



Wetlands Institute Final Report

Lower Mainland, BC
August 27-September 2, 2016



Cover Photo: Participants pose in the newly-created wetland complex at Silverdale Creek Wetlands in Mission, BC.

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The 2016 Wetlands Institute would not be possible without the financial support of the following partners:



Environment
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The Boag Foundation

Acknowledgements:

BCWF Wetlands Education Program would like to thank all of the instructors, participants, volunteers, and funders for helping to successfully deliver the 2016 Wetlands Institute. A list of the additional supporters for the two restoration projects can be found under the Executive Summary.

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All photos were taken by Jason Jobin.

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Contents

i. EXECUTIVE SUMMARY	4
ii. ABOUT THE BC WILDLIFE FEDERATION	5
iii. INTRODUCTION TO THE WETLANDS EDUCATION PROGRAM	5
THE ROLE OF WETLANDS.....	6
THE WETLANDS INSITUTE	6
HISTORY OF WETLANDS INSTITUTE IN BC	8
1.0 THE 2016 WETLANDS INSTITUTE.....	10
SATURDAY AUGUST 27	10
SUNDAY AUGUST 28	10
MONDAY AUGUST 29	11
TUESDAY AUGUST 30	12
WEDNESDAY AUGUST 31	12
THURSDAY SEPTEMBER 1	13
FRIDAY SEPTEMBER 2	13
2.0 FINAL COMMENTS AND RECOMMENDATIONS.....	15
3.0 FUTURE WETLANDS INSTITUTE PROGRAMMING	15
APPENDIX A: 2016 WETLANDS INSTITUTE BIOGRAPHIES	16
APPENDIX B: WETLANDS INSTITUTE 2016 AGENDA	30
APPENDIX C: SAMPLE MEDIA, ADVERTISING AND CORRESPONDANCE.....	31
APPENDIX D: WETLANDS INSTITUTE PARTICIPANT FEEDBACK	34
PARTICIPANT FEEDBACK HIGHLIGHTS	34
WETLANDS INSTITUTE EVALUATIONS	35
APPENDIX E: REFERENCES	44

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 2016 Wetland Institute across the Lower Mainland from August 27 to September 2.

24 participants attended the workshop and assisted in the restoration of wetlands at Dewdney Elementary School and Silverdale Creek Wetlands, both located in Mission, BC. Wetlands have experienced significant loss in the Lower Mainland (over 85%), primarily due to agriculture and development. Loss is expected to continue as an additional 800,000 people settle in the Metro Vancouver area between 2016 and 2041 (Province of BC. 2015). More environmental awareness and stewards at a local level are needed to help this region grow in an environmentally sustainable manner. By training community members to appreciate, identify, map and steward 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 Boag Foundation, The National Conservation Plan, The Habitat Conservation Trust Fund, The Government of British Columbia, Government of Canada, Wildlife Habitat Canada, and Environment Canada. The wetland restoration at Dewdney Elementary School was made possible with additional support by the following individuals and organizations: BCWF Staff, District of Mission, Fraser Valley Watershed Coalition, Public Conservation Assistance Fund, Dewdney Elementary School, Tall Timbers Log Homes, TW Excavating Ltd., Ridgedale Rod and Gun Club, the Oliver Family, Carter Family, Mission Public School District, Fraser Valley Regional District, Youth Unlimited, Malabar farm, Davies Sand and Gravel, Valley Pulp Carriers, Communities in Bloom, Rootdown Farm, 5 Maples Nursery, Mission Contractors, Dewdney Elementary families, South Coast Conservation Program, Balance Ecological, Precious Frog, Catherine Tarasoff, Terry McIntosh, Community Mapping Network, Katzie First Nations, Canadian Wildlife Service, Metro Vancouver Parks Department, Coastal Painted Turtle Project, Langley Environmental Partners Society, Wetland Restoration Consulting, and Wetland Restoration and Training LLC. Wetland restoration at Silverdale Creek Wetlands was made possible with the additional support of Ducks Unlimited Canada, The District of Mission, The Fraser Valley Watershed Coalition, Mission Streams, and numerous volunteer planters.

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 2012-2016. The next WI is scheduled for the East Kootenays in 2017.

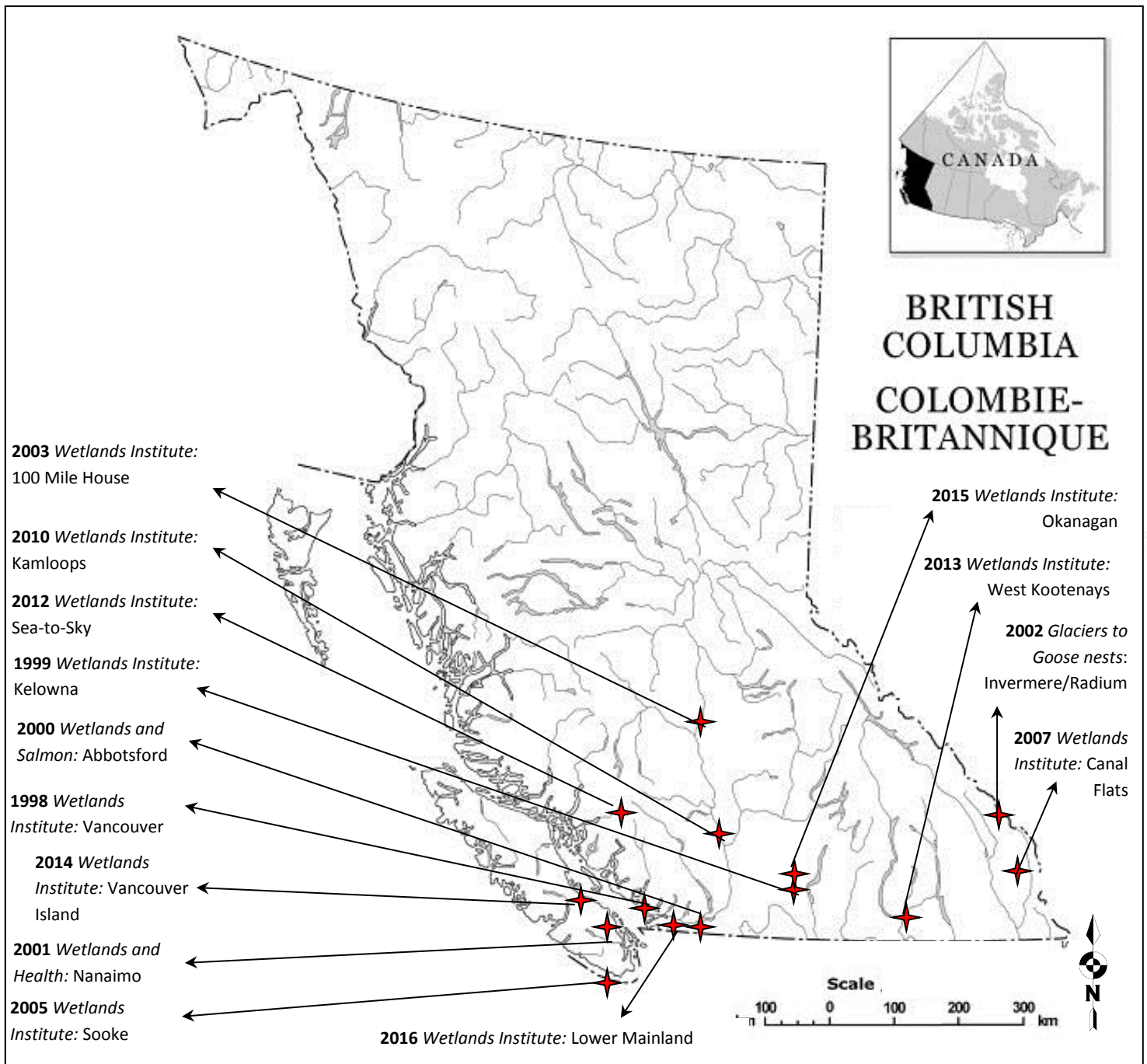


Figure1. Location of Wetlands Institute Courses

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:

The most recent 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 399 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 August 27th

Beginning the Wetland's Institute in Delta, 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, municipal employees, and ENGO employees. Participants represented Teck Resources, Department of National Defense, Burns Bog Conservation Society, Katzie First Nations, Fraser Valley Conservancy, Ducks Unlimited Canada, and more

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. The final presentation of the day was by participant and consultant Daniel Stewart. He shared his findings on analyzing the successes and challenges of wetland compensation sights on the Fraser River. The entirety of the findings can be read in [*Marsh and Riparian Habitat Compensation in the Fraser River Estuary: A Guide for Managers and Practitioners*](#). Afterwards, participants visited two of these compensation sites at two marinas in Delta.

Sunday August 28th

In Chilliwack, Tom Biebighauser began the next day with a history of wetland drainage in North America. Next, Agrowest and Thompson Rivers University's Catherine Tarasoff presented her ongoing research on controlling the invasive Yellow Flag Iris. Her technique involves heavy cutting and then providing an anoxic barrier with water or heavy tarps to prevent regrowth. Participants then travelled to Cheam Lake Wetlands where they were able to contribute to Catherine's research through the removal and treatment of 400ft² of Yellow Flag Iris (see image on right). Gord Gadsden of Fraser Valley Regional District Parks joined the group to discuss his successes with controlling invasive Reed Canary Grass at Cheam Lake wetlands. His technique involved covering the



affected areas with cardboard and heavy planting with native species. Effective and inexpensive invasive species control was of great interest to participants as they are present in many wetlands across the Lower Mainland and are difficult to manage.

The Wetlands Institute then moved to the first wetland restoration site at Dewdney Elementary School in Mission, where Principal Susan McLeod discussed the project needs. The site, once a wetland until mostly filled in for agriculture and development, was overrun with invasive Reed Canary Grass and Himalayan Blackberry, making the site inaccessible to the schoolchildren. Furthermore, it was no longer holding water for a long enough period to provide healthy habitat. Neil Fletcher and Tom Biebighauser walked participants through the many steps of restoration design including soil sampling, using a rod and level, and drawing maps. It was decided that, due to a low water table and high clay content, the restoration would require using a compacted clay liner.

Monday August 29th

After a few remaining participants presented their wetland projects, speakers taught participants about Regional Wetland Initiatives (Sarah Nathan, Ducks Unlimited Canada), Landowner Contact Techniques (Tamsin Baker, South Coast Conservation Program), The Fingered Wetland Landowner Contact Project (Lisa Dreaves, Langley Environmental Partners Society), and Wetland Restoration Project Prerequisites (Neil Fletcher, BCWF).

The class moved back to Dewdney to observe the excavator begin work on restoring the Dewdney Elementary School Wetland (See image below). Afterwards, participants visited Silverdale Creek Wetlands where Jim Taylor (Mission of Streams) and Natasha Cox (Fraser Valley Watershed Coalition) explained the site's history. One portion of the park was a monoculture of invasive Reed



Canary Grass, providing very little habitat value. Participants again worked with Tom Biebighauser to design a wetland complex that would provide a healthy environment for a number of species including salmonids, amphibians, and Great Blue Heron.

Tuesday August 30th

The workshop's midpoint began with a presentation on the connection the Katzie First Nation have with wetlands. Participants learned how the wapato plant (grown in wetlands) was an important winter food source for many First Nations in BC and traded widely by the Katzie. This was followed by a presentation by Kelly Squires, who discussed the role of western science in ecological restoration within a First Nations context. Next, UBC's Terry McIntosh spent some time dispelling myths about plant ID and shared tips on how to identify those within BC's wetlands. Before heading out into the field, Neil Fletcher taught participants the basics of wetland classification.

The first field visit was the Blaney Bog where participants classified the soil, plants, and wetland habitat (See image on right). The second visit was to a property on the Allouette River where Kelly Squires and the Katzie First Nation will be beginning wetland restoration work. Participants analyzed the site and provided input, as well as designed a number of mock wetland sites with Tom Biebighauser.



Wednesday August 31st

Aldergrove was the location for the entirety of the day, with field portions taking place in Aldergrove Regional Park. Field portions included a talk and demonstration on bird banding by Canadian Wildlife Service's René McKibbin. Despite the rainy weather, René was able to catch and band a number of Song Sparrows and Common Yellowthroats (see image on the following page). Biologist Monica Pearson and Metro Vancouver Parks' Roy Teo and Janice Jarvice took participants on a tour of the restoration work that had taken place on site. Monica Pearson also walked the class through the Gordon's Brook Wetland Complex, which will be restored in the near future. Once more, participants were able to ask design questions and add input.

Indoor portions of the day contained further information on Bird Banding by René McKibbin, a species at risk presentation on "Diversity by Design" by the South Coast Conservation Program's Pamela Zevit, and another on turtle biology by the Coastal Painted Turtle Project's Deanna MacTavish.



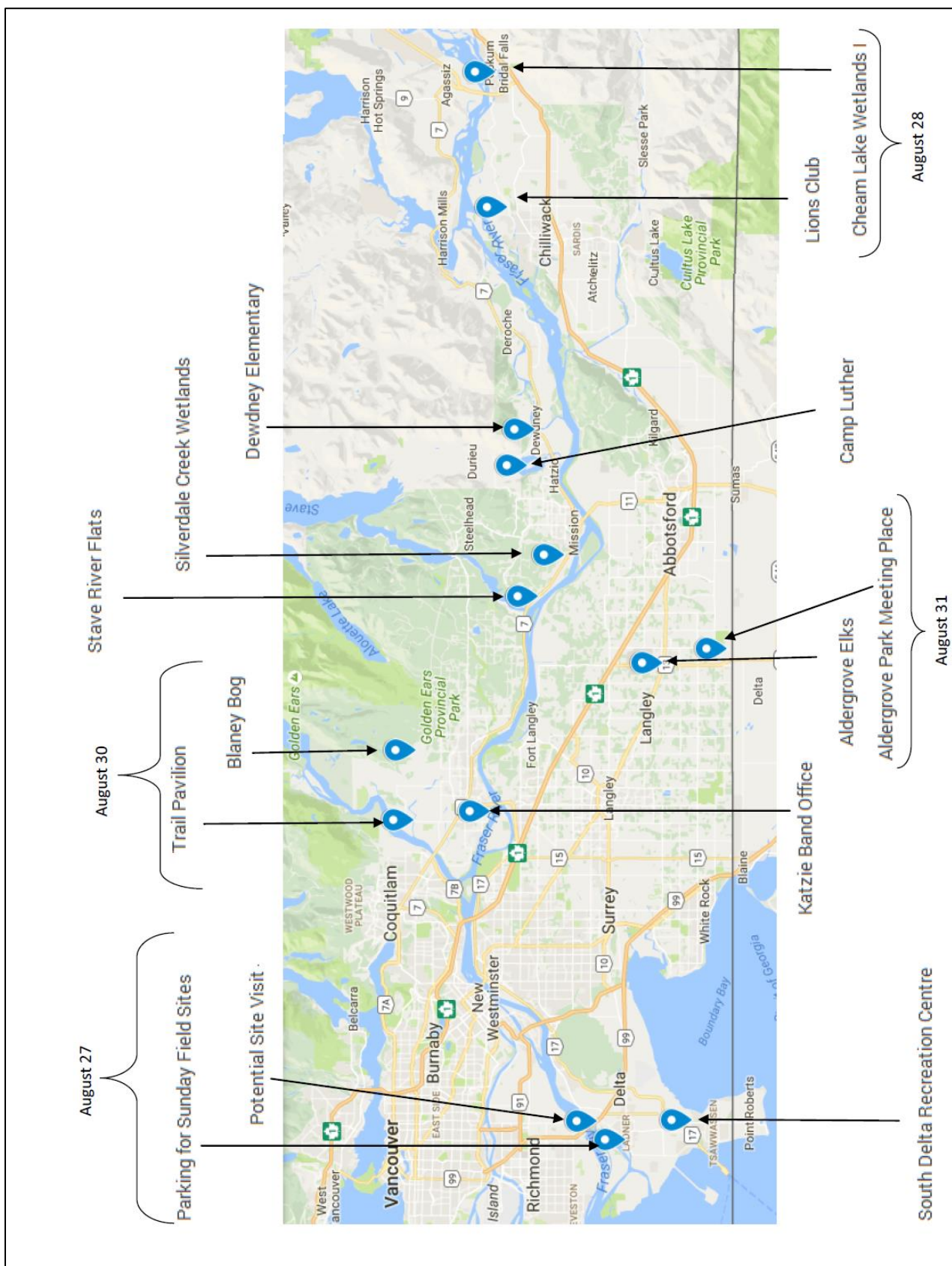
Thursday September 1st

Thursday morning was spent planting the Silverdale restoration site with native species, staking with locally-sourced willow, and seeding with seeds gathered from other, healthier portions of the park. The visit to the Stave River Project was cancelled to ensure the new wetland at Silverdale Creek Park was well planted.

Back at Dewdney Elementary, Monica Pearson joined us again for a presentation and hands-on activity about amphibian ID. Live amphibians were brought in by Monica for this purpose. Deanna Mactavish also brought in some live, juvenile painted turtles. Schoolchildren on site were also able to pay a visit to the live amphibians and reptiles. Participants, families, and other volunteers spent the rest of the day moving logs, spreading straw, planting native species, removing invasives, and spreading seed at the newly completed wetland at Dewdney Elementary School. Following a celebratory BBQ, Tom Biebighauser educated members of the public about the benefits of wetland restoration during with an open talk.

Friday September 2nd

The final day was a mix of discussions, presentations, and tests. Neil Fletcher walked participants through the steps of writing a successful grant, which was of great interest to participants as securing funding for projects can often be a limiting factor, even among larger conservation organizations such as Ducks Unlimited. Participant knowledge was tested through a soil texturing test and the creation of model wetland restoration plans. Armed with new perspective, knowledge, and skills, participants completed the workshop by re-presenting on their projects; demonstrating how they would integrate the Wetland Institute's teachings, experience, and networking opportunities to improve upon and successfully complete their projects.



2.0 FINAL COMMENTS AND RECOMMENDATIONS

The legacy left behind by the 2016 Wetlands Institute goes beyond the restored wetlands at Dewdney Elementary School and Silverdale Creek Wetlands. Beyond the obvious educational value that the Dewdney Elementary School wetland will provide for free for years to come, individuals who participated in the course have the capacity to restore and steward wetlands in BC and elsewhere. Though still early some of the most immediate actions by 2016 Wetlands Institute participants are:

- Participant Krista Voth will be partnering with the BC Wildlife Federation to host a Wetlandkeepers Workshop in Vancouver in 2017.
- Deanna MacTavish and Tara Mathews have applied to complete a wetland survey in North Shore forests. They will also be partnering with the BC Wildlife Federation to host a Map our Marshes workshop in North Vancouver in 2017.

Partnerships developed among the WI participants and the BCWF staff have enhanced projects and programs for wetland conservation. The WEP will continue to follow the progress of 2016 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 2017 in the West Kootenays. The Columbia Wetlands are a large and iconic wetland complex of international significance under the qualifications set out during the Ramsar Convention. They also have cultural significance to the Ktunxana First Nations, who have occupied the region for thousands of years. The Canal Flats area is closely connected to some of their traditional stories. Restoration projects will take place at Gyppo Logging Basin and Turtle Lake. Restoration of wetlands in the Columbia Wetlands area is identified as one of 6 priority areas by the Fish and Wildlife Compensation program. The 2017 Wetlands Institute will build the capacity of West Kootenay residents to protect, enhance and construct wetlands.

APPENDIX A: 2016 WETLANDS INSTITUTE BIOGRAPHIES

Facilitator Biographies

Neil Fletcher

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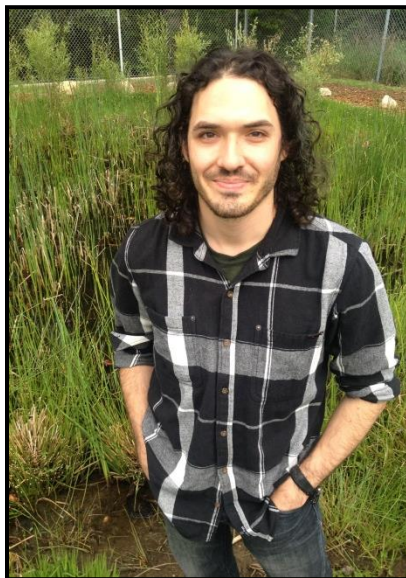
Neil affirmed his decision to pursue a career in wetlands after preparing a management plan for a provincially significant wetland in Ottawa, Ontario. This wetland suffered multiple threats, including: invasive species, poor consultation, toxic nutrient loading, and ongoing development pressures. From this experience he found that wetlands provide a rich social and natural framework for practicing resource management which is both complex and endlessly fascinating.

He has an undergraduate degree in Environmental Science (specializing in

Conservation Biology) from Ottawa University, where his thesis explores impacts to waterways from agricultural nutrient loading. His graduate degree is from Simon Fraser University's School of Resource and Environmental Management, where he pursued certificates in both Planning and Development. Previously he has worked for the Canadian Forest Service, Health Canada, BC Hydro, and the South Nation Conservation Authority. 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

wetlands_coordinator@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 later hired as an intern. He is now the Wetlands Education Program Coordinator and often teaches topics such as mammalian skulls, aquatic invertebrates, and GPS use. 2016 will mark his 5th Wetlands Institute.

Doug Newbigging
wetland_projects@bcwf.bc.ca



Doug comes from a botanical background, earning a Plant Science degree from UBC in 2012. His focus was plant physiology, specifically drought tolerance of barley and green bean. He is now studying Ecological Restoration at BCIT. As the Wetland Projects intern for the BC Wildlife Federation Wetland Education Program, he is working with the District of Squamish to develop policies to protect Environmentally Sensitive Areas. Second year Ecological Restoration students must design a restoration plan as a capstone project. Doug hopes to use the knowledge gained during his internship with BCWF WEP to create a wetland restoration plan for his capstone project.

Speaker & Trainer Biographies

Robin Annschild
robin@wetlandrestoration.ca



Robin is a wetland restoration specialist who has worked with Tom Biebighauser to design and build over 150 wetlands in British Columbia, Arizona, California, and South Carolina. Robin began an apprenticeship with Tom in 2014, and is experienced with building surface and groundwater supplied wetlands using groundwater dams, compacted clay liners, and synthetic liners.

Robin manages wetland restoration projects for the BCWF, and works with Tom to provide wetland restoration project design, management and construction supervision for sites across British Columbia.

Tamsin Baker

tamsin@sccp.ca



Tamsin Baker, M.Sc., has been involved with the South Coast Conservation Program (SCCP) since its inception in 2005. Since 2012, she has been the Stewardship Coordinator for the SCCP where she has been coordinating stewardship activities including landholder contact for Coastal Sand Ecosystems on the South Coast and Species at Risk in the Lower Mainland/Fraser Valley. From 1999 to 2012, she was The Land Conservancy of BC's Lower Mainland regional manager and has experience with land acquisitions, conservation covenants, stewardship initiatives and partnership building.

Tom Biebighauser

tombiebighauser@gmail.com



Tom Biebighauser is a Wildlife Biologist and Wetland Ecologist who has restored over 1,800 wetlands in 22 States, across Canada, and New Zealand. He began serving as an instructor for the BCWF Wetlands Institute in 2003. Tom has studied drainage for 34-years, learning from contractors who worked their lives to destroy wetlands. 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 courses on the topic. He received the National Wetlands Award for Conservation and Restoration in 2015.

Natashia Cox

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Natashia Cox is a banjo playing, great dane owning, Registered Biology Technician and certified Environmental Professional. She has a BA in physical geography and a minor in ecology from the University of the Fraser Valley. She is dedicated to restoring, protecting, monitoring and researching wetlands and watersheds. Natashia has experience working with sensitive habitat inventory mapping (SHIM), restoration and conservation project management, working with land trusts organizations, completing salmon habitat restoration projects, conducting radio-telemetry, streamside bio-engineering, and surveying habitats for species at risk.

Lisa Dreaves
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Lisa Dreaves comes to us from Langley Environmental Partners Society or LEPS, she is the Stewardship Coordinator there and has been with LEPS for 17 years. She loves wetlands and her heart is always warmed when kids agree they are important, even before she starts lecturing them about the wildlife and plant communities. There are several wetlands in Langley that you can regularly find Lisa, whether in waders, leading a tour group, monitoring or removing invasive plants. Currently she is working on a restoration and monitoring project called the Fingered Wetlands Project funded through the National Wetland Conservation Fund.

Gord Gadsden
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Gord Gadsden is well-known as the top birder in the Fraser Valley and is the founder of the popular Fraser Valley Birding website and forum. Gord has identified a mind-boggling 322 species of B.C. birds, most of them from the Upper Fraser Valley. With keen ears he can pick out over 160 different birds by their song.

Gord is also a resource technician with the Fraser Valley Regional District parks department. His duties include nature interpreting parks and natural areas of the Fraser Valley in a fun, informative, and flexible style to suit the needs of his audiences which range from kindergarten students, university students and adult groups. Gord gets kids interested through interpretive programs and creating wildlife boxes.

Mike Leon
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Mike Leon is a member of the Katzie First Nation. He has been working and volunteering with Wapato in the Pitt Watershed since 2000.

Mike has worked with A.R.M.S. and K.E.E.P.S. on several restoration projects on Alouette Lake and Kanaka Creek, including planting trees along the North and South Alouette Rivers. He has also worked with L.E.P.S. doing salmon enhancement on Yorkson Creek and Salmon River, south of the Fraser River.

Mike has been a part of the Katzie First Nation political office for many years and understands the vital importance of restoration within Katzie territory.

Roma Leon

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Roma Leon is a member of the Katzie First Nation. She has been monitoring wapato in the Pitt and Alouette Watersheds since 2000. She has been involved in an extensive wapato survey throughout both Pitt River and Alouette River. Roma has conducted short-eared and screech owl surveys.

As a hobby, Roma spends her time venturing throughout Katzie Territory learning about the vegetation.

Roma's training includes short-eared owl surveying, plant surveying and ID, Invasive plants, Ecosystem & GPS Mapping, Wetland Ecology, effectiveness monitoring and Restoration Ecology. Roma is currently working on Cultural Restoration on the Alouette River.

Deanna MacTavish

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For the last several years Deanna has been a member of the Coastal Western Painted Turtle Recovery Team where she has participated in various conservation strategies to increase turtle populations. She has also worked with numerous other species including small mammals, amphibians, bats and owls. Recently she has formed an environmental consulting company with her colleagues called Echo Ecological whose focus is the restoration of degraded estuarine and freshwater wetlands. Deanna is also founding member of the Wildcoast Ecological Society and she is currently completing her Masters Degree in Biological Sciences at SFU studying juvenile turtle survival via radio-telemetry.

Terry McIntosh

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Terry has had over 35 years of experience in botanical research, ecological consulting, and public education. He has completed numerous plant surveys in British Columbia, including in the Okanagan, Similkameen, and Thompson River Valleys, the Cariboo, and coastal BC. His most recent work has focused on At Risk plant and habitat surveys. Dr. McIntosh has prepared numerous COSEWIC Status Reports and Recovery Strategies. He is a board member and editor for the Flora of North America project. He is also a workshop facilitator, and has implemented botanical workshops in Victoria, Salt Spring Island, Whitehorse, Kluane National Park, and Corvallis, Oregon.

René McKibbin

rene.mckibbin@canada.ca



René has experience with wetlands in South Africa, where she evaluated and classified wetlands and identified threats to each wetland. In Canada she has been indirectly involved with wetlands through over 10 years of research and monitoring for CWFS on wetland associated Species at Risk, namely the Oregon spotted frog and the Yellow-breasted chat. She is an Environmental Assessment Officer for CWS reviewing Environmental Assessment documents for proposed development projects. One of the components that René has to review and provide comments and recommendations is the wetland baseline studies, compensation and restoration. For the last year, René has been on assignment as the Protected Areas Coordinator for all federally protected areas in BC. This involves coordinating all projects on the federally National Wildlife Areas and Migratory Bird Sanctuaries. René attended the 2014 Institute, which assisted her with these reviews and provided her with the knowledge to evaluate the baseline studies and provide recommendations for their wetland restoration and compensation programs. Over the last year René has also been involved

with the screening and evaluation of wetland projects that applied for funding through the new Federal Wetland Fund.

Sarah Nathan

s_nathan@ducks.ca



Sarah Nathan holds Master of Resource Management degree from Simon Fraser University. After graduation, Sarah worked for BC Hydro in climate change policy, where she decided full time office work was not for her. To escape office life, Sarah enrolled in BCIT's Ecological Restoration Program in 2012, and worked concurrently on a wide variety of amphibian and avian wildlife studies. Sarah started with Ducks Unlimited Canada as the field biologist for the Surrey office in June 2016, and looks forward to implementing what she learns in the 2016 Wetlands Institute to DU's many wetland conservation projects across southwestern BC.

Monica Pearson

monica@balance-ecological.com



Monica Pearson, RPBio is the principal at Balance Ecological, an environmental consulting firm that focuses on practical conservation including research, planning and implementation of endangered species and habitat recovery projects. She has restored over 20 Ha of wetlands in the Lower Mainland since 2008, and while much of this work has focused on endangered amphibians, wetland restoration projects also improve habitat for bugs, fishes, birds, mammals and humans. Monica's interests lie in restoring relationships between humans, wildlife and the environment on which they both depend.

Kelly Squires

squireskellya@gmail.com



Kelly Squires holds a Ph.D. in Forest Ecology and Management from Simon Fraser University, and a M.Sc. in Conservation Biology from the University of British Columbia. She has worked as a Registered Professional Biologist in BC for the last 12 years. Kelly primarily works as a quantitative ecologist, with a research focus on wildlife monitoring and habitat modelling. She has worked with the Katzie First Nation for the past five years to develop and implement wetland restoration that combines restoration ecology with Katzie traditional knowledge and values. When not working, Kelly enjoys adventures with her family in Squamish.

Daniel Stewart

danjstew@gmail.com



Daniel is a plant ecologist who has been operating as a self-employed contractor for two years. He received his degree in Ecological Restoration at BCIT, after previously completing a Diploma of Fish, Wildlife & Recreation. To date, much of his work has involved wetland ecosystems and their associated endangered species. He is pursuing grant money for multiple wetland creation projects this autumn, and hopes to be further equipped by participating in this workshop. Daniel likes to read books, play music, and grow vegetables.

Catherine Tarasoff

Agrowest.bc@gmail.com



Catherine Tarasoff has a PhD (Oregon State University) in Crop Science and Range Ecology with an emphasis on Weed Science; as well, she is a Professional Agrologist. Catherine has been working with invasive species and ecosystem restoration for 20 years and currently operates her own consulting company specializing in research with an emphasis on invasive species, community ecology and restoration. Prior to consulting, Catherine was a professor at Michigan Technological University. She continues to teach part-time at Thompson Rivers University. During this Wetlands Institute, Catherine will discuss her ongoing research on controlling of yellow flag iris, including the use of drones for high resolution mapping.

Pamela Zevit
coordinator@sccp.ca



Pamela Zevit is a graduate of the Fish, Wildlife and Recreation Resource Management Program at BCIT. Before turning her attention to a fulltime career in 1995 in conservation planning through the provincial government and more recently as a consultant, Pamela studied design and archaeology at the University of Calgary. Pamela is a Registered Professional Biologist (RPBio.) in BC with expertise in biodiversity conservation, landscape ecology and ecosystem restoration and planning. She is currently working (among volunteering for other projects and initiatives) with the South Coast Conservation Program (SCCP) on conserving species and ecosystems at risk in the Lower Mainland.

Participant Biographies

Lanny Amos
Lanny.Amos@Teck.com



Lanny Amos is a Registered Professional Biologist of British Columbia and is currently employed as an Environmental Coordinator at Teck Coal in the Elk Valley.

Lanny began his career in the forest industry and later moved to environmental consulting specializing in aquatic and fisheries inventories, habitat assessments, and instream rehabilitation projects. In 2003, he was hired as an Environmental Planner for Teck's Elkview Operation in Sparwood where he was responsible for reclamation, fish, and wildlife at the site.

Most recently Lanny has joined Teck's Biodiversity and Closure team as the Wildlife, Riparian and Closure Focus Lead. His current duties include riparian and wetland restoration, invasive species management, and numerous fish and wildlife related programs.

Leslie Bol
leslie.bol@erm.com



Leslie is a wildlife biologist working as a consultant primarily focused on environmental impact assessments of mining developments. Her academic training was in herpetology although as a consultant she has broadened her areas of field expertise to include waterfowl, raptors, and songbirds. She has conducted surveys for birds primarily in the Arctic and Saskatchewan. Leslie is currently working on wetland compensation plans that include determination of wetland functions for wildlife habitat. Furthermore, she is a volunteer leader with Nature Kids BC that has a mandate of helping children get outdoors to explore, play, learn about and take action for nature.

Jan Brisbin

Jan.Brisbin@forces.gc.ca



Jan Brisbin joined the Department of National Defense as a civilian in the Army Environment Program in June of 2004. Due to her experience with the military as a Reservist she was eager to develop and implement improvements on environmental files that impacted the Department's training activities and sustainability. A key part of Jan's portfolio is the oversight of species at risk and invasive species in the 4 western provinces. Jan has been fortunate to be able to provide environmental guidance to the Army during provincial emergencies, and deployed with the troops during the Alberta Floods in 2013 and the Fort McMurray Fires in 2016.

Jennifer Buchanan

ja_buchanan@hotmail.com



Jennifer Buchanan is a graduate of the BCIT Ecological restoration program. Since graduating she has worked on many research projects focused on amphibian monitoring and restoration. She is currently working on a Species at Risk project in the Stave Lake watershed, identifying wetlands that have high habitat value for our native Red-legged Frog and Western Toad. During this work, several sites have been identified as needing significant enhancement and restoration. She is hoping to get a new toolbox of wetland restoration techniques which she can apply across a wide range of upcoming projects.

Sam Cousins

sam.cousins@metrovancover.org



Sam Cousins works as a stewardship coordinator at Metro Vancouver Parks West area. He moved to Canada 9 years ago from England after gaining a BSC in physical geography and has held positions in invasive species management, park operations, volunteer coordinating and GIS. When not at work he enjoys outdoor pursuits such as climbing, biking, hiking and skiing

Eryne Croquet
eryne@statlu.ca



Eryne Croquet is the co-owner of a small environmental consulting firm in Chilliwack. She is an Agrologist and Geoscientist-in-training, specialized in soil science and terrain stability assessment. She works closely with hydrologists to develop plans to resolve drainage problems on farms and other properties. She is keen to learn more about wetlands, wetland construction, and how they can aid in resolving drainage issues because she believes that wetlands have an important role in drainage management planning.

Sofi Hindmarch
sofi.hindmarch@gmail.com



Sofi is a wildlife biologist with the Fraser Valley Conservancy (FVC). She has studied species at risk for 10 years in the valley, with a special focus on the barn owl. Through her research she has gained an understanding of the challenges currently facing the region in respect to balancing development while protecting greenspace and wildlife habitat. Sofi has just started to delve into the science of wetlands and is very interested in understanding how one can restore them. As the new project coordinator for the FVC she is excited to continue the restoration work on Maclure wetlands in Abbotsford.

Paul James
pjames@kdip.ca



Paul James is a member of the Katzie First Nation and has worked with Katzie Development Limited Partnership and Katzie First Nation for over 10 years. Paul has considerable experience in environmental monitoring with a focus on water quality, and is a highly experienced archaeological field and lab technician. In addition to Paul's experience, he has attended workshops on Species Inventory and Habitat Mapping, Bio-Engineering for Habitat Restoration, and Species at Risk Stewardship.

Paul looks forward to learning and acquiring skills that he can apply to the preservation of a healthy environment, the culture of his nation and moving forward to a positive future.

Casandra Knooihuizen

casandra.knooihuizen@teck.com



Casandra Knooihuizen is an Environmental Coordinator at Teck Coal Elkview Operations and is an articulating Agrologist. She has a degree in Environmental Science specializing in assessment and restoration.

Casandra has a history in the oil and gas industry in land acquisition in southern Alberta and wellsite restoration in northern British Columbia. She has worked for Teck for three years, one being in an Environment Technician capacity, focusing in surface water and 2 in her current role as an Environmental Coordinator. She currently focuses on groundwater, Elkviews EMS program, air quality, reclamation/restoration and legal compliance. Within reclamation and restoration specific work, she will have opportunities to have a role in improving and creating wetlands at Elkview or any of the 4 other Teck Coal mine sites in the Elk Valley.

Tara Mathews

matthews.m.tara@gmail.com

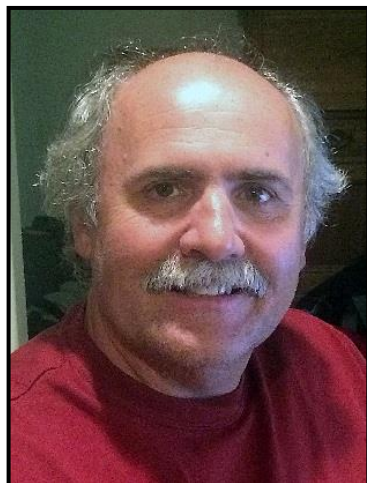


Since graduating BCIT with a BSc in Ecological Restoration, Tara Mathews is one of three partners of an environmental consulting company called Echo Ecological. This company focuses its efforts on restoring estuary and riparian areas in and around the lower mainlands of British Columbia. In the past few years, Echo Ecological has participated in the restoration of several areas around North Vancouver, including MacKay Creek, Lynn Creek and Seymour Creek Estuary.

Most recently, Tara has aided in the creation of the Wildcoast Ecological Society, a non-for-profit group whose aim is to create volunteer opportunities for community participation in restoration efforts. In her free time, Tara enjoys hiking, camping and learning about permaculture.

Markus Merkens

markus.merkens@metrovanancouver.org



Markus Merkens has been actively exploring ecosystems for over half a century. He began formally studying them in 1980 and finished his Bachelors of Science focusing on Ecology in 1985, followed by a Masters in Pest Management in 1992. Since then he has focused on integrated resource management and research through his work with government, universities, NGOs and as a private consultant. For the past 7 years Markus has worked with Metro Vancouver Regional Parks where he continues to learn about the ecosystems we depend on through management and research. Some of his current projects include peatland research and wetland management.

Rhonda O'Grady
rogwolf1@gmail.com



Originally a wanderer of the Manitoba prairie and a Gatineau Hill's wolf whisperer, Rhonda O'Grady comes to BC with over 20 years of experience in the field of environmental education and interpretation. Rhonda has developed and delivered a multitude of environmental education programs, ranging from owl and wolf ecology to wetland and prairie restoration, for all ages and in every possible venue. She has babysat wolves, housed hummingbirds, banded bats, and protected giant pandas. Rhonda has written two environmental education children's books (one about wetlands) and has created interpretive signage and playgrounds for parks and other education centers around North America. Rhonda is looking forward to learning and sharing with other similar souls during the 2016 Wetlands Institute.

Kari Pocock



Kari works as the Stewardship Coordinator with the Stanley Park Ecology Society in Vancouver, where she promotes collaborative problem-solving and mindful restoration through the coordination of invasive plant removal, native planting events, and plant mapping projects. Kari's passion for environmental sustainability lead her to receive her B.A. in Environmental Geography in 2015, and with knowledge gained from the Wetlands Institute, she aims to improve habitat quality for native vegetation and wildlife in Stanley Park's wetlands. Kari is a member of her local municipality's Environment and Sustainability Advisory Committee, and can regularly be found hiking and camping throughout BC's coastal ecosystems.

Ashley Robertson
robertson.ash@gmail.com



Ashley Robertson is an outdoor enthusiast and Professional Agrologist working in the field of environmental management. Ashley has a Master's of Science in Integrated Water Resources Management from the University of McGill and five years of work experience in British Columbia. She has worked in collaboration with BC Hydro, Metro Vancouver, Fortis BC, and municipalities in the Lower Mainland on a wide range of construction projects, predominantly in the powerline industry. For leisure, Ashley enjoys backcountry hiking and skiing, kayaking and rock climbing.

Hillary Rowe

cuzitshill@gmail.com



Hillary has enjoyed wetlands since her Dad taught her how to catch frogs in the local pond. Excitedly, she would pull on her purple gum boots, grab her coathanger-and-potato-sack frog net, and ride her bike down to the wetland at the end of the street. A little older now, but with that same enthusiasm, Hillary volunteers in local wetland restoration projects, mostly pulling invasives and planting native species. Hillary holds a degree in Ecology from UFV, and is hoping to educate youth about the importance of wetland environments, and to help them connect with their local water ways.

Carla Skuce

carlaskuce@hotmail.com



Carla is originally from Ottawa, Ontario and now lives on Bowen Island. She recently graduated with a B.Sc. in Environmental Science from Royal Roads University and previously attended BCIT for the Sustainable Resource Management program. Currently, Carla works for the Bowen Island Municipality as part of the parks maintenance crew. She is looking forward to expanding her responsibilities to include research, report writing and GIS work when she returns from the Wetlands Institute.

Krista Voth

volunteer@pacificspiritparksociety.org



Krista Voth's interest in wetlands restoration grew from her new role as the program coordinator with the Pacific Spirit Park Society (PSPS) and through her on-going volunteer and board participation with the Jericho Stewardship Group (JSG). Before returning to university to start an undergraduate degree in Geography in UBC's Environment and Sustainability Program, Krista was a Montessori and Waldorf teacher for 10 years. Her current role as the PSPS program coordinator allows her to bridge her interests in education and the environment by designing and implementing ecological stewardship, interpretation, and citizen science programs and projects in Pacific Spirit Regional Park.

Evelyn Young



Evelyn Young is the education coordinator and research assistant for the Burns Bog Conservation Society. She teaches K-12 about the unique ecosystem of Burns Bog through various education programs: field trips, in-class workshops, summer day camps, and the Stepping into Nature festival. Evelyn has a BA in Environmental and Indigenous studies and is passionate about incorporating indigenous worldviews and systems thinking into her lessons. Through her work and travels, she has come to realize the importance of protecting wetlands and sincerely believes in their capacity to provide vital ecological services to all.

APPENDIX B: Wetlands Institute 2016 Agenda

WETLANDS INSTITUTE SCHEDULE										
			Dewdney Machine Work		SilverDale Machine Work					
	Aug-27	Aug-28	Aug-29	Aug-30	Aug-31	Sep-01	Sep-02			
	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday			
8:00am		"How we pulled the plug on North America" T.Biebighauser	Participant Project Presentations							
8:30am	Registration - Classroom									
9:00am	Intro to Wetlands Institute			Ducks Unlimited Regional Initiatives - Sarah Nathan	First Nations/ TEK Talk - M. Leon, R. Leon, K. Squires	Bird Banding Demonstration - René McKibbin	Observe Silverdale Restoration Progress	Writing a Successful Grant, Neil Fletcher		
9:30am	Participant Project Presentations	Yellow Flag Intro - C. Tarasoff								
10:00am		Travel to Cheam Lake	Landowner Contact Techniques- Tamsin Baker		Site Intro. - Metro Vancouver	Travel to Stave River				
10:30am		Reed Canary Project Visit - Gord Gadsden		Wetland Classification - Neil Fletcher	Gordens Brook Wetland Complex Tour - Monica Pearson	Stave River Project Tour and Monitoring - Natasha Cox	Hands- On Soil Texting Quiz			
11:00am		Yellow Flag Iris Project - Catherine Tarasoff	Fingered Wetland Landowner Contact Project Description - Lisa Dreaves				Creating Project Models			
11:30am				Wetland Plant ID - Terry McIntosh						
12:00pm	Lunch	Lunch	Lunch		Bird Banding Presentation During Lunch in Classroom		Lunch			
12:30pm				Lunch		Lunch				
1:00pm	Wetland Restoration Techniques - T. Biebighauser	Hands on Yellow Flag Iris Management - Catherine Tarasoff	Wetland Project Prerequisites - Neil Fletcher	Turtle biology, habitat needs, and restoration successes - Deanna MacTavish	Diversity by Design (SAR Focus)- Pamela Zevit	Hands On Frog Identification Training - Monica Pearson	Participant Presentations - Future Steps			
1:30pm			Travel to Dewdney					Learning outcomes and take home messages		
2:00pm					Observe Dewdney Restoration		Travel to field site	TBA		
2:30pm		Travel to Mission								
3:00pm	Fraser River Compensation Sites- Success and Challenges - D. Stewart & M. Lievesley			Travel to Silverdale Creek			Wetlands Institute wrap up Evaluations/Certificates			
3:30pm		Design work at Dewdney Elementary	Design Work at Silverdale Creek Wetlands	Katzie First Nation Restoration Site Visit, Turtle Restoration Site Visit, Hands-on Wetland Classification	Continue Gordens Brook Wetland Complex Tour and Related Design Work	Dewdney Elementary Project Field Work / Chilqua Sough Tour				
4:00pm	Travel to field site									
4:30pm	Visiting Successful and Challenging Compensation Sites									
5:00pm										
5:30pm									BBQ and Cake Celebration at Dewdney Elementary	
6:00pm										
6:30pm						The Benefits of Wetland Restoration (Public Talk) - T. Biebighauser				
7:00pm										
Classroom	South Delta Rec Centre, 1720 56 Street, Delta	Lions Club 47130 Hope River Rd, Chilliwack	Camp Luther 9311 Shook Rd, Mission	Katzie Band Office, 10946 Katzie Rd, Pitt Meadows	Aldergrove Elks, 24689 Fraser Hwy, Aldergrove	Camp Luther 9311 Shook Rd, Mission	Camp Luther 9311 Shook Rd, Mission			
Field	Compensation Sites, 48 Ave & 47a St, Delta; Potential site visit, End of Ferry Road, Delta.	Cheam Lake Wetlands Regional Park, Elgey Road, Rosedale; Dewdney Elementary, 37151, Hawkins Pickle Rd, Dewdney	Dewdney Elementary, 37151, Hawkins Pickle Rd, Dewdney; Silverdale Creek Wetlands, 31650 Silverdale Ave, Mission	Blaney Bog, end of 224 Street, Maple Ridge; Katzie Restoration sites, Harris Road, Pitt Meadows	Aldergrove Regional Park (Meet at 262 272 St, Aldergrove)	Stave River Project (details TBA); Dewdney Elementary, 37151, Hawkins Pickle Rd, Dewdney	N/ A			

APPENDIX C: Sample Media, Advertising and Correspondence



Like us



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The Renowned Wetlands Institute is Coming to the Lower Mainland

The Wetlands Institute is a week-long, intensive workshop that helps participants complete their wetland projects by educating them with hands-on and in-class training from wetland experts. Grant-writing, invasive species control, and wildlife sampling are just a few of the multitude of topics we have covered in the past. In addition, participants will be able to help design and participate in the restoration of two wetlands during the week.

The workshop is suitable for consultants, planners, environmental/conservation groups, government and First Nations representatives, engaged community members, and keen outdoors-types, and wetland projects can be anything from the restoration of an urban wetland to the creation of a wetland education module. It is free for BC residents.

You can see the following link for registration and more information: <https://wi2016.eventbrite.ca>

Please feel free to share this among your professional contacts or any person or group you know of that may have a wetland project.

QUICK GLANCE

What: A week-long, intensive wetland workshop

Who: For people who have a wetland project

Why: To help participants complete their projects through training

Where: Chilliwack and Mission, BC

When: August 27-September 2, 2016

How: Register here: <https://wi2016.eventbrite.ca>

BCWF Wetlands Team

101-9706 188th St., Surrey, BC, V4N 3M2

T: 604.882.9988 ext 232 | (Toll Free in BC: 1.888.881.2293 ext 232)

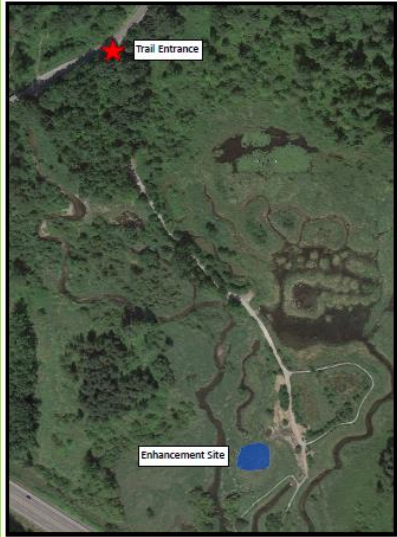
wetlands@bcwf.bc.ca | www.bcwf.bc.ca | www.bcwfbogblog.com

You are receiving this email because you have previously participated in a BCWF Wetlands Workshop, connected with us professionally, or have expressed interest in being kept up to date in our activities.

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Targeted email sent out to advertise the Wetlands Institute

Notice of Upcoming Habitat Improvement Works



From August 29th to September 2nd 2016, the BC Wildlife Federation, its partners, and wetland restoration specialists will be removing invasive species and improving habitat for fish and wildlife. Though trail closures are not anticipated, we ask you please be understanding of any disturbances during this time. Thank you.

This project is financially supported by:



This project is also supported by:



If you require more information, you may contact
Neil Fletcher, BCWF's Wetlands Education
Program Manager at 604-882-9988 ext 232 or
wetlands@bcwf.bc.ca

Signage placed at the Silverdale Creek Wetlands one month prior to restoration works.

MISSION RECORD

NEWS

Mission benefits from two wetland enhancement projects



Wetland enhancement projects occurred at both Silverdale Wetlands and Dewdney Elementary School last week. — Image Credit: Submitted Photos



posted Sep 4, 2016 at 5:00 AM — updated Sep 5, 2016 at 10:27 AM

Nature enthusiasts in Mission have something to celebrate.

Last week, wetland enhancement projects occurred at both [Silverdale Wetlands](#) and [Dewdney Elementary School](#) during the delivery of a week-long Wetlands Institute workshop hosted by the BC Wildlife Federation (BCWF).

Participants came from all around BC to attend the seven-day-long intensive wetland stewardship workshop, offered for free to those who have a wetland project.

Each year, the BCWF hosts the Wetlands Institute in a different region in the province. It was last hosted in Fraser Valley in 2000. As part of the workshop, they work with community partners to leave behind wetland legacy projects.

"The amount of support we received in Mission and surrounding areas was tremendous. All sorts of businesses, groups, and people rallied behind our wetland projects and went to exceptional lengths to ensure they were successful," said Neil Fletcher, wetlands education program manager of BCWF.

A revived wetland at Dewdney Elementary will serve as an outdoor classroom where children can explore nature on their own school ground.

Participants and families involved with the school spread mulch and seed on the newly contoured wetland that was prepared by an excavator earlier in the week.

Cedar stumps were turned into activity tables and a log amphitheater was integrated into the outdoor space to maximize learning opportunities for teachers and students.

These additions, compliment other outdoor improvements the school has made to enhance and support the new curriculum that focuses on place-based learning. Neighbours and businesses came forward with plenty of donations.

Silverdale wetlands also received a boost, as an area full of invasive reed canary grass was transformed into three shallow wetland pools.

The site was enhanced to increase the amount of native plant species with the aims to support a greater diversity of wildlife including native frogs and birds. These pools are located along a portion of the walking trail and will enhance the public's opportunity to encounter wildlife species.

The BCWF is working with the Fraser Valley Watershed Coalition and other community members to replant the site in the fall.

Article in the Mission Record posted September 4, 2016 about the Wetlands Institute



Wetlands Education Program

WETLANDS INSTITUTE REPORT

Photos by Jason Jobin and Claudia Ferris



Carlene LaHay and her children put the finishing touches on the new wetland

THE FRASER VALLEY REGION played host to the BCWF Wetlands Institute for their seven-day-long intensive 2016 wetland stewardship workshop.

Participants from all around B.C. performed design and project work at two wetland sites, Silverdale Creek and Dewdney Elementary School. Field visits also included successful and challenging Fraser River compensation sites, Katzie First Nations restoration site, and the Gordon Brook Wetland complex at Aldergrove Regional Park.

Each participant who attended the workshop came with a wetland project they aim to implement in their own community. This year, participant projects included: habitat enhancement for species at risk in hydro reservoirs, community wetland education programs, restoring wetlands in public parks, and reclaiming mine sites. Survey results from a recent five-year review of the Wetlands Institute workshops discovered that approximately 90 per cent of participants who attend the workshop have projects that have been enhanced from attending the workshop. The same survey found that approximately 98 per cent consider the workshop either above

average (24 per cent) or among the best (74 per cent) they've ever attended.

Wetlands Institute participants worked to create community wetland legacies as they learned how to steward the wetlands in their own backyards. Dewdney Elementary School families joined the Institute participants for an afternoon of hands-on work moving logs, spreading straw, and planting native species.

Markus Merckens, a biologist with Metro Vancouver Regional Parks, was enthusiastic about working alongside

the Dewdney families. "Every time the Wetland Institute goes out they built two or three wetlands like the one I'm standing in here," he said. "And with every wetland recreated you are not only educating people about the wetlands, as here in the school, but you're providing habitat that has been lost."

Dewdney principal Sue McLeod felt well supported by the BCWF Wetlands Institute assistance with the design and restoration of their wetlands. "With their expertise and all the people that are around, it has been wonderful. It's been



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Portion of an article on the Wetlands Institute in the November/December 2016 issue of BC Outdoors.

APPENDIX D: Wetlands Institute Participant Feedback

In this section:

1. Participant Feedback Highlights
2. Wetlands Institute Evaluations

Participant Feedback Highlights

- 1) 83% (15/18) of respondents agreed that concentrating on hands-on field skills helped them with their projects. The other respondents were unsure, did not respond, or were not applicable.
- 2) 78% (14/18) of respondents rated the coordinators “among the best”, while the remaining 22% rated them “above average”. The following comments were added by some participants:
 - “Amazing. Well spoken, engaging, passionate and knowledgeable.”
 - “Efforts, planning, thought that goes into this workshop is far above average as demonstrated by the vast learning & experience gained by workshop participants”
- 3) 78% (14/18) of respondents rated the speakers “among the best”, while 11% rated them “above average”, and 11% rated them average. The following comments were added by some participants:
 - “Highly specialized, 10+ years experience. Excellent demonstration of how past participants have leveraged the workshop to advance their careers”
 - “It was a pleasure to be instructed by some of the best wetland builders + area experts in their fields.”
- 4) In comparison to other workshops or extension courses they have taken 72% (13/18) of respondents rated the Wetlands Institute as “among the best”, with 22% rating it “above average”. One respondent stated “N/A”. The following comments were added by some participants:
 - “I have never participated in a course or workshop quite like this; the mix of hands-on work, speakers, and training was fantastic.”
 - “Variety & depth of learning, especially hands-on field experience, far surpassed that of other workshops”
 - “I got more out of this week than I have got from any past workshops”
 - “The amount of excellent material & hands-on training was second to none for a one-week extension course”

- 5) 100% of respondents stated they would recommend the Wetlands Institute to others. The following comments were added by some participants:
- “Wonderful coordinators, world class experts, beautiful sites, great participants - what else can I say.”
 - “Of course – I hope that every environmental consultant can learn this important information to incorporate it into their projects”
 - “Yes! More people in industry need to come to this course.”
 - “The Institute is a wealth of information that should be utilized as much as possible”

Wetlands Institute Evaluations

2016 Wetlands Institute Evaluation/Feedback Form Transcript

A- Jennifer Buchanan
B- Daniel Stewart
C- Kari Pocock
D- Rhonda O’Grady
E- Pamela Zevit
F- Mike Leon
G- Janelle Bisbin
H- Tara Matthews
I- Eryne Croquet
J- Cassandra Knooihuizen
K- Ashley Robertston
L- Evelyne Young
M- Cara Skuce
N- Paul James
O- Sam Cousins
P- Deanna MacTavish
Q- Roma Leon
R- Lanny Amos

1. *Did concentrating on hands-on wetland field skills help you with your wetland project?*

A. Y
B. Y
C. Y
D. Y
E. N/A
F. Y
G. –
H. Y
I. Not sure yet

J. Y
K. Y
L. Y
M. Y
N. Y
O. Y
P. Y
Q. Y
R. Y

Please explain.

- A. soils and wetland plants are definitely useful to our project
- B. I appreciated sitting through the design process with Tom B., hearing the rationale behind his several decisions. Also seeing several projects (FREMP, Monica Pearson etc.) was interesting for visualizing the many project forms.
- C. Though my project is still in the very early stages, I am now well-equipped with hands-on knowledge, great connections, and plenty of ideas to help me plan and organize a successful restoration plan.
- D. As an educator it is extremely important to understand and be passionate about what you are teaching. Hands-on skills are the best way to truly know what you are doing or teaching. Making contacts, sharing ideas and learning from experts helped me gain new confidence and inspiration for teaching about our wetlands.
- E. not applicable but the opportunity was certainly valuable for future projects
- F. Katie's first wetland project. Skills and knowledge very helpful
- G. –
- H. Although we do much of the same work with our company, I have learned many new techniques to be used in restoration into the future. It is awesome connecting with people and learning new skills that I otherwise wouldn't have the opportunity to experience.
- I. I definitely learned enough about wetlands to be able to convince farmers & other landowners to consider wetlands as part of their drainage management plans.
- J. More than teaching is doing. The best way to learn is by doing. Going in the field really helped me connect to the theory.
- K. Planning community engagement, wetland classification methods, project longevity to be built into plan/budget.
- L. Yes- Better retention of information & practical skill of assessing the landscape
- M. I learn better when my hands are dirty. I retain much more when I actually see the work being done and get more ideas for my project with each place we visited.
- N. With the hands-on wetland field skills. Will definitely help retain the knowledge that was passed on to all involved
- O. Learning to view the land in a different way to see the history of the drainage.
- P. We're excited to suppress yellow flag iris at our site using the methods we learnt this week.
- Q. In so many ways. Our project is in a tidal area and we did not know of think to monitor sily deposition on our site, to look back at aerial photos before planning your restoration project. This was just such an amazing experience.
- R. It's nice to learn about the theory behind all things, but nothing beats "hands-on" learning

2. BCWF provides support to Past Wetlands Institute participants to help them complete their projects. Are you interested in receiving additional support from BCWF? If so, please describe your interests/needs.

- A) Absolutely! Future letters of support, possible collaboration on presentations to landowner groups on importance of wetlands, would love to receive some of the info presented for work in draw down zones - was not able to attend this session.
- B) Yes. I'd love to have follow-up conversations where I share how my wetland creation project went, what I learned, and even receive ideas for future monitoring or adaptive management efforts.
- C) After gaining a better understanding of my project in the coming weeks, I will appreciate additional support from BCWF with advice, and specific knowledge pertaining to the organisms and plants I will be working with. I also expect to have questions about grant funding, etc.
- D) Of course! November 4th, Tom is coming up to help "fix" one of our schools wetlands and would love to do a mini "wetland restoration" workshop at the same time - would love help with this.
- E) N/A
- F) Very possible. Information about maintenance methods
- G) –
- H) Yes! I would definitely appreciate help with reviewing our grant applications and perhaps letters of support.
- I) Possibly – I would like to be able to refer people to BCWF for wetland restoration/construction advice and funding
- J) I would like to connect with BCWF for future outreach programs in my area. The Institute could be great in the Elk Valley!
- K) Yes. Wetland Classification forms and methods
- L) I may check in about appropriate methods
- M) Yes. Mostly I'd just like to be able to ask questions: expect emails!
- N) Yes, very interested in receiving help, in all aspects of what was learned.
- O) I would be interested on information with different plant species that are suitable for my site.
- P) Yes, when we start our wetland restoration project it would be great to receive support from BCWF
- Q) It's possible but I am not sure at this time. We received very good networking contacts from this workshop.
- R) Yes, I may be calling and asking what you think of upcoming project designs. Either things I may have missed or just suggestion on how I could make my projects better.

3. *What could be added or deleted from the course? Why?*

- A) Tom's worksheets could be deleted. I felt that there was not enough lead up information and most people were confused as to what was going on. I think if we had have designed and built a ground water wetland at Dewdney elementary, people would have comprehended the exercise better. I guess deleted isn't correct... better supported?
- B) I think (no offence to Terry McIntosh) that more formal plant ID training would be useful. Especially with more difficult plants (sedges, rushes, grasses). Also a presentation on at-risk wetland species (flora and fauna) in the region and their identification should be high-priority.

- C) I would love to see more worksheet-style activities that involve figuring out a problem on our own or with small groups, and then debriefing the results with the whole group. For example, the soil texture activity on the last day would have been very useful in the first few days, so we could later test the techniques in the field. I found large group discussions / planning sessions a bit difficult, but I think that is mostly due to my inexperience with large restoration projects (I didn't feel I had much to offer to the discussions). I would have likely gained more from planning sessions in smaller groups.
- D) I didn't attend the complete course so I am not sure what was covered the days I was not there, but I would love modules dedicated to education and engaging the public, schools, etc.
- E) looking at rarer or harder to restore wetlands like mineral wetlands or bogs
- F) More about possible archaeology, wetlands have high potential for arch. Sites
- G) –Add something on dealing with contaminates – Add a flow chart for permits
- H) I would like hands-on activities every day. It is hard to sit through hours of lecture/presentations and then go on a several hour tour where additional standing around is necessary. The iris removal and sedge planning was great!
- I) There's so much information. I'd probably like more hands-on work earlier in the week so I can "practice" what I learned in the classroom
- J) + more general information. Institute was quite specific to Lower Mainland & although it is transferable it would be great to have more info to all of BC
- K) Added- more discussions and review of permitting to ensure participants understand complexity + layers of planning. Keep- wetland design by workshop participants
- L) –
- M) It would have been nice to have activities or group work particularly at sites where we spent lots of time. I think it helps me retain more and keep me engaged
- N) At this time because I'm so new to this field I cannot think of anything to add or delete.
- O) More hands on work in the field
- P) More hands-on projects maybe. We really enjoyed suppressing the Yellow Flag Iris & working on the wetlands
- Q) I do not feel anything should be deleted. It was all so very informative. Maybe add a bit more on "archeology" because it is such an important topic.
- R) Please more on basic plant ID (ie. Basic plant parts for keying species out)

4. How would you rate the coordinators overall?

☐ Among the worst ☐ Below Average ☐ Average ☐ Above Average ☐ Among the best

- A) Among the best
- B) Above Average
- C) Above Average
- D) Among the best
- E) Among the best
- F) Among the best
- G) Above Average
- H) Among the best
- I) Among the best
- J) Among the best
- K) Among the best
- L) Above Average

- M) Among the best
- N) Among the best
- O) Among the best
- P) Among the best
- Q) Among the best
- R) Among the best

Specific comments:

- A) Everything flowed well. We were all organized and had all the equipment we needed. Great job to all! Thanks guys.
- B) I thought the schedule was clear. Any changes that occurred were clearly communicated.
- C) Well organized with including relevant activities, speakers, and projects in the course.
- D) Amazing. Well spoken, engaging, passionate and knowledgeable.
- E) excellent job
- F) Well done, was able to coordinate and be able to know day to day
- G) –
- H) –
- I) Smart, eloquent, approachable, knowledgeable
- J) Engaged, flexible, well educated
- K) Efforts, planning, thought that goes into this workshop is far above average as demonstrated by the vast learning & experience gained by workshop participants
- L) –
- M) Everyone was really helpful and accommodating
- N) The workshop went very smoothly, one of the best I've been to
- O) Having a plan and being adaptable to the plan if it changes (which you did well!) 😊
- P) –
- Q) The coordinators kept everything flowing smoothly and on track
- R) The coordinators did an incredible job of organization of the wetland institute!!! An incredible job. Well done!

5. How would you rate the trainers overall?

☐ Among the worst ☐ Below Average ☐ Average ☐ Above Average ☐ Among the best

- A) Average
- B) Average
- C) Above Average
- D) Among the best
- E) Among the best
- F) Among the best
- G) Above Average
- H) Among the best
- I) Among the best
- J) Among the best
- K) Among the best
- L) Among the best
- M) Among the best
- N) Among the best

- O) Among the best
- P) Among the best
- Q) Among the best
- R) Among the best

Specific comments:

- A) Some trainers/speakers were better than others. Most were well above average but I felt the plant guy (while very entertaining) did not actually help much in the actual IDing of plants. The metroVan folks were also just okay. I found Natasha to be helpful occasionally but a bit condescending to a few folks. Other than that Neil, Tom, Monica, and the FN folks were fantastic! Super engaging, eager and open to questions.
- B) The challenge for trainers (I believe) was the diversity of backgrounds they were teaching to. Some subjects were naturally more relevant than others. Perhaps (assuming this isn't done already) educating trainers on the backgrounds of participants would help them in their preparation?
- C) Diverse knowledge and experiences from speakers and trainers were valuable.
- D) Same as above.
- E) diverse expertise invaluable
- F) Very informative, easy to understand hands on and all hand outs
- G) –
- H) –
- I) Keen, enthusiastic, engaging
- J) I liked how they were trying so many new things. Seeing innovation was good
- K) Highly specialized, 10+ years experience. Excellent demonstration of how past participants have leveraged the workshop to advance their careers
- L) –
- M) Passionate and inspiring!
- N) The ability of the trainers to convey information, was fantastic
- O) Knowledgeable in their field and interesting to listen to
- P) –
- Q) Very good at answering questions. At no time did they make people feel silly for their questions
- R) It was a pleasure to be instructed by some of the best wetland builders + area experts in their fields.

6. *In comparison to other workshops or extension courses you've taken to enhance your capacity in your work or on conservation projects, how would you rank the quality of the Wetlands Institute?*

☐ Among the worst ☐ Below Average ☐ Average ☐ Above Average ☐ Among the best

- A) Above average
- B) Above average
- C) Among the best
- D) Among the best
- E) Above average
- F) Among the best
- G) Above average
- H) Among the best
- I) Among the best

- J) Among the best
- K) Among the best
- L) Among the best
- M) Among the best
- N) Among the best
- O) N/a
- P) Among the best
- Q) Among the best
- R) Among the best

Specific comments:

- A) It's a very well rounded program
- B) The networking element was top-notch. Also, the free resources (providing Tom's book, the duotang of materials) was a pleasant surprise. Also loved the diversity of presenters.
- C) I have never participated in a course or workshop quite like this; the mix of hands-on work, speakers, and training was fantastic.
- D) Same as above.
- E) N/A
- F) Will make it easier for our project and future projects
- G) –site visit form-explanatory key-out of order. – It would have been handy to have the Anatomy of Sedges, grasses laminated so that they are more useful in the field-and have one for rushes
- H) –
- I) Inviting approach – I mean that the organic/fluid approach allowed us to learn and share information amongst participants
- J) Huge diversity of speakers but they seemed to all feed into the same goals. Also, the days were lined up nicely; common things in one day
- K) Variety & depth of learning, especially hands-on field experience, far surpassed that of other workshops
- L) –
- M) –
- N) See answers 1,3,4,5
- O) I haven't attended courses similar to this
- P) –
- Q) I got more out of this week than I have got from any past workshops
- R) The amount of excellent material & hands-on training was second to none for a one-week extension course

7. *Would you recommend the Institute to others? Why or why not?*

- A) Yes - I think that all groups can benefit from this program whether you work directly in conservation or a less related field.
- B) Yes. Though understandably every institute takes different forms.
- C) Of course! Invaluable opportunities, especially with support from funders for BC residents (I would not likely have been able to join otherwise). This was a great way to meet others doing similar work, and to develop strong relationships.
- D) Yes. Wonderful coordinators, world class experts, beautiful sites, great participants - what else can I say.
- E) yes, for the experiential and networking values and professional development
- F) Yes. Informative on many other aspects to conservation

- G) Yes
- H) Yes. I have done this already in the past!
- I) Of course – I hope that every environmental consultant can learn this important information to incorporate it into their projects
- J) Yes! More people in industry need to come to this course. Suggestion: get the word out to industry for this institute. We need the “why” to reclaim wetlands for buy-in.
- K) Yes. Field experience, organization, dedication & experience of coordinators -> learning potential
- L) Absolutely! Very comprehensive, hands-on, and opportunity to network
- M) Definitely. I learned a lot and had a great experience.
- N) Yes, The Institute is a wealth of information that should be utilized as much as possible
- O) Yes. Informative and great t network with likeminded people
- P) Yes... I have
- Q) Yes. For sure, it touches on everything that has to do with wetland restoration. Very helpful for people like me that are new to wetland restoration.
- R) Yes- It would be the best way for someone to not only gain an appreciation for wetlands, but also how to learn to build/restore one

8. Are you interested in partnering with the BC Wildlife Federation to deliver some of the following workshops in your community? (Check all that apply)

- ☐ *Map our Marshes (1 day workshop focusing on using GPS to map small wetlands)*
- ☐ *Wetlandkeepers (2.5 day workshop focusing on wetland stewardship)*
- ☐ *Wetlands Institute (7 day workshop focusing on accomplishing wetland projects)*

- A) WI
- B) WK
- C) WK
- D) MoM, WK
- E) WI
- F) WK
- G) –NA
- H) MOM
- I) I can help with soils stuff
- J) MOM, WK, WI
- K) Yes. TBD
- L) –
- M) MoM
- N) –
- O) MoM, WK
- P) MoM, WK, WI
- Q) MoM. I think this would be great in the very near future but for the next few months we are very busy with our projects, reporting, etc
- R) WI

9. *Do you have any other comments about your experience at this year's Wetlands Institute? Positive or negative feedback?*

- A) Thank you all so much! Hope to see you again soon.
- B) I think it would be great if BCWF staff facilitated the Q&A sessions after presenters more, as it felt at times as if a few individuals ate up that time at the expense of other questions. Not a major issue, but perhaps that could take the pressure off the presenter. Thank you so much for your hard work. Was a great week.
- C) Overall, I had a very positive experience. The guest speakers were great (and complimented the program very well), and the coordination of the program with local restoration projects was well done.
Communication with facilitators before the program began was a bit confusing on my end (I expected a "you've been accepted into the institute" email, but simply received the draft schedule and an outline of the activities instead).
The site locations were very far away, and not having a car made coordinating carpooling before the course a challenge (not sure if a bus would have helped?)
Receiving an information package, Tom's wetlands book, (and even a t-shirt!) were a nice surprise! I will continue referring to the information resources.
Very happy overall, thanks for a terrific week!
- D) Feeling refreshed and ready to make a change! Thank you for all your dedication. I would definitely participate again! You Rock!
- E) another great institute, might consider making it shorter in the future.
- F) Thank you very much
- G) Before going to site for design work, time should be spent with maps and aerial photos of the site to situate the ground. At that time the real scope of the project should be outlined not like what was done at Dewdney where the principal (Sue) discussed the other "wants" (eg. Wheelchair accessibility, amphitheater, etc) after the wetland design had occurred. Based on that information, felt that the wetland designed was inadequate for her needs. Diversity by Design & presentation materials should have been provided the first day – good basic information.
- H) I really enjoyed the diversity of presentations that were given in this workshop. I learned a lot!
- I) Thanks. I'm going to eat wapato at least once in my life
- J) Opened my eyes to all things to consider when creating wetlands
- K) Just wanted to extend a great big Thank You to Neil, Jason, Tom, & Doug for all of your hard work! You are all an inspiration ☺
- L) Thank you! Everything was wonderful
- M) The only thing I found disappointing was missing out on seeing a different site in order to spend more time at Dewdney or Silverdale. Although I learned a lot a ton at both sites I think after a few hours people start to lose interest and need a change of scenery.
- N) See answer #3
- O) Thank you for the opportunity to attend this course and to learn from experience. Also to gain the experience and confidence to achieve my project goals.
- P) Good job guys!
- Q) Overall it was a great experience. We were given a short of check off or template that we can use on our project next year. I would like to Thank all of the coordinators and trainers for the opportunity to be a part of this workshop.
- R) Please don't take this as being critical, but rather helpful in reducing spread of invasive species. I am personally aware that I will have to disinfect my field gear before I use it again in the Elk Valley but other folks may not even think about it. Please reinforce throughout the week. Thanks!!!

APPENDIX D: References

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