



# **ADAPTING TOGETHER: A HANDBOOK FOR CLIMATE RESILIENCE IN BC**

Practical Nature-Based Solutions that can be undertaken locally by Naturalist Clubs in B.C.

**AUTHORED BY STEEWA MARIA PHILIP (CLIMATE ADAPTATION AND NATURE-BASED SOLUTIONS COORDINATOR)**



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## **BC NATURE LAND ACKNOWLEDGMENT**

BC Nature respectfully acknowledges that our work takes place across the homelands of many Indigenous Peoples throughout what is now known as British Columbia (B.C.). These lands and waters have been cared for and intertwined with the lives of diverse First Nations since time immemorial, each with their own unique histories, languages, and relationships with the natural world. Our headquarters are in North Vancouver, on the unceded territories of the Skwxwú7mesh (Squamish), səliłwətaʔt (Tsleil-Waututh), and xwməθkwəy̓ə m (Musqueam) Nations. We are deeply grateful to live and work on these lands and are committed to learning from and working in partnership with Indigenous communities to support respectful, reciprocal relationships in conservation.

# ADAPTING TOGETHER: A HANDBOOK FOR CLIMATE RESILIENCE IN BC



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## **1. WELCOME AND FOREWORD**

## Welcome and Foreword

BC Nature is pleased to present this digital handbook on Nature-Based Solutions that will help communities adapt to climate change. We felt this was important now, because naturalist clubs can play a crucial role in adapting to a changing climate. As you will see below, predictions for climate change in B.C. include more frequent and severe storm events, changed and less predictable precipitation events, and longer periods of heat and drought in most areas. Adapting to these changing conditions requires that B.C.'s ecosystems are managed to achieve as much resilience as possible. Therefore, climate change is now being considered in all the naturalist activities that BC Nature is involved in.

The role that naturalist clubs can play is to advocate for protecting and enhancing species and ecosystems. Naturalist clubs in B.C. advocate for protecting watersheds, old-growth forests, wetlands, estuaries, alpine meadows, parks and wilderness areas, and particular species, such as Woodland Caribou or Vancouver Island Marmots. In other words, naturalist clubs, as well as BC Nature, the Federation of BC Naturalists and related clubs, are well positioned and successful at maintaining and enhancing biodiversity in B.C. The connection between enhancing biodiversity and adaptation is that, as a general rule, more diverse ecosystems are also more resilient to the predicted changes that will occur as a result of a changing climate.

We make this digital handbook available to everyone who wants to contribute to nature-based approaches to climate change adaptation. In doing so, we recognize that the sixty-seven BC Nature member clubs all have different interests and capacities. Therefore, the digital handbook is less of a prescription and more of a guidance document.

We thank the Pacific Institute for Climate Solutions and Nature Victoria for a grant to support the development of this handbook. We also thank author Steewa Maria Philip for the hard work involved in pulling this all together.

On behalf of BC Nature,

Nancy Flood,  
President, BC Nature

## 1.1 How to Use This Handbook

This handbook is designed to be useful at different stages of a club's conservation journey. Find the entry point that matches where your club is right now.

**If your club is new to nature-based solutions,** start with the introductory sections on **Nature based Solutions (NbS)** principles and the five ecosystem types. These will give you a shared vocabulary and a framework for thinking about what kinds of projects make sense in your region. The case studies are then best read as a menu of possibilities rather than a prescription — look for examples that resemble your local landscape and your club's current capacity.

**If your club is already running a project,** the case studies are most useful as a mirror. Read the examples closest to your own work and ask: are we collecting data in a way that carries regulatory weight? Are we connecting with Indigenous knowledge holders? Are we tracking and reporting our impact in ways that build toward something larger? The B.C. connections offered at the end of each case study are intended to help you strengthen and deepen work already underway.

**If your club is seeking funding or partnerships,** the handbook documents real funding sources, institutional partners, and program frameworks that can serve as leads for your own applications. Pay particular attention to the project tables, which summarize scale, timeline, and lead organizations for each example.

**If your club is building a long-term vision,** read the Grimsby Wetlands and Loch Craignish examples together. Each represents a years-long commitment by a volunteer group to a single piece of land or a single species, and each shows what that commitment can produce over time. The most durable NbS projects are not one-time events. They are relationships between communities and places, built slowly and maintained stubbornly.

Finally, this handbook is a living document. The examples here were verified as of the date of publication, but the field of community-led NbS is growing rapidly. BC Nature encourages member clubs to contribute their own project stories for future editions — **the best case study for a BC Nature club may ultimately be one written by a BC Nature member club.**

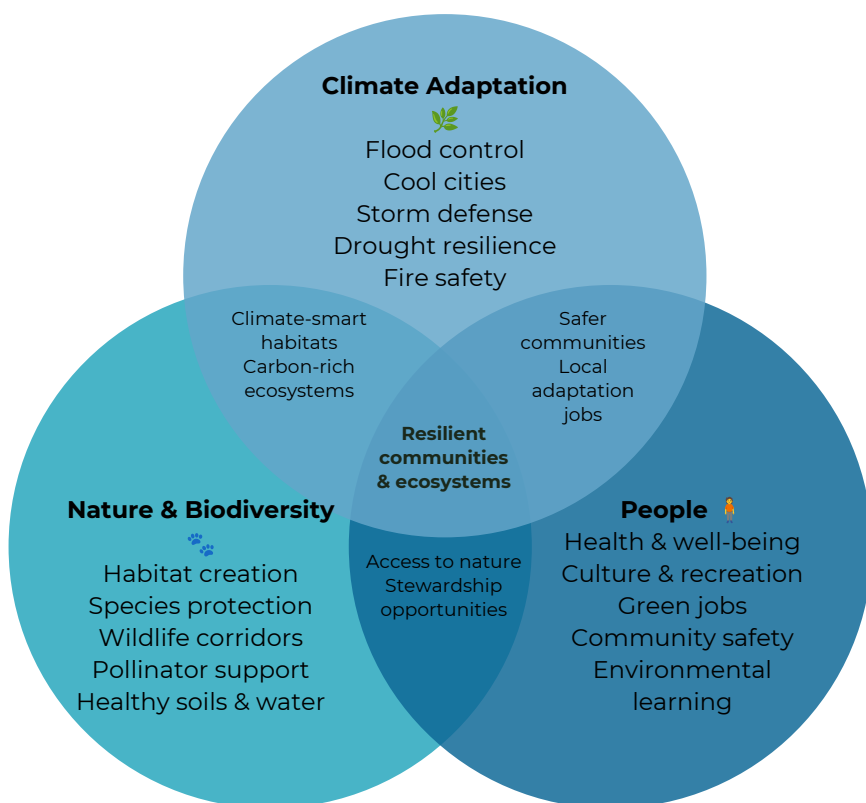
An aerial photograph of a coastal wetland. A winding waterway, possibly a tidal creek, flows through lush green marshes. In the background, there are rolling hills and a body of water. The text "2. INTRODUCTION TO NATURE-BASED CLIMATE SOLUTIONS" is overlaid in the center of the image.

## **2. INTRODUCTION TO NATURE-BASED CLIMATE SOLUTIONS**

## 2.1 What Are Nature-Based Climate Solutions (NbS)?

- NbS are essential tools for helping communities adapt to a changing climate. By protecting and restoring ecosystems, we can buffer people from climate-related hazards. These systems not only absorb excess water, filter pollutants, and moderate temperatures — they also provide critical wildlife habitat, supporting biodiversity that strengthens ecosystem resilience.
- In cities across Canada, green infrastructure — from tree-lined streets and rain gardens to green roofs and urban wetlands — acts as a natural defense system. These features cool neighbourhoods during extreme heat, reduce the strain on stormwater systems during heavy rainfall, and improve air quality, making urban areas healthier and more livable in the face of climate extremes.
- NbS also build social and economic resilience. They create local jobs in ecosystem restoration, urban greening, and sustainable land management — benefiting Indigenous communities, farmers, ranchers, and forestry professionals.

## 2.2 How NbS Connect Climate Adaptation, Biodiversity & People



This diagram shows how climate adaptation, nature and biodiversity, and people are interconnected through NbS. Healthy ecosystems — like wetlands, forests, and coastal habitats — protect communities from floods, heat, drought, and storms, while providing homes for wildlife and storing carbon. At the same time, these solutions create cultural, recreational, and economic benefits for people, from green jobs to improved health. Where all three areas overlap, we see the greatest wins: thriving, resilient communities living in balance with rich, diverse ecosystems.

**Example:** Restoring a wetland not only improves water quality and habitat for birds and amphibians, but it also reduces flood risk, and creates opportunities for local stewardship and education.

## 2.3 Global to Local Lens

NbS are now central to climate and conservation strategies around the world:

1. **UN & IPCC:** NbS are recognized by the UN and Intergovernmental Panel on Climate Change as essential for meeting global climate targets.
2. **Canada's Climate Plan:** Canada has committed to scaling up NbS through initiatives like the 2 Billion Trees Program, support for Indigenous-led conservation, and the Natural Climate Solutions Fund.
3. **BC Context:** In B.C., NbS are critical for adapting to rising wildfire risk, sea-level rise, heatwaves, and ecosystem shifts. They also align with Indigenous land care practices and local conservation efforts led by naturalist clubs.

**Fact:** According to [Nature United](#), natural climate solutions could reduce Canada's GHG emissions by up to 78 Mt annually by 2030—over 10% of national emissions.

## 2.4 Not All “Green” Projects Are Nature-based Climate Solutions

Some initiatives claim to be nature-based but don't meet ecological or social standards. It's important to be able to spot greenwashing — projects that sound good but cause harm or miss the point.

**Quick Tip:** Ask these questions:

- Does it protect or rehabilitate real ecosystems?
- Is it inclusive and community-driven?
- Are benefits clear and measurable?
- Is it designed for long-term resilience?

| Genuine NbS                                                                            | Greenwashing or Misleading                                           |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Planting native trees in a degraded riparian area, based on local ecosystem conditions | Planting monoculture trees for carbon credits, ignoring biodiversity |
| Rehabilitating wetlands to manage floodrisk and bird habitat                           | Artificial ponds with no biodiversity value or water source          |
| Community-led pollinator meadows using native species                                  | Commercial landscaping using ornamental, non-native plants           |
| Indigenous-led fire stewardship in dry forests                                         | Suppression of all fire, increasing long-term fire risk              |

## 2.5 Six Core Principles of High-Integrity NbS

These principles (adapted from the [IUCN Global Standard](#)) help naturalist clubs, communities, and planners ensure that NbS are truly effective and not just “green” in appearance.

| Deliver Co-benefits                                                                                                                                                                                                    | Ecosystem-Based                                                                                                                                                                              | Inclusive & Community-Driven                                                                                                                                                | Scalable & Systemic                                                                                                                                   | Ecologically & Socially Sustainable                                                                                                      | Evidence-Informed and Adaptive                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                       |                                                                                                             |                                                                                           |                                                                    |                                                       |                                                             |
| NbS should address multiple challenges — climate adaptation, biodiversity protection, and human well-being. For example, a restored forest may provide wildlife habitat, and support Indigenous harvesting traditions. | True NbS are rooted in local ecological knowledge and function. They enhance or mimic natural processes — such as recharging groundwater, stabilizing slopes, or enabling species migration. | NbS should be co-developed with Indigenous Nations, local communities, and equity-seeking groups. Their knowledge, priorities, and leadership are vital to lasting success. | NbS should go beyond isolated efforts — linking into regional land use plans, watersheds, or ecosystem corridors to build landscape-scale resilience. | Projects must maintain ecological integrity over time, avoiding harmful trade-offs like invasive species or displacement of communities. | Use data, local monitoring, and community feedback to guide planning and improve over time. Flexibility is key to responding to future change. |

<sup>1</sup> Icon made by Uniconlabs from flaticon.com  
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<sup>5</sup> Icon made by BomSymbols from flaticon.com  
<sup>6</sup> Icon made by Freepik from flaticon.com

A photograph of an orca (killer whale) swimming in a body of water, with a forested hillside in the background. The orca's dorsal fin is visible above the water. The text "3. WHY NATURE-BASED SOLUTIONS MATTER NOW" is overlaid in the center of the image.

### **3. WHY NATURE-BASED SOLUTIONS MATTER NOW**

## 3.1 The Urgency of Climate Adaptation in British Columbia

B.C. is already experiencing the accelerating impacts of climate change. This is not a future problem; it's a present reality that is altering ecosystems, threatening communities, and stressing the very natural systems that support life. From devastating wildfires to historic flooding and prolonged droughts, climate-related disruptions are happening more frequently and with greater intensity than ever before. The next 10 to 30 years are critical. Even if global emissions are significantly reduced, a certain amount of warming is already locked in due to past emissions. This means communities across B.C. need to adapt now to protect people, biodiversity, and ecosystems. Adaptation means preparing for new normals: hotter summers, shifting species ranges, more volatile weather patterns, and altered water cycles. It also means strengthening our relationship with the land and with each other, working proactively to increase ecosystem resilience.

### Rising Temperatures and Heat Waves

B.C. has warmed significantly — average annual temperatures are up by ~1.4 °C since 1900, while winter night-time temperatures have increased even more. These shifts have lengthened the wildfire season and intensified extreme heat events. Without action, heat-related illnesses are projected to double or quadruple by 2050.

### Wildfires: Bigger, Hotter, More Frequent

Since 2005, wildfire activity in B.C. has surged dramatically, reversing a century-long downward trend. Four of the province's worst fire seasons — 2017, 2018, 2021, and 2023 — have occurred in the past decade alone.

### Extreme Drought and Water Insecurity

During summer 2023, many water basins were in extreme drought, with Vancouver receiving just 2 mm precipitation, and Victoria recording only ~2 mm vs. 132 mm normally. Streams on Vancouver Island dropped so low that salmon spawning was disrupted; meanwhile, up to one quarter of trees in Stanley Park died.

### Flooding, Atmospheric Rivers & Coastal Threats

Complex weather systems have also intensified flood risk. The 2021 Pacific Northwest floods, which was driven by an atmospheric river, caused catastrophic damage in southern B.C., including landslides and infrastructure failure, with damages estimated \$7.5 billion. Coastal sea-level rise compounded with stronger storm surges threatens low-lying areas — models project up to one metre of rise by 2100 in metro Vancouver municipalities.

## **Ecosystem Stress & Biodiversity Loss**

Climate change is disrupting ecosystems: snowpack decline, shifting hydrology, increased pests (like mountain pine beetle), invasive species, and altered species ranges all stress biodiversity and ecosystem functioning. Healthy ecosystems are crucial buffers — storing carbon, moderating flooding, and supporting wildlife. Without proactive adaptation aimed at increasing ecosystem resilience, both human communities and ecosystems face heightened vulnerability.

## **3.2 Climate Snapshots by Region (Graphical Representation in Appendix C)**

### **South Coast (Vancouver)**

By the 2050s, the South Coast is projected to see hotter summer extremes, with peak temperatures rising from around 29°C historically to about 33°C and more than triple the number of days over 25°C. Summers are expected to get about 15% drier while fall rainfall increases by roughly 10%, extending the growing season but reducing snow overall.

### **Boundary (Nelson)**

In the Boundary region, hottest days are projected to climb from about 35°C to roughly 39°C by the 2050s and 42°C by the 2080s, with around three times as many days over 30°C. Summers are expected to become about 15% drier, while spring rainfall rises by about 10%, lengthening the growing season and reducing snowpack.

### **Thompson Okanagan (Kelowna)**

For the Thompson Okanagan, peak summer temperatures are expected to increase from about 35°C historically to around 40°C by the 2050s and 42°C by the 2080s, with roughly three times as many days over 30°C. Projections indicate about 10% less summer rain and 15% more spring rain, contributing to a longer growing season and less snow.

### **Omineca (Prince George)**

In the Omineca region, hottest days are projected to rise from about 31°C to roughly 35°C by the 2050s, with more than double the number of days over 25°C. The area is expected to see about 30% fewer frost days, around 15% more fall rainfall, a longer growing season, and less snow overall.

### **Northeast (Fort St. John)**

By the 2050s, the Northeast is projected to see its hottest days warm from about 30°C to roughly 33°C and toward 36°C by the 2080s, along with about 2.5 times as many days over 25°C. Frost days could decline by about 20%, with a longer growing season, increased spring rainfall of about 20%, and reduced snow.

### West Coast (Nanaimo)

On the West Coast, hottest days are projected to increase from about 31°C historically to around 34°C by the 2050s and 36°C by the 2080s, with approximately 2.5 times as many days over 25°C. The region is expected to experience about 15% less summer rain, around 80% fewer frost days, more fall rain (about 10%), a longer growing season, and less snow.

### Skeena (Terrace)

For the Skeena region, projections show hottest days warming from about 24°C to roughly 28°C by the 2050s and 30°C by the 2080s, with about eight days per year over 25°C. The area is expected to see around 30% fewer frost days, about 15% more fall rain, a longer growing season, and less snow.

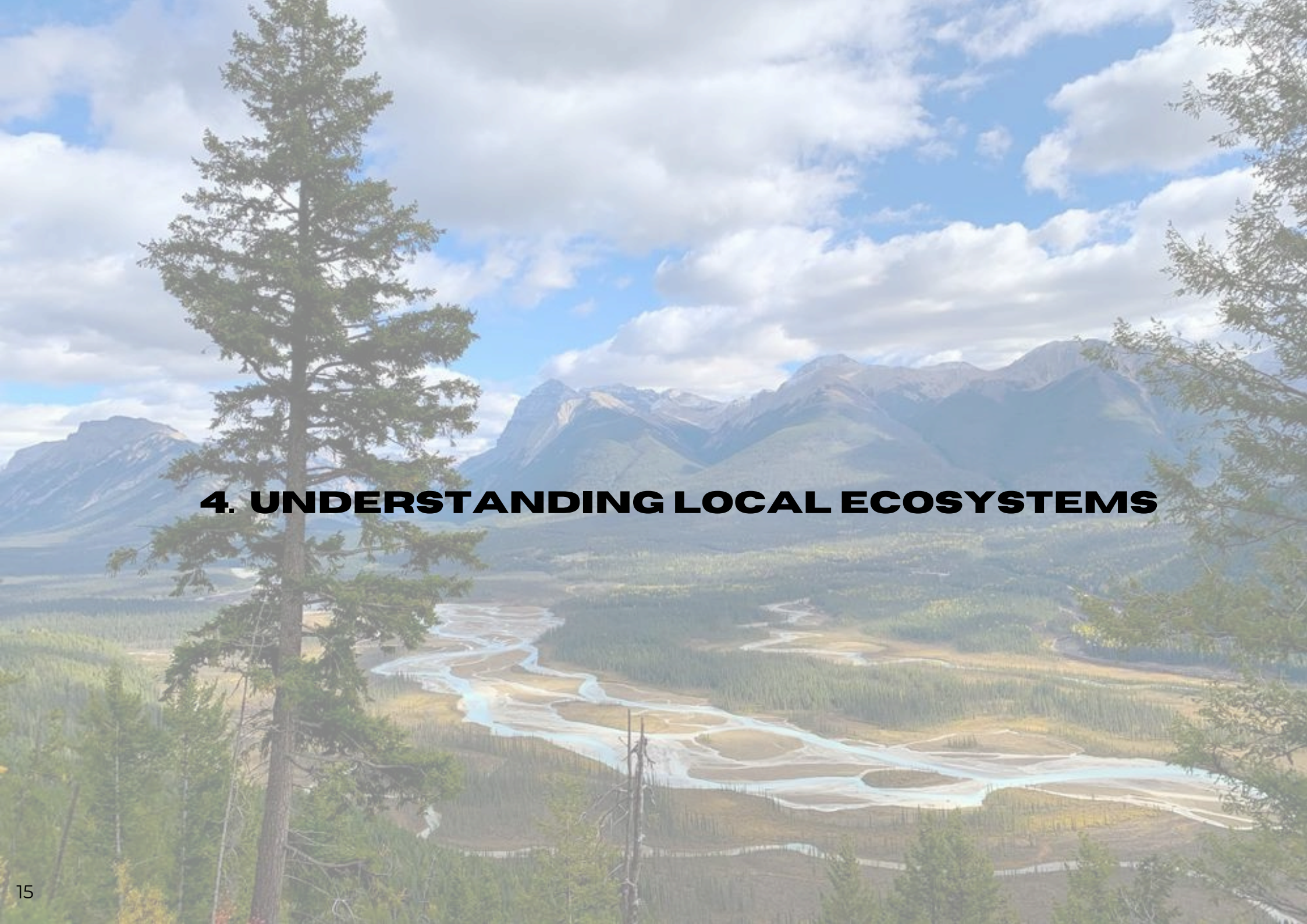
### Cariboo (Williams Lake)

In the Cariboo, hottest days are projected to climb from about 34°C historically to around 38°C by the 2050s and 41°C by the 2080s, with roughly three times as many days over 30°C. The region may see about 30% fewer frost days, around 15% more rain in fall and spring, a longer growing season, and reduced snow cover.

## 3.3 The Power of Local, Community-Led Action

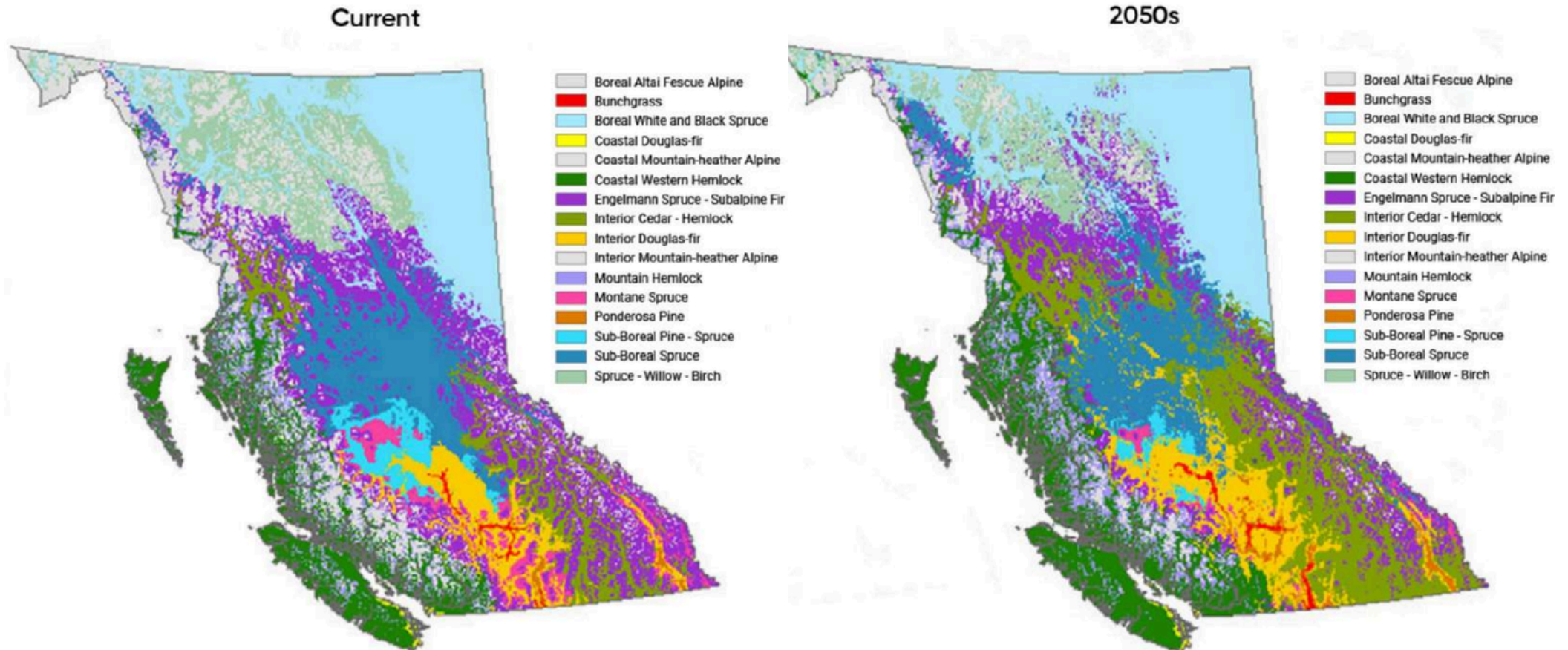
1. **Proximity to place:** Community groups understand local landscapes, ecosystem patterns, and traditional knowledge in ways larger agencies can't.
2. **Trust-building:** Relationships built over time with neighbours, landowners, and Indigenous partners make projects more equitable and effective.
3. **Speed and flexibility:** Clubs can pilot ideas fast, whether planting riparian buffers, installing rain gardens, or restoring pollinator habitat, and scale what works best.
4. **Reinforcing resilience:** Small-scale, nature-based efforts multiply resilience, through actions such as cleaning water, cooling neighborhoods, reducing flood and fire risk, and enhancing biodiversity.

Provincial and federal adaptation frameworks now emphasize community engagement and Indigenous leadership in climate resilience planning. For example, BC's Climate Preparedness and Adaptation Strategy notes that every dollar invested in adaptation yields \$2–\$10 in avoided long-term damages. Similarly, BC's Tripartite Nature Conservation Framework commits to Indigenous-led ecosystem protection and climate-resilient landscapes.

A scenic landscape photograph of a mountain valley. In the foreground, a tall, dark evergreen tree stands on the left. The middle ground features a wide, braided river with multiple channels and sandbars, flowing through a valley. The background consists of rugged, rocky mountains under a blue sky with scattered white clouds. The overall scene is a natural, mountainous environment.

## **4. UNDERSTANDING LOCAL ECOSYSTEMS**

## 4.1 Changing Landscape of BC



Based on the predictions shown, by the 2050s, substantial changes to the distribution of B.C. ecosystems will have occurred due to climate change. For example, there is expected to be a major shrinkage of Montane spruce and Engelmann spruce – subalpine fir; the sub boreal pine-spruce ecosystem will shrink and interior Douglas-fir will expand northward, as will the interior cedar-hemlock ecosystem.

Pictures sourced from [changingclimate.ca](http://changingclimate.ca), Source - The University of British Columbia, 2022; Wang et al., 2012.

## 4.2 Key Ecosystems in BC

| Ecosystem Type               | Some Examples in B.C.                         | Key Features                                                                         |
|------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Forests</b>               | Coast, Interior, Subalpine                    | Habitat for thousands of species; large carbon stores; critical for water regulation |
| <b>Wetlands</b>              | Fraser Valley, Kootenays, Central Coast       | Flood mitigation, biodiversity hubs, carbon sinks                                    |
| <b>Watersheds</b>            | Fraser, Skeena, Columbia, Peace               | Drinking water sources, salmon habitat, agricultural support                         |
| <b>Coastal/Marine Zones</b>  | Vancouver Island, Gulf Islands, Central Coast | Storm buffers, blue carbon storage, critical fish nurseries                          |
| <b>Urban/Suburban Nature</b> | Metro Vancouver, Victoria, Kelowna, Kamloops  | Urban forests, pollinator habitat, green infrastructure potential                    |

## 4.3 What Ecosystems Do For Climate, People, and Wildlife

Ecosystem services are the essential life-support systems that healthy, functioning natural environments provide. They sustain human life and well-being every day, purifying our air and water, regulating our climate, supporting food production, and protecting us from natural hazards like floods and storms. Because these services are freely available, they are often overlooked or taken for granted in economic and policy decisions. Yet when ecosystems are damaged or lost, the cost of replacing these functions, if they can be replaced at all, is enormous, both financially and in terms of human health and safety. Recognizing their value is the first step toward protecting and restoring the natural systems that sustain us.

| Type                         | What It Includes                                                                   |
|------------------------------|------------------------------------------------------------------------------------|
| <b>Regulating Services</b>   | Flood control, wildfire mitigation, climate regulation, air and water purification |
| <b>Provisioning Services</b> | Food, fresh water, timber, medicinal plants                                        |
| <b>Supporting Services</b>   | Soil formation, nutrient cycling, habitat maintenance                              |
| <b>Cultural Services</b>     | Recreation, spiritual value, education, cultural identity                          |

Losing ecosystem services has real costs: Flood damage, declining air quality, water shortages, and biodiversity loss.

## 4.4 Climate Vulnerability Snapshots

### Forests

#### Key Climate Impacts:

- a. Increased wildfire frequency and severity
- b. Drought stress and tree mortality
- c. Pest outbreaks (e.g., Mountain Pine Beetle)
- d. Changes in species composition and tree migration

**Most Affected Zones:** Interior Douglas-fir, Sub-boreal Spruce, Montane Spruce, Coastal Western Hemlock

### Wetlands

#### Key Climate Impacts:

- a. Declining water levels due to drought
- b. Shifts in plant communities
- c. Disconnection from floodplains and river systems
- d. Loss of breeding habitat for amphibians and birds

**Most Affected Zones:** Southern Interior valleys, Kootenay and Columbia basins, Fraser Lowland

### Watersheds

#### Key Climate Impacts:

- a. Low summer flow due to glacial melt and snowpack loss
- b. Warm water temperatures affects salmon and trout
- c. Flashier floods from extreme precipitation
- d. Changes in sediment load and water quality

**Most Affected Zones:** Fraser River Basin, Skeena, Columbia, Peace River region



## Coastal & Marine Ecosystems

### Key Climate Impacts:

- a. Sea-level rise causing shoreline erosion and saltwater intrusion
- b. Ocean warming and acidification affecting kelp, eelgrass, and shellfish
- c. Loss of estuarine habitat critical to juvenile salmon and shorebirds

**Most Affected Zones:** Salish Sea, North and Central Coast, Haida Gwaii

## Urban/Suburban Nature

### Key Climate Impacts:

- a. Intensified heat islands due to loss of vegetation and impervious surfaces
- b. More frequent urban flooding from extreme rain
- c. Air quality degradation from wildfire smoke
- d. Loss of habitat connectivity for birds, pollinators, and amphibians

**Most Affected Zones:** Metro Vancouver, Victoria, Kelowna, Kamloops, Prince George



**Climate change affects every ecosystem, but in different ways. To protect what we love, we first need to understand what's at risk.**

A photograph of two people in a grassy field. On the left, an older man with white hair, wearing a grey cap and glasses, is holding a blue bag. On the right, a woman with brown hair tied back, wearing a brown hoodie and a white respirator mask, is looking into the bag. The background is a field of tall green grass with yellow wildflowers.

## **5. ACTION TOOLKIT: NATURE-BASED CLIMATE SOLUTIONS YOU CAN DO**

## 5.1 Nature-based Solutions for Ecosystems and Case Studies

This section describes examples of NbS for the five ecosystems discussed above. These are not meant to be exhaustive, but stand as illustrations of the range of local actions that are possible.

We present three case studies for each ecosystem: one each from B.C., another from elsewhere in Canada, and an international example, selected for their relevance to the scale and capacity of BC Nature member clubs.

Most examples feature the rehabilitation of degraded ecosystems. We consider rehabilitation to be adaptation: it does not prevent climate change, but it increases the biodiversity and resilience of both ecosystems and communities to better accommodate and survive its effects.

## 5.2 Forests

### Invasive Species Removal

Remove invasive plants like Himalayan blackberry, English ivy, and European beachgrass to restore native forest ecosystems. Focus on early detection and rapid response approaches. Hand removal is most effective for smaller infestations, while mechanical removal may be needed for established populations. ([ssisc](#))

### Understory Regeneration

Plant native shrubs and herbaceous species beneath mature forest canopies to restore natural forest structure and diversity. Target areas degraded by past logging or development. Focus on species adapted to local soil and moisture conditions. ([natureconservancy](#)).

### Fire-Smart Native Planting

Create defensible space around communities using native, fire-resistant species like Douglas-fir and Ponderosa pine. Plant deciduous species in riparian areas to increase soil stability and reduce fire risk. Design fuel breaks with strategic native plantings. ([bccfa](#)).

### Coexisting with Wildfires

Support cultural burning and prescribed fire programs led by Indigenous communities and other prescribed programs in ecosystems that are fire-dependent. Learn about fire-adapted ecosystems and promote natural fire cycles that maintain grassland and dry forest habitats. ([gov](#))

### Rewilding

Allow natural regeneration processes by removing human disturbances and reintroducing native species. Create wildlife corridors connecting fragmented forest habitats. ([ourtrust](#)).

# CASE STUDY - HARROP-PROCTER COMMUNITY FOREST CLIMATE ADAPTATION



**WEST KOOTENAY ADVERTISER**

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Thursday, February 22, 2024

## Educational wildfire videos create new jobs in Columbia Basin

Submitted by Columbia Basin Trust

Effective storytelling is no easy feat. It requires an entertaining balance of delivering key information and themes, as well as hooking the audience from the beginning until the end credits roll.

When the Harrop-Procter Community Co-operative (HPCC) set out to create four educational films on wildfire risk reduction, their goal was to attract — and keep — the interest of an audience spanning the entire province of B.C. and beyond, all while creating jobs for professionals in the arts sector.

The HPCC is a community service co-operative managing 11,300 hectares of public land behind the villages of Harrop and Procter. The co-op practices socially and environmentally progressive forestry and has worked in community wildfire protection for over 10 years. As a founding member of the BC Community Forest Association (BCCA) and leader in B.C.'s community forest movement, the HPCC has become a vital resource when it comes to innovative forestry and climate change adaptation.

With support from partners Columbia Basin Trust and the Province of B.C., the HPCC's forest manager Erik Leslie worked with Nelson-based Watershed Productions to create and distribute four short films, along with shorter teaser versions, between June 2021 and April 2022. These videos aim to promote community awareness and inform public support for wildfire risk reduction activities and continue to be used today.

"We wanted to make videos that are relatively easy to digest and tell community stories through a range of voices and perspectives," says Leslie. "We took a documentary, narrative-style approach to help people understand the issues around wildfire protection, climate change, and forest management for wildfire risk reduction, using local interviews and examples from our community forest."

Distilling technical information into accessible 10-minute videos that engage a diverse audience required the expertise of Amy Bohigian, founder of Watershed Productions, a video production and marketing company specializing in community-based storytelling. The film project not only created eight new jobs in the creative arts industry — a sector that was struggling post-COVID — but it also provided training and skill development for a burgeoning director.

"Amy hired eight creative professionals in film writing, production supervision, editing, sound and graphic design on a contract basis, as well as a less experienced director she mentored on the job," explains Leslie. "I worked closely with Amy to develop the content and she created narratives based on the information I provided."

Each video focuses on a different topic: community wildfire protection through the context of fire history, ecology and climate change using Harrop-Procter as a case study; rural wildfire risk reduction with a FireSmart focus featuring homeowners' perspectives; techniques used by the HPCC to reduce fuel loads, addressing concerns regarding watersheds and wildlife habitats; and a synopsis/overview summarizing all three films.

"The videos are great!" says Leslie. "They've broadened the co-op's engagement and advanced the discussion around community wildfire risk reduction, showing the public how and why the HPCC's work protects the land and community through concrete, positive examples and through residents' stories."

Basin residents are deeply invested in the impacts of climate change on the environment, which is reflected in a 2020 public survey the HPCC conducted that found 80 per cent of residents considered wildfire risk reduction to be "extremely important."

These results are no surprise considering the Harrop-Procter community received two evacuation alerts for wildfires in 2003 and in 2017.

This project is just one example of how collective, co-ordinated efforts address this complex issue directly. Distributed through the BCCA, Bulkley-Harrop Fire Department, Regional District of Central Kootenay, BC Wildfire Service and public presentations, the films have an enduring online presence and are able to reach a global audience via the HPCC's YouTube channel.

"I usually play one of the videos during community meetings to set the tone and spread the word about the work HPCC is doing, and it's been extremely effective," Leslie adds.

"It was a lot of work to film active operations and set up all the interviews within our busy community, but it was worth it because video is the best medium for reaching a broad audience. People say the films have inspired 'aha' moments, especially for those who didn't know the long history of how we got to where we are in terms of climate change."

The Harrop-Procter Community Co-operative in southeastern B.C. has developed an innovative climate adaptation strategy for their 11,300-hectare community forest.

Following a major wildfire in 2003 that prompted evacuation alerts, the community implemented a comprehensive climate risk assessment approach. They mapped wildfire and drought probabilities for 2055 and 2085 climate scenarios, identifying priority areas for adaptation actions.

The forest management strategy employs ecosystem-based approaches that consider 70% of the forest unsuitable for timber management due to sensitivity, critical wildlife habitat, or economic inaccessibility. Key adaptation techniques include:

- 1.Strategic Fuel Breaks:** Creating a 12-kilometer east-west network of low-elevation fuel breaks and high-elevation landscape-level breaks between watersheds.
- 2.Species Conversion:** Removing fire- and drought-intolerant species while promoting Douglas-fir, Ponderosa pine, and deciduous species.
- 3.Thinning Operations:** Reducing stand densities to improve resilience while maintaining partial cutting techniques that retain mature trees.

The project demonstrates how community-scale forest management can simultaneously address wildfire risk reduction, climate adaptation, and biodiversity conservation while maintaining economic benefits.

Sources - [Harrop-Procter Community Forest](#), [Changing Climate](#), [Forest Enhancement Society of BC](#), [BC Community Forest Association](#)

Additional example for British Columbia - [British Columbia Wildlife Federation](#) collaborating on a cultural burn with the [Lower Similkameen Indian Band](#)

# CASE STUDY - CAROLINIAN FOREST PAWPAW RESTORATION ONTARIO

|                          |                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Carolinian Zone, southwestern Ontario (Toronto to Windsor corridor)                                                                                                        |
| <b>Scale</b>             | 300 partner groups; 5,000 volunteers; 37,000 hectares engaged; 337,592 native plants planted including Carolinian forest species                                           |
| <b>Timeline</b>          | Coalition established 1984; In the Zone community program launched 2017; Pawpaw Parade annual since ~2019; ongoing                                                         |
| <b>Lead</b>              | Carolinian Canada Coalition, with Indigenous communities, naturalist clubs, landowners, and municipalities across the Carolinian zone                                      |
| <b>Who can replicate</b> | Any club in or near forest — the Pawpaw Parade model of sourcing, growing, and distributing locally-provenant native forest trees is directly replicable at the club scale |

The Carolinian Canada Coalition, established in 1984, coordinates Indigenous-focused restoration across Canada's declining forest cover in the Carolinian zone landscape through 300 partner groups and 5,000 volunteers.

The Coalition's most distinctive project is the Pawpaw Parade. Pawpaw (*Asimina triloba*) — Canada's largest native fruit tree — was once a key food and cultural plant for Indigenous communities but declined sharply with forest clearing. Each year the Coalition distributes hundreds of locally-grown saplings to community groups and First Nations communities. In the 2019 opening parade, 100 saplings were distributed, with 100 directed specifically to First Nations in 2023 to restore cultural connection to the species. As Carolinian Canada staff have noted, planting even one native plant is an act of both ecological restoration and reconciliation.

The In the Zone program complements this by giving community groups and landowners a framework to track and report native plantings and woodland stewardship, aggregating small efforts into visible landscape-scale impact. For BC Nature clubs, Carolinian Canada offers two replicable components: a locally-sourced native forest tree distribution program, and a participatory tracking framework that makes volunteer effort motivating and measurable.

Carolinian Canada's In the Zone program ([caroliniancanada.ca](http://caroliniancanada.ca)) and the Native Plant Society of BC (<https://npsbc.wordpress.com>) both publish guidance on locally-sourced native plant programs that clubs can model. Contact your regional Indigenous communities early — as the Pawpaw Parade shows, co-designing a restoration program around culturally significant native species creates far stronger community support and ecological outcomes.

# CASE STUDY - DUNDREGGAN CALEDONIAN FOREST VOLUNTEER REWILDING

|                          |                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Dundreggan Estate, Glenmoriston, Scottish Highlands (4,047 ha / 10,000 acres)                                                                                     |
| <b>Scale</b>             | Over <a href="#">300,000</a> trees planted at Dundreggan since 1993; 60,000 trees grown in on-site nursery annually                                               |
| <b>Timeline</b>          | Founded 1986 by Alan Watson Featherstone; Dundreggan Estate purchased 2008; Rewilding Centre opened April 2023                                                    |
| <b>Lead</b>              | Trees for Life (registered charity); ~29 paid staff; hundreds of volunteers per year through structured Rewilding Weeks                                           |
| <b>Who can replicate</b> | The volunteer week is directly adaptable by any naturalist club or other outdoors clubs running events that cover natural terrain (hiking, running, camping etc.) |

Trees for Life was founded in 1986 to restore the Caledonian Forest — ancient native woodland of Scots pine, birch, aspen, rowan, and oak — which survives today as fragments covering less than 1–2% of Scotland's land area. Since 1993, around 5,000 volunteers have collectively planted nearly 2 million trees across multiple sites, including the 4,047-hectare Dundreggan Estate, purchased in 2008 as the flagship site.

The Dundreggan nursery grows approximately 100,000 native trees annually from estate-collected seed, preserving local genetic provenance. Volunteer Rewilding Weeks combine practical tasks — planting, seed collection, invasive species removal, wildlife surveying — with nursery work, while strategic deer fencing encourages natural regeneration alongside active planting. In 2020, [golden eagles](#) returned to breed at Dundreggan for the first time in 40 years.

For BC naturalist clubs, two elements are directly replicable: a community nursery growing locally-sourced native seed, and the structured volunteer week format — immersive multi-day programs that deepen member skills and commitment. The Rewilding Centre, opened in 2023, shows what a club's long-term vision for a restored site can become.

Trees for Life ([treesforlife.org.uk](https://treesforlife.org.uk)) publishes detailed information on their nursery techniques and restoration methods. For B.C. clubs, the Native Plant Society of BC and local Garry Oak Ecosystem Recovery Teams provide similar models of community-run native propagation programs that clubs can partner with or replicate.

## 5.3 Wetlands/Riparian

### Beaver Mimicry (Beaver Dam Analogues)

Build human-made structures that mimic beaver dams to restore wetland function and wildlife habitat. Use local materials like willow, mud, and untreated wood posts to create year-round wetlands that slow water flow, reduce flooding, and provide critical habitat for salmon and trout. ([bcwfb](#))

### Buffer Zones

Establish vegetation buffers around wetlands using native species to filter pollutants, prevent erosion, and provide wildlife habitat. Buffer zones should be at least 15-30 meters wide depending on wetland type and surrounding land use. ([lfs-mlws-2020.sites.olt.ubc](#))

### Wetland Rehydration

Restore natural water levels and flow patterns by removing drainage ditches, adding culverts, and reconnecting wetlands to their watersheds. Focus on restoring natural flood pulses that create diverse wetland habitats. ([ourtrust](#))

# CASE STUDY - FRASER ESTUARY RESTORATION



The Fraser River Estuary restoration efforts represent one of Canada's most comprehensive wetland restoration programs, addressing decades of habitat loss in this globally significant ecosystem. The estuary has experienced extensive habitat degradation, with early restoration efforts showing poor success rates due to invasive species, poor site design, and an inadequate understanding of estuarine dynamics.

Modern restoration approaches have evolved to focus on:

1. **Comprehensive Debris Management:** The BC Wildlife Federation's Fraser River Tidal Marsh Clean-up has removed over 44,780 kg of debris from 350 hectares of salt marshes since 2021, more than doubling initial projections.
2. **Ecosystem-Based Design:** Moving beyond simple compensation approaches, current projects create complex habitat mosaics that mimic natural estuarine processes. This includes restoring tidal flow patterns, creating elevation transitions, and establishing diverse plant communities adapted to varying salinity and water levels.
3. **Indigenous Leadership:** Projects increasingly incorporate First Nations governance and traditional ecological knowledge, with partnerships including Tsawwassen First Nation and other Coast Salish communities.
4. **Research Integration:** Long-term monitoring programs track restoration success using quantitative metrics including water quality, sediment dynamics, and species diversity. This data informs adaptive management strategies and improves future restoration techniques.



Photos from BC Wildlife Federation Blog, [‘Fraser River Cleanup Makes Remarkable Early Achievements’](#).

The Fraser Estuary restoration demonstrates how large-scale wetland restoration requires sustained collaboration between government agencies, Indigenous communities, environmental organizations, and dedicated volunteers to address the complex ecological and social dimensions of ecosystem recovery.

Sources - [BC Wildlife Federation](#), [Community Mapping Network](#)

# CASE STUDY - HAMILTON NATURALISTS

## GRIMSBY WETLAND RESTORATION

|                          |                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | 624 Winston Road, Grimsby, Ontario — south shore of Lake Ontario                                                                                         |
| <b>Scale</b>             | 29-acre site; 6 wetland bodies; public trail and two-storey observation tower; open daily free of charge                                                 |
| <b>Timeline</b>          | Hamilton Naturalists' Club (HNC) involvement began 2002; 4 additional water bodies created by 2006; trail and tower completed 2016; 2023 Brownie Award   |
| <b>Lead</b>              | HNC, coordinated by Bruce and Laurie Mackenzie; partners include Niagara Peninsula Conservation Authority, Town of Grimsby, Region of Niagara, etc.      |
| <b>Who can replicate</b> | Directly analogous to BC Nature clubs — a volunteer naturalist club identified, negotiated for, and restored an abandoned industrial site over 20+ years |

The Grimsby Wetlands began with a problem: what to do with a decommissioned sewage lagoon. When the former Biggar Sewage Lagoons — operated by Niagara Region until 2000 on 29 acres of Lake Ontario waterfront — were slated to be drained and levelled, a small group of HNC members approached the two landowners with a different proposal. After five years of negotiation, both agreed. By 2006, four additional water bodies had been created alongside the two original lagoons, giving the site its current six wetland basins.

The transformation over 20 years was led almost entirely by HNC volunteers under club members Bruce and Laurie Mackenzie. Invasive plants were removed, native vegetation established, and the Town of Grimsby incorporated the wetlands into a waterfront trail with a two-storey viewing tower, completed in 2016. The site is open free daily. In 2021, Bruce Mackenzie received Ontario Nature's J.R. Dymond Public Service Award. In 2023, the HNC won the Canadian Brownfields Network Brownie Award — the adjudicating professor noting it was rare to see a citizens' group take on a brownfield project: "when you see a group of volunteers take it on and do it, you have to celebrate it."

For BC Nature clubs, Grimsby is the most instructive example in this document. No government funding initiated it. No paid staff were needed. What was required was a small group of determined club members, a credible relationship with local authorities, and a 20-year commitment to showing up.

The Hamilton Naturalists' Club ([hamiltonnature.org](http://hamiltonnature.org)) documents this project in detail and Bruce Mackenzie has given public presentations on how the club approached the negotiations and restoration. Contacting the HNC directly could provide invaluable guidance for any BC Nature club exploring a similar opportunity with municipal or federal land.

# CASE STUDY – STABLE COASTLINE WETLANDS IN DEMAK

|                          |                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Demak, Central Java, Indonesia                                                                                                                                       |
| <b>Scale</b>             | Village-scale coastal sites (~10–50 ha each); mangrove and wetland restoration within aquaculture landscapes                                                         |
| <b>Timeline</b>          | Initiated ~2013 through Building with Nature program; ongoing expansion                                                                                              |
| <b>Lead</b>              | Wetlands International, EcoShape, and local fishing communities; community-implemented                                                                               |
| <b>Who can replicate</b> | Highly relevant to community groups and nature clubs — low-cost, volunteer-supported, and based on restoring natural processes rather than engineered infrastructure |

The Demak coastal restoration project was initiated in the early 2010s by local fishing communities, supported by organizations including Wetlands International and EcoShape, on heavily degraded shrimp aquaculture land along the north coast of Java. At a village scale (often 10–50 hectare coastal sections), the project addressed rapid shoreline erosion caused by mangrove loss — estimated at up to 100 m per year in some areas. Instead of hard infrastructure, the project aimed to restore a functioning mangrove wetland system that could naturally stabilize coastlines, store carbon, and support fisheries.

Restoration was community-led and process-based: villagers constructed permeable brushwood dams from bamboo and branches to reduce wave energy and trap sediment. This allowed the seabed to rebuild by 10–45 cm per year, creating the elevation needed for mangroves to return naturally. Abandoned shrimp ponds were also deliberately breached to allow tidal flow and sediment deposition, converting them back into wetlands. In many sites, mangroves regenerated within 1–2 years without planting, and community members managed ongoing maintenance and monitoring. Over time, restored mangroves replaced the need for artificial structures by maintaining sediment capture and coastal protection naturally.

For BC Nature clubs, the central lesson is that restoring ecological processes (like sediment flow and hydrology) is often more effective than planting alone, and that small, community-led interventions using local materials can deliver major climate resilience benefits.

Like BC Nature, Wetlands International (<https://www.wetlands.org/casestudy/building-with-nature-indonesia/>) works through partnerships with local communities to deliver restoration projects. Their *Building with Nature* model emphasizes community-built infrastructure (e.g., brushwood dams) combined with long-term stewardship by local users such as fishers and farmers.

## 5.4 Watersheds

### Stream Cleanups

Organize regular volunteer events to remove litter and debris from streams and riverbanks. Partner with existing programs like the Chilliwack/Vedder River Clean-Up Society. Focus on preventing pollutants from entering waterways and ocean systems. ([bcwf](#)).

### Native Tree and Shrub Planting

Restore riparian vegetation with native species like red-osier dogwood, willow, and cottonwood. Plant along streambanks to provide shade, stabilize soil, and create fish habitat. Establish buffer zones of at least 30 meters from fish-bearing streams. ([engage.gov](#))

### Erosion Control with Tree Fibers Logs

Install biodegradable erosion-control logs made from locally available materials such as willow, poplar, or conifer branches, or wood-chip mulch along streambanks to stabilize soil and encourage the growth of native riparian plants. These brush or fascine bundles naturally trap sediments, absorb water, and last several years, providing support as native species establish and reducing erosion through the wet season. ([gov.bc](#))

# CASE STUDY - COWICHAN WATERSHED BOARD, VANCOUVER ISLAND



The Cowichan Watershed Board represents a groundbreaking partnership between Cowichan Tribes First Nation and the Cowichan Valley Regional District, co-chaired by the Chief and Regional District Chair. Established in 2010, this unique governance model demonstrates reconciliation through collaborative watershed management. The Board's mandate encompasses the entire Cowichan and Koksilah watersheds, addressing critical water challenges including:

1. **Climate Impacts:** Inflows to Cowichan Lake have dropped over 30% in recent decades, with drought conditions requiring river flows below licensed minimums 5 of the past 6 years.
2. **Ecological Stress:** Cedars and salal are dying from repeated summer droughts with static groundwater levels at unprecedented lows.
3. **Land Use Integration:** Over 60% of both watersheds are privately managed forest lands, requiring collaborative management approaches.

The Board has implemented comprehensive watershed health targets derived from the Cowichan Basin Water Management Plan, incorporating Indigenous knowledge with Western science. Their work includes riparian restoration, invasive species management, and climate adaptation planning that serves as a model for watershed governance across B.C.

**The Cowichan Watershed Board's work has led to a major rebound in Chinook salmon in the Cowichan River, with numbers rising from about 500 fish in 2009 to more than 23,000 in the past four years.**

Key successes include building a "culture of water conservation," implementing science-based advocacy, and creating respectful community-based solutions that integrate traditional ecological knowledge with modern conservation practices.



Trucking of chinook salmon to Cowichan River in 2014.  
Photos from [Cowichan Watershed Board](#)

# CASE STUDY – YOUTH WATER MONITORING

## SHUBIE PARK

|                   |                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Location          | Shubie Park, Dartmouth, Nova Scotia                                                                                                         |
| Scale             | Youth ages 10–14; 4–7 monitoring stations; data shared with City of Halifax and Atlantic Water Network; published in Science Progress, 2024 |
| Timeline          | Water monitoring 2018–2021; restoration plantings and outreach 2021–2023; ongoing                                                           |
| Lead              | Young Naturalists Club of Nova Scotia (Nature Guardians chapter), coordinated by ecologist Becky Parker, with Dalhousie University          |
| Who can replicate | Any naturalist club members near an urban stream or park waterway — no lab equipment needed                                                 |

The Young Naturalists Club of Nova Scotia's Nature Guardians program — the Dartmouth chapter of a province-wide federation — chose a specific, practical goal: understand what is happening to the water quality in Shubie Park and do something about it. Between 2018 and 2021, members aged 10–14 collected water quality data at multiple park locations, testing for bacteria, pH, temperature, nutrients, and macroinvertebrate health using probes and methods designed by Coastal Action for their Fox Point Lake Monitoring Program. Findings were shared formally with city authorities and the Atlantic Water Network, influencing municipal awareness of the park's water quality issues.

In response to elevated bacteria counts and nutrient influxes identified through their monitoring, the 2021–2023 restoration phase focused on native species plantings in riparian areas of the park alongside outreach signage educating park users about water quality and stream health. The combination of monitoring, advocacy, and hands-on restoration in a single project cycle — all carried out by youth volunteers — was documented in a peer-reviewed paper published in Science Progress in 2024 by Dalhousie University researcher Heather Cray and YNC coordinator Becky Parker.

The fact that this work was led by children aged 10–14 with adult coordination makes it a powerful demonstration that meaningful climate adaptation requires no specialized equipment, no large budget, and no institutional affiliation beyond a committed naturalist club. It is perhaps the most directly comparable example to BC Nature clubs in this entire document.

The Pacific Streamkeepers Federation offers macroinvertebrate monitoring training (<https://www.pskf.ca/modules.php>) suitable for youth. Combining water quality monitoring with riparian planting and community outreach — as the YNC did — creates a complete, multi-year project cycle that engages members across age groups.

# CASE STUDY - TROUT IN THE TRYM RIVER CLEANUP

|                   |                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------|
| Location          | Bristol, United Kingdom                                                                                           |
| Scale             | Small urban watershed (~6-mile river); stream-reach scale restoration                                             |
| Timeline          | ~5+ years of restoration; Riverfly monitoring established 2021                                                    |
| Lead              | Trout in the Trym community group; supported by Bristol Avon Rivers Trust & Riverfly Partnership                  |
| Who can replicate | Directly analogous to BC Nature clubs — volunteer-led watershed restoration using citizen science and stewardship |

Trout in the Trym is a grassroots community group restoring the River Trym, a ~6-mile urban stream flowing through North Bristol. The river had been heavily degraded by pollution, invasive species, litter, and urban runoff despite passing through parks and residential areas with over 80,000 nearby residents. The project focuses on restoring stream health at a local watershed scale, improving habitat for fish and aquatic life while reconnecting the surrounding community to the river. (Source: Riverfly Partnership case study).

Restoration is entirely volunteer-led and combines hands-on stewardship with citizen science monitoring. Over five years, volunteers have removed 400+ tonnes of waste (including motorbikes and large debris), cleared extensive invasive Himalayan balsam, and conducted regular Riverfly sampling to track aquatic insect populations as indicators of water quality. Volunteers have also reported 30+ pollution incidents, triggering investigations into issues like sewage discharge and construction runoff. The group developed a River Health Dashboard to track ecological conditions and share data with local authorities, demonstrating how community monitoring can fill gaps in official oversight while supporting real improvements in watershed management.

For BC Nature clubs, the key lesson is that long-term, consistent volunteer effort — combining cleanup, invasive species control, and simple monitoring — can significantly restore degraded streams, even in urban environments and without land ownership or major funding.

Like BC Nature, the Riverfly Partnership (<https://www.riverflies.org/case-studies/trout-in-the-trym-2025>) operates through local volunteer groups managing specific river sections, making this model directly applicable to B.C. clubs working on watershed stewardship.

## 5.5 Coastlines/Marine

### Dune Replanting

Remove invasive European and American beachgrass and restore native dune vegetation like American dunegrass and coastal sedge. Plant native species in strategic locations to maintain natural sand movement while providing habitat for rare species. ([greenteamscanada](#)).

### Eelgrass Restoration

Transplant eelgrass shoots from healthy donor beds to degraded areas, or use innovative seeding techniques like Buoy Deployed Seeding (BuDS). Focus on areas with suitable depth, sediment, and protection from boat traffic. ([bcwfbogblog](#)).

### Natural Seawalls

Create living shorelines using native vegetation, strategically placed logs, and natural materials instead of hard armoring. Support coastal processes while providing erosion protection and habitat. ([marinescience.psf](#))

# CASE STUDY - SQUAMISH EELGRASS RESTORATION



The Squamish eelgrass restoration project demonstrates successful community-led marine habitat restoration in Howe Sound. Led by the Seagrass Conservation Working Group and Squamish River Watershed Society, this multi-year effort has restored eelgrass meadows where none previously existed.

**Project Development:** The restoration began in 2005 with scientist Cynthia Durance, who developed the innovative "washer method" for eelgrass transplanting. Plants are secured to biodegradable washers that anchor them until establishment, then rust away to improve substrate quality.

**Community Engagement:** Over 100 restoration sites have been established through volunteer efforts, with community members including commercial fishermen, university students, and local environmental groups.

**Restoration Technique:** Eelgrass shoots are harvested from healthy donor beds on the Sunshine Coast and transported to restoration sites in a single day.

**Monitoring Success:** The Stawamus site near Squamish shows 90% survival rates, with transplanted beds appearing to grow together by 2010, creating a promising eelgrass meadow. Monitoring includes shoot density counts, areal extent mapping, and comparison to reference sites.

**Ecosystem Benefits:** Restored eelgrass beds provide nursery habitat for juvenile salmon, spawning areas for Pacific herring, and feeding grounds for waterfowl. The beds also reduce shoreline erosion by slowing wave action and trapping sediments.

The project's success has contributed to the return of marine life to Howe Sound, including increased whale sightings and improved overall ecosystem health and resilience.



Photos by Eryne Donahue for [BCWF Bog Blog](#)

Sources - [BCWF Bog Blog](#), [SeaChange Marine Conservation Society](#), [Squamish Watershed](#)

# CASE STUDY - BRULE SHORE SALT MARSH RESTORATION

|                          |                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Brule Shore, Northumberland Strait, northern Nova Scotia                                                                                                                    |
| <b>Scale</b>             | 15 hectares of salt marsh habitat identified, restored, and monitored along the North Shore                                                                                 |
| <b>Timeline</b>          | Five-year project funded by DFO Coastal Restoration Fund; Brule Shore restoration event September 2020; ongoing monitoring                                                  |
| <b>Lead</b>              | Clean Foundation (Clean Coasts program), with local community volunteers, Mi'kmaw Elders and community members, and expert partners                                         |
| <b>Who can replicate</b> | Groups near degraded coastal or estuarine sites — community volunteers, culturally inclusive process, and technical support from DFO are all accessible to organized groups |

Nearly 65% of salt marsh habitat along Nova Scotia's Northumberland Strait has been lost to agricultural dyking and culvert installation, leaving coastlines vulnerable to storm surge and erosion while eliminating blue carbon storage and fish nursery habitat. Clean Foundation's 'Building Bridges' program, funded by DFO's Coastal Restoration Fund, set out to restore 15 hectares over five years — through physical restoration and by building lasting community capacity for future work.

The Brule Shore restoration in September 2020 brought together local volunteers, salt marsh ecologists, Mi'kmaw Elders and traditional fishers, and coastal restoration practitioners. At Marshall's Crossing, failing undersized culverts installed in the 1960s–70s were replaced with a bridge that immediately re-established tidal dynamics across 7 hectares. vegetation began to recover after tidal reconnection.

For BC nature clubs, three lessons stand out. The most transformative intervention was the simplest: replace a bad culvert and let tidal processes do the work. Centering Indigenous knowledge — asking Mi'kmaw Elders what the historic marsh looked like — produced better restoration design and more durable community support. And the combination of volunteer engagement with technical expertise produced a result neither could have achieved alone.

Clean Foundation ([cleanfoundation.ca](https://cleanfoundation.ca)) publishes restoration guidance and community engagement resources from this and other Atlantic salt marsh projects. DFO's Coastal Restoration Fund provides grants for community-led coastal habitat restoration projects across Canada — B.C. clubs near estuarine habitat should investigate this funding stream.

# CASE STUDY - LOCH CRAIGNISH COMMUNITY SEAGRASS RESTORATION

|                          |                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Loch Craignish, Argyll, Scotland                                                                          |
| <b>Scale</b>             | 10 seagrass meadows over 5 hectares                                                                       |
| <b>Timeline</b>          | Since 2021, breakthrough achieved in 2025                                                                 |
| <b>Lead</b>              | Seawilding, a local charity                                                                               |
| <b>Who can replicate</b> | Seed broadcasting method requires only snorkel/free diving — accessible to volunteer groups without SCUBA |

Seawilding's Loch Craignish project focused on restoring two keystone habitats: native oysters and seagrass. In practice, they worked with local communities, volunteers, school pupils, the Ardfarn Yacht Centre, and academic partners to rebuild these habitats in a sea loch where oysters had become scarce and seagrass had been badly reduced.

For the seagrass work, the key technique was to move from seed-sowing toward translocating adult seagrass shoots from healthy “donor” meadows into restoration sites. Seawilding says this newer method produced strong results: by 2025, one restored area had grown from about 10% seabed cover to more than 70% in 15 months, with 97% survival in a newer trial, while donor meadow impact appeared minimal after harvesting. They also describe the work as low-cost and intended to generate practical methods that can be replicated elsewhere.

For the oyster restoration side, Seawilding's aim was to bring native oysters back to a loch where they had been nearly lost through overexploitation and possibly disease. The broader method was community-based marine habitat restoration: survey the site, identify donor and restoration areas, test techniques, involve local people in monitoring and fieldwork, and refine the approach based on survival and recovery results.

Project Seagrass ([projectseagrass.org](http://projectseagrass.org)) publishes free monitoring guides and restoration protocols suitable for community groups. Their seed-broadcasting method requires only snorkelling and is directly applicable to eelgrass restoration in B.C. coastal inlets and estuaries.

## 5.6 Urban/Suburban Nature

### Rain Gardens

Install vegetated depressions that capture and infiltrate stormwater runoff from roads, driveways, and rooftops. Use native plants adapted to both wet and dry conditions, and design gardens to handle local rainfall patterns while providing pollinator habitat. ([fraserbasin](#)).

### Tree Canopy Expansion

Plant native and climate-resilient trees in areas with low canopy cover and high heat vulnerability. Focus on species that provide cooling benefits, support biodiversity, and can withstand future climate conditions. Use techniques like microforests (Miyawaki method) for rapid establishment. ([cbc](#))

### Cool Roofs

Support installation of reflective or vegetated roofs that reduce urban heat island effects. Green roofs provide additional benefits including stormwater management, habitat creation, and energy savings. ([fraserbasin](#))

### Native Pollinator Gardens

Create habitat for native bees, butterflies, and other pollinators using indigenous flowering plants. Focus on providing season-long bloom periods and include nesting sites like mason bee houses. ([cnv](#))

### Green Infrastructure

Implement connected networks of bioswales, permeable pavements, and urban forests that manage stormwater while providing ecological and social benefits. ([vancouver](#))

### Fire Protection

Plant fire-resistant native species around communities and create defensible spaces that reduce wildfire risk while supporting biodiversity. ([ubcm](#))

# CASE STUDY - ST. GEORGE RAINWAY, MOUNT PLEASANT, VANCOUVER



The St. George Rainway in Vancouver's Mount Pleasant neighborhood exemplifies successful community-led urban NbS. This innovative project transforms four city blocks into a living system that manages rainwater while creating community space and urban habitat.

**Community Origins:** In 2007, resident Rita Wong and neighbours linked local flooding to a buried creek and **campaigned** for its functional restoration, combining environmental and social benefits.

**Collaborative Development:** The volunteer-led St. George Rainway Project worked over a decade to integrate stream daylighting into the Mt. Pleasant Community Plan. Adopted by the City in 2013, construction began in 2023.

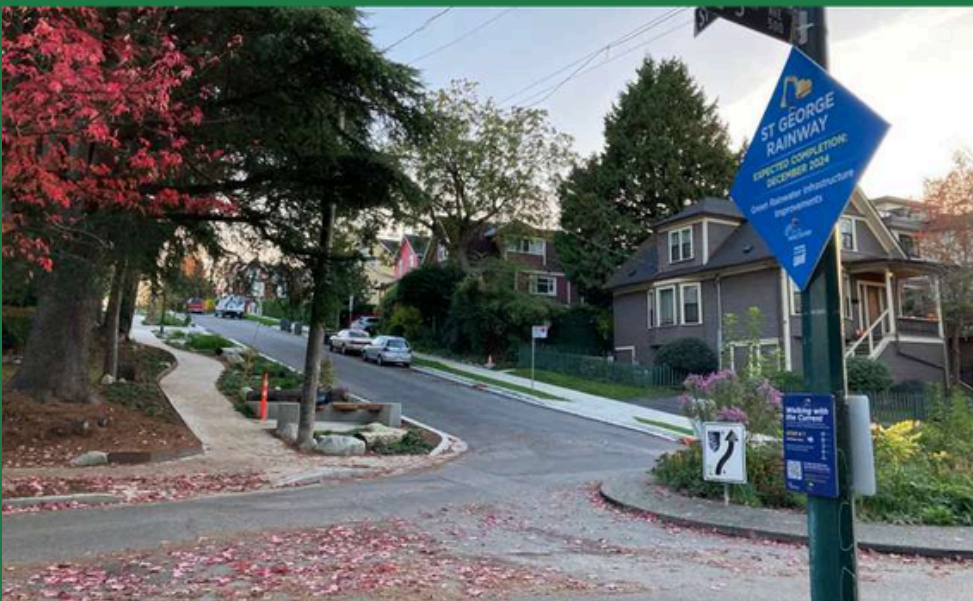
**Technical Innovation:** Green rainwater infrastructure now captures and filters 17,000 m<sup>3</sup> annually ( $\approx 7$  Olympic pools) using engineered soils, native plants, and designs that slow flow and boost infiltration.

## Multiple Benefits:

- Reduces combined sewer overflows into local waterways
- Increases urban biodiversity through habitat corridors
- Cools neighborhoods during summer heat events
- Creates community gathering spaces and educational opportunities
- Improves pedestrian and cycling safety through traffic calming

**Monitoring & Engagement:** Citizen science via iNaturalist tracks biodiversity gains, and regular community events keep public involvement high.

The St. George Rainway shows how neighborhoods can reclaim urban nature while addressing climate adaptation, demonstrating that effective NbS require both technical expertise and sustained community leadership.



Photos by [City of Vancouver](#) and Isaac Phan Nay for [CBC](#)

Sources - [Raincoast Conservation Foundation](#), [St. George Rainway Project](#), [International Coalition for Sustainable Infrastructure](#), [City of Vancouver](#), [CBC](#)

# CASE STUDY - HAMILTON URBAN TREES POLLINATOR CORRIDORS

|                          |                                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | City of Hamilton, Ontario                                                                                                                                                                        |
| <b>Scale</b>             | <a href="#">1,337</a> native trees and shrubs distributed to private landowners in 2021 alone; Pollinator Paradise corridor spans multiple Hamilton neighbourhoods; urban canopy currently 21.2% |
| <b>Timeline</b>          | Trees Please community tree planting partnership ongoing since 2016; Pollinator Paradise launched ~2019; ongoing                                                                                 |
| <b>Lead</b>              | Hamilton Naturalists' Club (HNC) in partnership with Environment Hamilton; supported by City of Hamilton Forestry Division and Hamilton Community Foundation                                     |
| <b>Who can replicate</b> | Any naturalist club in an urban centre — free native tree giveaways and pollinator corridor planting are replicable with modest funding and municipal partnerships                               |

Hamilton's urban forest covers only 18–20% of the city — far below the 40% canopy target recommended by urban forestry researchers. The HNC has partnered with Environment Hamilton on two complementary urban NbS projects. [Trees Please](#) distributes native trees and shrubs free or at low cost to Hamilton residents through community planting events with the City Forestry Division — in 2021 alone, 1,337 native trees and shrubs were planted on private land across the city.

The [Hamilton Pollinator Paradise Project](#) coordinates native plant installations — milkweed, wildflowers, native shrubs — across private gardens, school grounds, church yards, and public green spaces, creating a connected corridor through the city. Isolated garden patches provide limited habitat value; linking them creates a linear network supporting bees, butterflies, birds, and other urban wildlife. The HNC also runs a club-funded Hamilton Natural Areas Inventory documenting biodiversity decline in urban woodlands, providing the evidence base for municipal policy advocacy.

Both models are directly replicable with minimal startup costs. A native tree giveaway needs a municipal partnership, a seedling funding source, and volunteer coordination. A pollinator corridor needs willing landowners, a native plant source, and a map — activities that naturalist clubs are uniquely positioned to lead, combining ecological knowledge, community credibility, and volunteer capacity.

Contact your city's urban forestry or parks department about community tree planting partnerships — most B.C. municipalities have similar programs to Hamilton's that welcome non-profit co-delivery. Native plant societies in B.C. (e.g., Native Plant Society of BC) can advise on species selection and often run native plant sales that can supply a pollinator corridor project.

# CASE STUDY - DUTCH GREEN SCHOOLYARD NATURALIST PROGRAM

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Location</b>          | Netherlands-wide                                                                                                           |
| <b>Scale</b>             | Greening converting pavement to native plant gardens, rain gardens, and food forests                                       |
| <b>Timeline</b>          | IVN Nature Education founded 1960; Naturalistic Schoolyard (Groene Schoolpleinen) program expanded significantly post-2015 |
| <b>Lead</b>              | IVN Natuureducatie (equivalent to a nationwide naturalist education federation); local volunteer naturalist educators      |
| <b>Who can replicate</b> | Directly applicable to BC Nature clubs running school programs — the model uses volunteer naturalists as school partners   |

IVN Natuureducatie is a Dutch non-profit nature education organization with trained volunteer naturalist educators organized into local chapters — structurally very similar to BC Nature's network of naturalist clubs. Since 2015, IVN has significantly expanded its Groene Schoolpleinen (Green Schoolyards) program, partnering with schools across the Netherlands to convert asphalt-heavy schoolyards into biodiverse green spaces featuring native plant gardens, rain gardens, pond habitats, food-growing areas, and naturalistic play features using low-maintenance native planting schemes.

The program targets a critical urban climate problem: the Netherlands has over 30,000 school buildings, and their collectively vast paved schoolyards generate enormous stormwater runoff during the intense rain events that are increasing under climate change, contribute to the urban heat island effect. IVN volunteers work directly with school communities — teachers, parents, and children — to design and install greening schemes tailored to each school's context.

The schoolyard greening model is ideal for BC Nature clubs for several reasons: schools are universal entry points to communities, children are natural ambassadors for climate action, the ecological interventions (native plantings, rain gardens, bee hotels, bird boxes) are within the skills and budget of volunteer naturalist clubs, and the educational programming that accompanies planting creates lasting connections between children and the natural world. Several B.C. school districts already have greening programs that naturalist clubs could partner with or scale.

BC Parks Foundation (<https://bcparksfoundation.ca/updates/learning-by-nature-launches-at-over-100-schools-across-bc/>) have existing frameworks for schoolyard greening that naturalist clubs can plug into as volunteer partners. A native plant garden at one school, installed and maintained by a naturalist club, is a visible, replicable project.

A black bear cub is shown in a dynamic pose, splashing water as it holds a large, silvery fish. The cub is dark brown with a lighter patch on its chest. The background is a blurred natural setting with rocks and water. The text "6. ORGANIZING FOR IMPACT" is overlaid in the center.

## **6. ORGANIZING FOR IMPACT**

Successfully implementing nature-based climate solutions requires strategic planning, collaborative partnerships, and careful attention to regulatory requirements. This section provides naturalist clubs in B.C. with practical guidance for organizing effective conservation projects that create lasting environmental and community benefits.

## 6.1 Starting a Project

### Establish Clear Objectives

Consult your club on their interests and see if there is significant interest in beginning a new project. Begin by identifying specific, measurable outcomes that align with both club interests and regional conservation priorities. Consider whether your focus is biodiversity enhancement, climate resilience, watershed protection, wildfire risk reduction, or community engagement. Effective goals should be SMART: Specific, Measurable, Achievable, Relevant, and Time-bound.

### Connect to Regional Needs

Research local environmental challenges through municipal climate action plans, regional conservation strategies, and Indigenous land use plans. The BC Together for Wildlife Strategy identifies priority conservation areas and species at risk that may benefit from club-led initiatives. Align your project goals with existing conservation frameworks to maximize impact and funding opportunities.

### Consider Multiple Benefits

Design projects that address multiple environmental and social objectives simultaneously. For example, riparian rehabilitation can improve water quality, provide wildlife habitat, reduce flood risk, and create educational opportunities. Multi-benefit approaches often attract broader community support and diverse funding sources.

## 6.2 Form Teams

### Build Diverse Leadership

Assemble a core team with complementary skills including ecological knowledge, project management, community outreach, and partnership development. Include members with experience in permitting processes, grant writing, and volunteer coordination.

### Assign Clear Roles

Establish specific responsibilities for team members according to the strength and capacity of the club. For example, Project Lead, Site Coordinator, Partnerships Liaison, Community Engagement Coordinator, and Funding Lead for medium capacities.

## **Foster Inclusive Participation**

Actively encourage participation from diverse community members including youth, seniors, newcomers, and Indigenous community members. Consider language barriers, physical accessibility, and cultural preferences when organizing team activities. Successful projects often benefit from intergenerational knowledge sharing and varied perspectives.

## **6.3 Select Sites**

### **Conduct Site Assessments**

Use ecological criteria, community access, and land ownership status to evaluate potential project locations. Prioritize sites with high conservation value, community visibility, and realistic implementation timelines. Consider factors such as invasive species density, restoration potential, safety concerns, and maintenance requirements.

### **Engage Local Knowledge**

Consult with Indigenous knowledge holders, long-time residents, and local naturalists to understand site history, ecological patterns, and community values. Traditional ecological knowledge can provide critical insights about seasonal patterns, species distributions, and appropriate management approaches.

### **Plan for Long-term Stewardship**

Select sites where your club can maintain ongoing involvement through monitoring, maintenance, and adaptive management. Consider proximity to club members, accessibility for various physical abilities, and compatibility with landowner expectations. Successful restoration often requires 3-5 years of active stewardship.

## **6.4 Partnerships**

### **6.4.1 Working with Municipalities**

#### **Identify Municipal Priorities**

Research local government climate action plans, biodiversity strategies, and environmental policies to understand municipal conservation priorities. Many B.C. municipalities have specific targets for tree canopy cover, stormwater management, or habitat protection that align with nature club activities.

#### **Leverage Municipal Resources**

Municipalities often provide valuable in-kind support including equipment access, promotional assistance, waste disposal, and volunteer coordination. Some cities offer grants or cost-sharing programs for community environmental projects. Municipal partnership can also provide liability coverage and insurance for volunteer activities. For example, the District of Saanich will pick up the weeds pulled by voluntary “Pulling Together” teams in Saanich Parks.

### **Build Staff Relationships**

Connect with municipal environmental staff, parks departments, and climate adaptation coordinators early in project planning. These professionals can provide technical expertise, identify suitable municipal sites, and facilitate permit processes. Regular communication helps ensure projects complement rather than conflict with municipal initiatives.

## **6.4.2 Working with NGOs**

### **Identify Compatible Organizations**

Partner with environmental NGOs that have complementary expertise, resources, or mandates. Organizations like Stewardship Centre BC, BC Wildlife Federation, or local watershed societies can provide technical guidance, funding connections, and volunteer networks. Consider both large provincial organizations and smaller community-based groups.

### **Share Resources and Expertise**

Collaborate on grant applications, equipment sharing, and joint programming to maximize impact while reducing individual organizational burden. NGO partnerships can provide access to specialized skills like rare plant identification, wildlife monitoring protocols, or restoration techniques.

### **Coordinate Regional Efforts**

Work with NGO networks to ensure projects contribute to landscape-scale conservation goals rather than isolated site-specific actions. Regional coordination prevents duplication of effort and creates opportunities for larger-scale funding applications.

## **6.4.3 Working with Indigenous Nations**

### **Listening First, Acting Together**

Before any project planning begins, reach out to the Indigenous Nations whose territories your work will take place in. Approach with openness, patience, and a willingness to learn. Acknowledge their deep connection to the land and waters, and seek to understand their priorities, knowledge, and protocols. Invite guidance early, ensuring they have the space and time to shape the vision from the start. True collaboration grows when projects are built together, grounded in trust and respect.

### **Follow Proper Protocols**

Contact appropriate Indigenous government representatives through formal channels rather than individual community members. Many Nations have specific consultation protocols, cultural considerations, and decision-making processes that must be respected. Early engagement prevents conflicts and builds trust for long-term collaboration.

### **Integrate Indigenous Knowledge**

Seek opportunities to incorporate traditional ecological knowledge, cultural practices, and Indigenous land management approaches into project design. Many Indigenous communities have sophisticated understanding of local ecosystems developed over millennia. Collaborative projects can benefit both conservation outcomes and cultural revitalization efforts.

### **Support Indigenous-Led Initiatives**

Consider how naturalist club resources and expertise can support Indigenous-led conservation projects rather than proposing club-led projects on Indigenous territories. Many funding programs specifically support Indigenous-led environmental initiatives, and partnerships can strengthen applications for these opportunities.

## **6.5 Permissions and Policy**

### **Understanding Permits**

#### **Identify Regulatory Requirements**

Activities near streams, wetlands, or coastal areas typically require permits under the Water Sustainability Act, Fisheries Act, or municipal riparian protection bylaws such as Riparian Areas Protection Regulation. Even seemingly minor activities like invasive plant removal may require permits if they occur within riparian setbacks or fish habitat areas.

#### **Environmental Development Permits**

Many municipalities require Environmental Development Permits for activities in sensitive areas such as riparian zones, steep slopes, or habitat corridors. These permits often require professional environmental assessments and may impose specific conditions on project design and implementation.

#### **Comply with Local Bylaws**

Municipal bylaws may regulate activities such as soil removal, tree protection, noise levels, parking, and volunteer group sizes. Review relevant bylaws before project implementation and ensure compliance with all applicable regulations. Some municipalities have streamlined processes for community environmental projects.

## **6.6 Best Practices**

### **Maintain Comprehensive Documentation**

Keep detailed records of all correspondence, permits, approvals, and compliance measures. Documentation should include permit applications, agency responses, environmental assessments, and any conditions or restrictions imposed on project activities. Proper record-keeping facilitates regulatory compliance and demonstrates accountability to funders and partners.

### **Allow Adequate Lead Time**

Plan for 2-6 months lead time for regulatory approval processes, depending on project complexity and agency workloads. Some permits require public consultation periods, environmental assessments, or seasonal restrictions that can significantly extend timelines. Early engagement with regulatory agencies helps identify potential delays and requirements.

### **Engage Qualified Professionals**

Complex projects may require involvement of Qualified Environmental Professionals (QEPs) for species assessments, habitat evaluations, or restoration design. QEPs can help navigate regulatory requirements, design appropriate mitigation measures, and provide credible documentation for permit applications.

### **Build Regulatory Relationships**

Establish positive working relationships with regulatory staff through early consultation, transparent communication, and demonstrated commitment to compliance. Regular communication helps resolve issues quickly and may facilitate future project approvals. Consider regulatory agencies as partners in achieving conservation goals rather than obstacles to overcome.

### **Implement Adaptive Management**

Design projects with flexibility to adjust approaches based on monitoring results, changed conditions, or new regulatory requirements. Adaptive management demonstrates professional competence and environmental responsibility while allowing projects to evolve as understanding improves.

### **Ensure Public Safety**

Develop comprehensive safety protocols for volunteer activities including equipment use, hazardous plant exposure, and emergency procedures. Many permits require specific safety measures, insurance coverage, or qualified supervision for certain activities. Public safety should always be the highest priority regardless of regulatory requirements.

By following these organizational principles, naturalist clubs in B.C. can successfully launch and manage nature-based climate solution projects that create lasting environmental benefits while building stronger community connections to local ecosystems. Effective organization requires patience, persistence, and commitment to collaborative approaches that respect both regulatory requirements and community values.

A scenic background image featuring two Canada geese in the foreground, standing on a rocky shore. In the background, a large suspension bridge with green towers spans a body of water, with snow-capped mountains visible under a cloudy sky. The text '7. MONITORING AND COMMUNITY SCIENCE' is overlaid in the center.

## **7. MONITORING AND COMMUNITY SCIENCE**

Community science transforms naturalist clubs from casual observers into active contributors to conservation research and management decisions. By systematically collecting data on biodiversity and ecosystem health, naturalist clubs in B.C. can track the success of their restoration efforts while building scientific knowledge that benefits the entire province.

## 7.1 Why Monitor: Track Progress, Report Success, Adapt Actions

### Tracking Progress

Regular monitoring allows clubs to measure the effectiveness of their nature-based climate solutions. Whether you're removing invasive species, planting native vegetation, or restoring wetlands, consistent data collection reveals trends over time and helps identify what's working and what needs adjustment. Monitoring provides concrete evidence of your conservation impact, enabling clubs to demonstrate success to funders, partners, and community members.

### Reporting Success

Data collected through community science contributes to provincial and national biodiversity databases used by researchers, government agencies, and conservation organizations. Your observations help fill knowledge gaps about species distributions, population trends, and ecosystem health across B.C. This information directly supports policy decisions, conservation planning, and climate adaptation strategies.

### Adapting Actions

Monitoring data reveals when restoration techniques aren't achieving desired outcomes, enabling adaptive management approaches. For example, if native plantings show poor survival rates, monitoring data can help identify causes like drought stress, deer browsing, or invasive competition, leading to modified approaches. Regular assessment ensures limited volunteer time and resources are directed toward the most effective conservation actions.

## 7.2 Tools & Apps: iNaturalist, eBird, and Other Platforms

### iNaturalist

iNaturalist serves as B.C.'s most comprehensive biodiversity monitoring platform, with over 453,000 observations recorded in B.C. Parks alone since 2019. The app uses artificial intelligence to suggest species identifications, then relies on a community of expert volunteers to verify observations, making them "Research Grade" when confirmed by multiple users.

#### How to use



- Download the free app and create an account at [inaturalist.ca](https://inaturalist.ca)
- Enable location services and take clear photos showing identifying features
- Upload observations with date, location, and habitat notes
- Join B.C.-specific projects like "BC Parks" or create club-specific projects
- Use the "Seek" companion app for real-time identification assistance

### Best Practices:

- Take multiple photos showing different angles and key features
- Include habitat shots showing the organism in context
- Add detailed notes about behavior, abundance, and associated species
- Photograph evidence like tracks, scat, or nests when direct observation isn't possible

### eBird

Managed by the Cornell Lab of Ornithology, eBird focuses specifically on bird observations and has contributed to over 160 peer-reviewed publications in 2022 alone. The platform excels at tracking bird migration patterns, population trends, and habitat use across BC's diverse ecosystems.



- Create a free account at ebird.org
- Download the mobile app and the Merlin companion app for identification help
- Submit complete checklists documenting all species observed during specific outings
- Include effort data: duration, distance traveled, and number of observers
- Use the "Breeding Bird Atlas" feature during nesting season

### Other Valuable Platforms

- **Report Invasives BC:** Document invasive species locations for rapid response efforts
- **eButterfly:** Monitor butterfly and pollinator populations across BC
- **WhaleReport:** Track marine mammal sightings to reduce ship strikes
- **BugGuide:** Identify and document invertebrate species

## 7.3 Simple Monitoring Plan for Clubs

### Phase 1 –Planning(Month 1)

#### Set Objectives

- Pick clear goals: biodiversity check, restoration tracking, invasive species watch.
- Choose focus species or habitats relevant to local priorities.
- Define project area and easy-to-access monitoring sites.

#### Site Selection

- Select 3–5 sites covering different habitats or management styles.
- Ensure year-round access and get landowner/agency permissions.
- Map sites with GPS and set permanent photo points.

## Phase 2 – Baseline Data (Months 2–3)

### Initial Surveys

- Record species using iNaturalist/eBird.
- Take standard habitat photos.
- Note human impacts, invasive species, restoration needs.
- Measure key metrics: tree counts, invasive cover %, water clarity.

### Create Protocols

- Make standard data sheets and survey routes.
- Set schedule and methods.
- Train volunteers in ID skills and data entry.
- Store data securely (cloud + backups).

## Phase 3 – Regular Monitoring (Ongoing)

### Monthly

- Repeat surveys and photo points.
- Log findings to citizen science apps.
- Note seasonal changes or unusual events.

### Quarterly

- Review trends and share updates with partners.
- Adjust methods as needed.
- Plan any management changes.

### Monitoring Checklist

**Site Info:** Name, GPS, habitat, history, date/time, observers.

**Species:** List, abundance, breeding notes, new sightings, declines.

**Habitat:** Vegetation changes, invasive spread, disturbances, water quality.

**Restoration:** Plant survival, growth, natural regeneration, intervention success.

## 7.4 Ideas to Involve Schools and Youth

**Curriculum Integration** - Partner with local schools to align monitoring activities with science curriculum standards. Grade 4-7 students can contribute to biodiversity inventories while learning about ecosystems and scientific methods. High school students can engage in more sophisticated projects involving data analysis, statistical interpretation, and research presentation skills.

**Technology Integration** - Youth naturally gravitate toward technology-based monitoring tools. Gamify conservation through iNaturalist challenges, species identification competitions, and photo contests. Use social media platforms to share discoveries and build peer networks around conservation activities.

**Leadership Development** - Create youth naturalist programs where students mentor younger participants in species identification and data collection techniques. Establish youth advisory councils that help design monitoring protocols and interpret results for community presentations.

**Citizen Science Projects** - Engage youth in structured research projects like the *Growing Nature Connection & Skills* program in Metro Vancouver, where Indigenous high school students lead invertebrate biodiversity studies while developing community leadership skills. Connect with programs like NatureKids BC's Nature Clubs, which already engage over 1,500 B.C. youth annually in outdoor adventures and citizen science projects.

**Skills Building** - Teach transferable skills through monitoring activities: GPS use, photography, database management, scientific writing, and public presentation. These technical skills support both conservation goals and youth career development in environmental fields.

**Community Connections** - Foster intergenerational learning by pairing youth with experienced naturalists and Indigenous knowledge keepers. Programs like the Youth and Ecological Restoration (YER) initiative demonstrate how bringing young people together with community elders creates lasting appreciation for natural environments.

**Seasonal Programming** - Design monitoring activities around school calendars with intensive summer camps, monthly after-school programs, and special events during migration periods or breeding seasons. This approach maintains engagement while accommodating academic schedules.

By implementing systematic monitoring approaches, naturalist clubs in B.C. transform from casual nature appreciation groups into scientifically-informed conservation leaders. Community science not only advances ecological knowledge but also builds the next generation of environmental stewards through hands-on engagement with the natural world.

A photograph of three mountain goats running down a steep, rocky slope. The goats are in motion, with their legs extended and bodies angled downwards. The background shows a steep, light-colored hillside with some sparse green vegetation and a few dark, leafless branches. The overall scene is dynamic and captures the agility of these animals in their natural habitat.

## **8. FUNDING, SUPPORT & RESOURCES**

Naturalist clubs in B.C. have access to diverse funding opportunities, in-kind resources, and mentorship networks to support climate adaptation and NbS projects. This section provides practical guidance for securing financial support and accessing the tools, expertise, and partnerships needed for successful conservation initiatives.

## **8.1 Grants: Where to Apply (Click [here](#) and [here](#) for lists of climate funding opportunities in BC and Canada)**

### **Provincial and Regional Funders**

#### **Forest Enhancement Society of BC (FESBC)**

FESBC provides funding for projects that minimize wildfire risk, enhance wildlife habitat, improve forest health, and utilize harvest waste. The organization prioritizes multi-benefit projects that address climate adaptation, Indigenous participation, and community safety. Recent funding includes co-investments with the Habitat Conservation Trust Foundation totaling up to \$500,000 annually for wildlife habitat projects. Applications for the 2026-27 and 2027-28 funding opportunities are set to be released later this summer.

#### **Habitat Conservation Trust Foundation (HCTF)**

HCTF has invested over \$242 million in more than 3,800 conservation projects since 1981. The foundation supports projects led by community groups, environmental organizations, Indigenous communities, and government agencies across B.C. [Fish & Wildlife Grants](#), [Action Grants](#) (formerly Stewardship Grants), [Capacity Grants](#), [Caribou Habitat Restoration Grants](#), [Community Grants](#), [Habitat Acquisition Grants](#), [Land Stewardship Grants](#), [Education Grants](#), and [Invasive Mussel Monitoring Grants](#) are some of the grants available. While these funding opportunities have no limit to cost, every project should have a maximum stipulated timeline of 3 years.

### **Municipal Funding Programs**

#### **City of Vancouver - Greenest City Grants**

Vancouver offers up to \$50,000 for projects addressing both climate action and equity. The program supports registered non-profits, charities, and First Nations Bands with two-year project timelines. Matching funds are strongly encouraged, and projects must benefit Vancouver residents.

#### **City of Nanaimo - Community Environmental Sustainability Project Grant**

Nanaimo provides up to \$5,000 per project with \$20,000 total annual funding available. Projects must serve Nanaimo residents and address critical environmental and climate issues locally.

## Federal and Utility Programs

### BC Community Climate Funding Guide

The provincial government's comprehensive funding portal lists climate action opportunities for Indigenous communities and local governments. Recent additions include the Disaster Resilience and Innovation Funding (DRIF) program providing \$15 million for climate adaptation projects.

### BC Hydro Community Grants

BC Hydro offers grants up to \$10,000 for non-profits and registered charities developing or expanding programs in STEM education, safety education, or environmental sustainability. Preference is given to programs serving rural, remote, or Indigenous communities and those engaging youth.

### Recreation Foundation of BC (RFBC)

RFBC has granted over \$600,000 since 2011 for parks, recreation, culture, environment, and education programs. The next application window opens January 1, 2026, with a March 31 deadline.

## 8.2 In-Kind Resources: Seed Sources, Training, Tools

### Federal and Utility Programs

#### Provincial Seed Resources

B.C. has extensive native plant seed production guidance through the Ministry of Environment's Native Seed Manual, covering 31 herbaceous species indigenous to northern B.C. The manual provides detailed instructions for seed collection, processing, storage, and revegetation prescriptions adapted to local site conditions.

#### Seed Collection Networks

Research conducted through UBC and the BC Conservation Foundation has explored developing a provincial seed bank for non-commercial native seed. While formal infrastructure is still developing, local naturalist clubs can access seed collection guidelines through the Garry Oak Ecosystems Recovery Team and [Native Plant Society of BC](#).

#### Native Plant Nurseries

Commercial native plant suppliers throughout B.C. provide locally-adapted species for restoration projects. The [David Suzuki Foundation](#) recommends six approaches for sourcing native seeds and plants: becoming a "Seed Sitter," visiting local nurseries, attending seed swaps, accessing seed libraries, joining naturalist societies, and collecting responsibly from wild populations.

**Avoid commercially available "Wildflower seed" mixes—these often contain non-native or invasive plants. Instead, use seeds from reputable B.C. providers specializing in indigenous species.**

## Equipment and Tool Sharing

### Community Tool Libraries

Organizations like Wildsight operate tool-sharing programs providing specialized equipment for conservation work. [Zero Waste BC](#) also has a list of tool libraries that you could borrow tools from.

## Training and Capacity Building

### Professional Development Resources

[Nature Groupie](#) provides comprehensive stewardship training guides including instructor materials, slide presentations, videos, and activities designed for volunteer skill development. Though developed in New Hampshire, most materials are applicable across regions.

### Youth Training Programs

The Environmental Youth Alliance offers peer mentor programs combining skill-building workshops with hands-on experience in land-based education. Participants develop youth work skills while supporting nature stewardship programs, with programs specifically designed for equity-denied communities.

## 8.3 Mentorship: Networks and Programs That Offer Guidance

### Climate Action Mentorship

#### Women4Climate Mentorship Program

Originally delivered through C40 Cities and now continued by the Zero Emissions Innovation Centre, this program has empowered over 40 local women working on community-based climate solutions. The program builds next-generation climate leaders including marginalized genders and provides project management, partnership navigation, and personal support.

### Conservation-Specific Networks

#### Stewardship Centre for BC

The Stewardship Centre provides extensive guidance on NbS implementation, green bylaws development, and community conservation project design. They offer technical resources, training opportunities, and networking events for conservation practitioners across B.C.

#### British Columbia Conservation Foundation

BC Conservation Foundation partners with communities, governments, NGOs, and educators to deliver effective, on-the-ground conservation projects. With expertise in restoration, invasive species, monitoring, and outreach, it has completed over 10,000 projects across B.C.

## Indigenous-Led Conservation Support

### BC First Nations Climate Strategy Networks

The *BC Assembly of First Nations Climate Strategy and Action Plan* provides frameworks for Indigenous-led climate adaptation and conservation projects. These networks offer guidance on incorporating traditional ecological knowledge and building partnerships with Indigenous communities.

### Indigenous Climate Hub

This organization provides funding guidance, capacity building, and networking opportunities specifically for Indigenous-led climate action and conservation initiatives. They maintain current information on funding programs supporting Indigenous environmental leadership.

## Regional Conservation Networks

### Together for Wildlife Strategy

B.C.'s provincial wildlife conservation strategy connects community groups with government agencies, NGOs, and Indigenous organizations working on biodiversity conservation. The strategy provides frameworks for community science, habitat restoration, and species protection initiatives.

### Local Land Trusts and Conservancies

Organizations like the Land Trust Alliance of BC provide youth engagement guides, conservation planning resources, and networking opportunities for community-based conservation groups. These networks offer practical guidance on project development, partnership building, and long-term stewardship.

By leveraging these diverse funding sources, in-kind resources, and mentorship networks, naturalist clubs in B.C. can significantly enhance their capacity to implement effective climate adaptation and NbS projects. Success often depends on combining multiple funding sources, accessing appropriate technical support, and building long-term partnerships with experienced conservation practitioners and organizations.

# Appendix A - Nature-based Solutions Project Planning Worksheet

## A. Project Overview

- Project Name: \_\_\_\_\_
- Project Location: \_\_\_\_\_

## B. Problem Identification

- Climate challenge being addressed (e.g., flooding, heat, habitat loss): \_\_\_\_\_
- Urgency/timeline: \_\_\_\_\_

## C. Site Assessment

- Physical description: \_\_\_\_\_
- Environmental considerations (soil, hydrology, species): \_\_\_\_\_
- Current land use and ownership: \_\_\_\_\_

## D. Solution Design

- NbS approaches (circle all that apply):
  - Wetlands
  - Riparian buffers
  - Watershed rehabilitation
  - Green infrastructure (e.g., bioswales, rain gardens)
  - Forest restoration
  - Other: \_\_\_\_\_

## E. Benefits Assessment

- Climate adaptation benefits: \_\_\_\_\_
- Biodiversity/ecosystem benefits: \_\_\_\_\_
- Social/community benefits: \_\_\_\_\_

## F. Stakeholder Engagement

- Community members involved: \_\_\_\_\_
- Indigenous partners: \_\_\_\_\_
- Partner organizations: \_\_\_\_\_

## G. Funding Strategy

- Estimated budget: \$\_\_\_\_\_
- Potential funders: \_\_\_\_\_

## H. Monitoring and Adaptive Management

- Indicators to track: \_\_\_\_\_
- Long-term maintenance plan: \_\_\_\_\_

## Appendix B - Seasonal Action Calendar

A guide to what naturalist clubs in B.C. can do throughout the year to support climate adaptation and nature-based solutions (NbS).

| Season        | Suggested Actions                                                                                                                                                                                                                                                                              | Focus Areas                                                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Spring</b> | <ul style="list-style-type: none"> <li>- Launch habitat restoration projects (planting native species, removing invasives)</li> <li>- Run community education and outreach events</li> <li>- Strengthen partnerships with local schools, municipalities, and Indigenous communities</li> </ul> | Habitat restoration, outreach, partnerships                        |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>- Conduct biodiversity surveys (birds, pollinators, aquatic species)</li> <li>- Engage the public with nature walks and citizen science</li> <li>- Implement NbS projects such as riparian planting or wetland enhancement</li> </ul>                   | Biodiversity monitoring, public engagement, project implementation |
| <b>Fall</b>   | <ul style="list-style-type: none"> <li>- Collect and store native plant seeds</li> <li>- Analyze summer data and update local climate adaptation records</li> <li>- Prepare natural spaces for winter resilience (mulching, erosion control)</li> </ul>                                        | Seed collection, data analysis, habitat preparation                |
| <b>Winter</b> | <ul style="list-style-type: none"> <li>- Host indoor workshops on climate adaptation strategies</li> <li>- Research and design upcoming NbS projects</li> <li>- Apply for funding and grants</li> <li>- Conduct organizational capacity-building</li> </ul>                                    | Planning, research, funding, training                              |

## Appendix C - Climate Snapshots by Region

### SOUTH COAST VANCOUVER



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

#### PROJECTIONS



#### POSSIBLE IMPACTS



### THOMPSON OKANAGAN KELOWNA



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

#### PROJECTIONS



#### POSSIBLE IMPACTS



### BOUNDARY NELSON



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

#### PROJECTIONS



#### POSSIBLE IMPACTS



### OMINECA PRINCE GEORGE



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

#### PROJECTIONS



#### POSSIBLE IMPACTS



## NORTHEAST FORT ST. JOHN



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

### PROJECTIONS



### POSSIBLE IMPACTS



## SKEENA TERRACE



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

### PROJECTIONS



### POSSIBLE IMPACTS



## WEST COAST NANAIMO



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

### PROJECTIONS



### POSSIBLE IMPACTS



## CARIBOO WILLIAMS LAKE



NUMERIC PROJECTIONS ARE 2050+ DIFFERENCES FROM 1971-2000 BASELINE UNLESS OTHERWISE STATED.

### PROJECTIONS



### POSSIBLE IMPACTS

