Saving Salmon One Meter of Shoreline at a Time

A community-based approach to shoreline habitat restoration



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British Columbia Conservation Foundation (BCCF)

Elodie Roger

Origins Environmental Services

Association of Vancouver Island and Coastal Communities

April 1st 2022

Danny Swainson

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- ~10 years of experience with freshwater and marine environments Canada-wide



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- Ecosystem Restoration Consultant with Origins Environmental Services
- 10 years of experience in conservation, restoration of terrestrial habitats in BC and overseas



Email: Elodie@originsenvironmental.com

Gratitude

Quw'utsun and Ts'uubaa-asatx Nations

Gerald Thom

Hundreds of volunteers, property managers and landowners

Our summer field crews, students, youth

And the many more who coordinated the project behind the scene

Coastal Restoration Fund (Government of Canada) and private donors; DFO; PSF; HCTF; BCCF (Craig Whiteman, Lisa Limerick, Danny Swainson, Jeramy Damborg, Christine Brophy, Jeff Strohm, Dannielle Owen); Cowichan Lake And River Stewardship Society (Board members); Town of Lake Cowichan; Government partners Peter Woods, Andrew Coster, Luke Clarke, Grant Bracher; Polster Environmental Services Ltd. (Dave Polster, Genevieve Singleton) who contributed their expertise, mentorship and guidance once again; BC Forestry Research Station who provided the project with a plant storage and watering facility; Khowutzun Forest Services (Cedar Elliott, Troy Elliott, Rob Furness and their staff) for fostering our partnership with First Nations., Royal Road University; Local Schools...



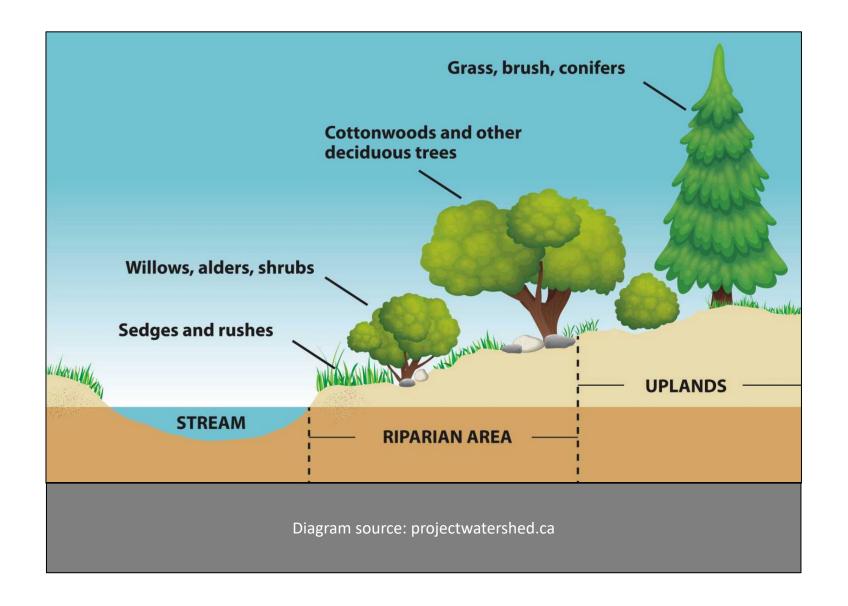
Agenda

- 1. Riparian Areas and their significance for Fish
- 2. The Story of Cowichan Lake
- 3.Cowichan Shoreline Stewardship Project
- 4.Future of grass-root restoration initiatives around Lake Cowichan



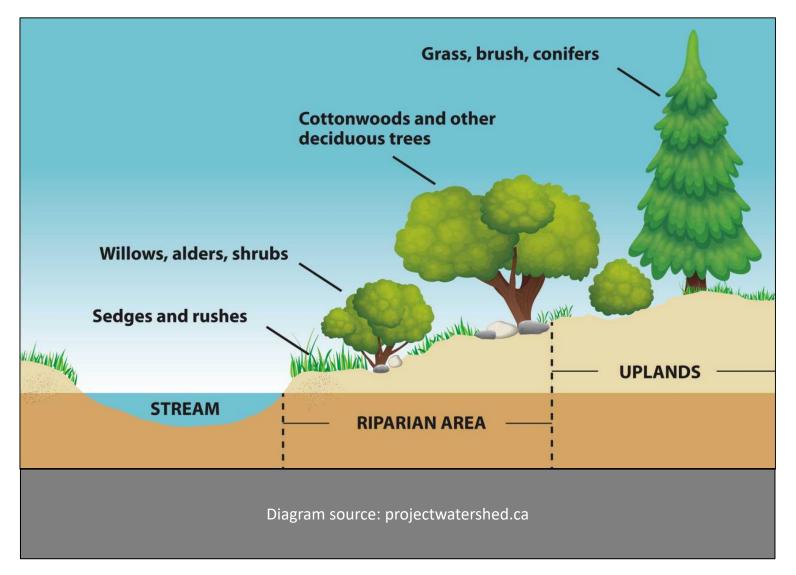


A Riparian area is the interface between a body of water and the adjacent land.



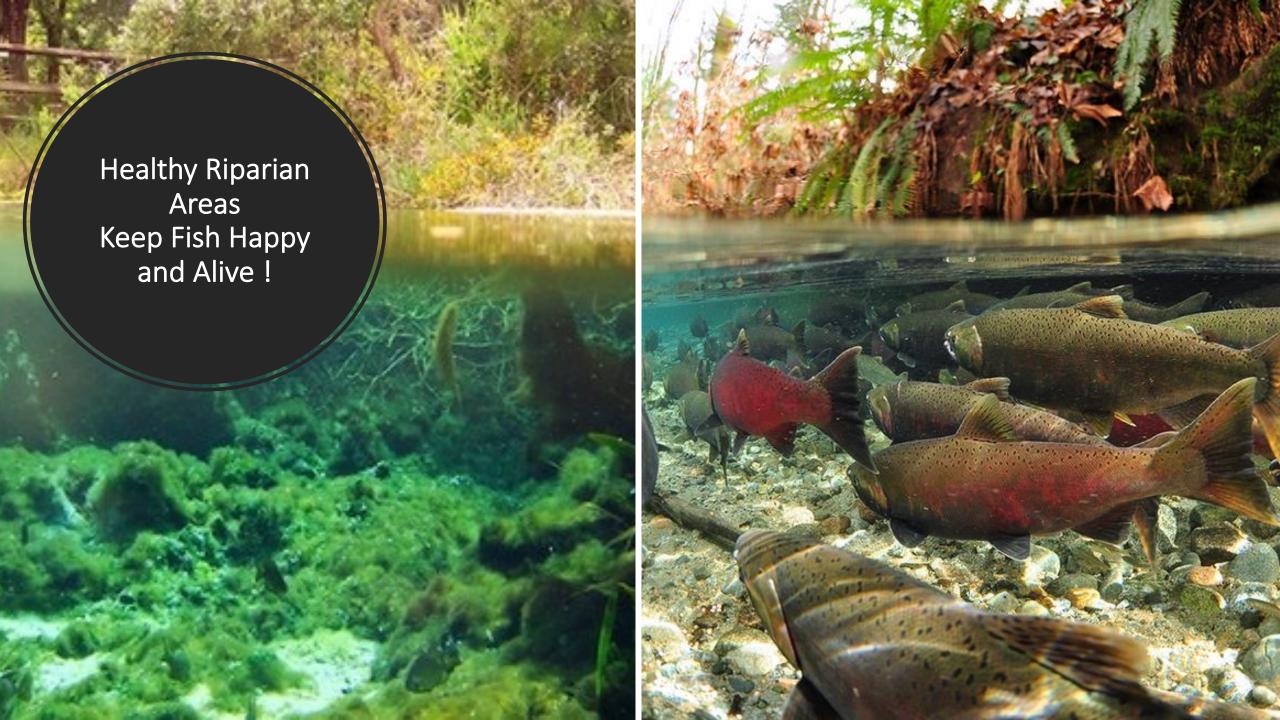


- Shoreline stability
- Flood control
- Shade
- Habitat for birds, wildlife and insects
- Fish habitat!



Planting Trees = Saving Salmon?





When it comes to salmon...

Wood is Good!



Juvenile Chinook Salmon utilizing riparian vegetation on the Cowichan River

Photo by: Craig Whiteman

When it comes to salmon...

Wood is Good!



Adult Chinook Salmon utilizing riparian vegetation on the Englishman River

Photo by: Danny Swainson

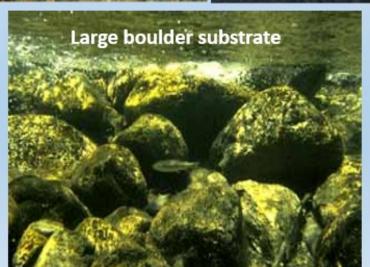














Summer/Fall

1st - Stream Mouth 2nd - Rocky shores 3rd - Wetlands



Cowichan Lake's
Healthy
Productive Fish
Habitats

Dominant Fish Species of Cowichan Lake Shorelines

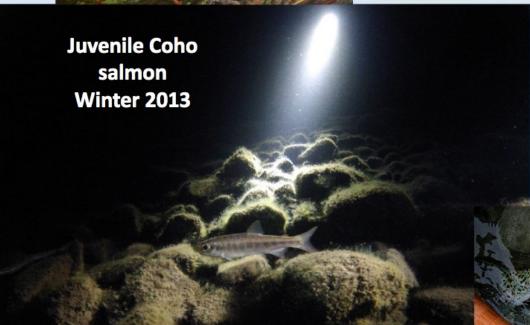
Cowichan Rainbow Trout

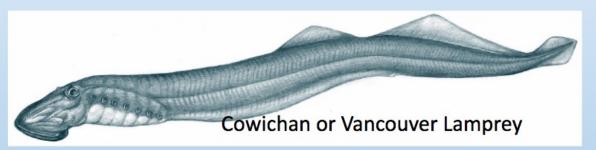


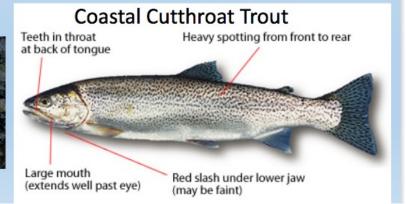






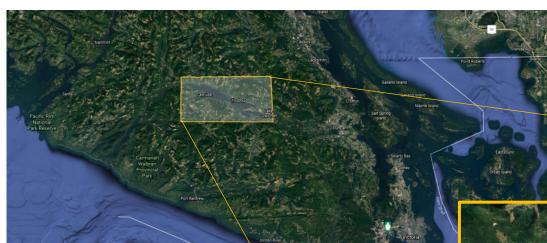




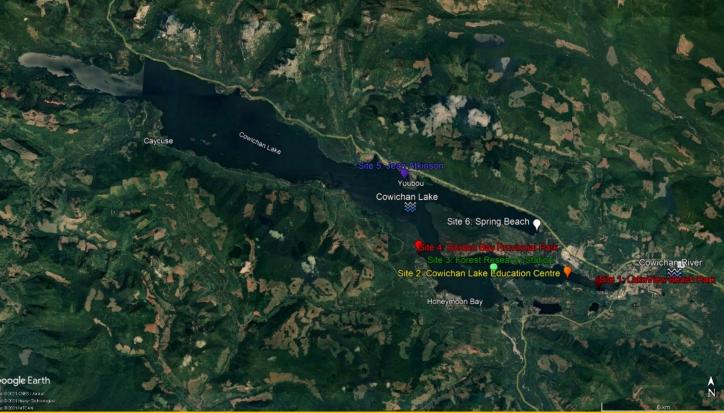








Cowichan Watershed



Source: Roger (2022)





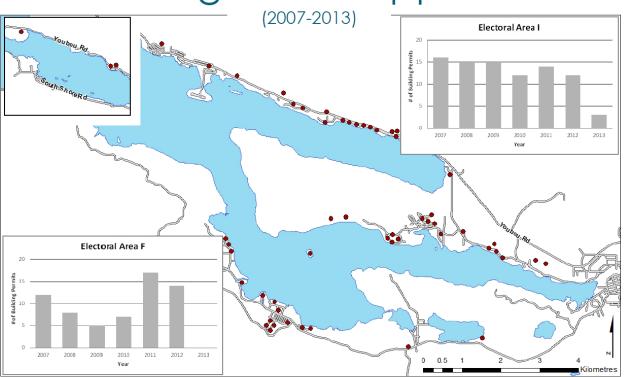
Development Trends in the Lake Cowichan Area



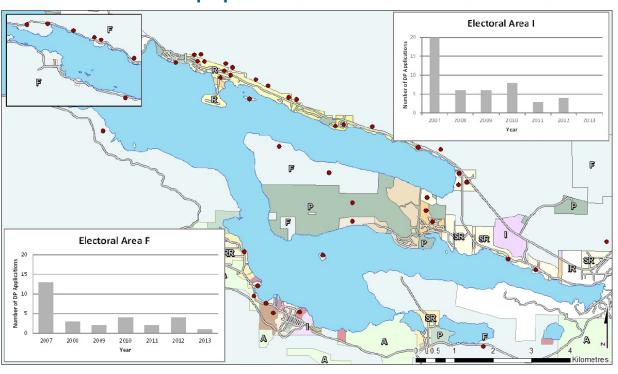
From "Lake Cowichan Shoreline Workshop", Dec. 2015

Development around Lake Cowichan

SF Building Permit Applications



RAR DP Applications 2007-2013



CVRD Area F and Area I Source: "Lake Cowichan Shoreline Workshop", Dec. 2015

British Columbia Conservation Foundation Cowichan Lake Erosion Assessment





Erica Ellis, M.Sc., P.Geo.

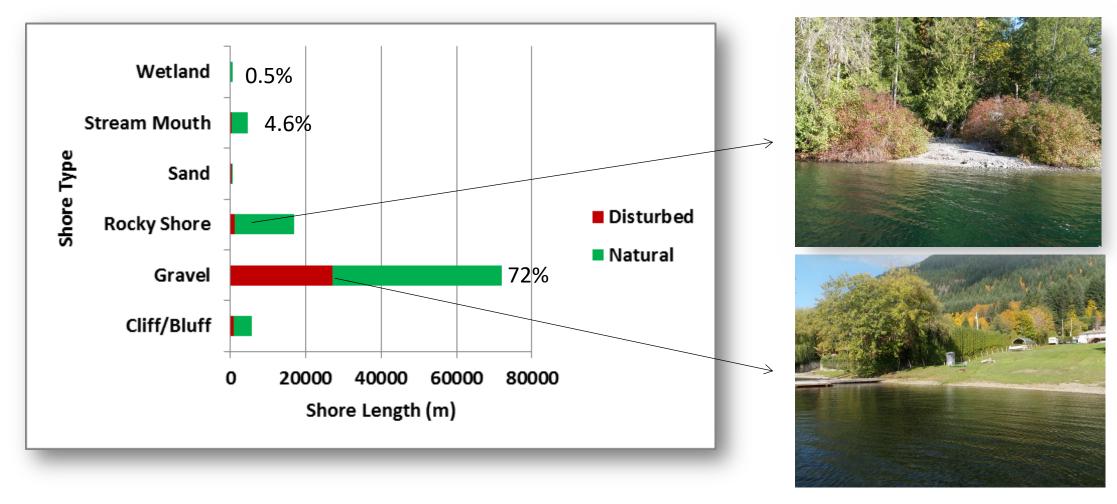
Natural Biophysical Processes that Shape the Shore

"What are the natural causes of erosion on the lake's shoreline?"

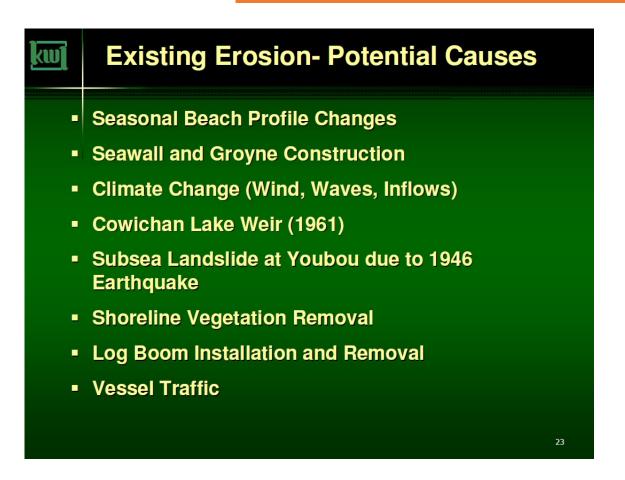
"What influence seasonal lake levels have on this process?"

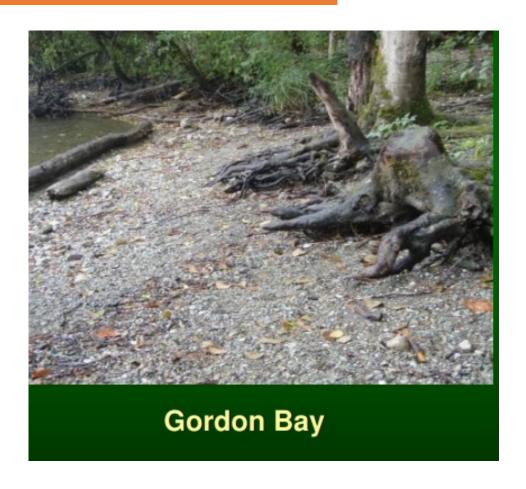


Findings: Shoreline Types and Disturbances



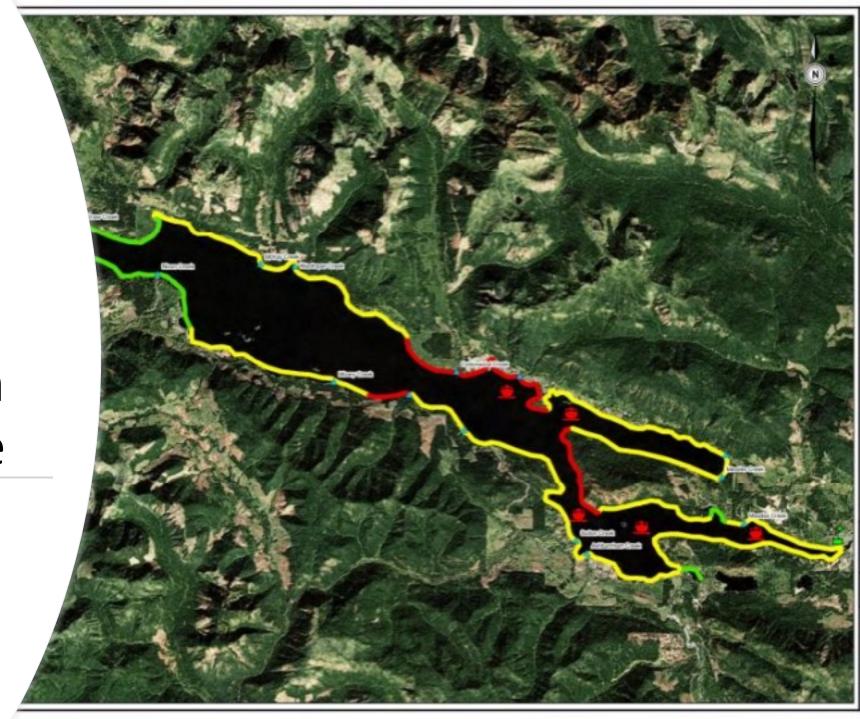
Gravel, cobble shorelines and man-made structures are the most vulnerable to site-specific erosion pressures cause by:





Findings:

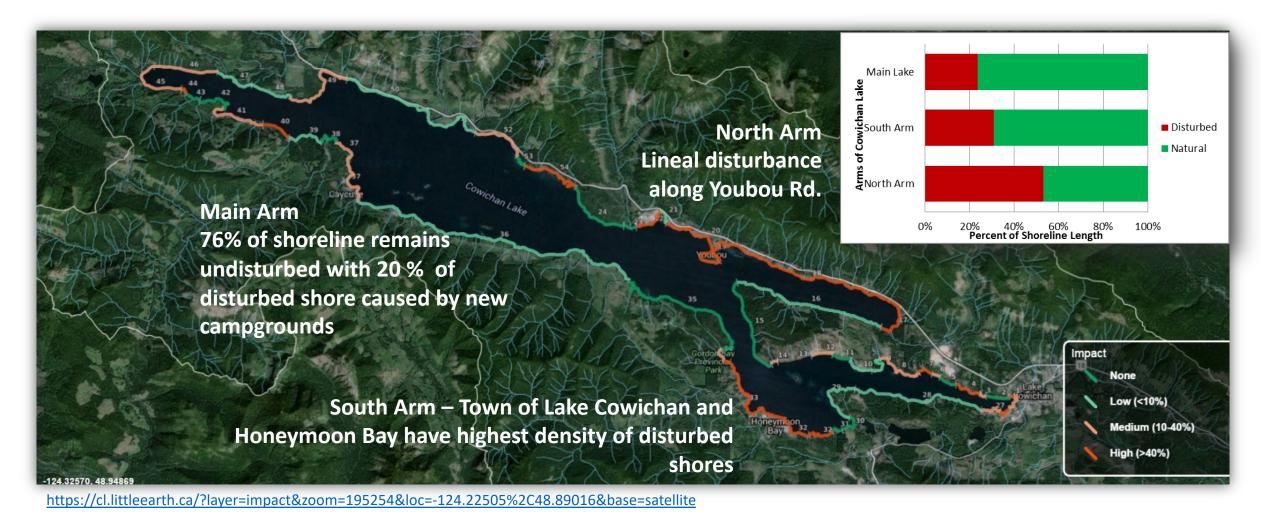
Action from Waves and Winds tend to magnify erosion risks around the shore



Findings: Riparian disturbances



Findings: Natural vs. Modified shoreline







"The lake can be restored to preserve its conservation values for the benefit of the next generation"

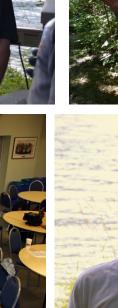








A River Run Through Him









Cowichan Lake and River Stewardship Society (CLRSS)

BCCF, Cowichan Watershed Board, Governances

Question

How could our Community assist in "Maintaining the Lake as a Healthy Ecosystem".

Components of the project

- 1.Landowner Education
- 2. Shoreline restoration
- 3.Community Engagement



1 Workshop

April 24th -25th 2013 Workshop

Objective 1:

2 linear kilometers or 18,000 m² of damaged shoreline habitats restored along Cowichan Lake and River

CSSP Targets 2014 - 2022



600 shoreline property visits and 450 owner surveys

Objective 3:

15 km of shoreline and riparian habitats protected on the lake and river through partnership building with local First Nation, governances, landowners and conservation organizations

Objective 4:

Shifting cultures through youth and community engagement to better protect shoreline habitat

CSSP project objectives and performance indicators

(2014 - 2022)

Phase I: 2014-2016

Phase II: 2017-2019

Objective 1:

2 linear kilometers or 18,000 m² of damaged shoreline habitats restored along Cowichan Lake and River

CSSP Targets 2014 - 2022

Objective 2:

600 shoreline property visits and 450 owner surveys

Objective 3:

15 km of shoreline and riparian habitats protected on the lake and river through partnership building with local First Nation, governances, landowners and conservation organizations

Objective 4:

Shifting cultures through youth and community engagement to better protect shoreline habitat

What CSSP Achieved

18,758 square meters (+ 4.22%)
1.8 km of linear shoreline and fish habitat

Hundreds of residents contacted 4 years of resident surveys and property visits

Growing First Nation partnerships and support from local governances. Increased landowner's concerns and awareness for healthy shoreline habitat Documented riparian restoration opportunities for on-going restoration

Numerous community events, youth engagement programs and educational opportunities through Universities and Schools







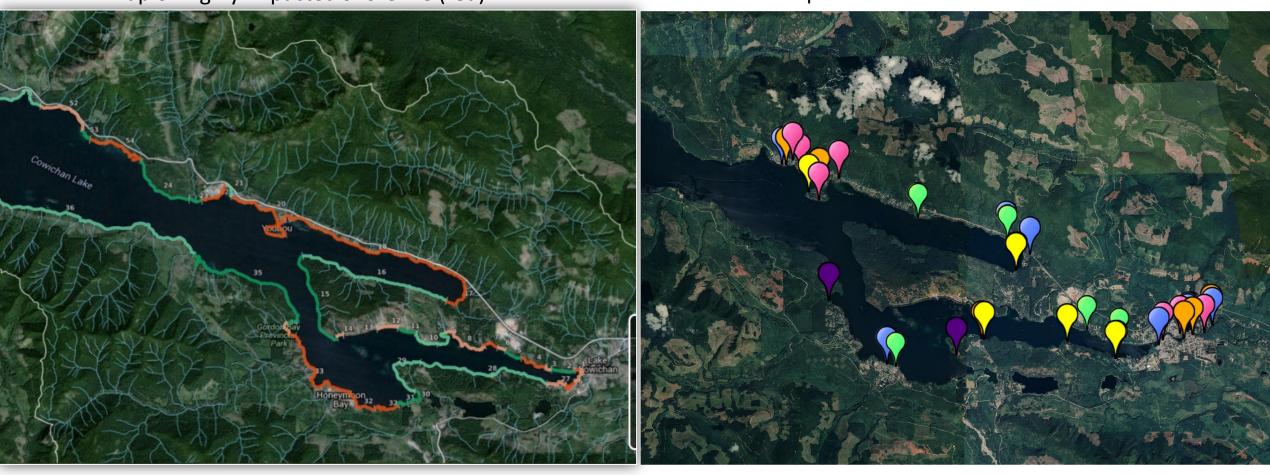
Summary of 7 years of shoreline stewardship

Cowichan Shoreline Stewardship Project	Number of Planting Sites	Planting Area (m2)	Linear Metres	Number of potted plants
CSSP 2014	7	3352.86	311.5	2326
CSSP 2015	9	1898.78	325.9	1083
CSSP 2016	8	2355.1	208.8	689
CSSP 2017	8	3088	264	954
CSSP 2018	8	4326.43	214.6	827
CSSP 2021	6	3737.7	489.5	1980
	Number of Planting Sites	Planting Area (m2)	Linear Metres	# of potted plants
Total CSSP 2014 - 2022	46	18,758.87	1,814.30	7859

Ecological Restoration

Map of highly impacted shoreline (red)

Map of restored sites between 2014 - 2022



Ecological Restoration

Map of shoreline types

Map of restored sites between 2013 - 2022

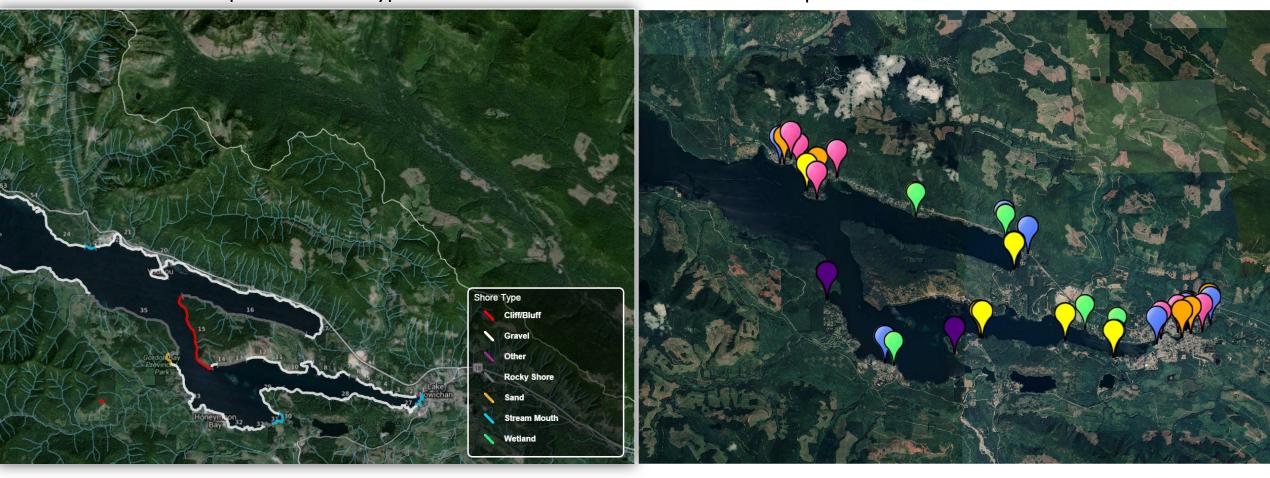






Figure 11. Before (2015) and after (2018) at a private residence, a 2015 Riparian Restoration Site

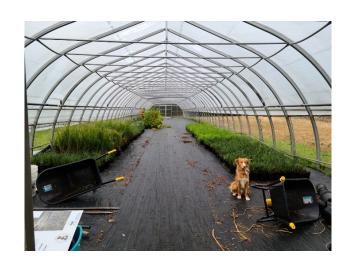


Figure 7. Construction of a live-stake wattle fence at two CSSP 2018 sites along Cowichan River



Figure 6. Invasive plant removal at CSSP private residence on Cowichan Lake and Koksilah River









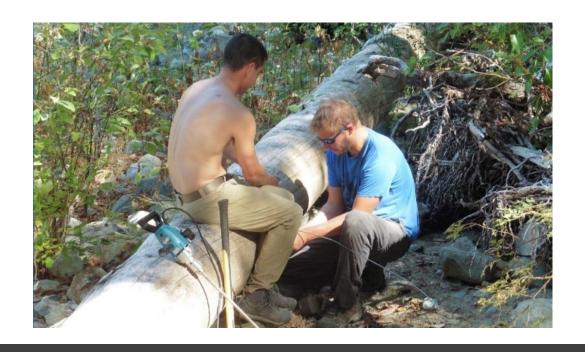


















Awareness raising! You need the fish, the fish needs you

Oh Deer!!

WITHOUT THIS FENCING, THIS AREA WOULD BE A DEER RESTAURANT!

PLANTING OF NATIVE PLANTS HAS BEEN DONE HERE TO INCREASE SHADE FOR BABY FISH NEEDING SAFE PLACES TO REST.



HAVING MORE PLANTS ALONG THE SHORELINE WILL SUPPORT MORE FISH IN THE LAKE.

THANKS FOR YOUR SUPPORT!

COWICHAN SHORELINE STEWARDSHIP PROJECT

A PROJECT SUPPORTED BY:
COASTAL RESTORATION FUND
BRITISH COLUMBIA CONSERVATION FOUNDATION
COWICHAN LAKE AND RIVER STEWARDSHIP SOCIETY



Do you like to go fishing?

WE DO!!

THESE NATIVE PLANTS PROVIDE PLACES FOR INSECTS TO REST THAT THEN FALL INTO THE WATER PROVIDING FISH FOOD.

BABY SALMON ESPECIALLY LIKE TO HIDE ALONG SHORE EDGES UNDER PLANTS. BY PLANTING HERE, WE ARE HELPING THERE BE MORE FISH FOR US ALL TO GO FISHING!





DEER LIKE TO EAT THESE YOUNG PLANTS, WHICH IS WHY WE HAVE THIS TEMPORARY FENCING.

THANKS FOR YOUR SUPPORT!

COWICHAN SHORELINE STEWARDSHIP PROJECT

A PROJECT SUPPORTED BY:
COASTAL RESTORATION FUND
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COWICHAN LAKE AND RIVER STEWARDSHIP SOCIETY

Who are we?

The Cowichen Lake & River Stewardship ociety (CLRSS) is a volunteer group of caring neighbours dedicated to the owichen Lake Watershed. The CLRSS "stewardship first" culture and act in poperation with landowners to protect and enhance riparian areas on private

Did you Know?

- 92% of the lake shoreline (including forest land) is privately owned. wners of ecologically important habitat are responsible to preserve bublicly owned resources, the fish and the water, now and for future
- 70% of shoreline of Cowichan Lake is still in an undistructed state and needs protection. This land and vegetation adjacent to watercourses ithe riparian one) is essential for water quality, fish stocks and wildlife, as well as flood and erosion control.
- The shoreline of Cowichan Lake is a numery for up to 300,000 wild coho salmon annually. It also contains selfsustaining populations of outthroat, ainbow, dolly varden and kokanee.

- Visit our riparian webpage www.cowichan-lake-stewards/riparian.htm to learn more about the importance, protection, enhancement and
- pulation of riperian areas. Request a riparian visit to evaluate
- Visit healthy riparian shorelines that are
- Become a member! Meetings are held call us or visit our website:

President Larry Van Wieren

www.cowichen-lake-stewards.ca



This brochure has been supported by the Pacific Salmon foundation

How can CLRSS support you?

- Cowichen Lake & River Stewardship Society
 - Riparian Insights



Oxford the otter says: "The healthy future of

Cowichan Lake in in our hands!

What can we do?

Restore damaged riparian areas.

Let natural re-vegetation take its course or

occurred prior to European contact.

Are beautiful & low maintenance

provide wildlife with food, shelter and places to reproduce.

Holip regulate climate, prevent erosion

improve water quality and much more.

Native Plants:

Leave our riparian areas intact. Prevention is easier than restoration. Common changes that can damage riperian health include:

- Clearing vegetation to create beaches, lawns or enhanced views Adding fill, rock or sand to create
- beaches and extend property. Building docks and boat launches for
- Introducing non-native plants for
- Removing woody debris and aquatic "weeds" for water sports. Minimize impact when
- Use only one point of access, build
- docks, frame views and use gravel pethways.
 - Do NOT collect native plants from the wild. Propagated native plants are readily available.

To learn more about native plants and local sources, visit our riparian webpage:

4. Respect Riparian Area Regulation

Leave ripation areas intact for erosion re-establish native plants.
A native plant is one that occurs naturally in control, water quality, habitat protection, a particular region, ecosystem or habitat and

Any disturbance within 30 metres of the high water mark of lakes and streams. requires contact with local government:

> Riparian Habitat Contacts CVRD Development Services

Town of Lake Cowichan 250-749-6681 Provincial Government (Environment) 250-751-3100

Fisheries and Ocean Canada (Habitat Enquiries) 1-866-845-6776

For online contacts or more riperian hab



Water Quality Monitoring

galar monitoring provides baseline data with will be used to detect change over time, is information is shared with the Province of the 8C Lake Stewardship Society to maper our lake with others in the province. 110 monitored lakes in 8C we are currently ked second for clarity. For more irmation on BC lakes visit; swww.bclss.org/

Committees

te www.cowichan-lake-stewards.co.

Water Traffic Committee Education Committee Membership Committee Retail Sales Committee Annual River Clean-up Committee



Cowichan Lake and River Stewardship Society PO Box #907 Lake Cowichan, BC VOR 2G0

For current information visit our webpage nww.conichun-lake-stenurds.ca

email enquiries webmaster@cowichan-lake-stewards.ca President Leroy Van Wieren Phone 250-709-7308







dose in July at Paradice Village RV



Cowichan Shoreline Stewardship Project

Riparian property visits were continued this summer and ne have now tailed with the owners of 1.43 riparian properties around the lake and upper inver since we started the visits in 2012. During these visits, CLRSS members discuss tiparian issues with a view to helping the property owners understand the importance of intact and functioning oparian may be supported to the control of control control of cont

Saywell Park Restoration In fall 2013 the CLRSS



The third weekend in August is reserved for our annual river cleanup. This two-day event loss without switching them to ref our river of any fareign objects that have accumulated over the year. Saturday is the sugger river coulding systemed by the CLESS engaged river could be specially stated to the CLESS engaged by Consistent Thirtee. Every year we remove some of garage and handeds on diclars in recyclable bottles from our river.

Fish Habitat Signs



Gerald's Legacy:

Encouraging Environmental Study and Action for Generations to Come

Our Youth is our most important resource. They hold the future of our community in their hands. Gerald Thom always emphasized the importance of engaging our youth in the stewardship o our watershed. The Cowichan Lake and River Stewardship Society is working hard to preserve and protect our watershed. We want to follow Gerald's lead by encouraging our young people to become aware of and directly involved in the protection and preservation of our precipus watershed ecosystems. We are assistance to deserving LCS students that want to learn more about







The Gerald Thom Environmental Studies Bursary



Gerald Thom and volunteers completing his last project July 26, 2014

Genetic spent his last day doing what he loved, working with volunteers to sestore Lake Covechan First Nation land. Previous days had creve. removing invasive blackbernes and preparing the site. The large group of volunteers that show up on July 26 completed the project by planting and watering hundreds of native plants on the site. We all enjoyed lunch and cold drinks and Water Woman showed her appreciation.



The Gerald Thom Bursary \$1,000

Conditions

Eligibility

One annual bursary is awarded in the name of Gerald Thom to honour his substantial contributions to ecological restoration

Priority will be given to LCS applicants planning to enrol in post secondary environmental studies related ocurses.

Preference for this Bursary will be awarded to a Lake Cowichan School student who:

- Studies Program. · Has demonstrated commitment and Has demonstrated commitment and service to improving or restoring the local environment. (Actions include effort towards water testing, record keeping, clean-up activity, planting, article writing and nursery management.
- Has demonstrated a willingness to educate others regarding environmental

Applications

- 1. Application forms are available from the Lake Cowichan School Office. 2. Applications will be reviewed and
- recipients selected by the LCS and

If you would like to donate to the Gera Thom Environmental Studies Bursai Program please send contributions to

ake Cowichen School, 190 South Shore Ro



Cowichan Lake and River Stewardship Society www.cowichan-lake-stewards.ca

Youth And
Public
Engagement









Working with First Nations

Through leadership, knowledge sharing and capacity building



Conclusion and Future of CSSP

Recommendations made at the end of the project



COWICHAN SHORELINE
STEWARDSHIP PROJECT
2022 INTERIM REPORT



Interim report prepared by Elodie Roger at Origins Environmental Services

Submitted to the British Columbia Conservation Foundation, Lantzville, BC

BCCF Service Agreement #: 1172038-003

BCCF Project #: 1172038

Duncan, BC February 2022

Elodie Roger Origins Environmental Services



There is more to do...

Site Name	Access	Addresses	Geographical Area	CSSP Status	Restoration recommendations	Approx. Restoration Area (meters squared)
	Private	50 Prospect Ave, Lake Cowichan	Cowichan River	Follow-up	Property adjacent to Mrs. Danaher, facing extreme bank collapse. Mrs. Adrams received CSSP restoration efforts in the past. Email communications mention that wattle fences installed in the past had washed away.	TBD
	Private	66 Prospect Ave, Lake Cowichan	Cowichan River	New	Bank collapse by private residence due to winter river flood. Staking possible at bottom of slop below high water mark. Upper slope requires staking with support from QEP. Threats to fish habitat and riparian health include Cowichan River winter flooding. Bank collapse by house footings. Wildlife grazing.	36
	Private	7314 Peri Rd, Honeymoon Bay, BC VOR 1YO	Cowichan Lake	Follow-up	Restoration follow up and signage after 2018 CSSP Planting. Fencing, educational signs required on the property. Survival rate monitoring.	TBD
	Private	8354 Sa-seen-os Road	Cowichan Lake	Follow-up 2019 CSSP	Plant and signage monitoring.	600
	Private	7314 Peri Road	Cowichan Lake	Follow-up 2019 CSSP	Plant and signage monitoring.	650
	Public	Meades Creek	Cowichan Lake	Follow-up 2019 CSSP	Plant and signage monitoring.	1500
	Public	Honeymoon Bay	Cowichan Lake	Follow-up 2019 CSSP	Plant and signage monitoring.	600
	Private	Honeymoon Bay	Cowichan Lake	Follow-up 2019 CSSP	Plant and signage monitoring.	500
	Private	67 South Shore Road	Cowichan River	Follow-up 2019 CSSP	Plant and signage monitoring.	450
	Private	222 Greendale Road	Cowichan River	Follow-up 2019 CSSP	Plant and signage monitoring.	525
	Public	Gordon Road	Oliver Creek	Follow-up 2019 CSSP	Plant and signage monitoring.	750
	Public	Tresle Bridge	Cowichan River	Follow-up 2019 CSSP	Plant and signage monitoring.	500
	Private	10332 Youbou Road	Utility Creek	Follow-up 2019 CSSP	Plant and signage monitoring.	500
	Private	9262 / 9264 North Shore	Cowichan Lake 2015 A	Follow-up 2019 CSSP	Plant and signage monitoring.	1000

Recommendation	Action Item	Rational
Category		
Plants	Adding plants to the 33 CSSP sites	Cowichan Lake water level decreases considerably over the summer, turning healthy shoreline and fish habitat into a fragmented landscape. Sites planted between 2014 and 2021 will benefit from regular monitoring and planting to increase habitat connectivity.
Plants	Identify shoreline restoration opportunities for 14 additional sites	14 properties were identified as potential candidates for shoreline restoration or additional planting. Landowner outreach and site visits should be orgnized to research and design site-specific shoreline enhancement or restoration practices with the guidance of a Qualified Environmental Professional.
Plants	Refer to Effectiveness Evaluation Report ffor future monitoring and restoration work	Morley and Barlow (2019) recommendations should be considered when designing the next phase of CSSP. More frequent Effectiveness Evaluation reports should be planned for to verify the quality of work delivered and consider adaptive restoration practices and project management strategies if needed.
Plants	Monitoring in Spring 2022 and Fall 2022	Vegetation planted in 2021 will need to be monitored with the support of a crew member who was part of the crew in 2021. Monitoring should take place after their first winter once plants start budding, and after their second dry summer in 2022.
Plants	On-going watering	Consistent watering will need to be coordinated for Summer 2022 at the six sites planted in 2021. Property owners and managers must be informed of the site visits.
Plants	Following Section 11 recommendations	Referring to the conditions under which Section 11 was approved in 2021: Ensure native plants receive sufficient water during the first two summers to fully establish.
Signage	Spring Beach signage	Install permanent signage at Spring beach in accordance with DFO guidelines.
Outreach	Following-up with CSSP recipients (2014-2021) and identify action items	Several participants contacted CSSP 2021 crew and raised concerns about shoreline erosion, plant survival, or lack of signage on their properties. These participants should be contacted by phone or email to follow-up and determine restoration or support needs.
Partnership	Site visit with Project Partners	Before the end of this project, a site visit should be organized with each property owner and showcase the restoration work that took place.
Partnership	Presentation to local governances and conservation groups,	Before March 2022, we recommend presenting the results of this project to local partners, local governances, and organizations and community to encourage further riparian and shoreline restoration work within the Valley.
Partnership	Seeking funding opportuninities	The project has gained considerable momentum since its start in 2014. A new multi-year funding should be considered to increase shoreline restoration and protection efforts around Cowichan Lake and Upper Cowichan River.

2022 – 2023: CSSP Research and Development

• \$15,000 secured for this fiscal year with the goal to develop a new multi-year, community driven restoration initiative!

 Will include effectiveness monitoring of previous restoration work



Thank You Huy ch q'u

Questions?

