

Presented by the B.C. Wildlife Federation's Wetlands Education Program (WEP)



2023 YEAR IN REVIEW

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Yaqan Nukiy Wetland Restoration Project

Over the past seven years, the B.C. Wildlife Federation's Wetlands Education Program has been collaborating with the Lower Kootenay Band on two landscape-scale restoration projects on traditional Yaqan Nukiy territory. This massive, ongoing wetland restoration project, known as the Yaqan Nukiy Wetlands project is nestled between the Purcell and Selkirk Mountain ranges in the Creston Valley, and spans well over 517 hectares.

Historical Context and Need for Restoration

The North Wetland Unit, spanning 105 hectares along the Kootenay River banks, historically featured a rich mosaic of wetlands, lakes, river channels, and wet meadows, all of which were regularly inundated by the Kootenay and Goat Rivers. The transformation of this landscape began in the early 1900s when parts of it was drained for agriculture.

By 1967, extensive drainage had completely eliminated natural water bodies within the North Unit, facilitated by the construction of a large impoundment. This impoundment, intended to manage water levels and prevent flooding, ultimately failed due to permeable soils beneath and within the dam, allowing water to drain away. This historical context underscores the need for the Yaqan Nukiy Wetland Restoration Project.





Yaqan Nukiy Wetland Restoration Project: 2023 Project Overview

Our 2023 initiatives were designed to enhance habitats for a wide range of species, including burbot, white sturgeon, various waterfowl, and mammals, in the vicinity of Creston, British Columbia. Our restoration efforts aimed at developing ecosystems that are natural, resilient to climate change, require minimal maintenance, and support the reintroduction of native vegetation to increase biodiversity and ecosystem health. We particularly focused on creating diverse wetlands with features that support species at risk and help combat invasive species, such as the American bullfrog.



- 2 lakes constructed (4.16 hectares)
- 25 wetlands restored (2.6 hectares)
- One river constructed (1.7 km)

The 2023 segment of this project was a collaborative effort led by the Yaqan Nukiy Lower Kootenay Band, involving the Kootenai Tribe of Idaho, and the B.C. Wildlife Federation, with designs by Thomas R. Biebighauser and Norman Allard Jr. Funding was made possible by the Kootenai Tribe of Idaho, Columbia Basin Trust, the Fish and Wildlife Compensation Program, the Province of British Columbia, and Wildlife Habitat Canada.

Future Potential for Project Continuation

There is great potential for restoring many additional wetlands, lakes, rivers, and streams in the North Unit, Middle Unit, and South Unit of the Yaqan Nukiy Lower Kootenay Band Reserve. The Lower Kootenay Band Reserve's North, Middle, and South Units are dedicated to wetland management. Each large area may be reconnected with floodwaters from the Kootenay River without affecting farmland, roads, or buildings. The wetlands, lakes, rivers, and streams may be restored so they do not require maintenance, without the use of dams, dikes, ditches, diversions, pipes, water control structures, or pumps.



Workers using a laser level to measure the depth of the newly constructed channel at the 2023 Yaqan Nukiy restoration site.

Photo by Birch Matkowski



Grizzly tracks spotted in 2023 at the Yaqan Nukiy wetland restoration site

Photo by Birch Matkowski



Beaver Dam Analogue Training with the British Columbia Institute of Technology

During the annual Wetland Restoration training at the British Columbia Institute of Technology (BCIT) in Logan Lake, the B.C. Wildlife Federation conducted a collective low-tech processbased restoration (LTPBR) training session.

The practical part of the training focused on building the first of 100 Beaver Dam Analogues (BDAs) as part of the BCWF's upcoming Water Water Everywhere project.

Jen Rogers, the BCWF's Beaver Restoration Assessment Lead, directed this BDA build, which involved BCIT students, BCWF technicians, and land guardians from adjacent First Nations communities.

At the workshop, Rogers discussed the benefits of beaver-based restoration for wetland rehabilitation, emphasizing both the practical and ecological advantages of BDA construction.

Beaver Dam Analogues (BDAs) are a cost-effective strategy for restoring wetlands and enhancing habitats by mimicking natural beaver dams. They improve water retention, enhance biodiversity, and strengthen resilience against environmental challenges like droughts, floods, and wildfires.

What is Low-tech Process-based Restoration?

Low-tech process-based restoration is an approach that utilizes simple, cost-effective methods to emulate natural ecological processes, aiming to enhance ecosystem resilience and functionality with minimal technological intervention. Valued for its simplicity and economic efficiency, LTPBR plays a crucial role in leveraging natural processes to strengthen ecosystem health.

Building Beaver Dam Analogues (BDAs) is a cost-effective strategy within LTPBR for wetland restoration and fish habitat enhancement. By mimicking the structure and ecological function of natural beaver dams, BDAs play a pivotal role in LTPBR efforts, facilitating the restoration of natural wetlands and the processes they support.

About BCIT's Annual Wetland Restoration Workshop

Drone photo of BCIT BDA build by Lower Nicola Indian Band

Wetland builds have been occurring on and adjacent to the Logan Lake Golf Course for several years as part of this program. Integral to a broader strategy aimed at improving water filtration and enhancing water quality, this series of educational wetland builds is particularly important because it has significantly improved the habitat quality of the lake and its nearby ecosystems.



BCIT students constructing a BDA for educational purposes at Logan Lake, B.C.



For over two decades, the B.C. Wildlife Federation's Wetlands Institute (WI) has been essential in empowering participants with the skills necessary to lead wetland-focused projects across British Columbia. The year 2023 marked the 21st annual Wetlands Institute.

Held on the traditional and unceded territories of the Secwépemc people in Barrière, Kamloops, and surrounding areas, the 2023 Institute was centered on crucial wetland restoration and stewardship aspects including classification, mapping, health assessments, maintenance, and monitoring. Attracting a diverse group of professionals, ranging from consultants and biologists to landowners and government staff, the 2023 WI had a unique environment where shared dedication to environmental restoration flourished.

Although the overall focus of the Wetlands Institute is on restoration techniques affecting various multi-phase and continual wetland projects across the province, the 2023 Institute stood out for its dynamic and interactive expertise exchange, which significantly enhanced the collaborative learning experience for all participants.

Highlights of the 2023 Wetlands Institute included:

- Skills training in wetland classification, mapping, and health assessments.
- Emphasis on collaboration among industry professionals, government staff, and First Nations.
- Knowledge exchange on restoration techniques and grant writing.
- Showcasing of various projects for habitat protection and environmental solutions.
- Educational sessions on wetland health, project management, and mapping tools.
- Hands-on activities like planting and species identification.

"The power of education should never be underestimated. Individuals who understand the value of wetlands share it with others, which encourages future conservation efforts."

- Wetlands Institute participant, 2023



WI participants utilizing the Rapid Wetland Health Assessment too



WI participant planting native species at a wetland restoration site after solarization technique ran its multi-year course for invasive species treatmen



WI participants work together to identify a wetland site in Barrière, B.C.

2023 Wetlands Institute Highlights & Guest Speakers



Protecting Wetlands and Wildlife in the Clearwater River Valley

With Trevor Goward and The Land Conservancy

On the first day of the Wetlands Institute, Trevor Goward and The Land Conservancy (TLC) presented their Clearwater River Valley initiative at the Edgewood Blue property, targeting wildlife corridors, habitat protection, and research in Wells Gray Provincial Park. After the tour, participants learned to identify five wetland types—bog, fen, marsh, swamp, and shallow water—present at Edgewood Blue and in the surrounding TLC-protected areas.



Community Wetlands Through an Indigenous Lens

With Don Bowser, Elder and Knowledge Keeper from Simpcw First Nation

On day two of the Institute, participants received a guided tour of the Simpcw First Nation's newly restored "Boardwalk Wetland." On the tour, Don Bowser shared Indigenous Knowledge on plant uses and beaver stories, underscoring the wetland's significance for food, medicine, and as a space for knowledge exchange between Elders and youth.

The Institute Also Featured Informative Sessions Led by Experts in Their Fields



Kyla Rushton (BCWF Wetland Assessment and Field Coordinator) introduced participants to the Rapid Wetland Health Assessment tool.



Erin Roberts from the Canadian Wildlife Service showcased the Canadian National Wetland Inventory (CNWI) tool– a tool which will improve mapping available for wetlands in B.C., which is key in conserving and protecting these invaluable ecosystems.



Kasey McKenzie from Ducks Unlimited Canada shared the journey of a significant wetland project, offering perspectives on its challenges and milestones.

2023 Wetlands Institute Highlights & Guest Speakers Cont'd











Traditional Knowledge Meets Contemporary Restoration Efforts

With Norm Allard Community Planner, Lower Kootenay Band

Norm Allard joined us for days 3 to 5 of the 2023 Wetlands Institute, where he shared his technical skills with participants and also emphasized the importance of weaving Indigenous and Western perspectives into restoration efforts. He highlighted his work on the Yaqan Nukiy Wetland Restoration project near Creston, B.C., as an example—a project where the B.C. Wildlife Federation (BCWF) has collaborated with Norm for over five years.

Expertise and Guidance in Conservation Stewardship

With Neil Fletcher, BCWF Director of Conservation Stewardship

Neil Fletcher, BCWF Director of Conservation Stewardship, also significantly contributed to the 2023 WI by sharing his expertise in restoration techniques and offering valuable grant writing guidance, vital for non-profit wetland projects. His involvement not only enhanced practical learning but also provided participants with opportunities for detailed discussions on their projects during evening sessions.

Exploring Restoration Strategies in Lac du Bois Grasslands

With Stephanie Russell and Melany Leontowich with B.C. Parks

Adding to this local insight, Stephanie Russell and Melany Leontowich with B.C. Parks, conducted a tour of the Lac du Bois Grasslands Protected Area, offering a deeper understanding of the region's environmental challenges, primarily drought and wildfires. In this discussion, WI participants explored potential solutions, including restoring spawning channels, adding BDAs, and restoring ephemeral or shallow wetland basins to mitigate drought and maintain moisture in the wetland areas of the protected region.

Managing Invasive Species: Innovative Approaches

With Dr. Catherine Tarasoff from Agrowest Consulting

Additionally, at the Tranquille Wetland site in Kamloops, Dr. Catherine Tarasoff stressed the importance of knowledge-based strategies and understanding plant biology for proper species management. Collaborating with the Kamloops Naturalist Club, Tarasoff implemented an experimental benthic barrier to smother and potentially control the spread of the invasive reed canary grass. WI participants actively engaged in the soil-sampling process to test the efficacy of the benthic barrier.

Additional Hands-on Learning

From Planting to Pond Dipping

Participants also took part in hands-on activities such as a planting project that showcased using solarization for invasive species management, guided by BCWF's Wetlands Workforce staff. Moreover, pond dipping at the Dufferin Wetlands provided a practical look at macroinvertebrates, highlighting their importance in the ecosystem, their role in controlling mosquito populations, and their utility as indicators of wetland health.

Wetlandkeepers, 2023

BCWF's Wetlandkeepers courses are 2 1/2 day workshops that educate participants about wetland conservation, stewardship and restoration, providing communities with hands-on experiences, tools, and resources needed to steward their wetlands.

From July 27th to 29th, A Rocha Canada and the Wetlands Education Program (WEP) hosted the Houston Wetlandkeepers course in the Bulkley-Nechako Region. The event began on Thursday with Audrey Faber discussing invasive plant species and prevention programs.

On Friday, Kyla Rushton, introduced Rapid Riparian Health Assessments to evaluate wetland health at a site near the Yellowhead Highway, to show and evaluate the effects of environmental disturbances.

Saturday started with lan Sharpe's insights into restoration techniques, focusing on Beaver Dam Analogues and tree planting. The final day continued at Dungate Meadows, where soil studies provided deeper understanding of wetland classification. Participants used Munsell Soil Color Charts for detailed soil analysis and practiced GPS mapping to identify vegetation changes, human disturbances, and key features, equipping them with essential skills for advocating wetland health and protection.



Digging soil cores, Houston Wetlandkeepers, 2023





2023 Wetlandkeepers in Houston, B.C.

During the workshop, we were fortunate to encounter local Western Toads, a species listed under SARA (Species at Risk Act) in Canada, along with several hundred of their young.

Protecting breeding sites from development, invasive species, and pollution is crucial as local populations of Western Toads return to the same spots annually for reproduction. With wetlands, making up only 7% of B.C.'s terrestrial landscape, these ecosystems are vital for the Western Toad and many other species of concern in B.C..

"This workshop helped me obtain new skills...I feel a lot more confident about wetland classification, soil analysis, plant ID, and how to collect data in a way that could affect decision makers."

-- Wetlandkeepers participant, 2023



In the spring of 2023, the BCWF's Wetlands Education Program and Youth Education Program held a four-day environmental and outdoor training workshop for 16 youth members of Shuswap First Nation, and five adult chaperones.

Participants learned about wetlands, fish and fish habitat, and water quality. Additionally, participants engaged in lessons on archery, archaeology, and flint knapping. Members of the Shuswap Nation also held campfire sessions with traditional storytelling, songs, and language lessons. This training combined modern conservation practices with deep-rooted cultural traditions.



A camper looking for frogs and aquatic invertebrates.



Chris, Operations, Education, and Engagement Director, teaching a camper how to tie a tackle.



Campers learning how to test the water quality of the lake with Living Lakes Canada educator.



Campers participating in a drumming at a campfire-session at the Shuswap Youth Conservation Camp, 2023.



Hand-painted details on the traditional hand drum of Suzie, the Shuswap drum leader.



BCWF's Wetland Restoration Coordinator, Alyssa, demonstrating how to use a soil auger.

Since the workshop, the Shuswap Nation has expressed that they found the event very valuable and is interested in formally establishing a conservation education program for youth within their Nation.



The BCWF's Map Our Marshes is a 1.5 day workshop that focuses on entry-level field skills for mapping smaller wetlands using free software, GPS, and your smartphone! In 2023, sessions were held in Maple Ridge and Whistler, with an additional workshop held virtually.

Maple Ridge Map Our Marshes

On June 2nd and 3rd, our team collaborated with the Alouette River Management Society (ARMS) to conduct a Map Our Marshes workshop in Maple Ridge. The first day featured a classroom session where participants explored the classes, values, and losses of British Columbia's wetlands, emphasizing their crucial roles and the urgent need for their protection. Blake Danis from WildResearch and Simon Fraser University provided expert insights on amphibian biodiversity and conservation, particularly focusing on species at risk in British Columbia.

The following day involved practical fieldwork at Blaney Bog, where participants applied their identification skills to analyze local vegetation and wetland soil types. Through hands-on activities, including the use of soil augers and field guides, we examined the characteristics of wetland and upland soils, contributing to a comprehensive understanding of wetland classification and conservation strategies.



Assessing soils in the field, Maple Ridge Map Our Marshes, 2023.

Whistler Map Our Marshes

On August 19th and 20th, the Whistler Naturalists and the Wetlands Education Program held a Map Our Marshes workshop in Whistler.

The session started with an overview of wetland functions and how to identify a wetland. The field day began at Emerald Wetlands with a guided tour by local naturalist Bob Brett, focusing on beaver habitat preservation, and how beneficial these animals are to wetland ecosystems. Participants navigated beaverchannels, experienced the "Bog Bounce," and engaged in vegetation identification, discovering diverse species including sundews, bog cranberries, and Labrador tea.

The workshop concluded at Wedge Park with an exploration of a Skunk Cabbage swamp, where participants learned about using handheld GPS units for mapping and conserving sensitive ecosystems.



Learning how to map smaller wetlands using free software, GPS, and a smartphone! Whistler Map Our Marshes, 2023.

Our 2023 Map Our Marshes Partners



WEP Outreach Events, 2023

In 2023, the Wetlands Education Program participated in a wide range of outreach activities aimed at promoting wetland conservation. By collaborating with industry experts and connecting with the public, we endeavor to increase awareness and encourage community involvement in protecting local wetland ecosystems through our outreach events.

Vancouver Giants Game Outreach, Vancouver B.C.



The BCWF's Communications Coordinator, Jennifer, educates attendees about the BCWF Wetlands Education Program's work at the Vancouver Giants game.

Night Quest Outreach, Pacific Spirit Regional Park



The BCWF's WEP Program Coordinator, Alana, engages with kids at the annual Night Quest event, delivered by Metro Vancouver Regional Park Interpreters and the Pacific Spirit Park Society.

Community Conservation Corner, Squamish B.C.



WEP team members join the Community Conservation Corner outreach event in Squamish B.C., hosted by the Squamish River Watershed Society.

Day at The Farm, Delta B.C.



The BCWF's Wetlands Education Program joined the Delta Farmland and Wildlife Trust's Day at the Farm to discuss wetland care and engagement in stewardship.

Wetlands Institute: Virtual Speaker Series



The BCWF's WEP hosted the Wetlands Institute: Virtual Speaker Series, themed "Secret Wonders of Wetlands," attracting 117 participants. The series focused on beavers, bryophytes, and bats.

Ginty's Pond Outreach, B.C.



The BCWF's WEP joined forces with the Wetlands Workforce for a community outreach event at Ginty's Pond in Cawston B.C.

Additional WEP Outreach Events in 2023 included:

- Annual River's Day with Alouette River Management Society (ARMS) • Houston, B.C. Wetlands Outreach
- Port Moody Fingerling Festival
- Probus Club Presentation
- U.B.C.O's Wetlands Delineation Training (Presentation)
- World Wetlands Day Outreach
- Youth Conservation Scholarship Program Conference



The Wetland Ecosystem Services Protocol (WESP) tool, introduced to British Columbia by the B.C. Wildlife Federation, marks a significant advancement in wetland management within the province. By providing a standardized methodology for assessing the varied ecological functions and benefits of wetlands, the WESP tool addresses the critical issues faced by wetlands, including historical loss and degradation from destructive practices such as draining and diking, especially in populated areas. The Wetland Ecosystem Services Protocol aims to change that.

Protecting B.C.'s Wetlands With the Wetlands Workforce

Since 2021, the BCWF's Wetlands Workforce tool has been working towards building a catalogue of hundreds of wetlands across various eco-provinces to identify those most productive and in need of protection and restoration.

The WESP tool is becoming a crucial resource for enhancing decision-making processes concerning wetlands in British Columbia. It focuses on quantifying the various goods and services that wetlands provide, with the goal of prioritizing the conservation of high-value wetlands. Additionally, it serves as a practical tool for evaluating wetland restoration projects based on the ecosystem goods and services they deliver.



The Wetlands Workforce in northern B.C., where 100 wetlands in the region were assessed over three years.

WESP in 2023

Efforts in 2023 focused on expanding the tool's calibration across three distinct ecoprovinces, areas characterized by similar climates, geological histories, and physiographies. This expansion was achieved by deploying several field crews to collect data from numerous wetlands, aiming to refine the tool's accuracy and utility.

The work involved collaboration with Indigenous groups and government bodies, enhancing the tool's application for conservation efforts and environmental stewardship in British Columbia.

Throughout 2023, 131 wetlands were assessed with the WESP. During this fieldwork, plot information was also collected to support the Canadian National Wetland Inventory (CNWI). First Nations were invited to training using the WESP tool and 68 individuals across 16 communities were engaged through this process. Indigenous communities were also invited to recommend sites of interest to the community to be assessed with the WESP tool. Over the last 3 years the calibration process has been refined and allowed for other initiatives to be combined with WESP work including validating predictive mapping models and identifying potential restoration opportunities. Three regions now have the calibration process complete for WESP, with 2 regions identified as a priority for work in 2024/2025 (Southern Interior Ecoprovince and Sub Boreal Interior Ecoprovince). There are 5 regions where the calibration process has not been started. See a comprehensive map of the WESP tool's Ecoprovinces on the following page.

Map of WESP Ecoprovinces of B.C.





Learn more about the Wetlands Ecosystem Services Protocol at www.wetlandsworkforce.ca

The Impact of WESP in B.C.

The WESP tool introduces an advanced approach to wetland decision-making in British Columbia, providing a standard measure to approximate the diverse benefits of wetlands, such as habitat for ungulates, water storage, and carbon sequestration. It offers a standardized method for assessing the ecological functions and benefits of wetlands, making it accessible even to those not expert in all 17 functions. WESP will also aid in the rapid assessment of wetland function and the effectiveness of enhancement efforts.

The BCWF's WESP project has benefited significantly from partnerships with many First Nations across the province for community engagement days and field training, along with collaboration with non-government organizations like Nature Trust B.C., Nature Conservancy of Canada, Ducks Unlimited Canada. These partnerships have been integral to the project's success.

Support from the provincial and federal government has been crucial, providing financial and technical backing for the WESP tool and related fieldwork. This support reflects the growing interest in and recognition of the importance of tools like WESP in recent years.

Get Involved with the BCWF



Volunteer

By becoming a BCWF volunteer, you can contribute to conservation efforts in your community and make an impact that will benefit everyone, now and in the future.

BCWF volunteers work in a variety of different capacities. They work to assist our various programs and services, with youth and accomplishing hands-on-conservation work. They also assist in our Surrey office, helping with fundraising, advocacy, education, administrative support, special events and so much more.



Advocate

Now is the time to invest, conserve, protect and restore our landscapes and wildlife to stabilize and restore what makes British Columbia special. This requires a commitment from the Province to re-establish British Columbia as a world leader in fish, wildlife and habitat management.

As passionate conservationists, hunters, anglers and outdoor enthusiasts, it is important to voice your concerns to your elected officials on government decisions effecting fish, wildlife and their habitat.



Collaborate

Collaborate

Every year, the Wetlands Education Program team works to restore, enhance, and conserve wetlands across our beautiful province. We collaborate with BCWF clubs and members, non-governmental organizations, naturalist clubs, First Nations communities, and more to create unique and inclusive educational workshops in communities throughout the province. We aim to provide the knowledge and tools for participants to be wetland stewards in their own communities.

Have an idea for a workshop in your community? Reach out to us!

BCWF Membership

Supported by the B.C. Wildlife Federation members, the BCWF Wetlands Education Program works to restore, enhance, and conserve wetlands, with a focus on training British Columbians on how to care for wetlands and engage in wetland stewardship across the province.

By becoming a BCWF member, you support us in ensuring the sound, long-term management of British Columbia's fish, wildlife, parks, and outdoor recreational resources for the best interests of all British Columbians.

Learn more about how our members fund onthe-ground habitat restoration projects at www.bcwf.bc.ca/membership.



Donate

Make a One-time Donation

By donating to the B.C. Wildlife Federation, you support conservation programs and initiatives across the province, including our Wetlands Education Program and other educational initiatives. Your contribution aids in conserving and protecting B.C.'s fish, wildlife, and habitat for present and future generations.

Become a Monthly Donor

A monthly gift is one of the most significant ways you can make an impact. Your monthly contribution provides a ready and reliable source of funding to support the BC Wildlife Federation's important programs and initiatives, while reducing fundraising and administrative costs. Easily increase, decrease, pause or stop your monthly gift at any time.

Learn more about donation opportunities at www. bcwf.bc.ca/donate.



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Stay in touch with the BCWF's Wetlands Education Program



Upcoming Wetlands Education Program Workshops in 2024:

www.facebook.com/BCWFWetlands

www.youtube.com/user/bcwfbogblog

📄 www.bcwfbogblog.com

Stay in touch with the B.C. Wildlife Federation Watershed team $\,$ -



Stay updated on our wetland stewardship programs and learn more about how to protect BC's remaining bogs, fens, marshes, and swamps. By following our pages, you'll also gain access to links and resources beneficial for wetland monitoring and conservation efforts.



Wetlandkeepers Wetlands Institute Wetlands Institute Speaker Series

Map Our Marshes

Visit our workshops page to find out about event locations and dates for 2024, as well as registration pages.

www.bcwf.bc.ca/wetlands-workshops/



This report was prepared by Jamie Long, BCWF Conservation Stewardship Coordinator and Molly Dube, BCWF Communications and Technology Specialist. All photos are by Jamie Long, Molly Dube, James Clare and the BCWF Watershed Team.