



**the partnership
for water sustainability in bc**

Waterbucket eNews on April 25, 2023
<https://waterbucket.ca/wscblog/>

**Living Water Smart
in British Columbia:**

***Shelly Creek in Parksville
is a "living laboratory"***

Note to Reader:

[Waterbucket eNews](#)¹ celebrates the leadership of individuals and organizations who are guided by the vision for [Living Water Smart in British Columbia](#)².

The edition published on April 25, 2023 featured Peter Law, Past-President of the Mid Vancouver Habitat Enhancement Society. Under his leadership, MVIHES has established a series of provincially significant precedents on a wide front, from community-based social marketing to water balance analysis. This sets a high bar for "citizen science in action".

The umbrella for Partnership initiatives and programs is the [Water Sustainability Action Plan for British Columbia](#)³. In turn, the Action Plan is nested within [Living Water Smart, British Columbia's Water Plan](#).



Cover Image Credit: photo by David Mackenzie,
a *Lifetime Member* of the Partnership for Water Sustainability

¹ <https://waterbucket.ca/wscblog/>

² https://waterbucket.ca/wcp/wp-content/uploads/sites/6/2017/11/livingwatersmart_book.pdf

³ <https://www.waterbucket.ca/cfa/sites/wbccfa/documents/media/81.pdf>

Editor's Perspective

Peter Law and I met in October 1997 at a UBCM consultation workshop when he was an ecosystem biologist with the Ministry of Environment. Our long history of collaboration provides me with context and perspective for judging his accomplishments, both with the Ministry and with MVIHES.

Few people realize that Peter Law was chair of the inter-governmental steering committee responsible for [Stormwater Planning: A Guidebook for British Columbia](#), released in June 2002. In addition, he was a member of the inter-ministry team led by the late Erik Karlsen which developed the original [Streamside Protection Regulation](#), passed in 2001.

This background is important for readers to know and appreciate. It is in small streams such as Shelly Creek where the impacts of changes in the seasonal water balance and on riparian integrity are being felt most. Peter Law's experience informs his science-based approach to developing solutions.

Peter Law has put his time and energy into Shelly Creek, as do many other stream stewards in their watersheds around BC, such that **Shelly Creek has become a "living laboratory"** for the local Parksville community to enjoy.

Look beyond the channel to understand the stream as a system

According to Peter, the intent of the current [Riparian Protection Areas Regulation](#) was to provide flexibility based on the expected scientific outcomes. "Instead," he says, "we have ended up with simple and minimal-type measures of the level of riparian protection on behalf of fish."

"Looking beyond the stream to understand the stream as a system is put on the shoulders of others, and those 'others' are not typically brought in. So, what is the consequence? The system context is lost. Small streams on Vancouver Island have minimal levels of riparian protection and are now going dry."

"In contrast," Peter points out, "enhanced riparian greenways like Shelly Creek Park allow fish to survive in natural conditions without encroachment issues. That 1990s decision to create an enhanced linear park showed great foresight. The proof of the pudding is that it saved the resident Cutthroat trout population during the heat dome and extreme drought of 2021."



*Kim A. Stephens, MEng, PEng (non-practising),
Executive Director
Partnership for Water Sustainability in BC
April 2023*



One-Minute Takeaway

“The City of Parksville's decision in the 1990s to create a greenway along Shelly Creek resulted in an ecological legacy for fish and residents.” - Peter Law

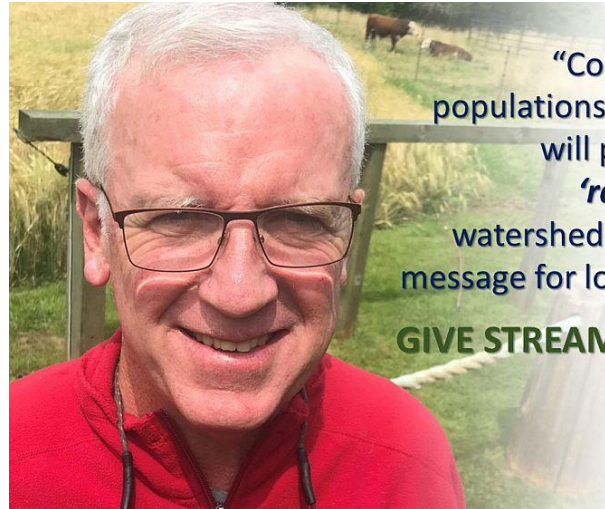
Shelly Creek is representative of small streams along the east coast of Vancouver Island. An important tributary of the Englishman River, Shelly Creek is the City of Parksville's last fish-bearing stream.

Shelly Creek is of interest to the Partnership for Water Sustainability because we support the applied research spearheaded by the [Mid Vancouver Island Habitat Enhancement Society](#) (MVIHES). The leadership of Peter Law sets a high bar for "citizen science in action" and points the way forward for local governments to better manage land use change.

Over the past decade, MVIHES has established a series of provincially significant precedents on a wide front, from community-based social marketing to water balance analysis. These precedents inform science-based understanding of consequences and solutions for stream health.

The latest MVIHES initiative is new research on the movement of Coastal Cutthroat Trout. This is the native freshwater species commonly found in coastal BC's lakes, rivers, and streams. In recent years they have declined dramatically in both numbers and distribution.

Coastal Cutthroat Trout have been listed as a **Species of Concern** by the Province. The research by MVIHES led to unexpected findings which reinforce the case for enhanced riparian area protection and restoration along streams.



“Coastal Cutthroat Trout populations on Vancouver Island will perish unless there is **‘rainwater balance’** as watersheds are developed. The message for local governments is... **GIVE STREAMS SPACE TO LIVE.**”

Peter Law, ecosystem biologist
Mid Vancouver Island Habitat
Enhancement Society

Shelly Creek Park and the "package of ecological services" it provides

“Based on our observations over the past six years, the bigger the riparian area, the more stable it will be. And the more ecological value to fish and fish habitat is brought to the table. It is in your face,” reports Peter Law, MVHES Past-President and project leader.

"An enhanced riparian area sustains flows, especially during critical low flow periods. The only reason the Shelly Creek system is still able to support a small, viable resident population of probably 200 trout is because the City of Parksville created a greenway, Shelly Creek Park, when the surrounding area was subdivided."

"Shelly Creek Park is a valuable community amenity and a popular destination for Parksville residents. It provides a package of ecological services - drainage, habitat, recreation and enjoyment of property."



STORY BEHIND THE STORY:

Shelly Creek in Parksville is a "living laboratory" - *conversational interview with Peter Law*



"Shelley Creek is typical of small streams on the east coast of Vancouver Island. Of the 5.5 km channel length, a mere 300m exists in its natural state. And this is only because the City of Parksville created an enhanced riparian zone for park purposes when the surrounding area was subdivided in 1998," reports Peter Law.

"We wanted to understand what factors influence the movement of resident cutthroat trout over their life history in Shelly Creek, In the summer of 2021, we organized a team from Vancouver Island University (VIU) and BC Conservation Foundation (BCCF) to investigate how a small population of resident fish survives in a stream that undergoes significant changes to water flows over the seasons."

Use of Passive Integrated Transponder (PIT) technology

"With funding from the Freshwater Fisheries Society of BC and Pacific Salmon Foundation, we implemented a fish tracking project."

"The resident population numbers about 200 fish. We put tags into the bodies of 52. These tags are like the chip in your credit card. As we walked up and down the creek with a scanner, it pinged and mapped where the fish were. We did this at least once every 2 weeks."



"We married two projects. The year before, in 2020, we had started a flow measurement initiative. This meant we had overlapping information for one year, 2021. What is the influence of flow on fish movement, we wondered?"

"The project was done as a directed study at Vancouver Island University. This means that the student has to know how to write a scientific paper, present the data, analyze the data, and defend the data. Ally Badger did it all. It was a lot of fun!"

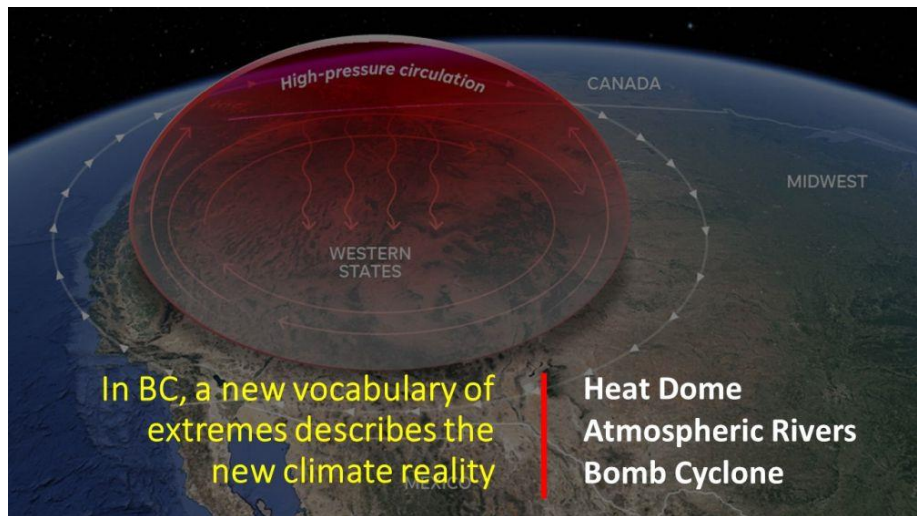
To learn more about the research program, download a copy of [Movement and Habitat Use of Coastal Cutthroat Trout in Shelly Creek⁴](https://waterbucket.ca/viw/wp-content/uploads/sites/10/2023/04/Movement-and-Habitat-Use-of-Shelly-Creek-Cutthroat-Trout.pdf) by Ally Badger and Jamieson Atkinson.



⁴ <https://waterbucket.ca/viw/wp-content/uploads/sites/10/2023/04/Movement-and-Habitat-Use-of-Shelly-Creek-Cutthroat-Trout.pdf>

Heat Dome and extreme drought in the summer of 2021

"The summer of 2021 turned out to be an eye-opener. It was the year of the heat dome and a worst-case scenario for flow in Shelly Creek. During that extreme period of heat in June, water temperatures rose from an average of about 15C to 21C. And this is for a riparian condition that has virtually no direct sunlight on the creek channel."



"Trout movement totally depends on there being enough water in the creek to allow them to get from point A to point B. Normally, flow in the creek is groundwater-fed through the summer and fall period. We expect to see a slow progression or drop in mean flows."

"As the drought continued, we watched the flows drop 75% over a 40-day period. The flow declined rapidly and to a point that we had never seen before. It was a scary situation because the fish were trapped in these pools. There were no riffles with surface water to allow them to move between pools."



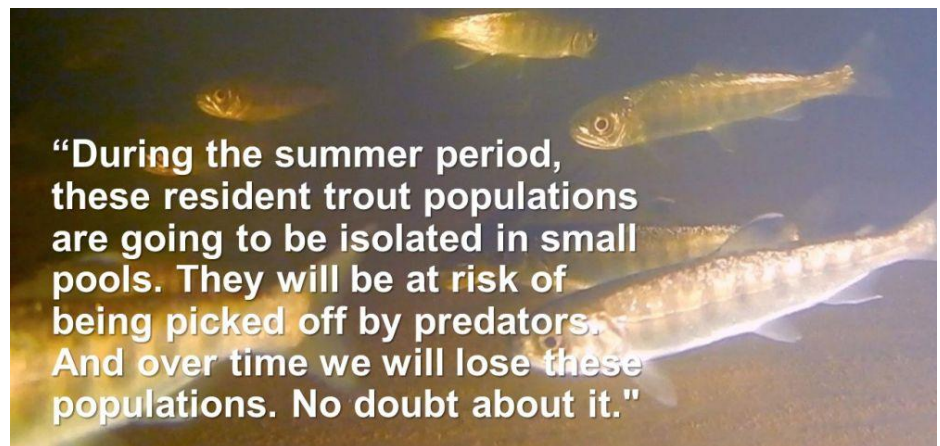
Gee-Whiz Facts

"So, the fish were in trapped in a pool for months! Not a couple of days or a couple of weeks. Months!! Natural predators can then feed to their delight unless the trout find hiding places within these pools. As scanning of the fish tags revealed, they did hide for extended periods of time."

"When we looked at the data for the entire year, we found the fish move up to a 50-metre distance over their entire life history. That range allows them to use different habitat types for different purposes. As soon as the low flow period hits and they are limited to 10-metre pool length, however, it is all about survival."

Now What

"We now have a pretty good understanding of what it means for small populations of resident trout that exist in these small creeks to be subject to dramatic differences between low summer flows and winter flows."



"It will be flows, and stability in sustaining low flows during the summer period, that will determine the future of these resident populations of Cutthroat trout. And of course, further downstream there is also the influence on anadromous fish such as Coho salmon and Rainbow trout."

"This project provides a window into the future of Coastal Cutthroat populations residing in small 1st order streams on the east coast of the Island. They will perish if the Province (as freshwater fish managers) does not bring attention to the importance of "rainwater balance" as watersheds are developed. The message for local governments is ...**give streams space to live.**"

"The folks responsible for land development need to understand the risks and consequences associated with loss of riparian integrity. So protect it! Do what Parksville did with the enhanced riparian area for Shelly Creek Park. Look beyond the stream channel."

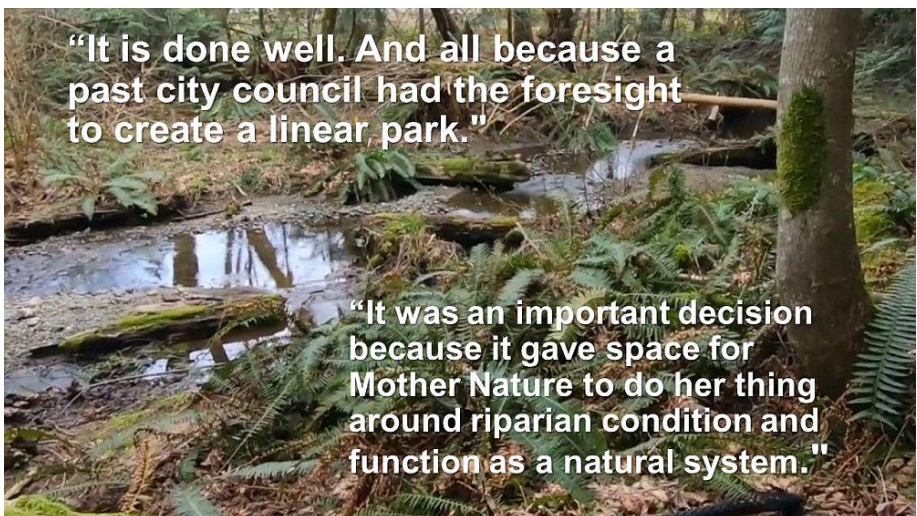
"Understand hydrology and how water reaches a stream. Municipalities simply must make a concerted effort to maintain the seasonal water balance if neighbourhoods are to sustain these wild populations of fish that are in their back yards. In Parksville, we need better Rainwater Management Policy!"

Shelly Creek Park and the "package of ecological services" it provides

"We have been observing stream conditions in Shelly Creek Park since 2016. It has remained relatively stable from an aquatic habitat perspective – which is not something that I can say for other portions of the creek."

"The enhanced riparian area within Shelly Creek Park is greater than the 30m stated in the Riparian Areas Protection Regulation Act. As a result, it provides a higher level of protection for the flow of water through the ground within the riparian area. This pathway sustains flow into the creek such that the habitat is in pretty good shape."

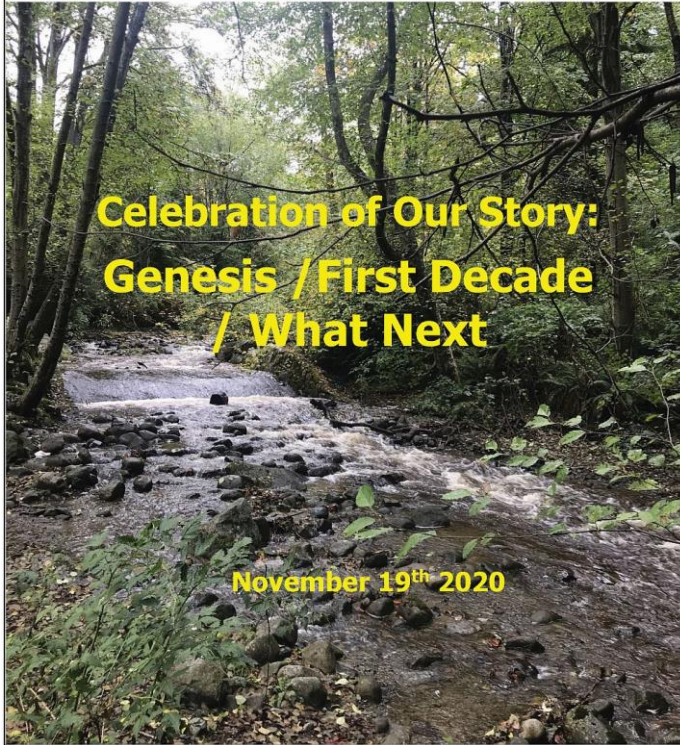
"Shelly Creek Park has also become quite the community asset in terms of recreational use. Recent trail upgrades, for example, allow wheelchair and bicycle access. It is a community destination because of the decision in the 1990s to set the trail back from the creek."



"There is space to allow higher flow events to move wood around and create accumulations of woody debris. These then provide refuges that allow those fish in the pools to survive when there is little or no flow. If that stuff was not there, neither would the fish," concludes Peter Law.



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TO LEARN MORE, VISIT:

<https://waterbucket.ca/about-us/>

About the Partnership for Water Sustainability in British Columbia

Incorporation of the Partnership for Water Sustainability in British Columbia as a not-for-profit society on November 19, 2010 was a milestone moment. Incorporation signified a bold leap forward.

Over two decades, the Partnership had evolved from a technical committee in the 1990s, to a “water roundtable” in the first decade of the 2000s, and then to a legal entity. The Partnership has its roots in government – local, provincial, federal.

The Partnership has a primary goal, to **build bridges of understanding** and pass the baton from the past to the present and future. To achieve the goal, the Partnership is growing a network in the local government setting. This network embraces collaborative leadership and **inter-generational collaboration**.

The Partnership believes that when each generation is receptive to accepting the inter-generational baton and embracing the wisdom that goes with it, the decisions of successive generations will benefit from and build upon the experience of those who went before them.



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