



# KOH-LEARNING IN OUR WATERSHEDS

Transforming education by connecting students, communities, and waterways



Above: Members of the Kennedy Siding Mountain Caribou Herd, near Mackenzie, October 2022 (photos by B. Booth).

## Dear Koh-Learning Community,

Happy New Year! We hope that 2023 brings happiness and health to you and your families. As we head into 2023, we want to reflect on the projects and events of the past year. In 2022, we said hello and goodbye to team members, engaged with community members, and partook in science literacy week, among many other activities. We hope the upcoming opportunities and events pique your interest and we look forward to hearing from you in 2023!

\*In conjunction with the Indigenous Education Council (formerly Aboriginal Education Council) of SD91, we are pleased to profile Dakelh, Nedut'en and Wet'suwet'en language that is integral to the Koh-learning in our Watersheds project. For example, Koh (waterways) and Khit/Khui/Khīt (winter).

## Student Shoutout!



Congratulations to EBUS Academy student Fiona for her winning entry to the Pacific Salmon Foundation's Salmon Art Contest (age 8-10 category)!



# Table of Contents

**Team Updates**

**3**

**'Olulh/C'olilh (Spring) 2022**

**4**

**Shin / Danghan / Shen /  
C'en / Cen (Summer) 2022**

**6**

**Dak'et / T'äk'et /  
Tak'et (Fall) 2022**

**10**

**Khit/Khui/Khït  
(Winter) 2023**

**12**

**Teacher Resources**

**13**

*Banner, right: Forest scene  
(photo by M. Johnston)*

## Team Updates

### Ella Parker Graduates!

While we were sad to see Ella depart for her native Yukon, we were thrilled that she was able to come back and visit us when she defended her master's research project associated with Koh-learning, called: "Linking School Based Monitoring to Land and Water Decision Making". During her research, preliminary findings were shared with participants by developing summary reports from interviews and group workshops. You can access Ella's preliminary reports and thesis here:

- [Group Workshops Preliminary Summary Report](#)
- [Interview Preliminary Summary Report](#)
- Thesis Document: <http://bit.ly/3WOoTiq>

### Best Wishes to Alexis!

2022 also saw the departure of Alexis Seely from our team. We were very lucky to have Alexis work with us in a number of capacities. We'll miss her most in the enthusiasm she brought to our work, her insights on youth engagement, and her expertise as a biologist during our Pro-D Day in Vanderhoof. Thanks Alexis and we wish you all the best in your future endeavors!

### Welcome, Hart Banack!

We are pleased to welcome Dr. Hart Banack to the Koh-Learning Team. Hart has recently moved to Prince George to become part of the Education Program at UNBC. He is passionate about outdoor learning and time spent outdoors. He brings a great deal of hands-on educational experience to the table as he has taught various age groups and in distinct educational settings, from pre-school to post-secondary and beyond, including seniors.



### Welcome, Anna Hixson!

Anna Hixson joined the Koh-Learning team in fall of 2022 after moving to Prince George to begin her Ph.D. in the Natural Resources and Environmental Studies (NRES) program at UNBC. Anna has spent most of her time studying the coastal ecosystem, including bivalves and marine mammals. She brings excitement to the outdoor learning team as she connects the terrestrial landscape to the coastal waters through the rivers and lakes of Northern BC.



*Top: Koh-Learning team member Dr. Hart Banack*

*Bottom: Anna Hixson with Barry Booth on the Ron Reid Nature Trail, Burns Lake (photo by T. McKinnon)*



## 'Olulh/C'olilh (Spring) 2022

### Koh-Learning in our Watersheds: Braiding Voices, Well-Being and Ways of Knowing to Transform Learning in the Nechako Watershed



Above: Koh-Learning Logo

In early 2022, Koh-Learning applied for a new phase of support through NSERC's PromoScience Program. In May 2022, we found out that our application was successful and this new round of funding will be provided into 2024. The funding from this grant will help facilitate a new phase of Koh-learning spurred by SD91's deepening commitment to student success through decolonizing and indigenizing processes across the curriculum. The next step of our work aims to expand the reach, relevance, and impact of STEAM (Science, Technology, Engineering, Arts, and Mathematics) learning through a focus on students' voices, well-being, and ways of knowing, fueling STEAM careers and future leaders by connecting students, communities, and their waterways.

### Healthy Waters, Healthy Communities Book Project

In spring 2022, SD91 students were invited to participate in the first stage of a collaborative book project. The book, *Healthy Waters, Healthy Communities*, will feature student writing and drawing and explore how people interact with waterways in their communities from the perspective of local animals. In the first stage, students submitted writing samples that will be put brought together into a story. In 2023, students will be invited to participate in the second stage by creating illustrations to go along with the story. Teachers stay tuned for an invitation to participate in Stage 2! Many thanks to Leona Prince for championing this project.



### Youth Video Project Launch

On March 7, 2022, the Nechako Watershed Roundtable (NWR) youth video project was officially launched! The launch event celebrated two videos created by youth, communities, and First Nations across the watershed, in collaboration with the NWR youth engagement working group. Koh-Learning partnered with the NWR to put on the first video workshop in October 2020 and provided support throughout the video process. The videos can now be viewed online [here!](#)



Stories of the Nechako:  
Youth Perspectives

## 'Olulh/C'olilh (Spring) 2022

### ABCDE Conference at UNBC

On April 28th, 2022, Koh-Learning presented a session at the [Association of British Columbia Deans of Education](#) (ABCDE) Conference. Gathered around UNBC's new [Ceremonial Fire Pit](#), our session featured student and educator voices and offered a glimpse into diverse learner experiences of the Koh-Learning program. SD91 students and presenters Siobhan Klassen and Kate Roberge shared their stories of participating in the Koh-Learning program and passing on their knowledge to younger students as mentors in the Waterways Mentorship program at NVSS.



*Koh-Learning team and attendees at the UNBC Ceremonial Fire Pit during the ABCDE Conference (photo by M. Moutray).*

### SD91 Pro-D Day in Vanderhoof

On May 13th, 2022, the Koh-Learning team had the privilege of hosting an outdoor learning Pro-D event at NVSS. SD91 K-12 teachers (and several UNBC teacher candidates) rotated through three stations: *Land-Based Healing and Wellness* with Lauren Aldred, *Visual Journaling and Arts-Based Approaches to Outdoor Engagement* with UNBC students; and *An Introduction to the World of Aquatic Invertebrates* with Barry Booth and Alexis Seely. After lunch, we were joined by UNBC graduate students Ella Parker and Tavia McKinnon and NVSS students Siobhan Klassen and Kate Roberge for a discussion on *Connecting to Decision-Making through Place-Based Monitoring*. The afternoon closed with Tannis Reynolds of Stellat'en First Nation and UNBC, who spoke about the cultural significance of salmon and youth engagement in adapting to climate change.



*Left: Pro-D Day participants in our closing circle by the McLeod wetland (photo by C. Litton).*

*Centre: Tannis Reynolds drumming to gather participants after an outdoor activity (photo by J. Doyon).*

*Right Barry Booth and Alexis Seely teaching about aquatic invertebrates at the Pro-D Day in May (photo by J. Doyon).*



## Shin / Danghan / Shen / C'en / Cen (Summer) 2022

### Summer Employment at NVSS

This past summer represented the third and final year of a project headed by Dr. Brent Murray at UNBC and funded by the Pacific Salmon Foundation, with support from the Nechako Environment and Water Stewardship Society (NEWSS) and SD91. This project used environmental DNA (eDNA) to explore the use of small streams by juvenile salmon in the Nechako watershed. Students from SD91 have been front and centre each year of this project, involved in both field and lab components.



*Tynan Filan and Ronan Blattner on Clear Creek with a juvenile chinook salmon (photo by B. Booth).*

This year, NVSS students Ronan Blattner and Tynan Filan along with Dr. Murray and Barry Booth from UNBC (AKA "Team eDNA") traveled throughout the Nechako watershed in search of salmon and trout DNA. While 2022 was the final year of Dr. Murray's eDNA project, we are hoping to continue this work into the future. The collaboration between UNBC and SD91 on this project has been a tremendous success. Collectively, we have made some significant contributions to the conservation and enhancement of salmon in our watershed. Importantly, our work together has also demonstrated that high school students can be a central part of these contributions.



*Clockwise from top left: Dragonfly larva (photo by R. Blattner). Tynan, Ronan and Dr. Brent Murray viewing fish on Murray Creek (photo by B. Booth). Tynan on Ormond Creek (photo by B. Booth), Columbia Spotted Frog on Moss Creek (photo by B. Booth)*

## Shin / Danghan / Shen / C'en / Cen (Summer) 2022

### Connecting to Land and Water

Over two weeks in July, Tavia McKinnon and Barry Booth had the privilege to participate in *Connecting to Land and Water*, a program conceived and organized by Fort St. James Secondary School (FSJSS) culture and language teacher Carla Martin. This program saw community partners come together and offer a summer learning opportunity for youth in Fort St. James. Tavia and Barry 'hosted' two days in the *Connecting to Land and Water* program, with the first day focused on watersheds and the second on forests.

The day on watersheds saw Tavia and Barry joined by Erin Nielsen and Cory Johnson from First Nations Health Authority and Clara Jack from Nak'azdli Whut'en First Nation as well as Jaclyn Boyes and Kelley Inden from FSJSS. During this time, the students learned about watersheds and connections between watershed and human health by doing a series of hands-on activities like minnow trapping, sampling aquatic insects, and obtaining water samples for analysis in Carla's classroom.



On the second day, Tavia, Barry, Jaclyn and the students were joined by Natasha Ewing, Community Liaison Officer at B.C. Parks. On this day, the group hiked up Mt Dickenson behind FSJSS, where they were immersed in forest ecology and the role that parks can play in the conservation of key habitats.

It is anticipated that Carla will be running this program again next summer. The Koh-learning team have already been recruited for summer 2023 and are looking forward to it!



Top: Connecting to Land and Water poster.

Bottom: Students gathered around Clara Jack, Cory Johnson, and Erin Nielsen by Nahounli Creek (photo by T. McKinnon).



## Shin / Danghan / Shen / C'en / Cen (Summer) 2022

### Canoeing the Nechako: 2022 Youth River Trip

The second annual Nechako Watershed Roundtable (NWR) Youth River Trip was a soaring success! On August 13th and 14th, two separate groups of youth paddled 25 kilometers each day from the Braeside Road boat launch to Riverside Park in Vanderhoof. Youth were guided in voyageur canoes by Kevin Moutray and Vanessa Elton for a day that included Leave No Trace lessons, paddling lessons, river water quality testing, freshwater invertebrate sampling, and many conversations about Nechako watershed history, conservation, and health.

This year's NWR Youth River Trip was organized by the NWR Youth Engagement Working Group and offered in partnership with Integris Credit Union, the Rivershed Society of B.C., Koh Learning in Our Watersheds (including contributions from SD91 and UNBC), the Fraser Basin Council, and the Nechako Environment and Water Stewardship Society (NEWSS).

To learn more about NWR youth engagement or to get involved with the 2023 Youth River Trip, please email the Nechako Watershed Roundtable at [nwrcoordinator@gmail.com](mailto:nwrcoordinator@gmail.com).



*Clockwise from top left: Pre-paddling games (photo by M. Moutray). Carrying a big canoe (photo by M. Moutray). Paddlers setting off from the Braeside boat launch (photo by M. Moutray). River Trip participant measuring river pH (photo by T. McKinnon).*



## Shin / Danghan / Shen / C'en / Cen (Summer) 2022

### Stellat'en Salmon Festival

In late summer 2022, Koh-Learning team members, along with colleagues from SD91 and UNBC, had the privilege of participating in the Stellat'en Salmon Festival. It was a beautiful celebration beginning on the banks of the Stellako.

In the morning, stories and songs were shared to welcome the sockeye salmon returning to the Stellako in the coming weeks. Following the welcome, participants walked along the riverbank, hearing stories of the river and discovering local flora and fauna, including rainbow trout. After walking the river, the team was invited to the Stellat'en First Nation community center for a wonderful lunch of bannock tacos and soup.

Following lunch, individuals dispersed to partake in kayaking and salmon preparation activities. Multiple Koh-Learning team members jumped at the opportunity to learn how to prepare salmon for smoking or canning! Mussi cho to Stellat'en First Nation and Tannis Reynolds for the opportunity to participate in such a beautiful day.



*Top Right: Betty Anne Heron teaching people to cut salmon at the community smokehouse. (photo by L. George).*



*Middle: Lyana demonstrating salmon gutting with Margot Parkes looking on (photo by L. George).*



*Top Left: Anna Hixson and Christiana Onabola learning about local ecosystems by the Stellako (photo by M. Bates).*



*Bottom Left: UNBC teacher candidate Emma Sayle with education faculty member Christine Younghusband at the Salmon Festival (photo by L. George).*

## Dak'et / T'äk'et / Tak'et (Fall) 2022

### ECHO Gathering

*By Jaclyn Boyes, FSJSS Educator*

In October, four Student Voice students from SD91 attended an ECHO (Environment, Health, Community Observatory) Collective gathering at the Cowichan Lake Research Station on Vancouver Island. This conference focused on collaboration to manage our waterways better.

On Day 1, our students heard from numerous distinguished speakers, including Chief Lydia Hwitsum of the Cowichan Tribes, Provincial Health Officer Dr. Bonnie Henry, Medical Health Officer Dr. Shannon Waters, and Provincial Aboriginal Health Advisor Dr. Daniele Behn Smith. We visited the Cowichan River to discuss the Level 5 drought, its effects on salmon, and ongoing concerns of pollution and food security.

On Day 2, students were introduced to the [LEO \(Local Environmental Observer\) Network](#), an online platform where citizen scientists can post unusual environmental events to help us better understand our changing world. These students were the only adolescents in attendance. They astounded the other expert health professionals, biologists, and university professors with their ability to synthesize unique connections between environmental concerns and to share their personal experiences. The impactful day closed with a private tour of an old growth forest by a forester from Cowichan Lake Research Station, an art activity with natural berry-based dyes, and a games night. We even managed to sneak a tour of Vancouver Island University on our way back to the airport.

#### Some big takeaways that students have expressed:

- Inter-sectoral collaboration is critical in resource management
- Treat our waterways like you would your grandmother
- Intergenerational learning is powerful
- Students need to have a voice at the decision-making table

A HUGE thank you to ECHO Collective for inviting us to this gathering and promoting student voice and leadership!

*To learn more about the ECHO Collective (previously the ECHO Network), visit:*

<https://www.echonetwork-reseaecho.ca/>



*Above: Jaclyn Boyes and Student Voice students embrace an old growth cedar at the Cowichan Lake Research Forest (photo by T. McKinnon).*



## Dak'et / T'äk'et / Tak'et (Fall) 2022

### Science Literacy Week 2022: Math is Science, Science is Math

Science Literacy Week 2022, supported by a supplemental funding grant from NSERC PromoScience, was a success across SD91. Over 80 participants (including teachers, education assistants, students, and district representatives) across four schools took part in activities that linked mathematical concepts to activities outside. Koh-Learning team members Barry Booth, Tavia McKinnon, and Anna Hixson spent three days with grade 9-12 students and math teachers from Fraser Lake Secondary School, Nechako Valley Secondary School, and Burns Lake Secondary School, exploring topics like temperature variance, velocity, measuring tree height and diameter, and demonstrating exponential relationships through games of wildfire 'tag'.

Some of our community partners, such as the Department of Fisheries and Oceans and Stephen Dery from UNBC, have provided SD91 with data that will allow teachers to explore math using 'real-life' data in the classroom\*. Not only did Science Week bring students outside, but it also allowed the Koh-Learning team to create connections with more teachers across SD91. The team looks forward to applying lessons learned from this year's event to future Koh-Learning activities!

\*See **page 13** to learn how to access this data!



### Graduate Research: Youth Relationships with Land and Place

UNBC team member Tavia McKinnon has been working on a Master of Social Work thesis project focused on youth relationships with land and place in the Nechako watershed. In fall 2022, Tavia interviewed twelve students at FSJSS about their experiences outdoors during and beyond school. She looks forward to sharing her learnings with the Koh-Learning community in 2023. Many thanks to the students, SD91 educators and staff, and community members who have supported this project! To learn more about this project as it progresses, please contact Tavia at [tmckinnon@unbc.ca](mailto:tmckinnon@unbc.ca).



*Top Right: Koh-Learning team members and SD91's Ryan Mickelson and Roberta Toth with FLESS students by the Stellako (photo by T. McKinnon).*

*Bottom Right: Tavia presents about Koh-learning and her research project at FSJSS (photo by C. Martin).*

# Khit/Khui/Khit (Winter) 2023

## Khit/Khui (Winter) Festival 2023

Join us from **February 13 - March 15** for the 2023 Khit/Khui (Winter) Festival! Our theme this year is "**Connecting to land and water in the winter time**" with a focus on supporting learners in going outdoors this winter. Classes, families, and individual students will have the opportunity to take part in challenges using the **Goosechase app (details below)**. The Festival will also feature guest speakers invited to share knowledge and stories with students of various age levels.



*Above: A grouse walk-about in Wilkins Park, PG. Tracking animals is one possible Goosechase activity (photo by B. Booth).*

## Festival Itinerary

Stay tuned for details about our Khit/Khui (Winter) Festival Itinerary! In addition to Goosechase activities focused on outdoor learning, the Festival will include opportunities to connect virtually with other classes and schools, as well as connections with UNBC's [Research Week](#).

## What is Goosechase?

[Goosechase](#) is an interactive app where students, teachers, and families will be able to view our winter challenges and show their participation by submitting a photo. The photo above would be a great submission for a challenge of "Take a photo of tracks in the snow"!



*Goosechase logo.*

SD91 Educators: Keen to get a head start on our Khit/Khui (Winter) activities? Download the Goosechase app on your phone or tablet before February 13th to be ready to go with your class when the Festival begins!

If you have ideas of Goosechase activity challenges to include, we would love to hear them! Please send Goosechase ideas to [koh-learning@unbc.ca](mailto:koh-learning@unbc.ca) by February 6th.

## Thursday Morning Coffee Chats!

On the first Thursday of every month, Koh-Learning team members and individuals across SD 91 (and beyond) come together to share ideas, discuss challenges, and devise creative ways to get students outside. Coffee chats typically start at 7:45 AM.

Email [koh-learning@unbc.ca](mailto:koh-learning@unbc.ca) if you would like to receive the meeting link!





## Teacher Resources



**Did you know** that the Koh-Learning program has compiled resources to support outdoor teaching and learning in SD91?

Resources from Koh-Learning Pro-D events, Science Literacy Week, and other past activities are available online for SD91 educators.



- Insects are cool!
- Insects are important
- Studying them provides a range of opportunities/areas of interest to cover
  - ✦ Life cycles
  - ✦ Form and function
  - ✦ Environmental concerns
- Insects are accessible and are easy to view
- Identification isn't that challenging
- There are LOTS of resources to help!

**A Case for Insects:**

Pictured left is the cover page of a resource guide for teachers generated for the May 2022 Pro-D Day. This informative guide on insects can be found on the SD 91 Koh-learning Teams page.

SD 91 educators, please contact Mark Gauthier at SD 91 for access to this site for this and other teaching resources!

### Real World Data in the Classroom

Interested in using local environmental science data with your students? SD91 educators wishing to access the 'real world' data brought together for Science Literacy Week 2022 can contact Mark Gauthier for access to the SD91 Koh-Learning Teams page.

Questions about this data? Contact the Koh-Learning team! (See below).

**This update was put together by the Koh-Learning team at UNBC. Thank you for your interest!**

To learn more about the Koh-Learning program, please visit our website: <https://bit.ly/3Ep6uLK>

If you have questions, please contact us at [koh-learning@unbc.ca](mailto:koh-learning@unbc.ca).

