



Wetlands Institute

Final Report

East Kootenays, BC
September 23-29, 2017



Cover Photo: Participants in the Columbia River Wetlands near Canal Flats, BC

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The 2017 Wetlands Institute would not be possible without the financial support of the following partners:



Acknowledgements:

BCWF Wetlands Education Program would like to thank all the instructors, participants, volunteers, and funders for helping to successfully deliver the 2017 Wetlands Institute. A list of the can be found under the Executive Summary.

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i. EXECUTIVE SUMMARY

Since 1998, the BC Wildlife Federation (BCWF) has hosted a Wetlands Institute in a variety of communities across BC, doing so annually since 2012. The Wetlands Institute provides the greatest depth of training offered by the BCWF's Wetlands Education program. All Wetlands Education Programs are designed to increase awareness about the values of wetlands and to empower individuals and communities to become stewards of wetlands within BC and across North America. The Wetlands Institute targets individuals currently working on a wetland project and provides them with many of the necessary skills to successfully accomplish their conservation goals. The other two pillar programs are the Wetlandkeepers course and the Map our Marshes. BCWF's Wetland Education Program hosted the 2017 Wetland Institute in the East Kootenays from September 23-29.

15 full-time participants attended the workshop and assisted in the restoration of four wetlands in the Columbia Wetlands region; a cattle impacted wetland on rangeland, a failing man-made wetland, a clay-liner wetland, and an artificial liner wetland. The "Gyppo Logging Basin" and "Hoodoo Property" sites received 0.40ha and 0.06ha of restored wetland habitat, respectively. The "Turtle Lake" site resulted in securing 2.3ha of wetland. The Columbia River Wetlands is one of the longest intact wetlands in North America and possesses significant cultural significance to First Nations such as the Ktunaxa. Though the wetlands in the valley bottom have remained largely intact, upland and "bench land" wetlands surrounding them have been impacted by development, farming practices, and climate change. By training community members to appreciate, identify, map, steward, and restore ecologically important habitats, individuals and groups can actively participate in protecting and restoring wetlands in their community.

The Wetlands Institute would not be possible without the generous financial support provided by The National Conservation Plan, The Habitat Conservation Trust Fund, The Government of British Columbia, Government of Canada, Columbia Basin Trust, Wildlife Habitat Canada, Fish and Wildlife Compensation Program, and Environment and Climate Change Canada. The workshop also would not have been possible without a multitude of partners: BC Ministry of Forests, Lands, and Natural Resource Operations, The Columbia Wetlands Stewardship Partners, Lake Windermere District Rod and Gun Club, Canal Flats Wilderness Club, Ktunaxa Nation, Nature Conservancy of Canada, Shuswap Band, The Nature Trust of BC, Jakob Dulisse Consulting, Goldeneye Ecological Services, Alberta Riparian Habitat Management Society, Anchor Excavating, and the McKersie family. We would like to extend a sincere and special thanks to local biologist, Dave Lewis, and Lake Windermere Rod and Gun Club President, Rick Hoar, for being our eyes and ears in the area and helping make this Institute possible. It could not have been done without them. We would also like to thank our hosts for the week: the Blue Lake Centre, and Base Camp Café.

ii. ABOUT THE BC WILDLIFE FEDERATION

The BC Wildlife Federation (BCWF) is a province-wide voluntary conservation organization of hunters, anglers and outdoor recreationalists, representing all British Columbians whose aims are to protect, enhance and promote the wise use of the environment for the benefit of present and future generations. As such, two strategic goals have been adopted:

- 1. To ensure the sound, long-term management of British Columbia's fish, wildlife, park and outdoor recreational resources in the best interests of all British Columbians, and to coordinate all the voluntary agencies, societies, clubs and individuals interested in that objective, and*
- 2. To develop and support a comprehensive educational program to make all British Columbians aware of the value of British Columbia's fish, wildlife, park and outdoor recreational resources, and to arouse in the public conscience a recognition of, and a respect for, the place of fish, wildlife and outdoor recreation in the wise integrated use of the nation's natural resources.*

BCWF delivers educational programs including, but not limited to Conservation Outdoor Recreation Education, Wilderness Watch, Becoming an Outdoors Woman, all which act to fulfill the needs of its members, community and that of the strategic goals. The Wetlands Education Program (WEP), established in 1996, is one of the prominent conservation educational programs of BCWF.

iii. INTRODUCTION TO THE WETLANDS EDUCATION PROGRAM

The BC Wildlife Federation recognizes wetlands as important ecosystems to conserve with enormous social, economic and environmental benefits. The longest standing WEP programs, including Wetlandkeepers and the Wetlands Institute, were designed at a provincial level from government and non-government stakeholders who recognized the need for public stewardship of wetlands in BC. Despite the ups and downs of financial support from the government, the BC Wildlife Federation recognized the value and potential of the program, and has been a champion in delivering province-wide wetland educational programs since its inception. The Wetland Education Program has become a valuable asset and has played an increasingly significant role in meeting the stated mission of the B.C. Wildlife Federation:

“To protect, enhance and promote the wise use of the environment for the benefit of present and future generations”

Through the various Wetland Education Programs, BCWF is able to demonstrate to the broader public the contribution that hunters, anglers and outdoor recreationalists make to fish and wildlife conservation efforts across British Columbia. To date, the WEP has contributed to the conservation of hundreds of wetlands in not only British Columbia but throughout North America. The WEP accomplishes wetland conservation through facilitating community education projects, facilitating land securement, and conducting wetland inventory, monitoring, construction and restoration.

WEP is delivered by a full-time Program Manager and Program Coordinator who receive support from assistants and interns throughout the year (pending external funding). Direction for the program is a collaborative effort between the Program Manager, an Advisor on the BCWF Board, and the BCWF Director of Operations.

THE ROLE OF WETLANDS

Wetlands play an essential role in the wellbeing of our natural environment through carbon sequestration, providing fish and wildlife habitat, enhancing water quality, mitigating floods, and recharging of groundwater and streams. For these reasons, wetlands impact our individual and community health. In comparison to many other ecosystems, the benefits from wetlands are exceptionally large relative to their size (MacKenzie and Shaw, 2000). Within BC, wetlands are valued at approximately \$100billion/year (MOE, 2010). When total economic values are considered, wetlands often provide greater economic returns than when the land is converted for other uses (Millennium Ecosystem Assessment, 2005).

However, wetlands are disappearing from our landscape. Over the last century many wetlands across Canada, including British Columbia, have been disturbed or entirely destroyed, especially in populated areas due to development pressures and lack of awareness to their inherent values. Without increased public awareness, the trend of wetland loss and degradation will likely continue to occur. BCWF's Wetlands Education Program provides participants with the knowledge and skills to address wetland loss and degradation, monitor, rehabilitate and steward wetland habitat and encourages citizens to play a key role in conservation initiatives as advocates and volunteers.

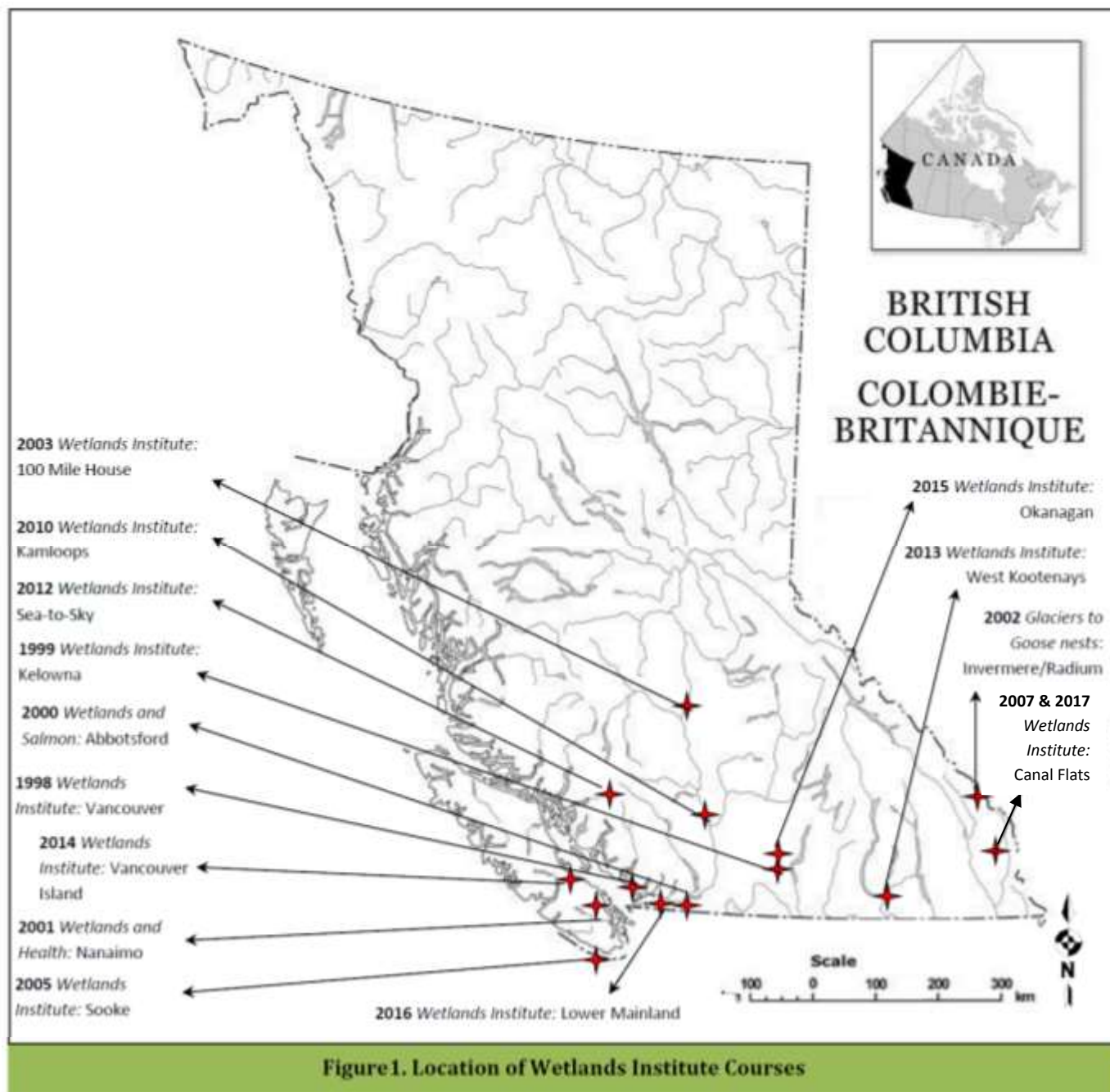
THE WETLANDS INSTITUTE

"I believe that the Wetlands Institute represents the highest standard in wetland education."
-Tom Biebighauser, Wildlife Biologist USDA (Retd.), and Center for Wetland and Stream Restoration

The Wetlands Institute is one of the three pillar projects of the BCWF Wetlands Education Program. It is a week-long course attended by landowners, land-managers, government and non-government staff, community volunteers, educators, and First Nations. The objective of this course is to provide theoretical and practical training to value, identify, monitor, map, construct, and restore wetlands. As a result of participating in the Institute, individuals can implement wetland stewardship activities in their own communities.

Institute participants submit a wetland conservation project as part of their application and receive specific training and resources in order to successfully complete their project. Participants receive training from numerous specialists, some including wetland construction/restoration professionals, amphibian specialists, hydrology specialists, fish and wildlife specialists, and vegetation specialists. Participants also receive resources from environmental consultants, universities and scientific publications.

Wetlands Institute (WI) programming is initiated by existing partnerships with BCWF regional presidents, BCWF clubs and local communities or from community champions to identify suitable project sites. Once a WI location has been identified and restoration projects have been identified, funding opportunities and sponsorship opportunities are pursued. The WI has been successfully implemented in 1998-2003, 2005, 2007, 2010, and 2012-2017. The next WI is scheduled for Salt Spring Island in 2018.



HISTORY OF WETLANDS INSTITUTE IN BC

1998 Vancouver Wetlands Institute:

The first institute was modeled after its American counterpart, and included a partnership with the Faculty of Education at Simon Fraser University (SFU). There were 18 full-time participants and 15 part-time participants. Staff from the Greater Vancouver Regional District helped deliver the course. Among the conservation activities, participants were involved in the GVRD model project at Camosun Bog.

1999 Kelowna Wetlands Institute:

This institute was based at the Okanagan University College (OUC), with the attendance of 16 full-time and 9 part-time participants, and involvement from the City of Kelowna to deliver and plan the course. A key outcome of the institute included the mapping of significant privately owned wetlands and their subsequent inclusion in the City of Kelowna's municipal inventory.

2000 Abbotsford Wetlands Institute:

This institute had 15 full-time, 2 part-time participants, 1 volunteer, 4 instructors, 3 facilitators, and 3 guest speakers. The focus was to connect wetlands to salmon health and habitat. A number of wetlands were surveyed.

2001 Nanaimo Wetlands Institute:

This institute had 15 full-time, 1 volunteer, 4 instructors, 2 facilitators, and 7 guest speakers. The focus was to demonstrate the link between healthy functioning wetlands and the health of human communities. Nine different wetland areas around Nanaimo were investigated.

2002 Invermere/Radium Wetlands Institute:

This institute had 15 full-time participants, 3 part-time participants, 5 instructors, 1 facilitator, 33 guest speakers, and a 25 member Steering Committee. The focus was to address rural wetland issues such as tourism, livestock grazing and railroads.

2003 100 Mile House Wetlands Institute:

This institute had 12 full-time, 36 part-time participants, 8 instructors, and a 36 member Steering Committee. This institute focused on multiple wetlands with different challenges regarding wetland conservation in the Cariboo region, where ranching and tourism are predominant activities.

2005 Sooke Wetlands Institute:

This institute had 15 full-time participants, 33 part-time participants, 6 instructors, and a 35 member steering committee. The focus was to identify water supply issues and pressures to wetlands from growing urban areas on Vancouver Island.

2007 Canal Flats Wetlands Institute:

This institute had 10 full-time participants, 9 instructors, 5 guest speakers and a 4 member steering committee. A major outcome was the construction of a wetland that could provide school children with a place to explore a small-scale outdoor natural habitat. This region is located at the headwaters to the Columbia River, a critical waterway for fish, wildlife and recreational use.

2010 Kamloops Wetlands Institute:

This institute had 13 full-time 18 part-time participants, 13 instructors, and 2 facilitators. A main theme for the institute was to highlight the impacts of recreational and agricultural use and the effects of climate change on wetlands.

2012 Sea-to-Sky Wetlands Institute:

The institute took place in Squamish, Pemberton, and Whistler. It had 18 full-time participants, 17 part-time participants, 10 trainers, 3 guest speakers, and 3 facilitators. Participants helped create/enhance 2 groundwater and 3

liner wetlands. 19 planners from the Lower Mainland and the surrounding areas also attended the Planner's workshop, which focused on incorporating wetland stewardship into existing policies. The following section provides details on the various activities that occurred throughout the week-long institute.

2013 West Kootenays Wetlands Institute:

The Institute took place in the West Kootenays, including Salmo, Castlegar and Passmore. It had 29 participants, 6 trainers, 10 guest speakers, and 4 facilitators. Participants helped restore one wetland complex and restore another wetland in Salmo for stormwater retention and filtration. Additionally, 11 planners, consultants and municipal/regional staff attended the Kootenays for Wetland Conservation & Enhancement workshop.

2014 Vancouver Island Wetlands Institute:

The Institute took place on Vancouver Island in Courtenay, Nanaimo and Duncan. It had 30 participants, 2 facilitators, 3 instructors, and 7 guest speakers. Participants assisted Ducks Unlimited with a re-scouring project at Lazo Marsh and helped with 4 wetland repair projects and 2 wetland creation projects at the Garry Oak Preserve. They also provided design prescriptions for Nanaimo fish and Game Club as well as for Simms Millennium Park.

2015 Okanagan Wetlands Institute:

This Institute took place in Kelowna, Winfield and Vernon. It had 23 full-time participants and 13 part-time participants, 3 facilitators and 5 instructors and 6 guest speakers. Participants helped restore a ground water wetland at Curly Frog Farm in Kelowna and a clay-liner wetland at the Radies site in Vernon. Additionally 18 participants attended the Vernon Working Group Workshop.

2016 Lower Mainland Wetlands Institute:

This Institute primarily took place in Aldergrove, Cheam, Chilliwack, Delta, Mission, and Pitt Meadows. It had 21 full-time participants and 3 part-time participants, 3 facilitators and 17 instructors/speakers. Participants helped restore a ground water wetlands at Silverdale Creek Wetlands and a clay liner wetland at Dewdney Elementary School (both located in Mission). They also assisted in treating 400ft² of invasive Yellow Flag Iris at Cheam Lake.

Since 1998 the Wetlands Institute has connected with and trained 414 participants

1.0 THE 2017 WETLANDS INSTITUTE

The following is a detailed account of what occurred at the 2017 Wetlands Institute. See Figure 2 for a map of where activities occurred. See Appendix B for an Agenda.

Saturday September 23rd

Beginning the Wetland's Institute at the Columbia Outdoor School (Formerly Blue Lake Centre) near Canal Flats, Wetlands Education Program Manager Neil Fletcher introduced the learning outcomes and goals of the week. The Institute is designed for participants to receive guidance and support for their own wetland projects through technical training, planning theory, field experience, and renowned trainers who can fill knowledge gaps. This allows participants to return to their communities and use their newly acquired skills to improve upon their own projects in wetland restoration or creation. Participants then presented on their wetland projects. There was a range of participants including biologists, consultants, First Nation members, and ENGO employees. Participants represented The Nature Conservancy of Canada, Bonaparte Indian Band, Stanley Park Ecological Society, Shuswap Band, Fraser Valley Conservancy, and more.

Biologist and Consultant Jakob Dulisse presented on the biology of Painted Turtles as well as related wetland design considerations. Tom Biebighauser, an internationally renowned author and wetland restoration specialist then presented on wetland restoration methods. He discussed the surface water technique, the ground water technique, the clay liner technique, and the synthetic liner technique.

In the field Jakob and Neil introduced participants to the Ecological Solution Group's well-respected Health Assessment Form, which can be used to rapidly determine a wetland's functional health condition. Derivations of this form are used throughout the US by the Bureau of Land Management, US Fish and Wildlife Service, in Alberta by the very successful Cows and Fish Program, and in some pilot projects in the interior of BC.

Sunday September 24th

The workshop travelled to the first restoration site, Gyppo Logging Basin, to perform initial site assessment and complete a wetland restoration design. The site was heavily impacted by cattle, which compacted the soil and removed much of the vegetation. Participants learned how to use a soil auger, complete a soil sample, evaluate test pits created by excavators, and determine elevation. With training from Tom Biebighauser and wetland restoration specialist Robin Annschild, participants were able to determine the proper course of action would be to deepen the pools and loosen the soil so that the water table would be available for much of the year. Participants also used the previous day's training and performed a wetland health assessment on the site.

After observing the excavators and dozer begin work on the site, Tom and the participants travelled to the second restoration site, Turtle Lake. This man-made system was at risk of failing due to an eroding bank, which would drain the wetland and displace the resident Western Painted Turtle. After a site assessment, participants determined that the banks and existing spillway would have to be filled and a new, armoured spillway would have to be constructed. Furthermore, participants designed nearby turtle spawning habitat.



Participants analyze a test pit at Gyppo Logging Basin

Monday September 25th

The workshop left the Columbia Outdoor School and continued to the next classroom setting at the Base Camp Café in Canal Flats. Neil began the day by introducing wetland classification and the differences between the five major types in BC: Bog, Fen, Swamp, Marsh, and Shallow Open Water. Teachings followed guidelines set out in *Wetlands of British Columbia: A guide to identification*. The Kootenay Camas Project's Valerie Huff then led participants through methods of wetland plant identification, step by step, using live samples, microscopes, and some hefty tomes.

The Institute migrated to the nearby Columbia Wetlands, one of North America's longest stretches of intact wetland. There, participants practiced their wetland classification and plant ID. These exercises were repeated at the Marion Creek Wetlands, another man-made complex which was primarily swamp habitat. The immediate and repeated application of classroom-learned skills cemented the day's lessons, setting a foundation for all future wetland visits.

Tuesday September 26th

The workshop's midpoint featured a presentations on a myriad of topics. Tom Biebighauser began with an in-depth history of wetland drainage in North America. Simon Fraser University's Professor George Nicholas presented an archeological perspective of wetlands at a provincial, national, and global scale, demonstrating the deep connection humans have with this ecosystem. This segued nicely to Leanna Gravelle's talk of the Ktunaxa people's history with the Columbia River Wetlands.

The following speaker, Norine Ambrose, travelled from Alberta where she is the Executive Director with the Cows and Fish Program (a.k.a. Alberta Riparian Habitat Management Society). A three-tiered presentation covered the biology of the North American Beaver, the challenges of co-existing with them, and case studies on how landowners have adapted to do so. Beaver management is a divisive topic and was of high interest to many participants.

The day concluded with a more interactive portion. Long-time educator and interpreter Dan Clark honed the class's communication skills through a series of group activities. This session was designed to address the challenges and complexities that come with communicating wetland projects to landowners, funders, and the general public.



Trainer walks participants through wetland ID

Wednesday September 27

The day began with an assessment of a third site, The Hoodoo Property. This Nature Trust of BC site had previously been developed into a wetland system but it was never able to be self-sustaining. The Wetlands Institute participants' job was to design a wetland which would not require maintenance and sustain a healthy water-level throughout the year. It was deduced that an artificial liner wetland would be most appropriate.

The workshop made a quick stop to the Turtle Lake site to observe heavy machinery creating the new spillway before returning to the nearly-completed Gyppo Logging Basin site. Here, participants spread straw and seed for erosion control. Some participants also worked on completing the two cattle ramps created on site.

Island Pond Wetland was the final stop where local experts Randy Harris and Jeff Allen taught participants about fire ecology's relation to wetlands (a timely topic due to the province's vicious wildfire season). The Island Pond site had suffered from wildfires just weeks prior so participants were able to observe fire ecology first hand.

Thursday September 28

The entirety of Thursday took place in Spillimacheen and Brisco (approximately an hour North of Canal Flats) to bring the workshop to some unique areas within the Columbia Wetlands. The morning was presentation-based and began with an overview of the wetland's processes by Dr. Suzanne Bayley (a long-time researcher in the wetland field). Dr. Bayley also provided some insight from her numerous studies on wetlands. Penny Ohanjanian provided an encompassing presentation on amphibian biology and life history before focusing on the Northern Leopard Frog Recovery Project. She has been on the recovery team for 15 years. The final presentation was from Goldeneye Ecological's Rachel Darvill who presented on waterfowl ID, a benchmark wetland survey project, and the Columbia Wetland Waterbird Survey. The latter is a recent initiative to survey bird species frequenting the Columbia Wetlands so it can be designated as an Important Bird and Biodiversity Area.

The afternoon involved four site visits along the Columbia Wetlands to touch upon aspects discussed in the morning. Participants used scopes and binoculars to ID waterfowl from a distance at each site. Penny's assistant collected amphibians at two sites for demonstration purposes. Dr. Bayley discussed some of the history and unique features of the wetlands as they were encountered, such as the multi-staged beaver dam side channels, natural levees, and flood regime. Participants spoke highly of the organic flow of the afternoon.



Seeding a wetland site

Friday September 29th

The final day was almost exclusively spent at the Hoodoo site where attendees installed an artificial liner. This involved placing the three liner layers, anchoring them with spikes, sealing any damage to the liner (inflicted during transportation), and cutting the liner to size. Once the liner was installed, participants tested the knowledge gained throughout the week and identified mystery soil samples, each calibrated to exact percentages of silt, sand, and clay. Due to the speed at which the liner wetland was created, a second wetland was able to be restored with the remaining time. This second wetland was created using a clay liner from material harvested on site.

The final presentation trained participants how to write successful grant applications. This is a skill which many participants desired but were intimidated to develop on their own. Afterward, participants completed their workshop evaluations. Armed with new perspective, knowledge, and skills, participants completed the workshop by discussing their projects; demonstrating how they would integrate the Wetland Institute's teachings, experience, and networking opportunities to improve, and successfully complete, their projects.

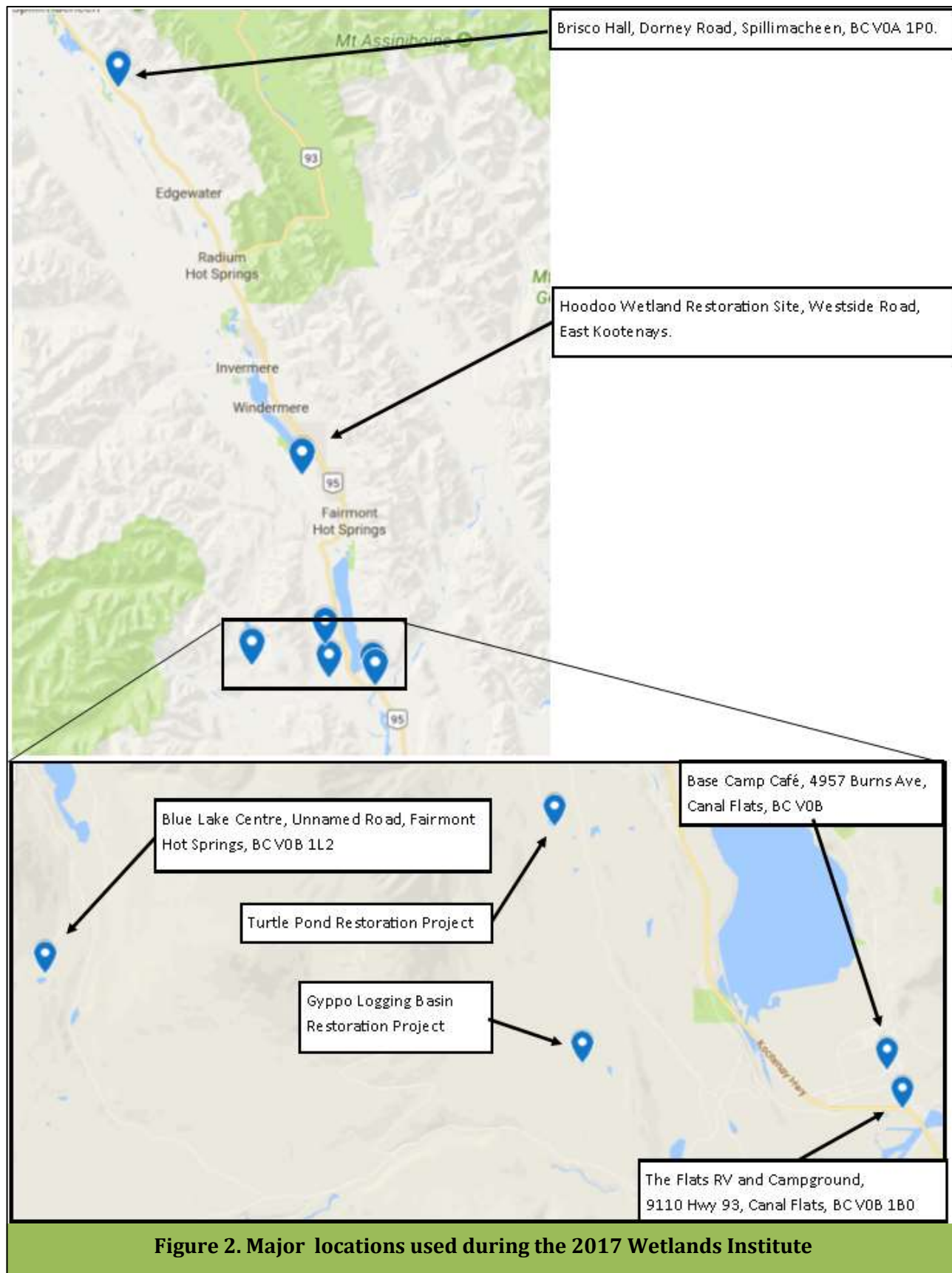
2.0 FINAL COMMENTS AND RECOMMENDATIONS

The legacy left behind by the 2017 Wetlands Institute goes beyond the restored wetlands at Gyppo Logging Basin (0.4ha), Turtle Lake (2.3ha), and the Hoodoo Property (0.06ha). Individuals who participated in the course now have the capacity to restore and steward wetlands in BC for years to come. Partnerships developed among the WI participants and the BCWF staff will no doubt enhance projects and programs for wetland conservation. The WEP will continue to follow the progress of 2017 participants and provide support wherever possible to help them successfully achieve their conservation projects.

3.0 FUTURE WETLANDS INSTITUTE PROGRAMMING

The next Wetlands Institute is scheduled for 2018 on Salt Spring Island. Due to development, agriculture, and forestry, wetland ecosystems account for only 1.7% of the east coast of Vancouver Island and adjacent Gulf Islands (P. Ward et al. 1998.) Many of these were drained at lower elevations, limiting opportunities for water storage and retention in urban areas. Due to this loss, the BC Coast, Vancouver Island, and Gulf Islands are considered ecologically important wetland areas and a priority for Environment Canada (Whitehorn, 2016). Restoration projects will take place at McFadden Creek, Night Owl Farm, Burgoyne Bay Provincial Park, and Cusheon Creek. The 2018 Wetlands Institute will build the capacity of BC residents to protect, enhance and construct wetlands, particularly within the unique restrictions of the Gulf Islands.





APPENDIX A: 2017 WETLANDS INSTITUTE BIOGRAPHIES

Facilitator Biographies

Neil Fletcher

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Neil affirmed his decision to pursue a career in wetlands after preparing a management plan for a provincially significant wetland in Ottawa, Ontario. From this experience he found that wetlands provide a rich social and natural framework for practicing resource management which is both complex and endlessly fascinating. Since May 2010, he has worked with BC Wildlife Federation to plan and deliver wetland related workshops across the province. He is also the Chair of the

Wetland Stewardship Partnership and sits on the Public Conservation Assistance Fund review committee. In 2016 he was awarded the Canadian Wildlife Federation's Stan Hodgkiss Canadian Outdoorsperson of the Year Award.

Jason Jobin

jason.jobin@bcwf.bc.ca



Passionate about the environment from a young age, Jason joined the Environmental Sciences program at Trent University where he later graduated with an Honours Joint BSc. in Environmental Sciences and Biology with a specialization in Ecological Conservation. Trent allowed Jason to strengthen his interest in wetland conservation and, under the teachings of Prof. Tom Whillans, became inspired to get involved with wetland conservation movements. Upon moving to BC, Jason immediately recognized the value of volunteering with the BC Wildlife Federation and was soon hired as an intern. He is now the Wetlands Education Program Coordinator where he manages grants, provides training, takes photos, performs outreach, trains staff, coordinates workshops, oversees restoration projects, and develops resources (among many other things). 2017 will mark his 6th Wetlands Institute.

Doug Newbigging

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Doug is the Wetlands Projects Technician. He earned a plant science degree from UBC and an ecological restoration degree from BCIT. His primary interest is wetland restoration. This summer, he focused on developing his wetland restoration skills through his work with experts Tom Biebighauser and Robin Annschild. He is also very interested in incorporating UAVs (drones) in the designing and monitoring of wetland projects.

Doug enjoys discussing and learning about restoring ecosystems, rare species, invasive species, emerging technologies, adaptive management, experimental design, applications of UAVs, and all things related to wetlands.

Speaker & Trainer Biographies

Norine Ambrose

nambrose@cowsandfish.org



In her 18 years with *Cows and Fish*, Norine has focused on working with landowners, communities and natural resource professionals to help them recognize the value of riparian areas, and what they can do to maintain these areas as healthy, productive pieces of our landscape. Her work with community leaders, organizations and agencies emphasizes sharing lessons learned in effective program design and delivery. She combines her wetland ecology research experiences from the University of Alberta with extensive development of new outreach and monitoring tools at *Cows and Fish*, to help bridge science, management and education around riparian ecosystems. She holds a diploma in Renewable Resources from NAIT and a Bachelor of Science, with Specialization in Zoology, related to wildlife conservation, from the University of Alberta.

Robin Annschild

robin@wetlandrestoration.ca



Robin manages wetland restoration projects for the BCWF and works with Tom Biebighauser to provide wetland restoration design, project management and construction supervision for sites across British Columbia. Since 2014, Robin has worked with Tom to design 290 and build 212 wetlands in BC, Arizona, California, and South Carolina. Robin has trained with Tom for over 1200 hours on wetland restoration sites, and is experienced with building surface and ground-water supplied wetlands, using groundwater dams, compacted clay liners, and synthetic liners. If the loader operator isn't available on a wetland construction site, Robin occasionally jumps in to compact a clay liner. Robin will be one of the specialists managing restoration projects throughout the week.

Suzanne Bayley

s.bayley@ualberta.ca



Professor Emeritus at the University of Alberta, Dr Bayley's research involves; biogeochemistry, ecology and management of wetlands and lakes; Interaction between hydrology and nutrient cycling in northern and prairie wetlands and lakes; use of wetlands for wastewater treatment; effects of fire and climate change in wetlands and streams; and alternative tropic states in shallow lakes. Dr. Bayley is currently the President of the Columbia Wetlands Stewardship Partners.

Tom Biebighauser

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Tom Biebighauser is a Wildlife Biologist and Wetland Ecologist who has restored over 1,950 wetlands in 24-States, across Canada, New Zealand, and Puerto Rico since 1982. He retired in 2013 after working 34-years for the U.S. Forest Service as a Wildlife Biologist, where he restored wetlands and streams. Tom has designed and built over 1,400-dams, and has decommissioned over 300 -dams. He has studied drainage and irrigation for 33-years, learning from contractors who spent their lives destroying wetlands. Tom has developed highly effective and low-cost techniques for building wetlands for rare species across North America. He teaches practical, hands-on

workshops where participants learn how to restore wetlands by becoming involved in the design and construction of naturally appearing and functioning wetlands. Tom has written 4-books about wetland restoration, and instructs online college and field courses on the topic. He received the United States National Wetlands Award for Conservation and Restoration in 2015. Tom will be one of the specialists managing restoration projects throughout the week.

Dan Clark

dj_clark@hotmail.com



Dan is an educator, guide, wilderness adventurer and author with 25 years of experience sharing his love of natural and human history with people across western North America. Dan has an academic background in geography that propelled him into interpretive guiding in the mountain parks. Dan is an accredited guide with the Interpretive Guides Association and wrote their “Handbook for Interpretive Guides” as well as their “Climate Change Handbook.” Currently Dan works as a classroom teacher in Kimberley, BC.

Rachel Darvill

racheldarvill@gmail.com



Rachel has a passion for biodiversity conservation. She completed her MSc in 2014 and has been working as a biologist and environmental consultant since graduating with a BSc in Biology from the UVic in 2000. She is the primary consultant at Goldeneye Ecological Services and, by working with agencies like Canadian Wildlife Service, Parks Canada, and Wildsight, she has had extraordinary opportunities. From working on remote seabird research programs on Triangle Island and Haida Gwaii, an elephant project in Tanzania, grizzly bear research in Alaska and Banff, to aquatic plants and waterbird projects in the Columbia Wetlands, her field research skill set is vast. Rachel is currently the program biologist on the Columbia Wetlands Waterbird

Survey, a Director on the Board for the Columbia Wetlands Stewardship Partners and Wildsight Golden, and is on the Steering Committee for the Columbia Basin Water Quality Monitoring Project and Kootenay Conservation Program.

Jakob Dulisse

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Jakob is a wildlife biologist based in Nelson. A Kootenay childhood spent catching snakes and frogs led to a biology degree and a career in conservation biology—mostly catching snakes and frogs. Jakob has 24 years of experience working throughout the Kootenay region on many field projects, often involving amphibians, reptiles and birds. This year, he has been chasing songbirds in the Rocky Mountains and Hudson Bay Lowlands, Lewis’s woodpeckers in the West Kootenay, western toads in the upper Slokan, fast snakes in the lower Columbia, and small wetlands at risk in the East Kootenays.

Leanna Gravelle

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Leanna is an Education & Outreach Coordinator in the Ktunaxa Nation Traditional Knowledge and Language Sector. She will be speaking on traditional use of wetlands and cultural significance.

Randy Harris



Randy received his B.Sc in Forestry from the University of Alberta and had a forestry-centred career with BC Timber Sales, BC Forest Service, and the Ministry of FLNRO. Randy is an active member of a number of boards and committees including the East Kootenay Invasive Species Council and The Rocky Mountain Trench Ecosystem Restoration Program. He also is currently employed with The Wandering Ecotone where he focusses on ecosystem restoration prescriptions. At the Wetlands Institute, he will be discussing the roles of forestry and fires on wetlands.

Valerie Huff

valeriehuff@gmail.com



Valerie is a restoration botanist and native plant advocate. She has a B.Sc (Agr) in plant science and a M.Sc. in restoration ecology, specializing in native grasses. She has been active in organic climate-smart agriculture, ethnoecology and social justice. Valerie's recent consulting work includes research and restoration of the culturally and ecologically significant camas plant, rare plant surveys, vegetation and pollinator inventories, as well as propagating native plants for restoration projects and home gardens. She particularly loves the plants of very wet and very dry places, and believes they have a lot to teach us if we listen for their songs.

George Nicholas

nicholas@sfu.ca



George Nicholas is a professor of Archaeology at Simon Fraser University (SFU) in Burnaby, British Columbia. He was the founding director of SFU's Indigenous Archaeology Program in Kamloops (1991–2005), and has worked closely with the Secwepemc and other First Nations in British Columbia, and Indigenous groups worldwide. In 2013, he received the inaugural “Partnership Award” from the Social Sciences and Humanities Research Council. He is also an adjunct faculty member of the Flinders University Archaeology Department in South Australia.

Nicholas' research focuses on Indigenous peoples and archaeology, intellectual property issues relating to archaeology, the archaeology and human ecology of wetlands, and archaeological theory and practice. He is the director of the Intellectual Property Issues in Cultural Heritage (IPinCH) project, an 8-year international collaboration of over 50 scholars and 25 partnering organizations concerned with the theoretical, ethical, and practical implications of commodification, appropriation, and other flows of knowledge about heritage. His research on the archaeology and human ecology of wetlands worldwide in relation to small-scale hunter-gatherer societies has promoted new understanding of these important ecological settings, and promoted better heritage management strategies to protect them.

Penny Ohanjanian

pohanj@xplornet.ca



Isabel (Penny) Ohanjanian obtained her MSc (SFU) on Red-necked Grebes at Creston and has worked since on Species-at-Risk. Penny continued her affection for wetlands studying Western Grebes and White Pelicans, she acquired a love of grassland ecology conducting inventories of Long-billed Curlews, and re-ignited her fondness for large, old trees while studying Williamson's Sapsuckers. In the mid-1990s, Penny was captivated by amphibians, and worked on Coeur d'Alene Salamanders and Western Toads. On the Northern Leopard Frog Recovery Team since 2003, she has been conducting reintroductions of that endangered frog. Penny lives on a sheep farm near Kimberley, and trains working border collies.

Participant Biographies

Andrew Bennett

moongravityfarm@gmail.com



Andrew was born in Alberta, raised in Indonesia, and studied at UBC, McGill, and Laurentian, earning a BSc and an MSc in ecology. His passion for agroecology brought him to farms across Canada, the US, Guatemala, and Bhutan. He and his wife Caley have run a mixed farm in Rossland since 2011, growing livestock, plants, and two young boys. They have built a series of ponds on their farm and also take on ecological restoration contracts. Andrew works as a farm advisor for BC's Environmental Farm Plan and is co-developing the Kootenay & Boundary Farm Advisors program.

Stacy Boczulak

boczulaks@ae.ca



Stacy's roots are in rural Saskatchewan. Although her passion for environmental science started in the prairies, she fell in love with the west coast during a number of field courses in Bamfield. Stacy graduated with a Masters from UVic in Forest Biology and an Undergraduate degree in Ecology and Environmental Biology from the UofR. After years of academia and research, Stacy moved to Vancouver to join the applied-science world of consulting with Associated Environmental. She has research experience in heavy metal bioaccumulation in wetlands, and has been involved with several wetland restoration projects with her current company. In her spare time, you can find her camping, knitting, and foraging for edibles.

Sheena Briggs

sheena.briggs@natureconservancy.ca



Sheena is the Stewardship Coordinator with the Nature Conservancy (NCC) of Canada, in BC's Southern Interior program. Her role is to manage NCC's properties from Lillooet to Osoyoos, which could mean anything from weed management, grassland monitoring, fencing maintenance and managing species at risk habitat. She has experience from northern BC and Alberta in both the private and public sector, and is currently working on a wetland restoration project in Osoyoos with NCC.

Ariane Comeau

technician@stanleyparkecology.ca



Ariane grew up in Montreal and moved to Vancouver in 2014 following the completion of her master's degree in Biology at the Université de Montréal. She works at the Stanley Park Ecology Society as a conservation technician. Her work involves enhancing wetland habitats of Stanley Park, conducting various wildlife surveys, and recruiting and training conservation volunteers. She loves skiing, mountain biking, and playing drums.

Denise Dufault

deniseingreece@yahoo.ca



Denise was born and raised in Coast Salish Territory, Vancouver, B.C. Her mother taught her to grow food, to respect everything, and took her to her first protest (the launching of Greenpeace in the 70's). She has canoed and camped the Pacific Northwest made documentaries on the environment of Canada and Greece.

Denise received a Permaculture Design certificate from UBC, which reaffirmed that all things are interrelated and as much nature as possible should be preserved for all species. She moved to the Kootenays and is wanting to farm communally. After learning of the absence of salmon and the Columbia River Treaty, she began working across the borders to bring the salmon back home. Denise co-created the Slocan Waterfront Restoration & Development Society, SWR&DS. They plan to daylight and restore Springer Creek (which was diverted and culverted 50+ years ago), and return it to a fish-bearing, spawning creek. Hopefully a salmon hatchery is in their future.

Mark Edmonds

markdedmonds@gmail.com



Mark studied applied horticulture at Capilano College; worked in the landscaping industry for 10 years; and after working in the Public Works Department for the Bowen Island Municipality, went on to help form its Parks and Environment Department. These experiences have led to a desire to not only protect the environment, but to educate both the public and industry that ecosystems can provide services, such as filtering water or combating shoreline erosion, while at the same time enhancing the environment. His project involves enhancing a wetland in an area to be developed to serve as stormwater detention pond.

Chelsea Enslow

naturalresources@bonaparteindianband.com



Chelsea was born and raised in Metro Vancouver, where frequent outdoor adventures with family instilled a deep connection to the natural world. This passion for nature led her to complete a bachelor's degree in Environmental Science at the University of British Columbia, and eventually a Master's degree in Natural Resource Management. Chelsea has spent several years working in the fields of habitat restoration and conservation biology. She is now is the Director of Natural Resources for the Bonaparte Indian Band, where (among many other projects) she helps coordinate habitat restoration in the band's traditional territory.

Patrick Kokesch

pkokesch@telus.net



Patrick was born in Saskatchewan. He joined the RCMP in 1978, was posted in BC and the NWT and performed a wide variety of duties during his service. Patrick retired as a Staff Sergeant in 2012 after 34 years of service. Since the outdoors and nature were always an important part of his life he decided to focus his time and energy studying, taking courses, and training in environmental areas. He plans to pursue a Master of Arts in Environmental Practice at Royal Roads University with a focus upon ethics, management, environmental policy, protection and laws. Patrick hopes to work in the environmental field where he can use his investigative skills along with an understanding of environmental issues to make a difference wherever he can.

Zack Mckluskie



Zack McKluskie has lived in the Columbia Valley for 15 years and currently works for the Shuswap Band as a general labourer. He is also learning how to do survey work, specifically on Shuswap Creek. Zack enjoys spending time with his family and exploring the great Columbia Valley.

Beth Millions

beth@elkriveralliance.ca



Beth was born in Montreal and moved to Alberta at a young age where she grew up and discovered her passion for rivers and mountains. Beth received her BSc in Biological Science and her MSc in Environmental Science from the University of Lethbridge, and whenever she wasn't studying or working, she could be found exploring nearby rivers. Beth now calls Fernie home, where she works for the Elk River Alliance, a non-profit environmental group that aims to maintain and monitor the health of the Elk River Watershed. To her, caring for wetlands is an important step in maintaining a healthy watershed.

Basil Stevens



Basil was born and raised on the Shuswap Reserve. When he was 23 he moved to Vancouver to attend Vancouver Community College for Architecture. In 1998, he moved to Cranbrook and started archeology with Aqam Reserve, which he still does on and off. In 2000, he completed his Forestry Diploma through NVIT and also later received this Fish and Wildlife certificate.

Basil fought fires with the Ministry of Forests for four years.

Today he works for the Shuswap Band as a Junior Biologist/ GPS/ Forest Tech doing projects monitor. Currently he is monitoring badger activity, weed control, and creek levels for future projects.

Nina Sylvester

ninasylvester@hotmail.com



Raised in Nelson, BC Nina loves to spend as much time outside as possible. After achieving her B.A. from McGill University, she travelled for seven months in South America. While exploring Patagonian landscapes she was instilled with the urge to learn more about nature back home in Canada and how she might contribute to its protection. Currently Nina is volunteering at the Friends of Kootenay Lake Stewardship Society (FOKLSS) in Nelson. With FOKLSS she will be working on The Duck Bay Restoration Project which aims to restore a disrupted wetland area as well as convert it into an awareness and learning opportunity for the community of Nelson.

Natasha Wilbrink

natashaw@fraservalleyconservancy.ca



Natasha is a wetland restoration technician with the Fraser Valley Conservancy. She is currently working on a wetland restoration project in Aldergrove Regional Park to restore 2 ha of land that has been used for agricultural purposes back into functional wetland habitat for a variety of endangered and threatened species. In addition, Natasha works on a team attempting to recover Oregon Spotted frogs numbers throughout the Eastern Fraser Valley. Her educational background is rooted in wildlife and fisheries management with a focus on their relation to recreation and tourism in British Columbia.

Tipi Mountain Eco-Cultural Services

arch.info@tipimountain.com



Tipi Mountain Eco-Cultural Services is a service-oriented, heritage resource consulting company, located in the southeastern region of British Columbia. Their team includes: Archaeologists, Anthropologists, GIS Technicians, and Geomorphologists/Geologists. Tipi Mountain will have several representatives present for a portion of the Wetlands Institute.


APPENDIX B: Wetlands Institute 2017 Agenda

WETLANDS INSTITUTE SCHEDULE								
	Sep-23	Sep-24	Sep-25	Sep-26	Sep-27	Sep-28	Sep-29	
	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	
7:30am	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	7:30am
8:00am								8:00am
8:30am	Registration - Classroom	Travel to Gyppo Loggin Basin	Travel to Canal Flats	History of Wetland Drainage in North America, <i>Tom Biebighauser</i>	Travel	Travel to Brisco	Travel	8:30am
9:00am	Intro to Wetlands Institute		Wetland Classification, <i>Neil Fletcher</i>		Design Hoodoo Wetland Restoration, <i>Tom Biebighauser</i>			Columbia Wetland Stewardship and Watershed Processes, <i>Suzanne Bayley</i>
9:30am	Participant Project Presentations	Design Gyppo Logging Basin Restoration, <i>Tom Biebighauser</i>		Wetland Plant Identification, <i>Valerie Huff</i>		Archeology and Wetlands, <i>George Nicholas</i>	Travel	
10:00am			First Nations & Wetlands: A cultural connection, <i>Leanna Gravelle</i>		Amphibians: ID, Recovery, etc, <i>Penny Ohanjanian</i>			10:00am
10:30am						Observe Turtle Lake Restoration, Additional Mock Designs	Travel	10:30am
11:00am			Lunch		Lunch/ Watch excavator break ground			Lunch
11:30am	Wetland Assessment Project, Turtle Biology and Design Considerations, <i>Jakob Dulisse</i>	Wetland Health Assessment Forms, <i>Jakob Dulisse & Neil Fletcher</i>		Travel to Field Site		Living with Beaver: Ecology, Management, and Case Studies, <i>Norine Ambrose</i>	Gyppo Logging Basin Seeding, Spreading Straw, etc	
12:00pm			Wetland Restoration Techniques, <i>Tom Biebighasuer</i>		Travel to Turtle Lake			Wetland Classification and Plant ID, <i>Neil Fletcher & Valerie Huff</i>
12:30pm	Travel	Design Turtle Lake Restoration (with Painted Turtle considerations), <i>Tom Biebighauser & Jakob Dulisse</i>		Travel to 2nd site		Travel	Travel	
1:00pm			Intro to Wetland Health Assessment Forms, <i>Jakob Dulisse. & Neil Fletcher</i>		Travel			Dinner
1:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
2:00pm			Travel		Dinner			Dinner
2:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
3:00pm			Travel		Dinner			Dinner
3:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
4:00pm			Travel		Dinner			Dinner
4:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
5:00pm			Travel		Dinner			Dinner
5:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
6:00pm			Travel		Dinner			Dinner
6:30pm	Travel	Dinner		Dinner		Dinner	Dinner	
7:00pm			Travel		Dinner			Dinner
Classroom	Blue Lake Centre (Unnamed Road, Fairmont Hot Springs, BC V0B 1L2)	Blue Lake Centre (Unnamed Road, Fairmont Hot Springs, BC V0B 1L2.)	Base Camp Café Gymnasium (4957 Burns Ave, Canal Flats)	Base Camp Café Gymnasium (4957 Burns Ave, Canal Flats)	Base Camp Café Gymnasium (4957 Burns Ave, Canal Flats)	Brisco Hall (Dorney Rd, Spillimacheen)	Base Camp Café Gymnasium (4957 Burns Ave, Canal Flats)	Classroom
Accommodations	Blue Lake Centre	Blue Lake Centre	The Flats RV and Campground (9110 Hwy 93, Canal Flats,)	The Flats RV and Campground (9110 Hwy 93, Canal Flats,)	The Flats RV and Campground (9110 Hwy 93, Canal Flats,)	The Flats RV and Campground (9110 Hwy 93, Canal Flats,)	The Flats RV and Campground (9110 Hwy 93, Canal Flats,)	Accommodations
Field Sites	20 minutes south of Blue Lake Centre	Gyppo Loggin Basin, Turtle Lake	Marion Creek Wetland	N/A	Turtle Pond, Gyppo Logging Basin and Island Pond Wetland	Columbia Wetlands	Hoodoo Wetland, Turtle Pond	Field Sites
Restoration Project	N/A	Gyppo Logging Basin	Gyppo Loggin Basin	Gyppo Loggin Basin	Turtle Pond and Island Pond Wetland	Turtle Pond & Hoodoo Wetland	Hoodoo Wetland	Restoration Project

APPENDIX C: Sample Media, Advertising and Correspondence



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WETLANDS EDUCATION PROGRAM

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Only One Month Left To Apply! *NEW DETAILS* On The 2017 Wetlands Institute

Dear Wetland Enthusiasts,

Are you involved in a wetland project? The Wetlands Institute workshop is only one month away (September 23-29th) hosted in the picturesque East Kootenays. Don't miss out on this amazing opportunity to receive some exceptional training.

In addition to hands on restoration with restoration specialist Tom Biebighauser, the a draft of some of the speakers and topics include:

- Watershed Level Wetland Processes (Dr. Suzanne Bailey, University of Alberta)
- Amphibians: Northern Leopard Frog Reintroduction, Restoration considerations (Dr. Penny Ohanjanian, Northern Leopard Frog Recovery Team)
- Painted Turtles: Biology, Restoration considerations (Jakob Dulisse, Consultant)
- Beaver Management (TBA)
- Waterfowl: Identification, the Columbia Wetlands Waterbird Survey (Rachel Darvill, Goldeneye Ecological Consulting)
- Plant Identification (TBA)
- Grant Writing (Neil Fletcher, BCWF)
- Wetland Restoration Techniques (Tom Biebighauser Wetland Restoration and Training)

More topics and speakers to be announced once confirmed. Three unique restoration projects will take place: restoring a cattle impacted groundwater wetland, a repairing a failing surface water wetland, and installing an artificial liner wetland.

As a reminder, the workshop is FREE for BC residents (minus meals and accommodations – optional packages available) and partial attendance will be considered for those with strong applications. More information and the application page can be found here: <https://2017wetlandsinstitute.eventbrite.ca>

▪

BCWF Wetlands Team

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Targeted email sent out to advertise the Wetlands Institute

Wetlands Education Program: Stars Align for 2018 Wetlands Institute *By Jason Jobin*

FOR MOST OF THE SUMMER it appeared as though the 2017 Wetlands Institute may have had to make a drastic change in scheduling and, for the first time in history, proceed without any accompanying wetland restoration projects. With BC experiencing the worst wildfire season ever recorded, the three restoration projects that would have made the bulk of the Wetlands Institute were on the chopping block. People weren't allowed to set foot off of pavement, much less allowed to work with the heavy machinery required to restore wetlands. Biting nails, the Wetlands staff was relieved to see the off-road restrictions lifted just days before the Institute, and elated to see the campfire ban lifted shortly after. A few days later the "Fire Danger Class" was lowered, and the week was allowed to proceed unhampered. What resulted is being viewed as possibly the most successful Wetlands Institute to date.

From September 23-29, fifteen participants from across the province were trained how to successfully complete their wetland projects through a mix of hands-on and in-class sessions. Non-profits, First Nations, consultants, and even agricultural practitioners were represented by the diverse cast of participants. Equally diverse were the topics and expert trainers.

As a few examples: Norine Ambrose (Alberta Riparian Habitat Management Society) presented on Living with Beaver, which included their biology, challenges that arise with co-habitation, and



management case studies; Dr. Suzanne Bayley, (University of Alberta) presented a slew of research on the Columbia River Wetlands, including a field tour of its unique structural features; and Dr. George Nicholas (Simon Fraser University) discussed the rich historical connection with wetlands and how that informs current Wetland Archaeology. Other topics and speakers included:

- History of Wetland Drainage in North America (Tom Biebighauser, Wetland Restoration and Training LLC)
- Painted Turtle Biology and Restoration Considerations (Jakob Dulisse)

- Wetland Classification (Neil Fletcher, BC Wildlife Federation)
- Wetland Plant Identification (Valerie Huff, V.J. Huff Consulting)
- Ktunaxa's Connection with Wetlands (Leanna Gravelle, Ktunaxa Nation Traditional Knowledge and Language Sector)
- Interpretation and Communications Techniques (Dan Clark, Interpretive Guides Association)
- Amphibians of BC, and The Northern Leopard Frog Recovery Project (Penny Ohanjanian)
- Wetland Fire Ecology (Jeff Allen, Jeff

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STARS ALIGN FOR 2017 WETLANDS INSTITUTE

Posted by [jasonjohin](#) on October 6, 2017 - [Leave a Comment](#)



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- *History of Wetland Drainage in North America* (Tom Biebighauser, *Wetland Restoration and Training LLC*)
- *Painted Turtle Biology and Restoration Considerations* (Jakob Dulisse)
- *Wetland Classification* (Neil Fletcher, *BC Wildlife Federation*)
- *Wetland Plant Identification* (Valerie Huff, *V.J. Huff Consulting*)
- *Khuxax's Connection with Wetlands* (Leanna Gravelle, *Khuxax Nation Traditional Knowledge and Language Sector*)
- *Interpretation and Communications Techniques* (Dan Clark, *Interpretive Guides Association*)
- *Amphibians of BC, and The Northern Leopard Frog Recovery Project* (Penny Oshanjanian)
- *Wetland Fire Ecology* (Jeff Allen, *Jeff Allen Contracting Limited & Randall Harris, Wandering Ecotone*)
- *Waterfowl ID, The Columbia Wetland Waterbird Survey, and The West Bench Inventory & Assessment Project* (Rachel Darvill, *Goldensye Ecological Consulting*)

BLOG CATEGORIES

BC Wetland Photo of the Month
Outreach
Species Profiles
Wetland Stewards Continued Projects
Wetlands Education Program
Map Our Marshes
Restoration Workshop
Wetland Institute
Wetlandkeepers
Wild Kidz Camp
Working Group Workshops



UPCOMING EVENTS AND COURSES

For more information on registration for courses and workshops, see our [Eventbrite page](#).

Wetlandkeepers:
Courtenay
May 19th, 2017

completed

Wetlandkeepers: Cheam Lake Wetlands
May 26th, 2017

completed

Invasive Species Removal Workbee: Cheam Lake Wetlands
June 10th, 2017

sold out

Map our Marshes: North

Portion of a blog post written about the Wetlands Institute.

APPENDIX D: Wetlands Institute Participant Feedback

80% (12/15) full time participants completed a feedback form. Some highlights are below.

1) 100% of respondents who had a wetland project (11/11) agreed that concentrating on hands-on field skills helped them with their projects. The following comments were added by some participants:

- “The Wetlands Institute has helped me better understand the scope of my project and the many variables I will need to consider in order to be successful. It has also helped increase my knowledge of many related fields that are pertinent to my project and guiding future directions for my organization.”
- “I can see that even those with wetland knowledge have hugely benefited from the information, practical exposure, and opportunity to communicate with experts”
- “My project ideas are multifaced and complex and the wide variety of topics we covered addressed almost all of the potential facets of my project and future project.”

2) 100% (12/12) of respondents rated the coordinators “among the best”. The following comments were added by some participants:

- “All the coordinators showed an exceptional knowledge of the topics. The ability to integrate with the participants and adapt to the different knowledge bases was impressive.”
- “The workshop was extremely well organized. All our days ran very smoothly and very full. Neil was an excellent leader, wealth of knowledge, and very engaging. Doug and Jason did a great job organizing, were very helpful, and available for questions.”
- “Superb effort. Professional, knowledgeable and personable.”
- “BCWF should be VERY proud of these three fine gentlemen! Their enthusiasm and professionalism is evident in everything they do.”

3) 66% (8/12) of respondents rated the speakers “among the best”, while 25% rated them “above average”. The following comments were added by some participants:

- “There was no doubt the trainers and speakers were experts in their fields. The fact that in the trainers and speakers are all approachable and open to being contacted after the institute is a huge bonus.”

- “Great resources! Amazing insights were gained by the presentations these professionals... ones who have REAL WORLD experience rather than just clinical academic opinions sometimes prevalent in presentations...”
 - “Lots of the trainers and speakers were above average and great at conveying their knowledge. I didn’t think that any of the subjects weren’t applicable or interesting.”
- 4) In comparison to other workshops or extension courses they have taken 100% of respondents rated the Wetlands Institute as “among the best”. The following comments were added by some participants:
- “Probably the best. I can’t believe the variety of speakers and hands-on experience.”
 - “I have never been to a more complete workshop, which is made more impressive given the range of topics covered and the enormity of the subject.”
 - “I’ve attended some very good courses in the past few years. This course really seemed to “tie it all together” with soils/plants/wildlife/wetland ecosystems and other facets. I sat or stood nodding my head through much of the course and had more than one “Aha!” moment”
- 5) 100% of respondents stated they would recommend the Wetlands Institute to others. The following comments were added by some participants:
- “This institute would be a great benefit for anyone regardless of their education or experience level. Also, the connections made are invaluable.”
 - “100% RECOMMENDED! Should be a “must do” for individuals or serious students working or planning to work in the environmental field.”
 - “It was a very engaging course that introduced a wide range of fields. It was great to improve upon existing knowledge and learn new things to which I previously had no experience.”
 - “It is an amazing opportunity that offers such a broad range of info to participants”

APPENDIX D: References

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