## THE NATURE TRUST OF BC MAGAZINE

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Cover photo, Flammulated Owl by Glenn Bartley



Ministre de l'Environnement et du Changement climatique



Minister of Environment and Climate Change

Ottawa, Canada K1A 0H3

The Nature Trust of British Columbia 888 Dunsmuir Street, Suite 500 Vancouver BC V6C 3K4

Dear Nature Trust of British Columbia:

On behalf of Environment and Climate Change Canada, I would like to congratulate The Nature Trust of British Columbia (Nature Trust BC) on its 50th anniversary and many achievements in wildlife habitat conservation and stewardship.

Since its creation in 1971, Nature Trust BC has been an important ally in achieving the Government of Canada's goals to deliver and manage nature conservation projects in British Columbia. Nature Trust BC is well known for taking a science based approach in selecting land for protection and for ensuring the professional delivery and management of conservation projects of provincial and national significance.

In addition, Nature Trust BC has been an important contributor to many Environment and Climate Change Canada programs, such as National Wildlife Areas, the Habitat Stewardship Program, Priority Places, the Natural Heritage Conservation Program, and the National Wetland Conservation Fund. These achievements are helping the Government of Canada work toward fulfilling its commitment to protect biodiversity and conserve 25 percent of land and inland waters and 25 percent of marine and coastal areas by 2025, working toward 30 percent by 2030.

Notably, Nature Trust BC's outstanding efforts have helped the Canadian Habitat Joint Ventures achieve Canada's North American Waterfowl Management Plan goals, as recognized by the North American Waterfowl Management Plan's National Blue Winged Teal Award in 2019 for Nature Trust BC's significant contributions to the conservation of waterfowl and wetland habitats.

As you know, Nature Trust BC has also led efforts to conserve ecologically sensitive private lands donated through Environment and Climate Change Canada's Ecological Gifts Program. Nature Trust BC has received Canada's first formal "EcoGift," as well as more ecological gifts than any other land trust in British Columbia, protecting a diversity of rare and sensitive habitats across the province.

As Minister of Environment and Climate Change, I am very grateful for all Nature Trust BC has done to conserve Canada's outstanding natural heritage and for being a reliable and steadfast partner over 50 years of dedicated conservation work. I look forward to seeing what we will accomplish together in the coming years as our collaboration continues.

Please accept my best regards.

Sincerely,

No inter

The Honourable Steven Guilbeault, P.C., M.P. (il/lui/he/him)



50° anniversaire d'Environnement et Changement climatique Conada Environment and Climate Change Conada's 50° anniversary

150° anniversaire du Service météorologique du Conado Meteorological Service of Canada's 150° anniversary



## Message from the CEO

hen I was a kid, my best day was catching frogs and chasing snakes. Today, my best day is when we acquire one more threatened habitat and save more vulnerable wildlife.

I feel very lucky to work with the amazing group of people at The Nature Trust of BC who work every day to keep nature in our future.

We know that saving habitat is the first step in protecting wildlife, fish and plants. We also know that protecting biodiversity builds resilience against impacts like climate change. This summer's dangerous heat waves could be a harbinger of more extreme weather events. This is a real concern for our province because BC is home to more species than any province or territory, but so many of those species have dwindling populations. And, a loss of biodiversity leaves us all more vulnerable.

This year, I have often thought about the brilliant minds that laid the foundation for our work 50 years ago. People like Bert Hoffmeister, who led a remarkable Board of Directors of renowned scientists and business leaders, committed to sound science and sound business decision making.

People like Ron Erickson who through the 1980's and 1990's spearheaded many of the important programs and partnerships that have been instrumental in our success.

People like our incredible donors, supporters, and champions. I am always humbled by the care and generosity of people who love the natural world and who have shared part of our journey. In our first 50 years, The Nature Trust of BC has protected more than 500 properties and 178,000 acres of threatened habitat across BC, from the Salmon River on Vancouver Island, to Boundary Bay in the Lower Mainland, to the majestic Hoodoos in the Kootenay.

2021 will be a landmark year for The Nature Trust with nine property acquisitions worth more than \$16 million dollars – our biggest acquisition year ever.

For me this year is about celebrating. It's about celebrating the past 50 years. It's about celebrating BC's biodiversity, every habitat that has been protected, and every ecosystem that has been restored. Most importantly, it's about celebrating the future of land conservation in BC.

Fifty years is a huge accomplishment...But with your help, it's only the beginning.



Dr. Jasper Lament, CEO

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## Celebrating 50 Years

ifty years is long in a person's life, but in the context of our natural world it is brief.

Many of the landscapes that The Nature Trust seeks to protect, places like the iconic Hoodoos in the Kootenay, took thousands of years to form. Species that are imperiled today took millions of years to evolve and adjust to their specific habitats. In the last fifty years, The Nature Trust has diligently preserved many of the rarest and most vulnerable spaces. And we have committed to continuing our conservation mission in perpetuity.

Looking back, it becomes clear how prescient our Board has been. Long before we had computers and digital communications, we had dedicated scientists out on the land documenting, surveying and making decisions on the best possible conservation properties. They saw the pressure that increasing development was having on sensitive ecosystems and vulnerable species, and were able to prioritize areas where humans and nature were most in conflict.

Early on, the board identified conservation priority areas – the east coast of Vancouver Island, the lower Fraser River, south Okanagan and the Kootenay. These remain our priority areas today. New conservation science and technology has only confirmed that these are, in fact, the most endangered areas of the province.

Conservation has never been the job of a single organization. Over the past 50 years The Nature Trust has taken a lead in developing partnerships across organizations, governments and foundations to further this important work.

In 1987, The Nature Trust along with other conservation partners and federal and provincial government departments

established the Pacific Estuary Conservation Program (PECP) for the purpose of acquiring, protecting and enhancing estuaries along the BC coastline. Some of The Nature Trust PECP projects include the Cowichan River estuary, Nanaimo River estuary, Englishman River estuary and South Arm Marshes of the Fraser River delta. This program is still active today and has played an important role in the Enhancing Estuary Resilience program.

In 1990, The Nature Trust was instrumental in prioritizing management activities for the conservation of natural habitat in the South Okanagan, together with provincial and federal environment ministries and other non-government organizations and foundations. The resulting Habitat Atlas for Wildlife at Risk and the Conservation Strategy for the South Okanagan helped establish the basis for the South Okanagan Similkameen Conservation Program partnership.

In 1991, The Nature Trust helped to establish the BC Conservation Data Centre (CDC). The BCCDC assists in the conservation of the province's biodiversity by collecting and sharing scientific data and information about wildlife and ecosystems in BC. This started the BCCDC on an ambitious plan to compile and analyze information on the rare vascular plants, vertebrates, and forested ecosystems of the province. The Nature Trust still plays a key role in managing annual spatial data updates on BC's conservation lands protected by NGOs, as well as mapping and distributing annual summaries of findings. The current General Working Group for managing these data include Canadian Wildlife Service, Ducks Unlimited Canada, The Nature Trust of BC, the Nature Conservancy of Canada, and The Land Trust Alliance of BC (LTABC).



Through the 1990s and 2000s The Nature Trust continued to lead in British Columbia conservation and grow partnerships and programs, many of which still exist today. The South Okanagan-Similkameen Conservation Program, the Kootenay Conservation Program, the Canadian Intermountain Joint Venture, the Pacific Birds Habitat Joint Venture, the Columbia River Basin Biodiversity Atlas, the Coastal Douglas-fir and Associated Ecosystems Conservation Partnership (CDFCP), and the West Coast Conservation Land Management Program are some of these programs and partnerships.

In 2008, The Nature Trust was again at the forefront of

a joint effort by government and non-governmental scientists to develop a science foundation to take action to conserve the province's biodiversity. From this initiative, *Taking Nature's Pulse: The Status of Biodiversity in British Columbia*, a 268-page report, was published. This report provides 23

Over the past 50 years The Nature Trust has taken a lead in developing partnerships across organizations, governments and foundations to further this important work.

major findings that highlight the most important considerations for the conservation of biodiversity in BC. *Taking Nature's Pulse* is the result of a collective effort over three years by more than 50 leading provincial and international scientists representing some of the best ecological thinking in BC. The findings from this report are still in use for conservation decision making.

Fifty years ago, The Nature Trust was very lucky to be able to have many 'boots on the ground' to inform decisions. Our directors took off in sea-planes and helicopters, on buses and boats, to survey, assess and gather information. As time went on, The Nature Trust harnessed new technology and developed new tools for conservation and assessment. Satellites came online, digital mapping became more accessible, communication and phone technology progressed and with each new development field observations could be shared more quickly and easily. There are still many people on the land but now vast databases of information are gathered and shared across partnerships. The science of conservation becomes more precise with more information.

The access to data and technology informed the development of the Relative Ecological Assessment (REA) tool. This tool uses

> provincial spatial data to help assess the ecological values and priority ranking for individual property acquisitions. The REA tool ensures that the land acquisition decisions made by The Nature Trust are scientifically sound and that the land portfolio continues to improve over time, based on seven

ecological criteria for conservation. To help gather data for the REA tool our staff developed mobile apps to use in the field.

In 50 years, The Nature Trust has conserved over 500 properties spanning 178,000 acres (72,000 hectares). It started with one property, a clear vision, a dedicated board and staff, and the persistence to keep going. Along the way we have gathered a diverse and devoted community of donors, supporters, and partners, without whom we could not do this work. We continue to foster these values and relationships and we're confident they will see us through the next 50 years.

The Biodiversity Crisis



The Ivory-Billed Woodpecker was officially declared extinct by the U.S. Fish and Wildlife Service in 2021. Photo by Audubon

#### By Bryn White

Biodiversity is central to all life on earth – human and non-human.

The term "biodiversity" is short for biological diversity – the variety of life in all its forms that many people simply think of as "nature".

Biodiversity is described as the variety of living things, including diversity within species (genetic diversity), diversity between species and diversity of ecosystems. Biodiversity also includes the evolutionary, ecological, and cultural processes and interactions that connect life at all these scales.

Biodiversity is central to all life on earth from the smallest bacteria to a giant blue whale and everything in between. The diversity of nature ensures that benefits from the ecological functions of ecosystems are provided to all living things, as such there is a growing recognition of the importance of maintaining biodiversity to human society.

A biodiverse landscape is critical for ecosystems to provide for our health, social, cultural and economic needs. Ecosystems provide clean air and water, soil regeneration, pollination of our food plants, groundwater recharge, medicines, forest products, storage of carbon and reduction of our greenhouse gases. It is the underpinning of the quality of life we enjoy and critical for the survival of the wildlife living all around us.

If biodiversity remains strong and intact, ecosystems are more resilient and resistant to disturbance, and are much more likely to support both non-human and human life over the long-term. This is especially important for us to pay attention to in British Columbia as our provincial biodiversity, some found nowhere else on the planet, plays a significant role in Canada, and around the globe.

British Columbia is the most biologically diverse of Canada's provinces and territories, and is home to many regionally, nationally and globally significant species and ecosystems. Climate and physical geography are the two most important factors that make BC so biodiverse.

BC is home to three quarters of Canada's bird and mammal species, 70% of its freshwater fish and 60% of its evergreen trees. Further, 40% of Canada's hardwood tree species, 30% of its amphibians, and 25% of its mammals are found only in BC. The province has become a globally important refuge for formerly common or widespread species in North America whose ranges have collapsed toward the province, including Grizzly Bear (*Ursus arctos horribilis*) and Wolverine (*Gulo gulo*).

While more than 50,000 species call BC home, only a small fraction have been assessed for their conservation status. What we know is that of the thousands of species and hundreds of ecological communities assessed – many are at risk. BC has more species at risk than any other province or territory in Canada.

We have recently experienced the very real, tangible impacts of climate change this past summer with the heat dome, catastrophic wildfires, and drought. The climate is changing, and ecosystems are already being impacted. What does this mean for biodiversity if losses are already being documented? Although some changes are predictable, scientists explain that "surprises" will be unavoidable.

For example, experts predict large-scale shifts in ecosystems and species including



the certain loss of some ecosystems, where whole ecological communities are expected to disassemble and reassemble into novel, new combinations. Those new combinations will undoubtedly impact existing ecosystems' structure and function, where they occur, and their availability to provide quality habitat for species.

Species themselves are predicted to change their distribution, with populations perhaps declining, migrating or adapting over time. Generalist species will take advantage of the disturbance while those that are more specialized and vulnerable may decline. Even those native species capable of migrating to newly suitable climates and conditions will be confronted by atypical ecosystems in the face of changed disease and disturbance patterns, increased variability, and invasive species. For example, what happens when the timing of predator-prey or flower-pollinator interactions are misaligned? Or, when a species necessarily expands its range but is challenged to find appropriate food resources or breeding conditions?

For the first time in history, 50 of the world's top experts

on biodiversity and climate change, representing two major international scientific groups, have collaborated to drive one clear message home: climate change and the rapid decline of biodiversity are intertwined crises that must be tackled together if international efforts to address either are to succeed.

Their groundbreaking report released this past June, emerging from months of research and collaboration amongst the world's most expert biodiversity and climate scientists, examined the relationships between biodiversity and climate in the context of plausible future changes in climate.

This body of work was in preparation for two major upcoming United Nations conferences, one focusing on biodiversity and the other on climate change. The authors highlight that for too long, efforts to address these crises have operated on separate tracks. Global leadership needs to work at the intersection of biodiversity and climate, or humanity will suffer as they both could have predominantly negative impacts on human well-being and quality of life.

There are some major recommendations from the

Fifty of the world's experts are suggesting we need to do more and do it better. Challenge accepted.

report that inform and reinforce the direction of The Nature Trust's work.

Nature based solutions alone will not save us – but without them we will likely face failure and the loss of many ecosystems and species. We need to do more and do it better. The authors call for a rapid expansion of ambition and scope – a substantial upscaling of commitment and resources to implement conservation strategies, protecting and managing important areas in perpetuity. The Nature Trust is celebrating its 50th anniversary with approximately 180,000 acres and 500 properties in its care to conserve and manage in perpetuity, and 2021 is shaping up to be one of the biggest years for conservation on record for NTBC.

#### In a world increasingly affected by climate change, maintaining biodiversity relies on enhanced and well-targeted conservation efforts.

The Nature Trust is working with multiple partners in collaboration to conserve biodiversity – and its own process is scientifically rigorous to ensure that NTBC is securing and

managing the vitally important areas of biodiversity in BC.

Avoiding and reversing the loss and degradation of carbon- and species-rich ecosystems on land and in the ocean is of the highest importance for combined biodiversity protection and climate change mitigation actions. Carbonrich ecosystems can reduce greenhouse gas emissions from changes associated with land- and sea-use and maintain large carbon sinks if properly managed.

The Nature Trust is targeting carbon rich ecosystems and is increasing capacity and efforts to do so, including being funded by ECCC's Nature Smart Climate Solutions Fund.

This is what NTBC has done for 50 years – protecting biodiversity in the places that need it the most. Our conservation lands are critical for native species and ecosystems to respond to climatic changes, and for biodiversity to recover and flourish in the face of one of the most challenging times in human history.

Fifty of the world's experts are suggesting we need to do more and do it better. Challenge accepted.



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## BC's Most Endangered Species

British Columbia has more species than any other province or territory in Canada. The Nature Trust focuses on unique and endangered ecosystems in order to protect the homes of the most vulnerable animals and plants. Here are some of the vulnerable species The Nature Trust is protecting through land conservation.

#### Western Skink – Plestiodon skiltonianus

Western Skinks are known for their amazing tails. Not only are they a vibrant blue color, but they are also able to 'release' their tails if predators grab hold of them as a way to quickly escape. After their tail is released, it will thrash around – distracting their predators with the bright colour – giving the skinks a chance to escape. They are able to slowly regenerate their tails, but they never grow back to have the same bright blue colour. Skinks are threatened by increasing habitat loss and being illegally taken from the wild for the pet trade, but still are wild at NTBC's Chilliwack River property.

#### Phantom Orchid – Cephalanthera austiniae

The Phantom Orchid is an especially unique plant species because it lacks chlorophyll. Unlike most plants that use sunlight and water to grow, these plants derive their nutrition from a three-way partnership with an underground fungus and a tree species. Because of this, the Phantom Orchid requires old-growth or undisturbed

> second-growth forests with intact below-ground fungal networks, like NTBC's Katherine Tye property.

#### Brandt's Cormorant – Phalacrocorax penicillatus

The largest cormorant on the Pacific Coast, Brandt's Cormorant is an expert diver that can swim deeper than 200 feet in pursuit of fish. This species nests and forages in the California Current, an area of rich upwelling between British Columbia and Mexico. This species has declined in BC over recent years largely due to human disturbance, entanglement in fishing nets, and vulnerability to oil spills. They have been seen on Breton Island - Whitridge Reserve, a recent addition to NTBC's property portfolio.

#### American Badger - Taxidea taxus jeffersonii

The American Badger is North America's only badger species. It is at risk in BC because the little habitat they have left is adversely affected by human activity. They are also highly susceptible to road mortality. The continued survival of badger populations in BC requires protecting more habitat like NTBC's Princeton Grasslands - MapleCross

Meadow and Columbia River Wetlands conservation complexes.

#### Yellow-breasted Chat - Icteria virens auricollis

The once common Yellow-breasted Chat is now very rare. In British Columbia, the chat breeds only in the South Okanagan and Similkameen valleys. Its song is louder and lower pitched than other wood warblers consisting of three whistles like the sound of someone calling a dog. The Yellow-breasted Chat is in danger of becoming extirpated in BC mainly due to habitat loss, but it can still be spotted on NTBC's Vaseux Lake property complex.

## Williamson's Sapsucker – Sphyrapicus thyroideus

The Williamson's Sapsucker is a summer visitor to the southern interior of British Columbia, with the most restricted distribution and lowest abundance of the four species of sapsuckers that occur in the province. As their name suggests, Williamson's Sapsuckers are cavity excavators with specialized tongues that are adapted for eating sap. Unfortunately, tree harvesting throughout much of their breeding and foraging habitat is a serious threat to this species. They need protected areas like NTBC's Princeton Grasslands – MapleCross Meadow.

#### Behr's Hairstreak Butterfly - Satyrium behrii

Behr's Hairstreak butterflies have an important relationship with a plant called Antelope-brush. This plant species is the Behr's Hairstreak's only known larval host plant. Without it, this butterfly is unable to complete its life cycle. Unfortunately, this host plant and its habitat have decreased considerably in the past century and remain under threat due to land use change and the impact of wildfires. Thankfully, NTBC has protected some of its habitat on the Antelope-brush Conservation Area near Oliver.

#### Desert Nightsnake – Hypsiglena chlorophaea

The rarest and most endangered snake in Canada is the Desert Nightsnake. This Red-listed species is difficult to study because of its secretive and nocturnal behaviours. Even though these snakes are not a danger to people, they are often killed because they have a similar appearance to young rattlesnakes. They have been spotted in NTBC's Okanagan

Falls Grasslands.

#### White Sturgeon – Acipenser transmontanus

Over the past century, White Sturgeon populations have been declining due to over-fishing, construction of hydroelectric dams, diking, and human competition for food such as salmon. Two imposing features of the White Sturgeon – the huge size reached by the oldest adults and the rows of bony shields – set this fish strikingly apart from other freshwater species in the province. Reaching six meters in length, 635 kg in weight and over 100 years in age, this is the largest freshwater fish in Canada. They have been found in Nicomen Slough, where The Nature Trust has recently established a property complex.

#### Vivid Dancer – Argia vivida

The Vivid Dancer damselfly is a thermal spring habitat specialist. It has adapted to breed specifically in geothermal springs like in NTBC's Wycliffe Wildlife Corridor property. In fact, it is the only documented dragonfly or damselfly with these adaptations. This specialization is a challenge as recreation and development near thermal springs has caused this species to decline. These springs are also very vulnerable to droughts, earthquakes and landslides, making the future of this species uncertain.

#### Woodland Caribou – Rangifer tarandus caribou

There are three major subspecies of caribou in Canada: Woodland, Peary, and Barren-ground. Only Woodland Caribou can be found in BC and they have been slowly disappearing for several decades now. Roads, recreation, and utility corridors are major contributors to their population decrease. Management of caribou habitat, like NTBC's Kennedy Siding property, is vitally important to the survival of Woodland Caribou in BC.



#### Spotted Bat – Euderma maculatum

Spotted Bats are found only in the dry southern and central valleys of BC, like NTBC's Okanagan Falls Grasslands, and nowhere else in Canada. They have very specialized behavior and habitat needs, and any subtle changes in their environment, either natural or human-caused, can have a significant impact on their populations. Like most other bats, the Spotted Bat emits echolocation calls to navigate in the dark – but unlike most other bats, its low frequency call can be heard by humans at distances up to 250 meters.

#### Burrowing Owl – Athene Cunicularia

Burrowing Owls are unusual: they nest in underground burrows rather than in tree cavities; they are often active in broad daylight; and they eat insects as well as rodents. These adaptations for life in a grassland environment set them apart from other owls. However, natural grasslands in BC are being diminished by expanding agriculture and urbanization. NTBC and conservation partners are working to protect this species and reestablish a healthy population at NTBC's White Lake Basin Biodiversity Ranch.

#### Contorted-pod Evening-primrose – Camissonia contorta

Contorted-pod Evening-primrose is a small herb with yellow flowers and small twisted seed pods – which give them their name. In Canada this species is restricted to coastal areas along southeastern Vancouver Island and the adjacent Gulf Islands. However, the total Canadian population is estimated to have declined by approximately 35% in recent years due to recreational activities on their habitat causing destructive disturbances. These interesting plants can be found on NTBC's Savary Island property.

#### Northern Leopard Frog – Lithobates pipiens

Northern Leopard Frog populations across much of western Canada declined sharply in the 1970s. There have been recent efforts to reintroduce the species to places where they were extirpated throughout the province along with habitat restoration projects like at NTBC's Bummers Flats. The Vancouver Aquarium also maintains a captive population as insurance against extinction of

the species in the wild.



## The Tech and Tools of Conservation

Cologists work with more than just paper, maps and compasses these days, and The Nature Trust of BC is at the forefront of applying new technologies in its work to protect ecosystems and wildlife in British Columbia. Leanna Warman, a long-time biologist and Conservation Ecologist with The Nature Trust, outlines some of the latest tech and tools of conservation.

With so much land in need of conservation, assessing the ecological values of potential land acquisitions is a critical task for The Nature Trust of BC.

"When we first started assessing properties, we used notebooks, compasses and paper maps to survey ecological features, and later added Global Positioning System (GPS) units that identify your location using satellites," said Warman. Now, rather than cross-referencing these different tools, The Nature Trust uses computer tablets that allow surveyors to view spatial imagery and data while walking through the landscape to survey ecological information, and upload directly into online digital maps.

Spatial data, also referred to as geospatial data, are any kind of data pertaining to specific geographic locations. These can be species observations and ranges, rare and common ecosystems, or even roads, developments and water features.

An important consideration when assessing a potential acquisition is the surrounding landscape. Conservation areas don't exist in isolation, they exist as part of a network of very different land types and uses. To really understand the conservation values of a property, we need the spatial data for the property itself, for the region in which it is located, and for the province as a whole. "Since there is a vast array of spatial datasets available at these different scales, many of the initial decisions The Nature Trust makes are now based on spatial data," said Warman. The Nature Trust uses a conventional geographic information system (GIS) software called ArcGIS. ArcGIS provides the capability to make maps, analyze spatial data, use online tools for mobile field work, and facilitates sharing and collaboration with staff and partners.

One of the most important technological developments in The Nature Trust's 50 years is a custom designed computer model called the Relative Ecological Assessment tool, which is used to evaluate potential acquisitions. This tool uses statistical software and ArcGIS tools for data processing, and is regularly being enhanced with updated spatial data and technology. The tool currently uses seven criteria to evaluate potential land acquisitions: biogeoclimatic zone conservation values, under-protected ecosystems, ecosystem condition, species richness, presence of rare species or ecosystems, viability or connectivity with other protected areas, and wetland

or riparian ecological values.

These criteria are based on a series of spatial datasets that have been mapped for the entire province of BC. The tool uses the spatial data to provide a common set of values to evaluate potential acquisitions across the province. The results from the tool help The Nature Trust make the difficult decision of how to prioritize land acquisition. "The Relative Ecological Assessment tool is one of the biggest technological advancements that have happened in my time with The Nature Trust," said Warman.

But conservation isn't all about remotely assessing a property: a lot of conservation still involves on-theground fieldwork, and technology plays an important role here too. "We've developed maps and datasets that can be used in mobile apps on iPads and are connected with our ArcGIS system, which field technicians can use to record their observations while out on the properties," said Warman. A field crew that comes across a rare species, a changing river system, a patch of invasive plants, or an incursion situation can map it using the app, which will then add the new data to The Nature Trust's existing spatial datasets. "The Nature Trust can use these data to track activity on the property over time, such as issues that need to be resolved, wildlife use, or changes in habitat features. We use this information to know where the ecological values are most sensitive to disturbance and make decisions about what's important for the ongoing management of the property" said Warman.

Technology is already a big part of the conservation work The Nature Trust does, and it may have an even bigger role to play in the future. "We're in the process of looking at how we can use technology to monitor our properties with an 'eye in the sky'. Right now, we have really good high-definition images of our properties based on the data that is available. But we're working toward getting real time imagery which we could use as an alert system to assess needs and mitigate issues, or to record changes in ecosystems over time. I think in the future, this type of technology is going to become more and more accessible," said Warman.

Ecologists' understanding of ecosystems is advancing in many ways, which is aided by the ease of using apps and programs to remotely describe landscapes through GIS mapping. The Nature Trust of BC continues to invest in tech and tools to advance land conservation and to ensure donors and supporters get the best return on their investment.

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## Keeping Nature in Our Future One

#### Park Rill Floodplain

The Nature Trust was delighted to announce the addition of the 61-hectare Park Rill Floodplain to the White Lake Basin Biodiversity Ranch Conservation Complex. Prior to its acquisition, the land had been cared for by conservationists Ray and Jennifer Stewart for over 33 years. Park Rill supports six sensitive ecosystems: sagebrush steppe, open coniferous woodland, seasonally flooded fields, wet meadow, sparsely vegetated rocky outcrops, and importantly, grasslands. Part of the property is a cultivated floodplain, which The Nature Trust plans to restore to a more natural state.

The native grasslands of the South Okanagan are a hotspot for biodiversity, hosting a huge number of BC's at-risk species. But grasslands are also one of the rarest land cover types in BC, covering less than 1% of BC's land base with few intact swaths of these open plains remaining. Park Rill Floodplain will protect species including Lewis's Woodpecker, Peregrine Falcon, Nuttall's Cottontail and Western Rattlesnake.



#### Nicomen Slough

The stretch of river between Mission and Hope, with its stony shores, gravel reaches and winding side channels, so profoundly affects the productivity of the Fraser River watershed that it has been called the "Heart of the Fraser". This area provides crucial spawning habitat for salmon and threatened White Sturgeon (COSEWIC), and serves as a nursery and migration corridor for millions of juvenile salmon every year. Additionally, the river and associated riparian habitats support an extraordinary diversity of plants and animals.

In 2021, The Nature Trust added 7.5 hectares to the Nicomen Slough Conservation Complex, increasing its area by 50%. This area is significant for migratory birds including Trumpeter Swans and other waterfowl. Nicomen Slough supports species at risk including reptiles and amphibians like Western Painted Turtle, Northern Rubber Boa and Northern Red-legged Frog, as well as mammals like Muskrat, Beaver and River Otter.

## Property at a Time



#### Princeton Grasslands – MapleCross Meadow

The Nature Trust has continued the expansion of Princeton Grasslands – MapleCross Meadow in 2021 with the addition of 527 acres (213.2 hectares). This is the final stage of a three-phased project to conserve grasslands in the Similkameen Valley. These grasslands include over 100 species of grasses, flowers and other plants. Grasslands provide habitat for more threatened or endangered species than any other ecosystem type in British Columbia.

The Princeton Grasslands Conservation Complex includes I 18 hectares of critical habitat for the Williamson's Sapsucker, a small woodpecker estimated to have a population of less than 500 adults in Canada. Other birds that can be seen on this property include Barn Swallows, Olive-sided Flycatchers and Western Screech Owls. The property also provides vital winter range for Mule Deer and predators including Cougars, Bears, and Bobcats.





Ver the last 50 years, The Nature Trust has acquired and protected over 500 properties, more than 178,000 acres (72,000 hectares) of land for conservation.

Our mandate is two-fold: to secure habitats of high biodiversity value, which are at the greatest risk of being lost, and to manage those lands to ensure ecosystem resilience and connectivity.

Each of the dots on the map represents a Nature Trust conservation property. They are concentrated in our four priority areas of special concern: the east coast of Vancouver Island, the lower Fraser River, the Okanagan, and the Kootenay.



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Crew is proud of our partnership with the Nature Trust of British Columbia and we look forward to continued collaboration with a shared goal of long-term sustainability

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Connor, Clark & Lunn Private Capital Ltd. joyfully celebrates the 50<sup>th</sup> anniversary of The Nature Trust of British Columbia. Proud to have been a gold sponsor for their 2021 Fall gala.

Rudy Kerklaan, Vice Chairman

604-643-2085 rkerklaan@cclgroup.com

A Wealth of Thinking



#### Mariner Way

A generous donation from the Wilson 5 Foundation allowed The Nature Trust to purchase the 2.8-hectare Mariner Way property located at the mouth of the Englishman River on Vancouver Island.

Due to factors such as dikes, roads and residential development, portions of the estuary are almost completely cut off from natural tidal and river processes. In turn, the estuary has become less accessible for fish and wildlife that would normally use these habitats for shelter, feeding, and rearing. The Nature Trust has undertaken a number of restoration and enhancement projects on its properties in the Englishman River Estuary Property Complex including: removing dikes and fill, enhancing tidal channels, increasing habitat complexity for fish and wildlife, and removing invasive plants.

The Englishman River estuary and adjacent habitats support

Artist's rendition of restored Mariner Way property

over 250 bird species, 23 mammals, plus several amphibians and reptiles, all species of Pacific Salmon, and forage fish such as Herring and Pacific Sand Lance. The Englishman River is the most important salmon-producing stream on the mid-east coast of Vancouver Island. This watershed supports all species of salmon and fish stocks have dramatically declined. Due to the significant changes of the landscape over the past century, the Englishman River is now recognized as one of the most endangered rivers in the province.

This estuary also offers significant resting and feeding sites along the Pacific Flyway for birds such as the Black Brant, which stop each spring on their incredible 3,000 kilometer journey to the Arctic.

#### Shoal Creek Estuary

Biodiversity flourishes in estuaries, the areas where fresh water from rivers and streams collide with the ocean's salt water tides. Estuaries comprise only about 3% of BC's coast but support 80% of all fish and wildlife in the province. For this reason the 320 acre Shoal Creek Estuary property, neighbouring the Fulmore Creek Estuary, has a rich diversity of plant and animal species.

From its sea level tidal flats, to rising steep mountain slopes, to the overhead Pacific Flyway, this land parcel supports a variety of wildlife and plants. Millions of birds, including the Western Grebe and Brandt's Cormorant, stopover each year on their migration journey along the Pacific Flyway which means this route holds international importance. Perhaps the most rare and vulnerable species that need to be protected in the estuary are the plant communities – many of which only occur in temperate estuaries. These include Tufted Hairgrass, American Glasswort, Sea-Milkwort, and Lyngbye's Sedge.

The Nature Trust is now working on securing the second phase of the Shoal Creek Estuary project, which will double the size of this conservation complex. Find out how you can help at naturetrust.bc.ca





#### Kamloops Lake – Rosseau Creek

N estled on the north banks of Kamloops Lake, adjacent to the Dewdrop-Rosseau Creek Wildlife Management Area, lies the 19-acre property of Kamloops Lake – Rosseau Creek. Due to its remoteness, this parcel is unserviced, undeveloped and is considered accessible only by boat. Rosseau Creek crosses the property from northeast to southwest flowing into the lake and creating a riparian gully through the property. With much of the north side of the lake already protected from development, the purchase of this property protects an infill shoreline parcel from future development and contributes to the resiliency of this large contiguous conservation area.

The rare grassland ecosystem on this parcel of land provides a stunning setting to discover Bighorn Sheep and Mule Deer as they venture down from the hills to forage for a meal during the winter season. Other endangered species live here as well. It's not unheard of to come across American Badgers, Lewis's Woodpeckers and the tiny but fierce Flammulated Owls while venturing in this area.



#### Galiano Island – Cable Bay

The 26.5-hectare forested Cable Bay property on Galiano Island is home to over one kilometer of coastal shoreline, featuring eelgrass and kelp beds. This site neighbours other conservation lands such as the Pebble Beach Reserve. In an effort to extend the protected areas that span the island, The Nature Trust of British Columbia and Galiano Conservancy Association are partnering to acquire the Cable Bay property.

Deciduous and coniferous forests of all ages compose this

area and old growth trees line the forest edges. The forest protects and shades spawning areas for Surf Smelt and Sand Lance. Cable Bay is a haven for resident and migratory birds, intertidal life and fish and marine mammals. To name a few, there is the Stellar Sea Lion as well as the California Sea Lion, Harbour Seal, Mule Deer and Raccoon. Because its nutrientrich waters serve as excellent nurseries for young fish and overwintering birds, you are likely to stumble upon species such as Buffleheads, Harlequins, Goldeneyes, and Scoters.

#### Emily Griffiths-Hamilton - Current Board Chair

For me, The Nature Trust of BC's 50th Anniversary is a time to reflect on the people who have contributed to our significant past accomplishments, take pride in our current strengths and projects, and plan for an exciting future.

I'm inspired by the passion, collaboration, and leadership of our founders, generous donors, hard-working staff, volunteer board of dedicated business leaders and foremost scientists and conservation partners, who have built the trust over fifty years. They had the vision to build a solid foundation for The Nature Trust, and to ensure BC's rich natural diversity is protected.

I'm humbled to volunteer alongside all the individuals, who work tirelessly at every level of engagement and who share in the mission of The Nature Trust. Today, we are building on the work of the founders, conserving BC's rich biological diversity through not only securement, but also the long-term management of ecologically significant lands.

And I'm excited by The Nature Trust's bright future! The commitment of the individuals and organizations who share the vision and mission of The Nature Trust inspires me every day. Together we can leave a lasting legacy of nature for future generations.

#### Ron Anderson - Board Chair 2017 to 2019

I joined the Nature Trust Board because I wanted to help preserve ecologically important parts of British Columbia for my daughters and their children. My business background balanced the 50/50 businessscience mix on the board, one of the key principles of the Trust since its beginning. I found an extremely well-run organization with a clear mission, a solid financial structure, no debt, a world class evaluation process for analyzing potential purchases, a new CEO Jasper Lament, and a lean, knowledgeable and committed management team that was in transition as several long-time employees began to retire.

The future is going to see the Nature Trust grow significantly. Under Jasper, the new Strategic Plan has the goal to more than double the annual property purchases, supported by the Board's Conservation Fundraising Committee to open doors to larger donors and government sources of capital. This is the most ambitious, exciting plan in its history and it will mean a significant increase in saving endangered lands and species in the province. It will be a big win for BC.

My Nature Trust experience was an incredibly enjoyable and rewarding time and I look forward to continuing on the Advisory Board.



## Reflections on 50 Years









#### Peter Arcese - Board Chair 2015 to 2017

Some memories stick with us forever. For me, wading streams and beaver ponds in search of cutthroats slurping mayflies or darting among salmon to snap up errant eggs offered limitless routes into nature; in the pool around the corner, the harlequins riding rapids, a brilliant female defending her redd, or a merganser rising to swallow her meal.

These kinds of memories rekindle a sense of belonging in the 'natural world' for all those lucky enough to have discovered its power in the first place. But finding those opportunities to create memories and imbue the spirit has become more challenging in our ever-more crowded world.

By conserving special places and restoring their potential to support spectacular and diverse species, NTBC is a leader among NGOs in ensuring that nature will exist in perpetuity to offer moments of beauty, exhilaration, and wonder to future generations. NTBC makes it a goal to provide gifts of nature that I never asked for as a child, but was deeply fortunate to receive.

#### Daniel Nocente - Board Chair 2009 to 2011

The Nature Trust, over its 50 years, has been a vital link in the global chain of individuals and organizations that have toiled to enhance and protect biodiversity and the environment. As an organization, The Nature Trust was able to achieve this success through a kind of spiritual harmony and shared vision among its leaders, staff and supporters.

More than this, The Nature Trust gifts hope to our children – that our generation has plans to protect and enhance the environment for all those to come who will want to wander the woods or cast a fly in a river.

#### Robin Wilson - Board Chair 2007 to 2009

I had a surprise visitor enter my office in North Vancouver one sunny afternoon in 2008. It was Don Krogseth, Chair of the Nature Trust of BC, and a well known and respected philanthropist.

At the time, I was engaged as a fundraising consultant in the for-profit and non-profit world and Chair of the Board of Directors at Canada Place Corporation. Don invited me to consider joining the Nature Trust's Board of Directors. I was honoured but surprised – I would be the only woman on their Board. When I raised that point, Don countered by saying he was well aware of that. Don was very persuasive.

Joining the Board of the Nature Trust of BC and later serving as Chair was an honour. Having the opportunity to work with their dedicated employees, field staff and Board members was a privilege. The experiences I had travelling around our beautiful province opened my eyes to how fortunate we are to live and work in British Columbia. Those of us who call BC home couldn't ask for a better place to raise our families.



#### Buttertubs Marsh

The Nature Trust of BC's Buttertubs Marsh property is a 23-acre reclaimed freshwater marsh habitat within the City of Nanaimo, which was purchased between 1975 and 1979. With a 2 km loop trail around the marsh, observation decks and a tower perfect for bird watching, it is no wonder that this park receives more than 75,000 visitors every year.

Buttertubs Marsh is home to many at-risk species. Be on the lookout for Red-listed Purple Martin, Blue-listed Trumpeter Swan, American Bittern, Great Blue Heron, Green Heron, Turkey Vulture, Short-eared Owl, or even a Painted Turtle!

## Visit Our Most Popular Properties

#### Boundary Bay

A great location for spotting wildlife is our 79-acre Boundary Bay property in Delta. Acquired by The Nature Trust of BC in 1987, this property contains intertidal salt marshes, mudflats, and open ocean where you're likely to spot many wildlife species that take advantage of these unique habitats. This property is a vital link in the Pacific Flyway – the north-south migratory bird route spanning from Alaska to South America.

Keep your eye out for the Western Sandpiper, Red-tailed Hawk, Peregrine Falcon, Bald Eagle, and numerous other beautiful bird species. You might also get lucky and spot the elusive Barn Owl. More than two-thirds of the Fraser River estuary's Harbour Seal population is found in Boundary Bay, so watch for their bobbing heads in the water.

The Boundary Bay Dyke Trail provides a great opportunity for walking, photography, and cycling. Over a million people visit every year.

#### The Hoodoos

ocated in the East Kootenay Trench, The Hoodoos is the largest property owned by NTBC. Covering nearly 9,700 acres, The Hoodoos property boasts incredible scenery, unique wildlife, and stunning recreational trails. It is one of our most frequently visited properties.

The property gets its name from spectacular hoodoo rock formations, thin spires of rock created over millions of years through erosion. Layers of various mineral deposits, and alternating soft and hard rock, create striped, whimsical looking shapes and textures that are unique to the area.

The Hoodoos provides critical wildlife habitat and migration corridors. With Elk, Deer, Beavers, Muskrats, numerous bird species, and amphibians, the property is integral for biodiversity conservation in East Kootenay – plus it provides great wildlife viewing for visitors!



#### Vaseux Lake

The Nature Trust of BC's Vaseux Lake conservation area consists of 13 properties, purchased between 1983 and 2005. It protects 484 acres of critical Bighorn Sheep habitat in the Okanagan.

This property is at the center of one of the most ecologically rich areas in not only BC, but in all of Canada. With so much of the Okanagan being developed, this property now helps to conserve many Red- and Blue-listed species including Behr's Hairstreak butterfly, White-headed Woodpecker, Nuttall's Cottontail, and of course, the stunning Bighorn Sheep.

Trails throughout the property lead through grasslands interspersed with Antelope Brush, Douglas-fir, Ponderosa Pine, rocky outcrops, and the stunning views of Vaseux Lake and cliffs in the distance. This is truly the Okanagan in all its glory!

## Conservation Champions: MapleCross

Thousands of acres and more than 30 environmentally sensitive land acquisitions in eight provinces have been conserved, restored and maintained thanks to the generosity of Dr. Jan Oudenes and Dr. Isobel Ralston's MapleCross fund. While they take their commitment to land conservation seriously, our Conversation on Conservation was light-hearted and sparked with laughter.

Jan and Isobel established the MapleCross fund in 2017 after retiring from their science-based business careers. Both admit that their land conservation work takes up a lot of their time in retirement. In pre-COVID times they traveled the world. Now to relax, Jan is learning to play the piano while Isobel paints. Her work, which has been included in several group exhibitions, interprets nature in vibrant colours.

### "Investing in Nature. Investing in Canada" is the MapleCross theme. Why have you chosen this focus?

**Isobel**: We've spent most of our life together here in Canada, hiking in the Rockies, enjoying outdoor adventures in the Yukon, canoeing in Ontario and on the South Nahanni River. Nature has always kept us spellbound. We say, Canada and nature because they are almost synonymous.

**Jan:** Investing is an important part of our philosophy. When we invest in land conservancies the dividend will be the well-being and enrichment of species saved and the diversity gained. And it will be in the way we enhance our nature reserves to make it a better world for generations to come.

Canada has always had a bit of mystique for me. I come from a small country where my knowledge of nature was cycling along canals seeing ducks, geese, swans and herons. I originally came to Canada for a year, but I got lost here and never found my way back to where I came from. How do you make your decisions about investing in nature? Isobel: We rely on the expertise of the land conservancy staff regarding specific projects. The ecology across Canada is so different, so we ask the nature trusts about their priorities to assess where our investment should go.

We also listen to recommendations regarding which groups to work with. The Nature Trust of British Columbia is a good example. The head of one of our Ontario land trusts recommended that we talk to CEO, Jasper Lament. People in BC have also suggested people we should talk to on the East Coast. We really like that culture of cooperation. It's also a bit of a gut feeling when you meet people and feel their passion.

## Do you make your funding decisions together or do you have a team?

**Jan:** Originally it was just the two of us making decisions but we got into squabbles so we needed a third person to help us out. When the head of forestry for the York Region retired he became part of our team. He gives us input on what properties are ecologically important and he does a lot of the follow up on management reports.

We've also chosen a nephew and a niece from each side of our family to be part of our team. They are a generation or more younger and we're grooming them to know what we want to do, why we think it's important, and to make sure the story of conservancy gets told for generations to come. Should something happen to us, they can take over and make sure our funds are properly dispersed.

#### Do you hope to inspire others to invest in conservancy?

**Jan:** The movement in land conservancy needs to become bigger; the story needs to be told.

The inspiration extends to the awareness of the need to preserve, conserve and also restore land. But it's also important for other people to contribute to the movement whether it's a dollar or hundreds of dollars. Everybody has his or her own ability to contribute and every contribution is important for it creates further awareness.

**Isobel:** When we're talking about inspiration I also think about who inspires us – it's the volunteers, the staff, and the ecologists. So many people across this country are truly dedicated, especially the volunteers who give of their time. It's very motivating.

### How do you encourage others to be as excited and energized about land conservancy as you?

Jan: When I was in business, I never knew where clients would come from. It could be a recommendation, a direct connection or the result of a discussion around a dinner table. I think it came from the volume of stories and I think the volume of stories about land conservation will also make a difference. People have to make their own decisions and come to their own conclusions but we have to keep telling the story.

**Isobel:** Matching funds is another thing we do to help inspire support for land conservation. It really gets people interested and thinking.

We recognize that the environment is one of the underfunded charitable sectors and we talk to people to help them understand more about it. We encourage them to come to conservancy events and to recognize what can be done at a local level.

## How did you decide to support The Nature Trust of BC's Princeton Grasslands property?

**Jan:** Our consultant in the field always stressed the importance of grasslands as did other nature conservancies. When The Nature Trust proposed the Princeton Grasslands as a high priority project in need of funding, we decided to invest in it. We really rely on the management of the land conservancies to determine their important projects. We have an interesting view of the whole conservancy movement in Canada. There are common threads as well as differences but one of the common denominators is the protection of grasslands.

## Based on your experience across Canada, what are some of the key land conservation challenges?

**Jan:** After the optimism and unbridled growth following World War II, people started looking at the limits of pollution and global warming; the impact of greenhouse gases, a rapidly expanding global population and the increase in our carbon footprint per capita. It all has a major impact on the earth in general and on the land conservation properties in each province. I see it as a much bigger issue and my view goes way beyond preserving individual properties.

I listen to the management and scientists of all the conservation land trusts and I can't say enough about how impressed I am with their passion, their intensity and the work they do. I've become increasingly aware of the complexity of land conservation. How do we encourage people to interact with nature while leaving nature to do what it does best? These are difficult questions and the answers are equally complex.

I did my post-doctoral studies in Switzerland on the prebiotic origin of life. From a chemical perspective and a prebiotic origin, hemoglobin and chlorophyll are exactly the same. So we have a lot in common with trees. If the trees and plants go so do we. We need to work as an ecosystem globally to restore and preserve.

**Isobel:** Population growth is probably the overriding issue but, at the local level, one of the issues is the relationship between people wanting to get out in nature while still wanting to preserve it. We need to find places, especially during the pandemic, where people can experience nature. The conservancies have different models. Some are trail-based while others want to keep the land in reserve. We need both so it's a challenge finding the balance. I think one of the ways to do that is through education programs.

#### What would you like your legacy to be?

**Isobel:** 'Legacy' is such a big word! I think what's important for us is to know, as much as possible, that what we are doing will be preserved in perpetuity.

The name MapleCross is important because when people hear it we hope that it will have some weight behind the things we've done and that it has some value that will inspire others. **Jan:** When we started looking at our MapleCross projects a financial advisor recommended we just invest and leave it as a legacy gift. Another wise financial advisor said, "Why don't you invest in land conservancy now while you're alive and have fun with it while leaving a legacy.?"

Our experience with the projects we're doing brings an amazing amount of satisfaction. We hope to do something that's a bit interesting and that will help people. But the road to what we're doing is wonderful.

Jan and Isobel spoke to us via Zoom from their home in Aurora, Ontario. The interview has been condensed and edited for clarity and space.

## Notes from the Field

## Monitoring Estuary Resilience

By Curtis Rispin

y phone alarm goes off in the living room, forcing me to get up and out of bed at 4:30 am before it wakes my 2 year-old son. While waiting for the water to boil for my coffee, I double check my gear: bear spray, binoculars, computer, air horn, rain jacket, chargers, etc. – everything is there, and the rest has been stowed away in the car. I'm out the door by 4:50 am and on my way to pick up my coworker, Sonja. Then, we are northward bound.

Our goal for this trip is to collect sediment cores at four locations in the Fulmore River estuary and the Shoal Creek estuary, in the traditional territory of the Tlowitsis First Nation. Sediment cores are collected for later analysis at the Estuarine Ecology Lab at Western Washington University to estimate long-term sediment accretion in the salt marsh. Additionally, we have two remaining rSET's (rod surface elevation tables) to take annual measurements from. Both of these datasets, along with other metrics derived from the Marsh Resilience to Sea-level Rise (MARS) tool, contribute to our understanding of the estuaries' resilience to a changing climate.

We arrive at Kelsey Bay and meet our boat captain, Andy, from the Tlowitsis Guardian Watchmen, as well as Matt from the University of British Columbia and his assistant Richard. Matt and Richard are tagging along for a separate project, collecting sediment samples from seagrass beds to look at blue carbon storage potential for Matt's masters project.

We load the boat full of our gear and depart northeast, up Johnstone Strait towards Port Neville. The water is calm, a lucky break in a strait that

can blow up quickly. Within a few minutes of leaving the marina, we spot a Humpback whale on the starboard side of the boat. A few minutes later. we see the first of hundreds of Pacific white-sided dolphins appearing on all sides of the boat. Andy mentions that he's observed very few whales in the strait this summer, a stretch of water that he's spent countless hours on. Combined with the early morning and the excitement of whales and dolphins, I forget to keep my eye out for the Short-tailed and Sooty Shearwaters that have been making an unprecedented appearance all over eastern Vancouver Island and the Salish Sea.

Passing by Port Neville and entering the calm waters of the inlet, we join hundreds of seabirds, including Rednecked Grebes, Common and Pacific Loons, Pelagic and Double-crested Cormorants, Bonaparte's Gulls, Glaucous-winged Gulls, Short-billed Gulls, Common Mergansers and many others. We follow the inlet towards the estuary. We make a stop and pick up a small skiff, as the mudflats don't allow the larger Guardian boat near the estuary.

The tide is low so we follow the river channel snaking its way into the estuary. Matt and Richard find a large bed of eelgrass, so we drop them off in the soft mud where they will collect their samples.

Sonja and I continue navigating up the channel towards our sites. As we come around a bend in the channel, remnants of a fish weir once used by the Tlowitsis First Nation poke through the sediment. Thousands of these stakes can be seen all over the estuary and up into the river, where Coho, Pink, Chinook and Sockeye salmon have historically returned to spawn in the river and in Fulmore Lake.

Getting closer to the salt marsh, I scan the area with my binoculars to ensure there are no Grizzly bears awaiting our arrival. Luckily, the only thing I see is a Spotted Sandpiper, teetering and bobbing as it follows the rocky shoreline. Getting further up the channel, the water starts to disappear under the boat, so Sonja and I have to hop out and push it the rest of the way. Once we arrive at the salt marsh, we collect our sediment cores at two locations in the estuary, using PVC pipes pushed into the ground, and hammered down until we get approximately 70 cm of sediment. We dig out the cores and seal them up as they will be traveling with us for the remainder of the day. We hop back into the boat and follow the channel back out towards the bay, picking up Matt and Richard along the way.

With our work complete at Fulmore, we switch our focus to Shoal Creek, an estuary that has proven incredibly difficult to access over the last two years. We have attempted on more than one occasion to complete work here and come out empty handed. Between the extensive tidal mudflats, the meandering creek channel that holds no more than a couple of inches of water at low tide, and the handful of large Grizzlies that hang out in the marsh, it can take hours to reach our intended site. However, careful planning on this trip pays off, and as we start our way up the channel, the tide starts to rise. We run out of water on a number of occasions while pulling and pushing the boat upstream, but within a few minutes each time, the tide comes up, and the boat begins to float again. Passing the time, I scan the mudflats and spot a small flock of about fifteen Western Sandpipers, as well as Canada Geese and a few flocks of dabbling ducks - including Mallards, Northern Pintails, and Green-winged Teals.

After about an hour of making our way up the small channel, we reach our first site where we collect one sediment core and take our rSET measurements. The rain, now heavy for the first time all day, makes recording notes on our touchscreen devices difficult, leaving Sonja to find shelter under a mud covered towel.

With our third site complete, I pull up my foggy binoculars and scan again





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### Proud to Support The Nature Trust of British Columbia

Congratulations to The Nature Trust of British Columbia on 50 years of protecting B.C.'s natural riches. This vital work ensures Canada's biodiversity is sustained so that it can thrive and be enjoyed.

towards our fourth and final location a few hundred meters upstream. This time, three more Spotted Sandpipers hop along the shore, then take flight up the channel. Following the birds, my eyes catch sight of a large brown object against the yellowing vegetation. The fog in my binoculars makes it difficult to focus, but then the shape of two ears appear, and slight movements confirm my initial thoughts. A large Grizzly is foraging precisely where we need to go. After a few minutes of watching the bear, we decide to boat up the channel, hoping that the presence of four humans and the sound of a boat motor will nudge the bear into the nearby forest. Seemingly unbothered, the bear hardly even looks in our direction as we park the boat in a small channel on the opposite bank. Another few minutes pass by while we weigh our options of getting to the site, but by now the bear has its nose pointed towards the sky, scenting the estuary intruders. Standing up, it gets a better look at us and decides that it will move along.

Disappearing and reappearing as it crosses through tidal channels, the bear is in no hurry, and it walks through the estuary at a slow, meandering pace until it reaches the forest edge. With the bear out of sight, we swiftly capitalize on the opportunity, crossing the channel to get to our final location.

Working quickly, Sonja and I hammer in the sediment core pipe, while Matt keeps watch for the bear in case it reemerges. Richard then takes over, digging the core out of the ground, while Sonja and I collect our rSET measurements. Once we have completed our work, we jump back in the skiff, the rain still pouring down, and steer back to the Guardian boat. We board the boat for a cold, wet ride back to Kelsey Bay.

## Banding Burrowing Owls in the Okanagan

The adorable Burrowing Owl is one of the most endangered birds found in Canada's grasslands. In fact, the species was extirpated from BC (extinct specifically in BC) in 1979. This is largely due to habitat destruction from urbanization and agricultural expansion. Burrowing Owls live in a very specific habitat: the dry valley bottoms of the Southern Interior, which comprise less than 1% of the area of the province.

Thankfully, there are many people working hard to try and reintroduce Burrowing Owls to their historic range in BC. The Nature Trust of BC's Okanagan Field Crew has been working at NTBC's White Lake Basin Biodiversity Ranch to help the Burrowing Owl Conservation Society with some of their important work.

Our crew have been assisting the Society with a project aimed at

establishing a reoccurring population of Burrowing Owls in the South Okanagan. The project raises captive owls in dedicated facilities and then releases them to the wild. They also work with Indigenous groups to promote grassland biodiversity and provide habitat for Burrowing Owls by maintaining a network of over 800 artificial burrows.

Twice a week in the spring, the Okanagan Field Crew feeds Burrowing Owls in their soft release cages. Pairs of owls are put into these cages where they can mate and lay a clutch of eggs in artificial burrows. Once the clutch has been established with five or more eggs, the soft release cages are removed. The owls incubate the eggs for roughly 26 days before they hatch. Once hatched, banding the owlets is the next step.

In June, the Okanagan Field Crew spent a day banding the little owlets

in nearly 40-degree heat. They used something called a 'plunger', which is a long piece of PVC pipe with some foam attached, to direct the owlets to the back of their burrow. From there, they opened the burrow and placed the owlets one by one in holding crates with towels covering them to keep them calm. They then took measurements and banded them with green US Fish and Wildlife Service bands and black BC bands. Once the bands are on, the owlets were put back safe and sound into their burrows so that their moms and dads could stop stressing.

The crew continues feeding the owls and recording their data until winter comes when the owls migrate south. If the birds are seen in the US or Mexico, the bands indicate that they are from BC. Now we wait and hope that they return to BC next year.



## Kootenay Crew Tackles Invasive Pumpkinseed Sunfish

nvasive species are second only to habitat loss as the cause for native species decline. Invasive fish species, in particular, can have detrimental effects on aquatic ecosystems. They can affect native fish, amphibians, invertebrates, and vegetation through habitat alteration, predation, competition, disease, and gene pool deterioration.

The Pumpkinseed Sunfish is an invasive species that is causing a significant amount of damage to ecosystems in BC. They have driven native species to extinction, including many unique species of sticklebacks, because of their broad physiological tolerances and their capacity to dominate their native counterparts.

Pumpkinseed are native to Ontario but their invasion in BC began in the early 1900s, when they were introduced through the Columbia River system. Since then, they have entered the Kootenay River system as well. Nonnative Pumpkinseed are also found in several lakes on Vancouver Island as well as the lower Fraser Valley. They can now be found everywhere between the Pacific and Atlantic in small lakes and ponds, and in shallow, weedy bays of larger lakes.

Pumpkinseed Sunfish were introduced for different purposes including control of other fish populations and as forage for predatory species, such as largemouth bass. Invasive fish species are also often introduced to novel environments through unauthorized releases or escapes. In both of these instances, their release has had unintended and dire consequences for native species.

Our Kootenay Field Crew is working to stop the spread and destruction of

the Pumpkinseed Sunfish. At one of the Cherry Creek ponds on our Bummers Flats property, the crew has been using minnow traps with larger holes (that they modified themselves) to bait and then remove the Pumpkinseed. This species is a major problem at this site because they are known to eat native insects, food supplies and amphibian eggs, which has detrimental impacts on the ecosystem as a whole.

Although we are unsure how Pumpkinseed originally invaded, it is assumed that it was through other connecting waterways. The crew is not yet confident that their trapping and removal method of species control will be an effective long-term strategy for eliminating the Pumpkinseed from the pond, but they are hopeful that it will at least have some kind of positive impact on the pond's overall health.

## Installing Nesting Boxes at Pitt-Addington Marsh

n June, The Nature Trust of BC's Lower Mainland Field Crew had the opportunity to work with the Pittwaterfowlers – Dan Otway and Chris Bradford. These two conservationists describe themselves as "two guys, just trying to make a difference for the prosperity of the local waterfowl population." They dedicate their time, effort, and resources to help waterfowl in the Pitt-Addington Marsh. Located in Pitt Meadows, British Columbia, this Wildlife Management Area supports over 200 birds and 29 mammal species. Pitt Lake itself is also very rare as it is the largest tidal freshwater lake in the world!

With the help of volunteers, Dan and Chris have organized the installation of 140 nesting boxes in the marsh. Nesting boxes are very important as they provide vital habitat for Wood Ducks and other bird species in the area. In the last 9 years, the Pittwaterfowlers have had an amazing 40% success rate with their nesting boxes. This is extremely promising for the future of waterfowl populations in the Pitt-Addington Marsh Wildlife Management Area.

During the crew's field day, they helped the Pittwaterfowlers inspect, clean and take photos of all 140 nesting boxes. In boxes without nesting ducks, the crew cleaned and replaced the woodchips on the inside, which allows ducks to lay their eggs on a cleaner surface. If they found a duck nesting in a box, the crew took photos and recorded the GPS location of the nest. This type of data is important because it shows Dan and Chris which nesting boxes are being used most often and which are being ignored. This helps them understand which locations in the marsh have high duck populations and where to install new boxes in the future.

The Pitt-Addington Marsh Wildlife Management Area is managed by The Nature Trust of BC, Ducks Unlimited Canada, and the Habitat Conservation Trust Foundation, in partnership with the Province of BC. Managing wildlife areas together is very crucial in providing species with the best habitat possible. Each organization brings something different to the table when it comes to conserving land and species. Working together creates an environment where organizations can learn from each other. This undoubtedly results in improved conservation practices and a better outcome for wildlife.



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## Where are they now?

For 22 years, The Nature Trust has hired young conservationists to work on field crews throughout BC. We offer the opportunity to young people to get hands on work experience in the conservation sector and learn valuable skills to apply to future careers. This year we caught up with some of our past crew members to find out where they are now.



#### JENNA DALLMEYER

When I was working as a field technician back in the summer of 2011, I visited a Nature Trust property located right on the Fraser River that had more mosquitos than I can possibly describe - they were absolutely everywhere! I actually had to wear a mosquito net on my head!

I said goodbye to NTBC to pursue further education and I have since completed a M.Sc. in Planning and a Watershed Management Certificate, and have been working in the local government planning field. My time at NTBC helped me grow as a young professional and allowed me to experience the joy and sense of achievement only possible through working with such a wonderful team of colleagues.



#### SAMANTHA PENNER

I've had many amazing and memorable days working in the field with The Nature Trust of BC. One memory that stands out was when I was traveling up north with my supervisor, Carl. We had to hike and then boat across Observatory Inlet in an inflatable kayak to access NTBC's Alice Arm Estuary property. The main goal of the site visit was to classify a rare and endangered ecosystem on the estuary. On the trip we saw Grizzly Bears, a Moose with her calf, a Porcupine and two Red Foxes! It was a wildlife experience I will never forget.

The Nature Trust of BC was my first conservation job after graduating from BCIT. I have worked for the past seven years as the Lower Mainland Field Operation Technician. I love the fact that I get to work for an organization that has the same passion and vision for the environment as I do. I hope to continue my career at The Nature Trust and help advance their conservation mission.



#### **RAJIV DASANJH**

Working with NTBC during the summers while pursuing a Biology degree at the University of Victoria gave me insight into a career-pathway that seemed seldom pursued by others my age at that time. It helped me identify a niche-role within the Agricultural Sector, where I noticed a lack of young professionals who could excel in both the physical, labor-related aspects of fieldwork, as well as uphold the scientific, and businessacumen required to advance the initiatives they had been assigned. Ultimately, my experience set me up for my current position with the BC Ministry of Agriculture, Food, and Fisheries, as an Agrologist on the Industry Development Unit.

My time with NTBC really helped me develop my business-acumen, in a sense of how to talk with stakeholders and administer conflict resolution, as well as appreciate the labor-related expectations of tasks even when they aren't very enjoyable. My role with NTBC required that I deal with very different situations on a day-to-day basis, and the full breadth of what it takes to translate 'on-paper' initiatives and projects into real-world context. It showed me that any career is ultimately what you make of it, and you will always get back what you put in sooner or later.



#### FIONA BEATY

Working with NTBC as a member of the Lower Mainland Conservation Crew was one of the first immersive field ecology experiences that I had. Getting to spend all day every day out in the field learning natural history and plant ID skills was incredible, and truly set me on the course to becoming the field ecologist that I am today. I remember one day we were out in the Valley walking through a riparian landscape with two visiting ecologists. They taught us how to read the landscape and history of events. By paying attention to which trees grew where, we could track where the river flowed and how recently it changed course. I thought that was such an incredible skillset, and have tried (slowly) to build this familiarity and landscape reading capacity as I walk through forests and along beaches throughout BC's south coast.

My career has taken me in the direction of marine biology and conservation. I am currently a fourth-year PhD Candidate at the University of British Columbia, where I study how climate change impacts British Columbia's coastal ecosystems and communities. I also lead several marine planning, conservation, and nearshore restoration projects based in Howe Sound/ Atl'ka7tsem (one of three Squamish Nation place names for the body of water). My experience with NTBC catalyzed my passion for getting out into the field, and learning as much as I can about nature and ways to take care of it. I'd say that it was one of my first chances to begin understanding what stewardship means for me, and how I can practice it through both my work and personal life. I am very grateful to have had the opportunity that I did!



#### Quieter oceans mean healthier whales.

Thanks to our partners across the marine transportation industry, government, Indigenous communities, and environmental groups, the Enhancing Cetacean Habitat and Observation Program (ECHO) is helping to create quieter oceans for healthier whales, improving their ability to find their prey.

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Gala hosts Andrea MacLeod and France Perras

The Nature Trust of BC 's 50th Anniversary Gala fundraiser was a huge success. The live stream was attended by 350 passionate conservation enthusiasts, and raised over a million dollars in donations. That generosity will be invested in new parcels of land to protect and nurture fragile ecosystems and the vulnerable species they sustain.

Thank you to all our sponsors and individual donors who made this a year to celebrate.



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For a complete list of auction donors, please visit our website: naturetrust.bc.ca

## Upcoming events









### Calling Young Leaders: Vancouver

Each year we bring together young people interested in conservation for a fun-filled night out. This year's event will be in late February in downtown Vancouver. Shoot us an email if you would like to be involved in this great networking event, info@naturetrust.bc.ca

#### Brant Wildlife Festival: Parksville-Qualicum Beach

From April 1-10 join us in Parksville-Qualicum Beach for the annual Brant Wildlife Festival. Celebrating the changing seasons and the epic migration of the Brant Geese, events will be held each day.Visit brantfestival.bc.ca for more information.

#### Fall Gala:Vancouver

After two years of virtual galas, we are back in person. Sponsor a table or buy a ticket to our premier fundraising event in October. More information will be available on our website.

#### Conservation Land Management Workshops and Events: All Regions

Events are held throughout the year, across the province. Stay tuned to our website and your local naturalist clubs for more information. If you are a member of a conservation group and are interested in partnering with The Nature Trust, please contact us at 1 866 288 7878, or info@naturetrust.bc.ca



























































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Nature Trust Conservation Property: Salmon River Estuary, BC. Photographed by Graham Osborne.