, 2021: p4. <https://bit.ly/3CnfVOU>
Valhalla Wilderness Society, <https://www.vws.org>

Wolves - Jacqueline Sherk updates us on the wolf cull issue. Conservationists and onlookers gathered on the grounds of the B.C. Legislature on October 4th to oppose the shooting and poisoning of wolves under the government's predator reduction program.

The wolf cull program is a stated emergency measure of the government's Mountain Caribou Recovery Program. The Pacific Wild petition in opposition of this policy received 500,000 signatures, and was presented to Katrine Conroy, Minister of Forest, Lands, Natural Resource Operations and Rural Development. Pacific Wild has also filed suit against the government's aerial gunning program to track and shoot wolves, claiming that engaging firearms from helicopters is unlawful under federal aviation laws. The Ministry currently seeks to extend the cull an additional five years.

The Union of B.C. Indian Chiefs recently signed a letter to Minister Conroy calling on the government to immediately halt the wolf cull program, saying that the government knowingly made decisions years ago to destroy critical caribou habitat and that the continued killing of wolves will not bring back caribou in the absence of habitat protection.

BC Nature has previously expressed its opposition to the cull stating that apex predators and their prey are all essential to a healthy eco-system. While BC Nature agrees that measures are needed to protect mountain caribou, we do not support the ongoing aerial killing and poisoning of wolves. More adequate studies of wolves, including inventory and monitoring are warranted. Furthermore, habitat protection and restoration and changes to industry practices must be promoted.

Old-growth Forests - BC Nature is responding to B.C. government policies regarding logging iconic old growth forests. By the time you read this, Peter will have met with MLA and Attorney General David Eby, and BC Nature will have submitted a letter

addressing proposed Bill 23, amending the Forest and Range Practices Act. As of this writing, the B.C. government has greatly expanded its protection of old-growth forests; we need to study the new plans and then comment. We continue to lobby government for greater attention to threatened old growth forest species and habitats and increased involvement with BC Nature and other environmental organizations.

Rodenticides - Elise Roberts continues her role in North Vancouver with "feet on the ground" raising awareness among local strata corporations and checking to ensure bait boxes no longer contain toxic SGARs. Deanna Pfeifer of Rodenticide Free B.C. provides her organization's public statement about B.C.'s new rodenticide action plan at <https://bit.ly/3qMB3vZ>

Species at Risk

Greg Ferguson attended the South Coast Conservation Program's annual Conservation Connects event on September 28th. The two-hour event was held via Zoom and included presentations from six groups/individuals on what actions are being undertaken for species at risk on the South Coast. This included presentations from the Province of B.C., Canadian Wildlife Service (CWS), Community Mapping Network, and others. Full details of the speakers and their presentations can be found at <https://bit.ly/3Dn8jxr>

New recovery documents published by the federal government include the following for terrestrial species at risk in B.C.: Western Waterfan Lichen, Tweedy's Lewisi, and Georgia Basin Bog Spider. These documents and other recent recovery documents can be found here: <https://bit.ly/3qHHqRl>.

Recovery documents in preparation by CWS for species in B.C. include Marbled Murrelet (amendment), Oregon Forest Snail (amendment), Western Bumble Bee, Barn Owl, Western Screech-owl, Barn and Bank swallows, Western and Horned Grebe, Gypsy Cuckoo Bumble Bee, Vivid Dancer Damselfly, Audouin's Night-Stalking Tiger Beetle, and Peacock



Photo: R. Rudland

Trumpeter Swans

Vinyl Lichen.

Some news on species at risk comes from Fairy Creek. A three-day, volunteer-led bioblitz discovered 320 species in the area, 16 of which are species at risk. Of note was the discovery of the old growth Specklebelly Lichen, which is a very rare and sensitive species of ancient forests. Unfortunately, Teal Jones cut a road through the lichen's habitat. A previously unknown population of Western Screech-owls was also found in the area. Volunteer-led auditory and radar surveys led to the discovery of a Marbled Murrelet 'nesting hotspot' of over 100 birds in an area of active logging. Although the Province and Canadian Wildlife Service were notified of these findings, no action was taken to protect this 'hotspot' or other species at risk or breeding birds. Thus, Teal Jones proceeded, business as usual, with the continued destruction of rare old-growth forests in Fairy Creek, known to support species at risk. Find information on Fairy Creek surveys in the article by Loys Maingon, Black Swan Summer: Tipping Climate and Biodiversity Destruction, in the *Bulletin of the Canadian Society of Environmental Biologists* (Fall 2021:73:3).

And...

If your club has a conservation committee, or a conservation individual, consider placing a person on the BC Nature Conservation Committee. That way we can better share more of our conservation activities with our entire membership and inspire yet more of this necessary work. ◇

Cowichan Valley Amphibians at Risk from Vehicles

Author – Larry Pynn

Elke Wind is the frog lady. I catch up with the biologist on an inky, rain-lashed evening on Riverbottom Road in the Cowichan Valley while she conducts a survey of amphibians along a one-kilometre stretch of pavement.

Amphibians can be difficult to spot since they are generally nocturnal and tend to hide in forests and wetlands. Not tonight. After a summer of unusually dry warm weather, the first heavy rains of the season have them on the move – in big numbers and in the open.

“Amphibians have sensitive skins so they need to be in moist environments,” explains Wind, on contract to the Ministry of Transportation and Infrastructure. “When it gets hot and dry, they basically have to hunker down or hang out where there’s water. When it rains, all of a sudden it is like being set free.” Unfortunately, their movements can put them at risk of being killed by motor vehicles. “I get them in all sorts of states, which is quite sad,” she says, adding: “I can be driving on a road at night and I can smell squished amphibians. It’s like a rotting smell.”

Wind carries a flashlight and headlamp. She just bought a new rain jacket, but it’s already leaking. When she spots an amphibian – dead or alive – she records the position from her GPS as well as the species and life stage. I volunteer for the grunt job, employing tweezers to flick the guts to the roadside so they won’t be counted again during subsequent surveys.

When we spot a live native amphibian, we carefully place it onto vegetation on the roadside to help keep it safe. If the creature is facing the right side of the road, that’s where it gets put. “Hopefully, they won’t go back onto the road,” Wind says.

Salamanders have smooth skin and are fast wrigglers. Rough-skinned Newts are

much slower; they’re poisonous, so they don’t have to hurry.

Soon into our walk we spot a large adult Bullfrog. It’s an introduced species and eats pretty much everything, including native frogs and even juveniles of its own species. Further along, large numbers of Green Frogs show up. They, too, are an introduced species and belong in eastern North America. Adults resemble Bullfrogs, but smaller.

And so it continues.

We spot the severed tail of an Ensatina Salamander that eerily still twitches. The species can regrow its tail and has no lungs, breathing instead through its skin.

The tiniest amphibians we encounter are Pacific Treefrogs, some smaller than the gravel used in the highway. “We get a lot of juveniles at this time of the year,” Wind says.

We wear reflective vests, but the work still has risks, especially on a night with poor visibility. Vehicles whip along the highway. A few slow down out of curiosity. One man parks his truck, activates the flashers, and talks about amphibians on his own waterfront, acreage property.

Roads are a fatal attraction to amphibians because they make easy pathways and retain the day’s warmth. Wind fears that the body count will only worsen as the Cowichan Valley’s human population grows. “It really worries me that at some point the traffic will push them over the edge. We’ll have too many getting hit and they won’t be able to recover.”

Earlier this year, the province installed a series of underpasses and directed fencing to reduce the carnage of Western Toads moving between



Photo: Elke Wind

Two Rough-skinned Newts attempt a perilous highway crossing.

Wake Lake and adjacent forest areas. Unfortunately, a residential development across the street stands to diminish the species’ habitat and generate even more traffic. While the network of underpasses and fencing appears to have had a positive effect, it is limited and cannot protect all amphibians. Some species can also hop or climb over the fencing en route to hibernation sites.

After about three hours, the final tally is 228 individuals from nine species, including the Northern Red-legged Frog, Western toad, and Long-toed and Northwestern Salamanders. About half of the total are non-native Green Frogs. And 61% of all these amphibians are roadkill.

What more can be done?

Wind co-authored a 2020 B.C. government document offering guidelines on road building to help mitigate the impact on amphibians. <https://bit.ly/3qHSfml>

Reduced density of development in rural areas near wetlands would also limit impact on amphibians.

And individuals can make a difference simply by changing their driving patterns. “I’m always telling people: ‘These first few big rains of the fall, try not to drive at night.’

“We’re all responsible.” ♦

Larry Pynn is a veteran environmental journalist, Explorers Club member, and author of two non-fiction books, including *Last Stands: A Journey Through North America’s Vanishing Ancient Rainforests*. Find him at sixmountains.ca

Naturalist Mentor: Remembering Lynn Howard Pollard

Authors - Marg Cuthbert, Anthea Farr, Jacquie Stinson, and Jennifer Pollard

With great sadness, we inform our naturalist community that Lynn Howard Pollard, Naturalist Mentor, NatureKids Nicomekl Club leader, teacher, volunteer, dear friend and loving family man passed away the morning of August 31. He was cared for at home by his wife Jacquie, daughter Jennifer, and son Ben.

Originally from Ontario, Lynn moved to B.C. and became an intermediate teacher in Surrey. He was always actively involved in environmental issues and did volunteer work for more than 20 years, before and after retiring from teaching. His early work was with the Western Canada Wilderness Committee and the Boundary Bay Conservation Committee. A long-time and much-respected member of the White Rock and Surrey Naturalists, Lynn taught many naturalists to see and appreciate nature in new ways. His enthusiasm was contagious.

He also participated with Friends of Semiahmoo Bay Society (FoSBS) with community events, such as celebrating World Ocean Day, and he developed and delivered many school programs, including Shorekeepers marine surveys. With the recent COVID-19 restrictions, Lynn was pleased that FoSBS was working to adapt school programs to be used by teachers as videos. Lynn committed to leading monthly birding walks for the City of Surrey and helping with the Birds Canada Christmas Bird Counts and A Rocha's Big Birding Days.

Lynn also hugely enjoyed his 16 years of shared leadership of Nicomekl NatureKids, a family club that teaches children and their parents to enjoy and learn about nature and to engage in stewardship activities. The highlight of the year was always the



Photo - M. Cuthbert

Lynn leading an outing at Crescent Beach

annual long weekend camp, held in different provincial parks. Lynn led many wonderful camp activities, including active nature games, campfire sing-a-longs, nature hikes, night walks (without flashlights) and "Botany or Bust" (teaching kids about native plants). He once said that "Botany or Bust" was the most worthwhile topic he and other club leaders had explored. Kids and parents learned about plant identification and practical uses of plants citing Indigenous references.

Lynn spent the greater part of his adult life imparting knowledge and a love of nature to all ages. He particularly enjoyed sharing his love of the outdoors with young folk, and as we all know, he was exceptionally good at it. He inspired us all. Check out Lynn on the YouTube Channel. <https://bit.ly/3oNYCSs> and on Surrey's online programming <https://bit.ly/3nuwRe9> - Go to Backyard Birding Basics.◇

Lynn's Celebration of Life - <https://bit.ly/3xf5T1H>

Vice President Wanted for BC Nature.

BC Nature is actively seeking a member to step up to the board as Vice President. We welcome any and all expressions of interest. Email: info@bcnature.ca

Responsibilities:

- Assists the President in his/her responsibilities
- Chairs the Human Resources Committee and, at the discretion of the Board, other committees.
- Assists with the preparation of the agendas for meetings.

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Nature Club Book Celebrates Beauty of the Region

Author - Wendy Stewart, South Okanagan Naturalists' Club



Photo: Wendy Stewart

South Okanagan Naturalists' Club (SONC) President Alex Bodden (R) presents a copy of the club's new journal to new SONC member Jack Shepe (L).

A new journal from the South Okanagan Naturalists' Club is a celebration of the beauty, wildlife, and landscapes of the Okanagan Similkameen as seen through the eyes of the area's amateur photographers.

Nature in Focus, the South Okanagan Similkameen was developed following the club's highly successful 2018 photo contest that attracted close to 600 entries from throughout the Regional District of Okanagan Similkameen (RDOS).

"We were very impressed with the diversity and quality of the photos submitted to the contest," said Alex Bodden, president of the naturalists' club. "We thought it would be great to create a high-quality publication to showcase contest images as well as photos from other photographers that beautifully capture the biodiversity of the regional district."

The nature journal contains 160 pages and more than 80 colourful images – from birds to butterflies, flowers to fields. The images are accompanied by educational information about the photographs and the subjects they capture.

Opposite the photos are spaciouly lined pages for journaling, notes and sketches. The journal is not dated so it's an

enduring volume for whenever the owner is inspired to jot down their thoughts.

"The RDOS is home to a wide range of natural habitat and species that are not found anywhere else in B.C. or Canada," Bodden added. "The region is also home to the largest number of endangered and threatened species of plants and animals in B.C. and Canada. Our club is very proud to offer a high-quality, useable book that captures some of this diversity and uniqueness.

For more information about *Nature in Focus, the South Okanagan Similkameen* and to order copies, visit the South Okanagan Naturalists' Club website: southokanagannature.com. You can also contact club director Bob Handfield at soncbob@shaw.ca

Proceeds from the sale of the \$25.00 journal will be used by the club to support nature conservation and appreciation projects in the region. ♦

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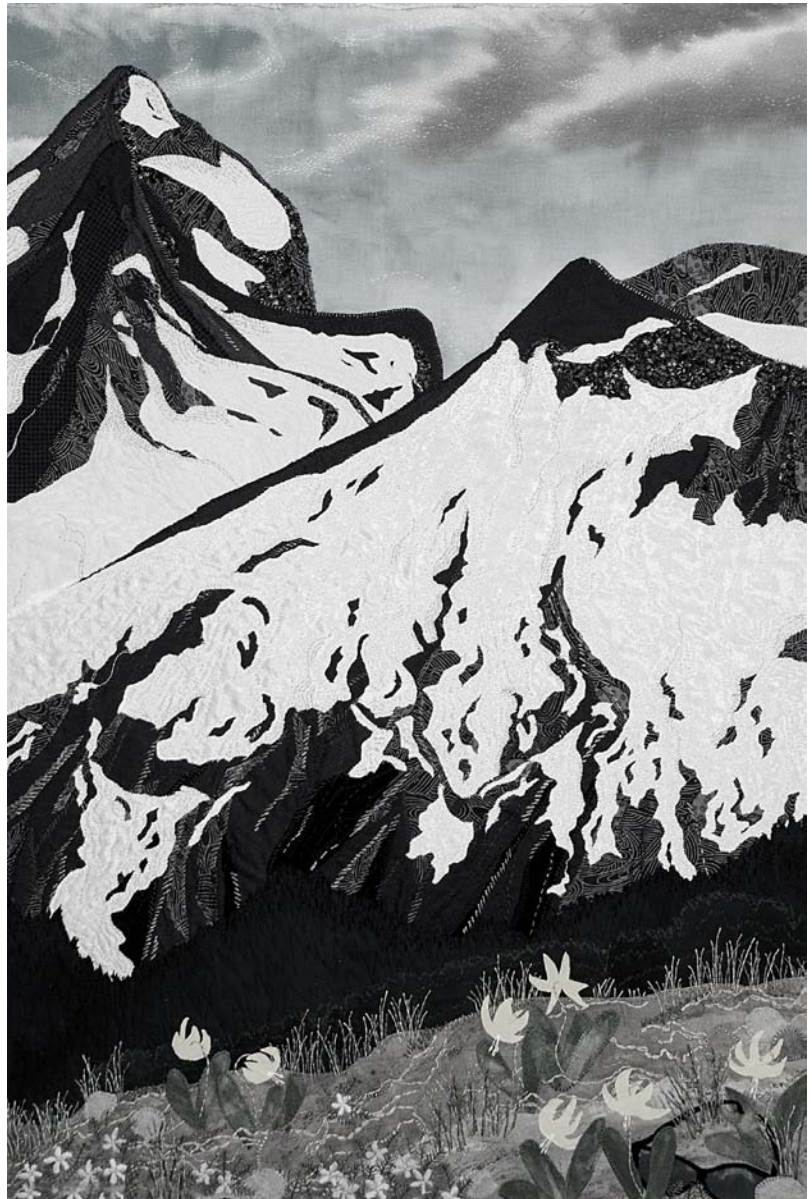


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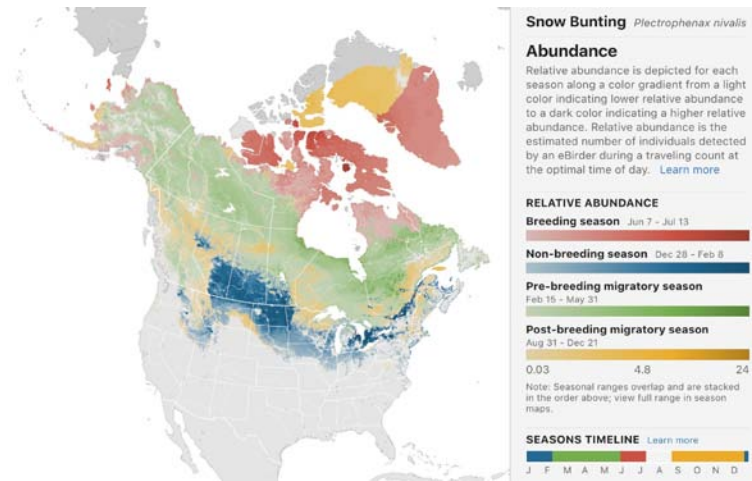
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IBA Focus - The Case for eBird

How the world's largest avian community science project helps us help birds

Author - Liam Ragan, B.C. Provincial Coordinator, Important Bird and Biodiversity Areas



Drawing on over 270,000 sightings, eBird is able to produce Abundance Maps such as this for 807 species, illustrating where birds breed, overwinter, and spend their time in-between.

The first time I ever went birding, two hours of trundling around a snowy Mount Royal with my mind spinning at the revelation of how much biodiversity I'd walked past unnoticed, my friend and birding mentor Anthony Zerafa pulled out his phone and asked, How many Downy Woodpecker?; Slightly confused I guessed a couple, and he repeated his question for every species we'd seen. After finishing this, he turned the phone to me and told me that what he was doing was making an eBird 'checklist', and that this checklist would be submitted to a global database of millions of checklists which researchers around the world go to determine everything from key migration stopovers to the effects of locust swarms on sparrow populations and everything in between. In the years since, I've come to appreciate the enormity of what eBird can and does accomplish, and more specifically how here in B.C. it's become a foundational tool for Important Bird and Biodiversity Areas (IBA), and the conservation community more broadly.

eBird began in 2002 when it was launched by the Cornell Lab of Ornithology and the National Audubon Society. It is built upon the simple premise that each time a person raises their binoculars, they are generating a data point on a species' presence, and when aggregated, those data points can help us paint a picture of what birds are doing, where, and when. To contribute to eBird is simple and can be done for free using either the smartphone app or their website. All one need do is enter where you were, what you saw, how long you spent looking, and what type of birding you were doing (for example sitting in one place, walking around, or noting something incidentally). The more information you put in, the more value you get out. This includes the ability for individuals to track the total number of species they've seen (a 'life list'), generate reports of where species they haven't seen or would simply like to see have been reported by others, and set up alerts so that when fellow birders find geese from Siberia or unexpected raptors blown astray to their neck of the woods they can quickly go and

appreciate them. In addition, eBird allows you to upload photos and audio recordings so they can be stored free online and used for reference by ornithologists.

The value eBird provides goes both ways and it has become a critical resource for conservation organizations the world over. Here in B.C. we use it to freely and easily collect data for our IBAs. This is done both systematically by our volunteer Caretakers when they conduct comprehensive surveys using the IBA Canada eBird Protocol developed by Birds Canada in 2014, and by the general public whose checklist submissions are easily collected under the IBA umbrella and aggregated for analysis and viewing at ibacanada.ca. This saves us from having to develop and maintain our own costly database, as well as ensures that anyone can easily submit observations for consideration. In the context of bird conservation, this allows us to identify areas with high numbers of birds either wintering, migrating through, or breeding in an area, and look into whether that site may be a future IBA. Beyond IBAs, the data collected is used by thousands of researchers and ornithologists for free and has been cited in thousands of publications. With more than 700,000 people using eBird across every country on earth, the platform offers an unprecedented ability to track species' populations as they adapt to our ever-changing planet and make informed decisions on how best to protect them.

To conclude, I'd like to ask you to join this community science endeavour, both to help us better understand our province's IBAs, and to better understand birds more broadly. Towards this end I've included a list of resources below on learning how to use eBird and how to better understand where IBAs are in Canada and what their purpose is. Additionally, I will be offering a free public webinar in the coming months, which will be announced in this magazine and which I invite anyone interested in the future of bird conservation to attend. ◇

Resources:

ebird.org/canada/about/resources - Learn how to submit checklists, find birds, and track your lists on eBird

ebird.org/canada/science/status-and-trends - See how community data has allowed researchers to create continent-level visualizations of bird migration and changes in population

ibacanada.org/documents/eBird_IBA_protocol.pdf - Find out how the IBA Program uses eBird to collect high-quality conservation data

www.ibacanada.ca/mapviewer.jsp?lang=EN - Map of all IBA sites in Canada

BC Naturalists' Foundation Update Open Season on Club Support Grant Applications

Author – Stephen Partington, President BC Naturalists' Foundation

Come one – come all! Now is the time to extend the BC Naturalists' Foundation success story into 2022 by dusting off your thinking cap and submitting your Club Support Grant application.

Deadline for applications is January 31, 2022. Available at <https://bcnature.org/club-support-grants/>

2021 Was a Super Year for Club Support Grant Results

All the BC Naturalists' Foundation Club Support Grant recipient clubs in 2021 received the full dollar amount for which they applied. Every single grantee club delivered more than they had offered in their applications. It was amazing!

Here are just two Club Support Grant report extracts selected from the nine projects that were funded in 2021 by the BC Naturalists' Foundation.

Barn Owl nesting box project – Nature Vancouver

Our team, Cascade Bird Box Team, built and delivered five Barn Owl boxes. Construction was in March 2021 with a restricted crew due to COVID. Boxes were labelled with logos for Nature Vancouver, and for BC Naturalists' Foundation.

Four boxes were delivered to Sofi Hindmarch. Two have been installed under her supervision in Langley and

Surrey. The other two will probably be installed in the winter of 2021.

Sofi has recently been doing some Blueberry Farmer education sessions to determine priority locations for installing boxes. One box was delivered and installed in an excellent location in Southlands, Vancouver (on Balaclava Street). - see photo of install.

Our costs were a little lower than expected. We used the excess funds to:

- Retrofit five installed barn owl boxes with heat-reflective roofs. These roofs reduce the temperature in the boxes by 3-9 °C when we have high temperatures in summer. There were a number of fatalities of young barn owls due to high heat in late June 2021.
- Build 12 Tree Swallow Boxes for box replacement at Iona Beach Regional Park, and Kings Links Golf course.

Trees4Tomorrow – Comox Valley Nature

Comox Valley Nature partnered with Conservancy Hornby Island (CHI) in supporting their Trees4Tomorrow initiative. Comox Valley Nature were awarded a \$2500 grant from BC Nature and the BC Naturalists' Foundation earlier this year, with the proceeds to augment purchasing of seedlings for planting on this joint venture.



Photo - Nature Vancouver

Peter Ward lends a hand in Barn Owl condo placement

The CHI Coordinator for the Trees4Tomorrow initiative, Rebecca Benjamin-Carey, reports that the B.C. coastal tree planting season is during fall and spring because summer planting conditions are far from favourable, especially this past year. The Trees4Tomorrow project is now involved in fall tree planting in the Comox Valley Regional District (CVRD) and Hornby and Denman islands.

There may be opportunities for BC Nature volunteers to assist with this effort. Interested members should get in touch with Rebecca directly (rebeccabcarey@gmail.com). For more information on the Trees4Tomorrow initiative, please visit <https://bit.ly/3oFLFKs>. ◇



Photo - P. Jenkins

New Observation Tower at Swan Lake, Vernon

Author - Pamela Jenkins

North Okanagan Naturalists' Club (NONC) officially opened the Swan Lake observation tower with a ribbon cutting ceremony. Vernon City and Regional District officials joined Norbert Maertens (the designer and project manager and NONC member) to cut the ribbon. The general public was invited the following day to view this new platform.

This project was financed by NONC, the City of Vernon, and the Regional District of North Okanagan. ◇

Photo on left: This seven-metre tall observation tower has been built at the Swan Lake Nature Reserve off Old Kamloops Road. It has been in the works for 3 years. Harold Sellers: "It is a very popular place for birds and bird watchers. This site is active year round."

Young Volunteers Become Summer Interns

Author – Gaylia Lassner, Rocky Point Bird Observatory

Rebecca Reader-Lee and Liam Singh have been very interested in birds since they were quite young. After several years of volunteering for the Rocky Point Bird Observatory (RPBO) in a wide variety of roles, they joined the RPBO staff as summer interns for the Passerine Migration program.

Rebecca Reader-Lee comes from a family of avid birders and has been a birder, photographer, and nature enthusiast throughout her life. A visit to the Pedder Bay banding station when she was eleven years old was a turning point. During that visit, Rebecca saw the birds up close, was allowed to try simple tasks such as organizing equipment and met many other bird-lovers who share her enthusiasm. Rebecca's take-away from that first visit was "Birding attracts a lot of cool people!"

During the past eight years, Rebecca has become a very important part of the RPBO birding community. When asked what she loves most about birding, she talked about the depth of the experience of volunteering at the banding station. "You learn so much more about the birds when you see them in the hand, when you learn to age and sex them, when you are immersed in the birds and their behaviour. You have a wonderful time learning to understand their lives in a deeper way than just watching them fly by."

This fall, Rebecca returned to her science studies at UVic. Her commitment to RPBO continues - she committed to volunteer shifts during the Nocturnal Owl Monitoring Project that runs through the fall. She has also co-founded the UVIC Birding Club and is looking forward to post-pandemic opportunities to organize student bird walks.

Rebecca views her experience with Rocky Point Bird



Photo: Jannaca Chick

Rocky Point Bird Observatory is very proud to have inspired these amazing young naturalists.

Observatory as being positive, formative and valuable: "The experience of volunteering at a banding station teaches skills beyond banding. Fieldwork skills are relevant for many careers. You meet a lot of cool people in a variety of cool fields - this can really open doors for exploring possible careers."

Liam Singh began birding seriously when he was ten years old. Once again, a visit to the Pedder Bay banding station had huge influence - on that first visit he saw a Wilson's Warbler and a Townsend's Warbler up close and thought "I gotta come back here!"

For the past eight years, Liam has been a committed volunteer for Rocky Point Bird Observatory programs and has built an impressive skill set. Fieldwork skills will be an important advantage on his resume as he is in Environmental Studies at UVic this fall. He looks forward to getting his bird banding permits and furthering his involvement in the important research of local and migratory bird species.◇



Surbhi Ratti - Canada Summer Jobs My Time as Outreach Assistant and Project Coordinator

Author - Surbhi Ratti

Throughout these past few months, I have had the privilege of working as an Outreach Assistant and Project Coordinator with BC Nature, as part of the Canada Summer Jobs Program. I am a recent graduate from Simon Fraser University with a Bachelors of Environment, majoring in Resource and Environmental Management and minoring in Sustainable Development.

The projects that I worked on were tailored towards outreach tasks and research on different ecological sites/reserves. Other projects included research and talking point documents on biodiversity, old-growth forests, succession, biogeoclimatic zones, conservation, estuaries, and the Species at Risk Act.

I have gained valuable skills and knowledge from my time at BC Nature that I will utilize in my future endeavours. Thank you BC Nature and the Canada Summer Jobs Program. ◇.

Grey Seas and Phantom Birds

A Christmas Bird Count Recap 2020

Author – Margo Hearne

Greater Massett - Midwinter on Haida Gwaii. All was still. The tempest of the previous days had blown through and other than a light mist over the Delkatla Sanctuary, the day dawned clear and bright. Our scouting mission the previous day had been pretty bleak so this quite cheered the heart. People and birds came out to play. Many walked for miles through meadows, dunes and wetlands, but the tides were high all day and access to the



Photo: Margo Hearne

Shorebirds at Skonun Point with Tow Hill in the background.

Sanctuary was limited to the edge. A Spotted Sandpiper was seen on Massett Inlet beach first thing. It's a winter rarity for sure. Other shorebird records trickled in, including two Greater Yellowlegs. We hadn't seen any all winter. And a lone Long-billed Dowitcher fed with the 1,127 Green-winged Teal that were scattered like pearls along the margin of the bay. Ducks are the stars of Delkatla in all their many colours, including the rare Eurasian Wigeon, he of cream and rufous crown.

We had to work hard to find a raptor, but three Sharp-shinned Hawks eventually made it into the checklist, a Peregrine Falcon was on its usual roost, and the resident Red-tailed Hawk finally showed up. On the beach 1,165 Dunlin ripped through the air with 52 Sanderlings and 45 Black-bellied Plovers while 60 Killdeer hunkered down in the dune grass far from that lively crowd.

The songbirds were terribly quiet. We walked through the afternoon listening for anything, but it was so hushed that if a Brown Creeper had called its high, thin note, we'd have heard it. It didn't. An apparent group of warblers were seen 'flycatching' from the tops of bushes in the distance near the dunes, but they turned into Dark-eyed Juncos. We hadn't seen such activity from the little black-headed species before. They usually seem to feed either low to or on the ground. Perhaps because there wasn't a breath of wind to blow the bugs away, they took full advantage and frolicked in the silent air.

We worked for a Northern Flicker, that commonest of winter woodpeckers, and if it hadn't been for a light whisper from a flock of nine Pine Grosbeaks

passing overhead, they'd have gone by unrecorded. Thirteen kingfishers were a surprise (we often miss them) and the American Coot stayed around for all to see. It is a dark little bird with a white bill, one of those unusual species that keeps us wondering about the 'why' of it. It has haunts of its own and keeps to them. Total species count: 78

Skidegate Inlet (includes Queen Charlotte, Skidegate and Sandspit) This count was very well organized and everyone did a wonderful job finding things. Although the Dipper seeker walked the Honna River three times, she didn't find it; not because she hadn't looked, but because the waters were so high from the relentless winter torrents that the bird stayed further upstream. Dippers like a little ripple in the rocks that will scare up small water bugs, not a tumultuous, crashing disaster.

Ducks and a Greater Yellowlegs at Hayden Turner Park and, along a

backwoods trail, a Hairy Woodpecker, although it was slim picking for songbirds except for the 'usual suspects' - Chickadees, wrens and kinglets. The Inlet itself was calm and small numbers of alcids flew away from the Kwuna ferry; Common Murres, Pigeon Guillemots, Marbled and Ancient Murrelets. In the grassland the big numbers were Canada Geese (900+) and – surprise – a Marbled Godwit, the bird of the day. We rustled up a small flock of American Pipits at Kilkun Spit and Black Turnstones (168), Rock Sandpipers (7) and Black-bellied Plovers (43) on the beach. The trees were noisy from the brisk west wind so it was hard to hear anything but the White-crowned, Golden-crowned, Fox and Song sparrows added nicely to the list. On the road to Copper Bay, we stopped near a small lake to find Ring-necked Ducks and a Bufflehead; two Brown Creepers crept up the side of a large hemlock as they do. In the Copper River, two Trumpeter Swans were 'phantoms of delight when first they gleamed upon our sight' (to misquote Wordsworth) as they drifted serenely by. A fitting end to a windy day. Total species for the area: 78. ♦

Visting Haida Gwaii over the holidays? To help with 2021 CBC, please contact Margo Hearne hecatebird@gmail.com



Photo: Margo Hearne

Pine Grosbeak on wild crabapple

Christmas Bird Count 2021 - 2022

Find a bird count near you:
<https://bcfo.ca/cbc-2020-2021-countdeets/>

Canadian Bat Box Project

Author - Karen Vanderwolf

If you have a bat box, we want to know about it!

Bats in Canada face multiple threats from habitat loss and disease. Bats need a warm and secure place to roost during the day in the summer. A bat box is a simple and effective way to provide additional roosting habitat for bats, but little is known about bat box use in Canada. This is especially important as three bat species in Canada are listed as endangered: Little Brown Bats, Northern Long-eared Bats, and Tricolored Bats. Bats now face additional persecution due to worries about COVID-19, but bats in North America do not have the virus that causes COVID-19.

Which bat species use bat boxes?

Of the 18-bat species that are regularly found in Canada, 13 have been documented using bat boxes. This documentation comes from studies farther south in the United States. Current recommendations on bat box design are based on research in Europe and the United States, especially Texas. The box design bats prefer varies by region and species. Little previous research exists about which bat species prefer which bat box designs in Canada. We have found that Little Brown Bats are known to use bat boxes throughout Canada, Big Brown Bats use boxes in some parts of Canada and Yuma Bats use boxes in British Columbia.

How you can help! Our research seeks to determine which bat species use bat boxes across Canada, what box designs are preferred by bats, and which temperatures bats prefer for roosting in our northern climate. To accomplish this, we need to know where bat boxes are located in Canada, the physical characteristics of the boxes and whether they are being used by bats! Participants will be sent temperature loggers to install in their box and supplies to collect guano (bat poop), as bat species can be identified from guano.

To participate in this study, please fill out this survey <https://bit.ly/3HptLnTsurvey> with questions about your bat box. Your participation is important even if your box does not have any bats!

This project is in partnership with the Wildlife Conservation Society and the Canadian Wildlife Federation and runs from 2021–2023. You can also participate in the long-term stewardship initiative, BC Community Bat Programs, which is interested in any bat sightings. Their website has great information on bats and bat conservation issues.

Why install a bat box? Installing a bat box gives bats an alternative to roosting in your house; since all bats in Canada eat only insects, you may even notice a decrease in the insect population around your house! Bats eat a variety of insects, including agricultural and forestry pests. You can watch bats swooping around your backyard at dusk catching insects in midair.

How do I tell if bats are using my box? You can tell whether your box is being used by bats by searching for guano underneath your box and watching your box at sunset in June to count bats as they emerge for an evening of eating insects. During May to October, you could also shine a light up into the box during the day to see if there are bats inside. The boxes will be too cold for bats during the winter.

How do I get bats to use my box? Not all bat boxes will be occupied in the first year after installation. Occupancy depends on many factors, ranging from when it was installed to the fact that bats are very selective and might need a little time to familiarize themselves with your bat box. There are no lures



Photo - Jordi Segers

Little brown bats in a bat box in the Maritimes.

or attractants that can attract bats to a bat box, although larger bat boxes with multiple chambers more commonly attract bats than smaller boxes.

Bat boxes are most successful when attached to houses or poles as opposed to trees. Trees shade the box and can block access to the box entrance. If bats are not using your box after two years, try moving the bat box to a new location.

Like tree hollows, bat boxes need to have temperatures that bats like. Bats like hot temperatures, but even in Canada some bat boxes get too hot during the summer, which can increase bat mortality. Temperatures of over 40°C in bat boxes are too hot, and temperatures in some bat boxes in Canada have been recorded over 50°C! One of the goals of our project is to understand how prevalent a problem bat box overheating is across Canada.

Our research group measures the temperature inside bat boxes using temperature loggers that can take a reading every hour during the summer. One way to ensure that bats can choose their preferred roosting temperature is to install multiple bat boxes as they will vary in temperature depending on how much direct sunlight they receive.

So please participate by filling out our survey at <https://bit.ly/3HptLnTsurvey> With your assistance, the compilation of information on box designs that bats use in Canada will help bat conservation everywhere! ♦



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(*Perisoreus canadensis*)



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BC Nature Field Camp – Cathedral Lake

August 22–24, 2022



Photo - Cathedral Lakes Lodge

Author - Mary Masiel (Revised from an earlier write-up by Kees Visser)

After almost three years without a BC Nature field camp, we are pleased to announce that members of the Vermilion Forks Naturalists will be hosting a 2022 BC Nature field camp at Cathedral Lakes Provincial Park.

This field camp will include a variety of hiking and walking, with varying degrees of difficulty, into both the subalpine and into the lake areas. The Lodge is situated at 2,000 metres and the alpine hikes will go to more than 2,500 metres. Due to the high altitude, even in the summer the nights will be cool. There will be three leaders - John Henry, Rod Dixon, and Mary Masiel. We will try to accommodate all participants with respect to their hiking/walking abilities. The hikes to the alpine rim trails are spectacular, but these hikes are both strenuous and long. The walks to the various lakes are easier, but some can be long in duration; we will offer both shorter and longer walks. This camp is not for members with mobility issues.

Accommodations: Cathedral Lakes Lodge. The Lodge offers a combination of bungalows, cabins, and lodge rooms, all with varying amenities and costs. Registration will be with the Lodge directly. Glenda of the Cathedral Lakes Lodge will explain the differences in the accommodation and corresponding prices. For further information on accommodation or the park please visit the Lodge website cathedrallakes.ca

The camp price is all inclusive: all meals, all tax, plus the transportation up and down the mountain to the Lodge. Your only other costs will be any alcoholic beverages purchased. There is a good wine and beer selection. In the mornings, you will be expected to pack your own lunch from a selection of fresh fruit, vegetables, cold cuts, cheese, and cookies.

On August 22, you will drive on Highway 3 toward Keremeos. You will turn off at the Cathedral Lakes Lodge

sign, approximately 4.8 km west of Keremeos. Cross the Red Covered Bridge, follow the Ashnola River Road for 20.8 km to the Lodge parking area. From the Highway 3 turn-off allow 30 minutes to drive to the Lodge parking lot (partially on a gravel road). You will return the same way at the end of the camp. From the parking lot you will be driven to the Lodge. You will be given the choices of time to travel on August 22, 10 am, 2 pm or 4:30 pm. Return times are: 9 am, 1 pm, and 3:30 pm.

This camp will have a maximum capacity of 35 and will require a minimum of 25 participants to make this trip viable. On January 31, if we have fewer than 25 participants registered, this camp will be cancelled and your credit card deposit will not be processed. Assuming we receive at least 25 registrants, a \$200.00 deposit will be charged to your credit card on February 1, 2022 and the remainder is due no later than May 5, 2022. Your deposit of \$200.00 per person is non-refundable.

We cannot offer any pricing at this time but do invite you to email your expression of interest to attend this fabulous BC Nature hosted field camp by December 20, 2021. Interested member numbers will be relayed to the lodge and your pricing will be sent to you via email. Registration with the lodge as noted below. Please email info@bcnature.ca with the subject memo: Interested in Cathedral Lakes Field Camp. Please add your name(s) and phone number so that we may contact you. You will be sent all pricing via email and can make your final decision to register at that time.

Registration: January 10, 2022, 9 am to January 31, 2022 (or sooner if the camp sells out). All registrations by telephone, direct to the Lodge: 1 888 255-4453. When telephoning in your registration, please mention BC Nature and have your credit card ready. ♦

Wildlifers Wanted

Author – Ben van Drimmelen

Legislation to protect and conserve species at risk and their habitats is scattered in B.C. because government has chosen to use several statutes to protect their habitats, presumably on the assumption that, if the habitat is protected, the species will be conserved. That approach has proven ineffective for a number of reasons:

- It fails to protect the species themselves.
- Fewer than 5% of B.C.'s threatened or endangered species are currently included.
- The habitat protection is directed toward mitigating only the industrial impacts of forestry and of oil and gas; other impacts are ignored.
- Critical habitats on private land are not protected at all.

Therefore, BC Nature is trying to organize a group of members to research the subject, including the province's Together for Wildlife Strategy, Minister's Wildlife Advisory Council and Regional Wildlife Advisory Committees plus the province's past (but now stalled) efforts to finally pass an Endangered Species Act.

An important initial question is "What should constitute "wildlife" for BC Nature's advocacy?" Traditionally, wildlife in the Wildlife Act left out fish and invertebrates; it is focused on game animals, those that can be shot or trapped. Obviously, naturalists have a vastly different perception. But "species at risk" also has a limited scope provincially – just some 40 species are "identified" to allow some habitat protection during forestry and oil and gas industrial operations.

So what should wildlife include? The vertebrates for sure – fishes, amphibians, reptiles, birds, and mammals. But what about all those invertebrates - ants, bees, wasps, beetles, butterflies and moths, dragonflies and damselflies. And the less-noticed caddisflies, native earthworms, grasshoppers and

crickets, mantids and mayflies? The freshwater snails, mussels and clams, spiders, and their kin? Or should BC Nature concentrate on just endangered or threatened species, or just those already identified as "at risk"?

Once the wildlife of concern have been identified, the work would begin. Discussion of goals and objectives, what are we trying to accomplish generally and how to go about it. Identifying resources. Summarizing what is being done in B.C. to protect wildlife and wildlife habitats and who the primary government contacts should be. The next step would be identifying what needs to be done and, within that, what BC Nature can practically do to protect at risk wildlife and their habitats. Which other organizations are already involved - who should we be working with? Ultimately, we would want to develop draft submissions for BC Nature to submit to ministers and legislative committees on what new or amended legislation should contain.

We presently have four BC Nature members interested, but those few might be overloaded. Eight to ten might be an effective group. Do you have the interest, and the time, to join the wildlife group? If so, please send an email to newtwe@barristers4bears.com. ◇

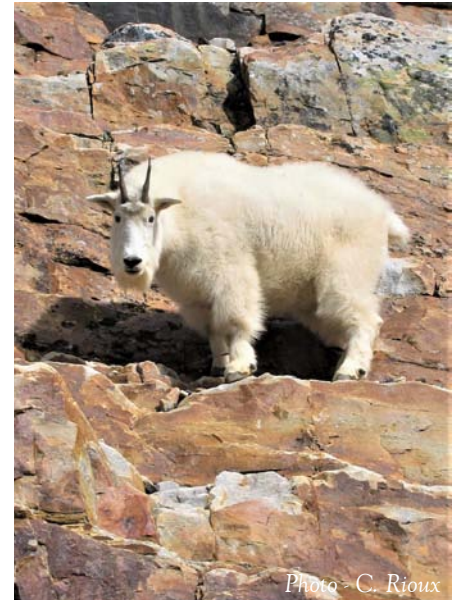


Photo: C. Rioux
Mountain Goat

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Climate Solutions 101: Part 1

Author - Karen Crosby

Project Drawdown is a global coalition of scientists, researchers, economists and others, that has built a model to evaluate solutions to climate change, based on their actual impact on greenhouse gas emissions. This organization has created Climate Solutions 101, a series of six exemplary videos (called Units 1 to 6) outlining how we humans got into this climate emergency mess and how we can get out of it. Watch the videos at <https://drawdown.org/climate-solutions-101>

This article is the first in a series of three articles. Each article will summarize two video links from Climate Solutions 101 with the hope of inspiring BC Nature members to view and add more climate understanding and solutions to their existing toolboxes. Understanding this information might also inspire you to enroll in Drawdown B.C.'s "Getting into Action" online course—registration information can be found at: <https://drawdownbc.org/programs-projects/>

Unit 1: Setting the Stage

This 13-minute video helps us understand how the climate crisis got started. Although humans have lived on planet Earth for an estimated 6 million years, it is only in the last century that we began living in mostly urban settlements with a rapidly growing global population. In the last 50 years, we have seen a great acceleration. For example:

- a) Our economy grew five to six times greater
- b) We are using about three times more fossil fuels
- c) Our population has doubled
- d) We are producing three times more food and using twice the amount of water.

The changes in us are changing the planet. Some of these changes are visible, like cutting down the forests. Thirty percent of tropical forests are gone. Farming lands, are now the largest ecosystem on Earth and about 70% of the water we take out of nature is used for agricultural irrigation, leading to large geographical areas

drying out (Aral Sea, California, parts of Africa and China.) Some of these changes are subtle or invisible, like changes to our climate and atmosphere.

The planet has already warmed by more than one degree Celsius which we see in accelerated glacier melting and decreasing sea ice.

If we continue "business as usual", the climate crisis and warming will keep worsening. There will be massive disruptions to all systems on our planet, including us. This will be most harmful to the most vulnerable people on Earth and to future generations. These people did not emit much (or anything, if they are unborn) and yet they will have centuries of clean up to do, if they survive. Not a positive scenario... and yet...it is not hopeless.

Some things have improved in the last 50 years, showing humans are capable of positive action. For example:

- a) humans are overall less violent
- b) we live longer, healthier lives (average global life expectancy has moved from 55 to 71 years old)
- c) women have fewer children (from 5 to 2.3 and falling faster than was predicted)

What will the future be? It is in our hands. We need to make a choice between the people we are and the people we can be or want to be, a choice for a future where people and nature can thrive. The future of the Earth will depend on that choice. What choice do we make today?

Unit 2: Stopping Climate Change and Achieving Drawdown

This 16.5-minute video starts by making the point that everything humans need is connected to climate: air, economy, food, health, security,



Photo: Harry Crosby

Wetlands are an example of a natural SINK

and water. If we choose to NOT fix climate change, all the other things we care about will be harder in the future.

So, what is DRAWDOWN? It is a point in time in the future when the greenhouse gas emissions stop climbing and begin to decline. Drawdown means we would be able to stop further climate change. The basic science is this: Greenhouse gases let in the sun's heat and trap heat inside the earth's atmosphere. That means more gases equals more heat. The most commonly occurring examples include: carbon dioxide, methane, nitrous oxide, fluorinated gases. These gases naturally occurred before humans walked the Earth but now humans are adding to them very significantly. So far, we have caused the Earth to warm by 1 to 1.3 degrees Celsius. This may not seem like much but, during the last ice age, our planet was only three degrees colder and was under a kilometre of ice in some places!

Greenhouse gases come from many things humans do; 62% of carbon dioxide comes from burning coal, oil and gas, 3% from chemical processes like producing cement, and 11% from burning trees and deforestation. Agriculture produces about 2/3 of the methane we release, and industry accounts for about the other 1/3. Methane accounts for 16% of emissions. Fluorinated gases (2%) often are released from refrigerants and insulators whereas nitrous oxide (6%) often comes from using too much fertilizer/manure and industrial processes. These are

Continued page 23

Climate Solutions continued from page 22

all SOURCES of greenhouse gases as they add to the climate crisis. (See table below)

Some things reduce greenhouse gases and are called SINKS. The land (mainly trees and plants) and oceans are two natural sinks. These pull about 41% of the greenhouse gases out of the

atmosphere! We need nature!

Land and ocean sinks remove 41% of emissions, leaving 59% to build up in the atmosphere every year. We need to reduce sources and increase sinks! Also, Drawdown operates on the principle that, in the process of doing so, we need to improve society with greater equity, justice, and human

rights. Human society is ripe for positive changes!

My article in the next issue of BC Nature's magazine will focus on scientifically-backed climate solutions we already know about to fix this mess - humans do have the solutions, so stay tuned! ◇

Globally, the greenhouse gases (100%) we emit come from six main sources:

Sector	Global greenhouse gases	Canadian greenhouse gases (2019)
Electricity	25%	8.4%
Transportation	14%	25%
Buildings	6%	12%
Food/agriculture	24%	10%
Industry	21%	Oil & gas 26%
Other	10%	Other industry 11%
		7.6%

Source for Canadian data: <https://bit.ly/3HB4BTx>

Letter to the Editor

Regarding the Fall BCnature 2021 article *Going Beyond Gas, to Combat the Climate Emergency: My Ongoing Journey*. Karen is correct in her assessment on air-to-water heat pumps. That they have been installed in some European countries but not in North America is very much an understatement.

We, on Salt Spring Island, had an electrically powered air-to-water external

heat pump operating for approximately five years. The original ancient oil fired furnace heating unit was replaced with a hydronic fan coil unit to complement the existing forced air duct system, a new hot water tank and an individual second zone intermittent wall fan unit to a prior extension of the house; all fed from an external Daikin Air to Water Heat Pump.

The exterior heat pump feeds the fan coil unit, the hot water tank and the fan coil in the wall unit; there is no reason why it

could not be used for a properly designed in-floor heating system. We effectively have two zones of heating in the house each with its own thermostat link back through the fan coil unit to the heat pump that has the two-zone capacity built into it. Issues and problems have been minor.

The heat pump offers a major mechanical and safety advantage to the original oil-fired heating. It is rated zero clearance to combustible materials. ◇
Keith Ballantyne

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Quw'utsun Sta'lo' Skweyul Cowichan Rivers Day, 2021

Author - Genevieve Singleton

Cowichan River, known as Quw'utsun Sta'lo' in the local Hul'q'umi'num' language, is one of the three designated Heritage Rivers in B.C. B.C. Rivers Day was started by well-known B.C. resident, river conservationist Mark Angelo, in 1980 and is now celebrated in over 60 countries (called World Rivers Day). Occurring at the end of September, it is an opportunity to create better awareness to protect rivers. No doubt many naturalists are involved with Rivers Day events around the province.

For some time, in uneven numbered years, Cowichan Tribes and the Cowichan Stewardship Roundtable (which the Cowichan Valley Naturalists are very active with) have been hosting Sta'lo' Skweyul (Rivers Day) together on Cowichan Tribes land. The day brings together the largest First Nations band in BC, conservation groups, and the general public to celebrate and educate those in attendance regarding the remarkable Quw'utsun Sta'lo'. This River has been critically important to the Quw'utsun People since time immemorial and was known as one of the prime fishing rivers in the world in postcolonization time. Its iconic Chinook and other species are at risk, and the river is now heavily stressed with many issues.

On Saturday, Sept. 25 from 10-2, Quw'utsun Sta'lo' Skweyul was held with more than 400 people in attendance. BC Parks provided very generous funding, along with Cowichan Valley Regional District, Mosaic Forest Management, and individuals. A simple lunch of locally smoked salmon, fry bread and fruit was served in a paper bag to meet COVID-19 safety requirements. After a traditional Quw'utsun opening, including the Tzinquaw Dancers, the many booths and activities started, including Elders and knowledge keepers showing how to make cedar hats and drums. Events during the day included storytelling, fish printing, a medicine walk, nature walk, predator bird displays, fish seine and paddling in kayaks and canoes supervised by local paddler groups.

Lichens - Winter Wonders

Author - Terry Taylor

Winter tends to be an uninteresting time for botanists. No flowers to see. No mushrooms to seek. But that does not need to be the case. Lichens and mosses are the background in our forests. They are organisms everybody sees, but very few notice. Winter is the time to notice and bring them to the foreground, when the distractions are not there.

In this article, we will deal with lichens. It's not that lichens change much over the seasons, but because in the winter they come to us. We do not need to

go to them. Winter storms bring down twigs and branches from the canopy. Many lichens grow on trees, especially on the tops of big, old trees, where we cannot reach them. They like sunlight and moving air. After a storm they are all over the ground, so go out searching after a storm and have a look. But for obvious reasons stay out of the woods during the storm. Another group of tree lichens that you have seen but probably have not noticed are crust forms that grow on smooth tree trunks. Old alder trunks are often blotchy with gray patches. Many people think alder

trunks are blotchy. Alder bark is not blotchy. The pale patches are due to several species of simple lichens.

You will see there are several different growth forms. There are leaflike foliose ones. They are this shape to gather as much light as possible. Others are fruticose and look like little shrubs or long streamers. Still others are crustose, forming flat patches on branch surfaces. There are several books which identify the common foliose and fruticose ones, but putting names on most crustose

Continued page 25



Photo: Barry Hetschko

Della Rice-Sylvester, Cowichan Tribes medicine woman and plant knowledge keeper getting ready to lead a nature walk, with Cowichan Tribes fisheries technicians collecting salmon broodstock in the background.

Hundreds of hours were put in to planning and many groups and individuals donated goods and services for the day. Cowichan Valley Naturalist members were engaged in all aspects.

The energy of coming together as a united group to celebrate our Sta'lo', educating ourselves about it, and, sadly, also to grieve its changes since colonization, including climate change, was extraordinarily powerful. As we work together, we build bridges between Indigenous and non-Indigenous, we get to know each other and become stronger in caring for the Sta'lo' and the watershed that we love. I encourage other naturalist groups to work on events together with local First Nations, learn place names, plant and animal names in the local languages and use these in publications and interpretative signs. Walk the talk of reconciliation. ◊

Genevieve Singleton is a nature interpreter, biologist and life member of Cowichan Valley Naturalists. She is co-chair of the Cowichan Stewardship Roundtable, a collaborative ad hoc group focused on protecting the Cowichan watershed. www.cowichanstewardship.com

Continued from page 24

lichens is best left to professionals with microscopes and chemicals. Trying to put names on them can give the rest of us mental indigestion.

The open forests of the Southern Interior are the domain of the lichens, as are the rocks of the high alpine. Lots of sunlight. The coastal, closed forests belong to the mosses that do better in low light and high humidity. In a coastal forest you can see this effect on a micro scale. Look at a leaning tree. On the side of the trunk where rainwater flows there are lots of mosses. On the dry side, out of the rain, there are lichens, especially one that forms a dusty gray coating. Like going from Vancouver to Kelowna in less than a metre.

Another good place for lichens is seashore rocks. These are totally different from the forest ones. Seabirds perch on these rocks. So there are lots of nutrients. Most lichens like low nutrient conditions, but seaside ones are adapted to the opposite. Many of them are bright orange in colour and cover extensive areas. Orange lichens and seabirds share the same environment.

Exposed rocks in the high alpine also belong to the lichens, although you cannot see them in the winter. You can, however, visit them in the summer after the snow melts. These lichens again are part of the background. We seldom

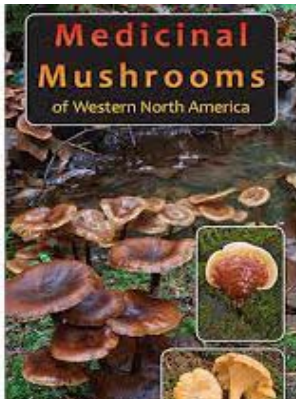


An intricate shrub lichen *Usnea subfloridana*

realize that much of the beauty of the high country is due to the lichens that cover the rocks and outcrops. Members of the genera *Caloplaca* and *Xanthoria* produce orange and red areas. The Map Lichen (*Rhizocarpon geographicum*) forms greenish crusts and many species contribute shades of white, brown, gray, or black.

Winter is a good time to start noticing the background organisms and structures you see during your nature walks. Not just lichens, but mosses, winter buds, spider egg cases, and many other little wonders. ◇

Book Reviews



Medicinal Mushrooms of Western North America

Authors - Rogers and Duane Sept
Published: 2020: Calypso Publishing
94 pages
Paperback \$ 14.95
Reviewed by: Genevieve Singleton

This is a field guide to mushrooms of western North America that are purported to have medicinal properties. The book offers a disclaimer that its intent is to educate the reader rather than an encouragement to eat a mushroom or use it medicinally. It cautions that it is not a how-to guide for picking or eating mushrooms.

The introduction lists some of the purported medicinal properties of mushrooms, including anti-tumour, anti-oxidant, and anti-inflammatory. It makes statements such as “When the immune system is deficient, medicinal mushrooms improve the efficiency by promoting growth of various lymphocytes, T and B cells etc.” This is an overstatement of what is known or accepted as valid by academic medicine. While there is a lot of interest in the medicinal properties of fungi, there is little in the way of published clinical trials in humans.

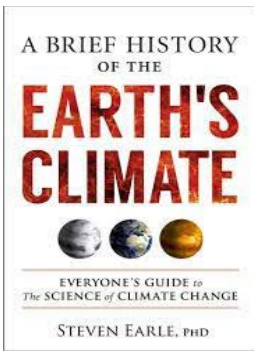
The next section of the book describes mushrooms under four taxonomic subtypes: gilled fungi, polypores, jelly fungi and others. Each mushroom is listed by its common name and Latin taxonomic classification. There is a physical description as well as a description of habitat, range, medicinal uses, and cultural uses. The listing of “other names” and the list of similar species are very helpful. In particular, the details on how to tell apart similar species is useful for those learning to tell different mushrooms apart in the field.

Each mushroom listed has accompanying clear, detailed photographs that provide stunning visuals.

The notes section that accompanies each mushroom shares interesting information about the history of the mushroom or how its name was derived. This helps to bring colour to the material.

Of concern are the unsupported assertions of the medicinal effects of individual mushroom species that are not backed by clinical research in humans. For example, the claim that “*Xylaria hypoxylon* improves iron-deficient anemia” could not be found in a review of published scientific literature. The medicinal glossary is helpful for those who are not in the medical field.

Medicinal Mushrooms of Western North America lacks scientific rigour but it is a good book for someone who is interested in the potential medicinal properties of mushrooms and understanding their traditional use. ◇



**A Brief History of the Earth's Climate,
Everyone's Guide to the Science of Climate Change**

Author - Steven Earle, PhD
Published 2021, New Society Publishers
189 pages, soft cover
Cost - \$19.99
Reviewed by - Genevieve Singleton

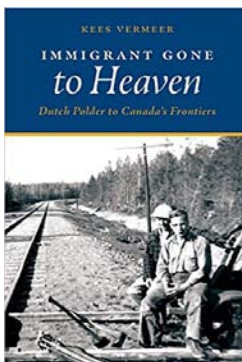
“Please, let them not say, in 20 years or 50 years, that although

we knew, we did not do enough” is the call to action with which earth scientist and author, Dr. Steven Earle, closes his preface. This book is for a wide audience and deals with the most important issue of our time, climate change. It provides a well-laid-out chapter-by-chapter discussion of the earth's climate history, the information to debunk climate change deniers, and includes a template for the reader to “do more”.

Dr. Steven Earle, Gabriola resident, is well known as a talented teacher of Earth Science to Vancouver Island University students and is the author

of a popular textbook, **Physical Geology**. Steven writes in the first person in a breezy, easily understood style and makes very difficult topics accessible. Each chapter starts with a fitting and evocative poem or quote with a subtle chapter photo to set your mind to consider the topic under discussion.

The book is well-illustrated with easy to read black and white drawings and charts. The research is very current including a reflection on the impact of COVID and what we can learn from this. Steven provides the clearest metaphor I have read as to understanding the age of the earth. Using this metaphor, primates evolved on Dec. 27! Reading this book has inspired me to “do more”. ♦



Immigrant Gone to Heaven: Dutch Polder to Canada's Frontier

Author: Kees Vermeer
Published 2021, Friesen Press
246 pages, \$34 (includes shipping)
Reviewed by Alan Burger

Dr. Kees Vermeer is well known as a major contributor to

seabird research in B.C., plus pioneering studies on the effects of oil pollution and pesticides on wildlife. Written in his late 80s, this is an entertaining memoir, with an easy mix of his unique personal life and his laudable scientific and conservation achievements.

The book has four main parts. Part 1 covers his immigration in 1954 from the Netherlands to Canada, beginning with a range of jobs in B.C. (including farm worker, labourer and railway survey technician) and then progressing to his university education (B.Sc., M.Sc. and PhD). Part 2 covers his 30-year career with the Canadian Wildlife Service in Alberta and B.C. Among his

numerous achievements, Kees initiated research on the ecology and behaviour of many B.C. seabirds, both on colonies and at sea. His work is the foundation for many of today's studies and long-term monitoring. The text and photos nicely capture the joys and trepidations of wildlife research on B.C.'s remote islands and productive seas. In his later years, Kees organized several symposia and published compendia on B.C. seabirds, which thoroughly summarized available knowledge. Today's naturalists will appreciate the hard work and adventurous spirit that Kees and his contemporaries needed to initiate high-level research on seabirds.

Part 3 goes back to Kees's youth in the Netherlands, with memorable descriptions of life there in World War II, including the harrowing experience of sharing their family home with Nazi

Continued page 27

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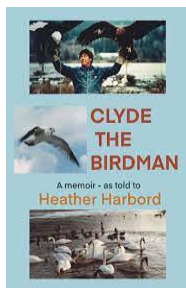
continuingstudies.uvic.ca/ECO

Continued from page 26

soldiers. Part 4 consists of tributes from fellow scientists, written on the occasion of his retirement in 1995. These give objective insights into the important contributions that Kees and his wife Rebecca made in ornithology and conservation.

Those who know Kees will recognize, throughout the book, that he is a person who rows his own boat, sometimes ignoring directives from above in order to achieve his goals.

This is a delightful book to read, with numerous interesting photos, celebrating a remarkable and meaningful life in nature. It also provides fascinating information on B.C.'s seabirds – species that most naturalists seldom get to know at close hand. ♦



Clyde the Birdman

Author: Heather Harbord

Available - 2021

141 pp.

eBook: <https://books2read.com/u/bWGGPO>

Cost - \$12.99

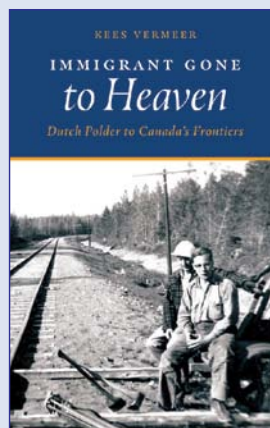
Reviewed by Art Martel

Clyde Burton is a well-known British Columbia naturalist and bird lover. For more than 50 years he has worked, observed birds, and carried out his conservation activities primarily in Powell River area. A lifelong birder herself, author Heather Harbord teased the anecdotes and stories out of Clyde to create this memoir of his life. In this, her sixth book, she tells the story in an engaging style that makes it easy for the reader to visualize. We get a glimpse of what created and motivates this expert naturalist and keeps bringing him back to his childhood passion.

From an early age, Clyde was acutely aware of all birds and wanted to know more about them. Many of his experiences observing and raising young birds are reminiscent of those of Gerald Durrell (British Naturalist). The experiences were to shape the remainder of his life. After working for the Hudson's Bay Company in north-eastern Quebec and as a bush pilot flying in Atlantic Canada and Ontario, he moved to Powell River in 1969. He loved the place and noticed that Cranberry Lake would be the perfect location for a bird sanctuary. Clyde recounts the many encouraging and frustrating experiences he had with waterfowl, eagles, and Trumpeter Swans, where he played a role in establishing a previously unknown migration route north through the inlets and mountains.

After almost fifteen years of trying to work two full-time jobs, he left the sanctuary but continued with the Parks Department. A founding member of the Malaspina Naturalists, he gave many presentations and led many field trips. He was instrumental in establishing the Powell River Christmas Bird Count. I recommend this memoir to anyone interested in nature and Canadian history. ♦

IMMIGRANT GONE TO HEAVEN by KEES VERMEER



Immigrant Gone to Heaven is a remarkable book. It grips the reader from the moment the author joins an Emigration Training Centre in the *Biesbosch* region of the Netherlands with the goal of moving to Canada. We follow his experiences as he lands in Canada and works his way up from farm-hand to obtaining a doctorate in Zoology. The section of the book detailing his explorations in ornithology are as fascinating as the stories of immigration and the memories of World War II. The book takes the reader on a riveting journey of exploration in many facets of social history and science as viewed through the lens of an inquisitive and always optimistic upbeat man. I strongly recommend this book to anyone interested in learning more about World War II, immigration, bird behavior or even just in how a life's journey can unfold with all its unexpected twists and turns.

Tom Bijvoet

Publisher, DUTCH the Magazine – De Krant

Brimming with charming personal anecdotes and fascinating ornithological research in equal measure, Kees Vermeer's *Immigrant Gone to Heaven* paints a vivid picture of an adventurous and fearless life. Vermeer's curiosity and insight into the natural world are evident from his descriptions of childhood nest-hunting in the Dutch polder, to his pioneering work with seabirds on British Columbia's windswept *Triangle Island*. His stories of everyday life under Nazi occupation are enthralling in their own right. Naturalists, scientists and history buffs alike will enjoy this book.

Annie McLeod

Editor, Nature Saskatchewan's Blue Jay

To order, please send cheque for \$34
(\$27 book and \$7 shipping) to:
Kees Vermeer
8968 Mainwaring Rd. North Saanich, BC, Canada, V8L 1J7

For more info, phone 1-250-656-6237 or go to:
www.immigrantgonetoheaven.com



BC Nature Conference and Annual General Meeting May 26 - 28, 2022 “Nature in your backyard”

Hosted by Central Okanagan Naturalists’ Club (CONC), Kelowna
(All Meetings and Speakers at the UBC Okanagan campus)

Schedule

Thursday, May 26

1:30-3:30 pm – BC Nature Executive Meeting

4:00-6:00 pm – Council of Club Representatives Meeting – light dinner provided

3:00-8:00 pm – Registration, Sun Room

Dinner on your own

6:00-7:00 pm – Reception

7:00-8:15 pm – Keynote speaker: Jeannette Armstrong, First Nation perspective

Friday, May 27

6:00-8:00 am – Early Morning Birding (pre-registration required) – TBA

7:30-9:00 am – Registration – Sun Room with coffee, tea, light snack

Breakfast on your own

8:30-8:45 am – Welcome by Westbank First Nation Elders and local officials

Parallel Session 1:

8:45-9:30 am – Andrew Hunzberger, City of Kelowna Urban Forester

9:30-9:45 am – Coffee, tea, and refreshments

10:00-10:45 am – Pam Laing, local birder, webmistress, and author

10:50-11:40 am – Don Guild, Ecological Reserve Warden

Parallel Session 2:

8:45-9:30 am – Liam Ragan, IBA and KBA

9:30-9:45 am – Coffee, tea, and refreshments

10:00-10:45 am – Les Gyug, Avocets

10:50-11:40 am – Judie Steeves, Xeriscaping (followed by field trip)

11:45 am-1:00 pm - Lunch on your own



Schedule Continued

- 1:00 -4:00 pm – Afternoon Field Trips (pre-registration required) – TBA
4:15-6:00 pm – Meetings – BC Naturalists Foundation, BC Nature Education and Conservation Committees
6:00-7:00 pm – Barbecue Dinner (extra cost; cash bar available)
7:00-7:30 pm – CONC’s sixtieth birthday cake! – Emcee is Douglas Graham, CONC president
7:30-9:00 pm – Keynote speaker, Richard Gregson: Green WildLifing

Saturday, May 28

- 6:00-8:00 am – Early Morning Birding (pre-registration required) – TBA
7:30-9:00 am – Registration – Sun Room
Breakfast on your own
9:00-noon – Field Trips (pre-registration required) – TBA
10:00-noon - BC NatureKids
Noon-1:30 pm – Light lunch provided
1:30-4:00 pm – BC Nature Annual General Meeting
4:30-5:30 pm – Social Hour (cash bar available)
5:30-8:00 pm – Banquet (Pre-registration is required) – Keynote speaker, Dick Cannings, MP: South Okanagan/Similkameen National Park
8:00-8:30 pm – Closing remarks, Silent Auction Winners.



Please check CONC website for further details and updates

okanagannature.org

All speakers and Field Trips are subject to change

Due to unknown issues with Covid-19 and meeting/gathering regulations or possible travel restrictions; we will have online registration available on February 1, 2022. Accommodation and other details will be available on Central Okanagan Naturalists' Club website - *okanagannature.org*



North in the Spring #18: Granisle Loop

Author - John Neville

Approximately 20 km east of Houston we turned off Highway 16 onto Highway 118 North. We wanted to explore the route that the tourist brochures call the Granisle Loop. The road steadily ascended to the Babine-Stuart Plateau through a forest of White Pine and Engelmann Spruce. We camped on a forestry service road for a night, with just a light breeze in the aspens. I heard four bird species and the whistled refrains of a White-throated Sparrow for the first time this year!

The next morning we visited the Fulton River spawning channels. It is on the edge of Babine Lake, the largest natural lake in the province; that is, if you count Williston Lake as a reservoir. Babine Lake flows to the Pacific via the Skeena River. The lake was once an integral part of an Eulachon trading route. The rivers and creeks are relatively short, due to the steep sides of Babine Lake. This means that gentle grades of suitable spawning gravel in the water courses are in short supply. So that the nursery for salmon fry can be maximized, the Ministry of Fisheries and Oceans built spawning channels on the Fulton River and Pinkut Creek. The longest channel is 5 km long, completed in 1971 and is the longest in the world. We watched Common Mergansers riding down the waterway, feeding as they went, then flying upstream to begin again.

The channel bed is covered with optimal-sized clean gravel and the sides are made of concrete or rip-rap.



Photo: Heather Neville

Fulton River Spawning Channel

The flow down the river and the spawning channels for the Sockeye is carefully regulated to maximize survival of the fish eggs. Please refer to the editorial by Loys Maingon on page 3 in this magazine for updated information on the Babine Sockeye Salmon.

Briefly, the life cycle is as follows: the female digs a hole in the gravel 15 to 20 cm deep to lay her eggs. She digs three or four nests, which collectively are called a redd. As she spawns, a male covers her eggs with milt. This task is completed in August and September, the best time to view the channels. If you are viewing, be aware that the dying salmon are an important food source for the local bears! During the winter months the eggs turn to alevin and then to fry. As we walked up the channel Common Merganser, Bonaparte's Gull, Greater Yellowlegs, Belted Kingfisher and Herring Gull were all enjoying the emerging fry. In the spring the fry descend to Babine Lake to feed on zooplankton for one or two years. Then as smolt they swim down the Skeena to the Pacific.

The return of the salmon to their spawning beds is one of nature's most important heartbeats in B.C. At the end of the five- or six-year life-cycle, the adult fish die. Some of their carcasses wash into the lake and provide nutrients for microscopic plant cells, which in turn feed the zooplankton. In the rivers and creeks, the fish provide food for bears, eagles, wolves and many other animals. The remains fertilize trees and other plants. The rings on tree stumps show which years were good salmon runs in the past.

Further along the lake we found a



Photo: Heather Neville

Babine Lake

campsite at Red Bluff Provincial Park in Babine First Nation territory. It is named for the iron-stained cliffs which plunge almost vertically into the lake. In 1971 "the Mammoth of Babine Lake" was excavated. The partial skeleton of a Columbian Mammoth dates back about 34,000 years. The unlucky animal appears to have got stuck in a pond. These mammoths were larger than their Woolly Mammoth cousins. They measured about 4 m. high, weighed about 10 tonnes and their tusks were about 4 m. long! Their diet consisted of grasses, sedges and some woody plants. At the time of its death this area was a shrubby tundra environment. These mammoths ranged as far south as Costa Rica before they became extinct about 13 thousand years ago.

Granisle is a sleepy village with good access for boaters to Babine Lake. It has a friendly welcoming disposition which in part can be measured by its picnic tables, available to all. The road soon changes to a good gravel surface and winds over the Babine Range. In mid-May there was still a little snow on the north facing slopes. Following Babine Lake Road past scenic Tanglechain and Doris Lakes a side road took us to the Chapman Lake Recreation Area for a short break. Our next stop was at the Cronin trailhead in Babine Mountain Provincial Park. Snow covered the nearby mountain slopes. As the road descended the mountain the valley opened up where the Telkwa flows into the Bulkley River. We were soon back at Highway 16 and the end of the Granisle loop. ◇

The Last Word

Connectivity...a word with deep implications for our planetary health.

Author - Peter Ballin



We've long been exposed to the reality of the interconnectedness of nature; that's an essential tenet of ecology, and scientists continue to deepen our understanding of our living planet. But to what extent have we personalized and realized our connectivity? For instance: What have you done to reduce your carbon footprint? What

have you done to adjust your diet so that we make better use of our land (and better your health)? What have you done to your consumption patterns of goods and services to reflect care for our planet? Unpeeling this onion will over and over again expose more connections. The consequence of engaging in this process pushes this sense of connectivity beyond the intellectual.

A long time ago I was sitting next to a Sioux medicine man at a banquet. He carefully tore a small corner off of his paper napkin and positioned it near the edge of his plate. On it he placed tiny portions of moose, salmon, potato, etc from his plate. When I asked him what he was doing, he replied that he was acknowledging his relationships to the plants and animals that he was eating, and the links to all those involved with the arrival of his food to his plate.

A game I used to play with students was to set a can of soup in front of a small group and have them brainstorm a list of all that went into producing and delivering it. Try it! But connectivity goes so much deeper: to our very fabric. I invite you to exchange yourself for that can of soup (latest party game?).

It all goes back to the land. When people refer to sacred land they acknowledge a deep relationship with it and the strength that they gather from it. The land (and our waters) produces our food, our oxygen, our building

materials, our minerals, our work and playgrounds, and receives our wastes. By acknowledging that deep connection, we express our profound gratitude and make our land sacred. Why not? After all, where did all your molecules come from? And where will they ultimately go? There's a strange notion that we can own land when the reality is that the land owns us. We are of the earth. Our land is indeed sacred!

Yet another important dimension of connectivity exists: time, as in generations and ancestry. I won't take us back to the origin of life (another time, perhaps). My kids were born in Vancouver. I arrived here from San Francisco, and my parents arrived there from Friedberg, Germany. Most of us are recent immigrants. Since our ancestors or we were uprooted, we have to grow our roots here, where we now live, to better connect to this land. We acknowledge our ancestral homelands, but now we live here, and we must live as if we plan to stay! We become the ancestors and most agree that it is our responsibility to make a better world for future generations to inherit.

It seems so late to be gaining deep understandings of the natural world. As I've heard it said: we must take back what was taken from us...our sense of connection. If we allow it, deepening our bond to the land and our roots becomes that vehicle; a path that can be emotional and even spiritual. For some, that's religious; for others, not. It can promote a strong sense of meaning and belonging and wholeness. It's a kind of reconciliation and a quest without an endpoint. And from this deepening relationship we can gain greater understanding that spurs us to action to take better care of our families, our communities, our province, our country, the world, and ourselves.

What can we, as naturalists, add to extend our individual actions to promote a sustainable planet? We can share! Take your neighbours on walks and share your love of nature, however that might look! For example, COVID times spurred me to lead themed walks, such as Bird Around the Block and Fiver Fern Foray, in my neighbourhood, on the land that we share. How about walking down your block with neighbours brainstorming what steps each household might take to reduce their carbon emissions? We have this very pleasant means at our disposal to promote planetary connectivity and encourage small steps towards a better environment while strengthening connections within our communities. Our contributions will not complete the journey, but we may inspire others to join us. In truth, we must inspire others to join us if we wish to be successful ancestors. ◇



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Naturalist Mentor: Daphne Solecki (1930 to 2021)

Author - Sheila Byers and Bev Ramey



Photo - Bev Ramey

Daphne presenting the Daphne Solecki Award to Al Grass.

It was sad to learn of the passing of Daphne Solecki last August. A full account of her life is included in Nature Vancouver's *Discovery* in a Remembrance written by Sheila Byers. (This account will be available online on Nature Vancouver website under Publications and *Discovery*, Volume 49).

Nature Vancouver's *Remembering Daphne Solecki* begins with recollection that she "was a fun-loving, strong-willed, passionate and very active woman." This description is followed by a quote written in 2001 by Jeremy McCall who describes Daphne: "Persistence and determination are not the attributes that immediately come to mind when you meet Daphne Solecki. Friendly and sociable—yes. Invariably supportive and never at loss for a helpful suggestion—yes. But a highly competitive super-achiever who will stop at nothing to succeed with her projects? Not obviously so." The Nature Vancouver Remembrance by Sheila Byers, continues: "I think that most of us nature-oriented enthusiasts who knew Daphne would agree with Jeremy's perspective on her character and that she remained true to her convictions to her final day."

In 1992, concurrent with her term as Vancouver Natural History Society (Nature Vancouver) President and at the invitation of Dr. Bert Brink, Daphne became the Club Director to BC Nature. Bert wisely anticipated that Daphne's leadership, administrative and management skills and foresight would provide great benefit to BC Nature. Daphne soon took on the position of First Vice-President, with Frances Vyse as Second Vice-President and Jude Grass as President. In 1994, Daphne took on the role of President of BC Nature.

Daphne considered that her greatest challenge, yet greatest achievement, for BC Nature, was working with Syd Cannings and Frances Vyse to develop and establish a new structural model for the Federation. Most of the groundwork and communication with the club members occurred during her period as Vice-President (1992-1993). During her one-year tenure as the FBCN President (1993-1994), Daphne continued to pursue the recommendations from the BC Nature Restructuring Committee that enabled her to initiate the reorganization from the old pan-provincial-type model (where only one Director from each club met on a regular basis) to the new regional, membership-focused model.

Through her involvement with Nature Vancouver and BC Nature, Daphne worked on many projects including the creation of the Nature House at Stanley Park and, most dear to her heart, NatureKids BC, an organization that she founded and nurtured for decades. NatureKids has supported thousands of children and their families in BC to learn about and protect nature. Daphne took on the causes she did because she believed in their importance; never seeking personal recognition for her efforts and always ensuring a collaborative team worked together for the success of all her projects.

Daphne was given the honour of having a new BC Nature award created in her name—the Daphne Solecki Award—which recognizes individuals who have contributed to nature education for children. Daphne left the greatest of legacies for nature with her development of NatureKids BC and her volunteer time spent with BC Nature and Vancouver Natural History Society. Daphne's obituary notes that a memorial will be held in March 2022. <https://bit.ly/30SXhSo> ◇