



CARIBOO CHILCOTIN CONSERVATION SOCIETY ENVIRONMENTAL EDUCATION PROGRAMS FOR CLASSES (K THRU ELDER COLLEGE)



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CARIBOO CHILCOTIN CONSERVATION SOCIETY'S ENVIRONMENTAL EDUCATION PROGRAMS FOR CLASSES (K THRU ELDER COLLEGE)

*The Cariboo Chilcotin Conservation Society (CCCS) runs their environmental education classes through two main programs. The first, **Ecosystems Education**, is based out of the region's outdoor school at Gavin Lake. The second in-school program, **Water Wise**, is run in partnership with the City of Williams Lake, Fisheries and Oceans Canada, with assistance from the Ministry of Environment and other supporters, and focuses on water conservation and watershed health and awareness.*

***Waste Wise**, the sister program to Water Wise, continues the journey by investigating the environmental and social impacts of our wasteful habits, in partnership with the Cariboo Regional District and the City of Williams Lake. All environmental education is aimed at providing people with an awareness of significant facts, accompanied by the tools to improve habitat and conserve our valuable resources.*

OUTDOOR ENVIRONMENTAL EDUCATION – ECOSYSTEMS (including Water Wise and Waste Wise programs)

When: September - November Session & February Session

Where: Gavin Lake Forest Education Centre, managed by Gavin Lake Forest Education Society

The CCCS sponsors two *Ecosystems* modules per session* targeted for students in grades 4 through 7. These modules alternate yearly to provide new experiences for the many split grade classes attending two years in a row. The current four alternating modules are listed below.

Ecosystems Education*

- 1. Ecological Webs: Species and Spaces:** This module provides students with an overview of what species need to survive and thrive, with an emphasis on species-at-risk, and how we can assist them by not damaging habitat. First an introduction to the causes and effects of the decline of species with a focus on local wildlife. This followed by a hike through the habitat of an endangered species, and a discussion on more specific issues about individual species. Followed next by a game to demonstrate the effect of shrinking habitat.
- 2. The Perfect Stream:** Introducing students to the world of freshwater salmonids & their habitat needs and stress factors. The students learn what is required by spawning rainbow trout in the way of habitat by running through a series of displays and demonstrations. At the end they use their new found knowledge to design the "perfect stream"
- 3. Ecological Footprints:** Gives a brief background on the planet's atmosphere and increasing CO₂. How individuals contribute to this in their daily activities and the concept of ecological footprints,

followed by a scavenger hunt around camp, highlighting energy and waste reducing options students can use at home.

4. **Watersheds of Gavin Lake:** In this module students learn the components of a healthy and a not so healthy watershed, with a game component to simulate thought - a smaller stream picks up both desirable elements and detrimental elements and brings those to the larger bodies of water. A general understanding of the importance of watershed integrity is the goal here.
5. **Invertebrates:** Through a series of demonstrations and displays as well as collecting specimens, the students will understand the biology of local aquatic insects and their importance in the food chain and the overall health of the ecosystem.
6. **Wetlands:** Discussion of the importance of wetlands using an interactive model. Then a walk along the new (2013) Gavin Lake wetlands boardwalk with student led teaching- each student receives a card with info about a wetland species that they become the 'expert' on and teach the rest of the class.
7. **Snow Science:** Through activities such as the building of crystal molecular structures, the importance of this structure (ie that ice floats, and how that ties into species survival in our lakes and rivers over winter), includes the physics and chemistry of the snowflake. Discussions on snowpacks, importance to watershed using the watershed model and implications of shrinking snowpacks and connections to the impacts of fish and aquatic species. The last section is on avalanches and snow safety info, along with using avalanche gear to locate a buried backpack.

*Each session includes a fifteen minute "Water Wise" presentation which includes: the current state of the Williams Lake Aquifer, coverage of how much water we use compared to other countries, why and how to conserve everyday, Xeriscape gardening demonstrations for parents and teachers, and an summary of how Gavin Lake has become a "water wise" site and how they can also make their own homes "water wise". Water Wise take home educational materials are available in the cookhouse at all times.

CLASSROOM ENVIRONMENTAL EDUCATION – WATER WISE

When: October - January & January - May

Where: Schools within School District No. 27 and School District No. 28

The Water Wise Program of the CCCS runs classroom modules (hour in length each) *yearly* to students in grades K - 7 in School Districts 27 & 28 (see below for details). Each year new modules are introduced for classes that have already taken the other modules. Classes are also taught at the High School, University, and Elder College levels, as well as to community groups by request year round. Modules are mixed and merged to suit the particular needs of the group.

Water Wise Classroom Modules

1. Grades K-3 'mini' Water Wise module

Have kids think about where their water comes from and where it goes. What do we use water for? What else needs water?

Read story showing how snow in mountains melts to create streams, runs into other streams and ends up in the ocean. Book shows humans and animals depending on the water as it travels downstream.

Have kids think of ways they could try and save water at home. Where do they think they might waste water. How could they change? Brochures with water saving tips for families.

2. Grade 3/4 Module 1 Water Wise Program : ‘Water Chemistry’

Introduction to where our water comes from in Williams Lake and outlying areas. Introduces terms such as ‘aquifer’, ‘groundwater’, ‘wells’. Reasons why groundwater and aquifer water levels may be declining. Have students identify where their own water comes from in their individual situations.

Ratios of saltwater/ freshwater on the planet. Dependence of all living organisms on water.

The water molecule; structure and why this chemistry leads to water being such a good solvent. Implications of most things dissolving in water and spreading around where water travels. Experiment to show things can be mixed in to water that we can’t see.

The water cycle. Emphasize that all water is interconnected, and that the water in our bodies is also part of the water cycle, another reason to keep it clean and unpolluted.

The water footprint. How much water North Americans consume compared to some other areas of the world.

Conservation measures kids can start at home.

Send home ‘water footprint’ sheets, as well as brochures with water saving tips for families and ask kids to discuss at home what they can do as a family.

3. Grade 3/4 Module 2 Water Wise Program: ‘Waste Water and groundwater’

Quick review of last module. Ask how many have started to save water at home.

Discussion of what happens to our water after we have ‘used’ it. Discuss sewage system in City of Williams Lake, also for rural areas. Discuss what goes down household drains and implications for watersheds. Cover storm drains and their role and effects of contaminants on local waterways.

World water facts; some issues affecting other countries re water concerns

Poster to show how much water various activities use. Introduce idea of ‘virtual water footprint’, where we think about the water used to produce all the things we buy.

Model to demonstrate an aquifer and groundwater flow. Introduce ‘pollutants’ into wells to show how these access groundwater and travel, to resurface at some time, and how eventually much of this drains into the ocean.

Review indoor water conservation and discuss ways to save water ‘outside’. Listen to stories of what kids have changed at home.

4. Grade 5/6 Module 3 Water Wise Program : ‘Watersheds’/ bottled water

Introduction to concept of ‘watershed’. Discuss local watershed. Use 3D model with various ‘land-use’ scenarios and have kids think of what effect there might be on local waterways and also further downstream, both to aquatic species as well as humans. (examples include farms, cities, mines, roads, pine beetle damaged forests etc. Importance of snowpack to water flow downstream. Discuss riparian zones and importance. Use city scenario to discuss storm drains again, as well as urban run-off.

Bottled water. Poster with ‘bottled water’ facts. Taste test to see if kids can tell bottled from tap water.

Suggestions for alternatives to bottled water.

Review of conservation measures, update on City water situation.

6. Grade 6/7 Module 5 Water Quality: Classroom and field trip

In class review of water issues in Williams Lake as well as on a more global scale. Review of watersheds. Discuss how many of the issues we have discussed until now not only affect the quantity of water but also the quality. Have kids define quality for drinking water, but also for aquatic species.

Examples of glasses of water with ‘things’ added to affect quality. Introduce concept of testing water to see what is mixed in. Some examples of what is tested for with the City water.

Field Trip portion: Often partnered with Scout Island or Department of fisheries staff. To Williams Lake River Valley, where we test river for phosphates, nitrates, temperature, pH, depth, flow rate, dissolved oxygen, and discuss implications for humans and other species of results. Students also spend time in the marsh area identifying species and gaining an appreciation for the complex ecosystems there.

7. Grade 6/7 Ecological Footprint Module

This is for those classes that have taken all the Water Wise modules and would like to extend the idea of 'water footprint' to the overall 'ecological footprint'. Topics covered include where various forms of energy comes from, ways we use it and where greenhouse gases come from. The concept of sustainability is introduced and the module goes on to discuss small choices we can make everyday in our lives to reduce our individual ecological footprints.

***Out of Classroom* ENVIRONMENTAL EDUCATION – WATER WISE**

When: May- June

Where: Williams Lake area

STORMDRAIN PAINTING and EDUCATION

The Water Wise Program of the CCCS takes to the streets of Williams Lake in late spring, to paint storm drains, distribute literature and talk to their family and friends about stormdrain water and fish/wildlife.

Water and sewage tours of City Systems

Field Trips with City Staff to see where the City water comes from and where it goes after use.

These may be combined with time at the Williams Lake River to do some water quality testing as well as some work on aquatic ecosystems in the marsh.

***COMMUNITY* EDUCATION through ART by WATER WISE students**

Children take their knowledge of how to live sustainably with water and create artistic messages to share with the public. A Water Art show is set up around World Water Day (March 22) for a month in the Williams Lake Library. As well, stormdrain boards created with their art are put out frequently to remind others what is at the other end of the drains.

***COMMUNITY* ENVIRONMENTAL EDUCATION – WATER WISE**

When: Year round

Where: Williams Lake, BC and surrounding areas.

The Water Wise Program of the CCCS runs a year round community education program. This program currently brings awareness to the general public through various means including: the *Water Shepherd Programs* (Business and Volunteer), *Water Wise Workshops, Displays and Events*, and year round *Public Media Campaign* (see below).

Water Shepherd Programs

1. **Business Education-** This program works with local businesses to increase water conservation through: placing reminder stickers and small signs with tips & water facts in public (and employee) areas to increase public awareness and repetitive conservation, teaching employees (adults) how to conserve water while at work, and hosting events related to water conservation (e.g. Denny's Water Wise Event). Local restaurants request water wise "staff training sessions", and we also complete business "evaluations" of establishments and provide recommendations on how to further water wise and maintain a sustainable building.
2. **Volunteer Education-** With the help of volunteers the Water Wise program is able to reach more people through face-to-face contact: door to door campaigning, community group projects (e.g. the Girl Guides "Spread the Word" Campaign, elementary students painting local storm drains, and a high school Media Class - Video Water Wise Project, Drama & Dance students performing water wise plays at multiple community events including the annual Children's Festival in Boitano Park, Sustainability Fair), individual projects (e.g. Columneetza Student's "Partnership in Learning" Water Wise Survey, Salmon promotion through creative puppets and Salmon suits in plays and parades, and Children's watershed art exhibits), and local Garden Centre support (promoting xeriscape plants during the gardening season as well as in-house CCCS educational displays and brochures for customers to view and take home (*Introduction to Xeriscape Gardening*, and *Water Wise Plants for our Area, Harvesting Rain Water*).

Community Workshops, Displays, and Events

1. Water Wise presents various workshops to local groups by request and also hosts regular **Xeriscape Gardening Workshops** (with expert Xeriscape gardening & landscaping, sharing their expertise and knowledge on gardening with less water).
Off the Bottle mini-workshops....
2. **Displays-** Water Wise rotates displays around the community year round at locations such as Thompson Rivers University, Provincial Stewardship Workshops, Discovery Ctr, Recreation/Leisure Ctr, Regional Library, Gavin Lake, Mall, Nature Centres, and special events within the community such as Rivermania, Earth Day Festivities, Oceans Day & Canadian National Rivers Day, and Environment week. Displays include: Watershed & Salmonids Display, Wetlands, and Forests and Waterway of the Cariboo Chilcotin, Xeriscape Gardening, Water Wise, Children's Water Art, and custom displays by request. Our popular Xeriscape Gardening Displays stay on display at eight local garden centres from April - July each year.
3. **Events-** Water Wise participates in public events such as Thompson Rivers University Energy Fair, CCCS Sustainability Forums, Williams Lake Stampede Parade, SINC's Marsh Festival, and Tri-City Trade Shows, as well as hosts their own events such as: Annual Water Wise Christmas Tree, Water Wise Day at Rona Home Ctr, Children's Water Wise Event at Denny's, Storm drain Painting, and other events related to water conservation (e.g. City Open House's 2007). We also participate in events such as Rivermania, Earth Day Festivities, Oceans Day & Canadian National Rivers Day events, parades (WL Stampede & Horsefly Festival) and Environment week activities.

COMMUNITY EDUCATIONAL MATERIALS DISTRIBUTED INCLUDE:

INTERNAL: 1) *Brochures*- 100 Ways to Save Water Everyday, 15 Fun Ways to Save Water Everyday (all ages), Save the Most Water, Guide to Xeriscape Gardening, Water Wise Plants for our Area, Wetlands of the Cariboo Chilcotin, Salmonids of the Cariboo Chilcotin, and Forests & Waterways of the Cariboo Chilcotin, 2) *Bookmarks* featuring easy indoor and outdoor water conservation tips as well as dispelling common water myths, 3) *Waterproof Reminder Stickers* (for mirrors faucets, and glass) as well as *Reminder Magnets*, both available in two sizes.

EXTERNAL: - Interactive Displays- Table top Wetlands, and Water management 3-D engaged educational tool; *Brochures* - Well Protection & Ground Water Stewardship for Rural Areas (BC MOE), Home Tips for Healthy Streams (Fisheries & Oceans Canada), Healthy Farms Healthy Streams (Fisheries & Oceans Canada), Cariboo-Chilcotin Lakes: Protecting Water Quality & Shorelines (CRD). *Posters* - Living in a Changing Climate: Canada's Water Resources (Government of Canada, C-CIARN). *Other*- Water Stewardship Information Series: Fluoride, Hardness, Iron & Magnesium, Nitrate, Sodium, Total (Fecal & E. coli Bacteria) in Groundwater Informational Sheets.

CLASSROOM ENVIRONMENTAL EDUCATION – WASTE WISE

When: September - January & January - June

Where: Schools within School District No. 27; City of Williams Lake and Cariboo Regional District
The Waste Wise Program of the CCCS runs two sets of classroom modules (hour in length each) Each year new modules are introduced for classes that have already taken the other modules. Classes are also taught at the High School, University, and Elder College levels, as well as to community groups by request year round. Modules are mixed and merged to suit the particular needs of the group.

Waste Wise Classroom Modules

1. Grades K-3 Module 1 Waste Wise : ‘What is recyclable? What is recycling?’

A fun simple repetitive Simon-says style game where students try to find paper plastic metal and glass around their class room followed by figuring out together what these items are made from eg. Paper is from trees. Messages are reinforced up by the class reciting with actions a rhyme of safe plastics “4, 5 and 2 all the rest are bad for you” and an imaginary journey home with a moral “Putting your recycling in the garbage should feel as weird as putting your shoes in the fridge.”

2. Grade 3/4 Module 1 Waste Wise : 'The Three R's'

Discuss the Three R's "Reduce Reuse Recycle"

Journey of Plastic Recycling from Williams Lake to Vancouver to China and back using a map of the world-many bottles travel thousands of kms burning planet hurting fuels to do just to continue the cycle. Recycling Glass vs. Plastic

Class chooses two recycling champions who represent two teams to sort one bag of recycling each BLINDFOLDED to reinforce their skills in identifying what end of life products go where. 'recycling is so easy you can do it blindfolded!'

Class is split into four teams who circle images on four enlarged laminates photos from the W.L Transfer Station to identify all the recycling still going to the landfill, kids are better informed about waste than adults. Kids are empowered to "teach their parents" what they need to know.

3. Grade 3/4 Module 2 Waste Wise : 'The new Three R's'

Quick review of last module. Ask how many have started to recycle at home.

Introduce the new three R's and New Three R's REPAIR, REFUSE & RETHINK

Show examples of recycling from game last time (glass, plastic, metal, Styrofoam) and get class to rethink them into extending their life before waste. "Repurposing"

Bring out examples of things that have already been repurposed eg. Felted sweater baby blanket, wind chimes made of found items, bags made from old banners and crochet plastic bags. Have kids share their stories of repurposed stuff from home.

Review where packaging comes from paper=trees, tin cans=mines, plastic=oil. Introduce biodegradable cups, biodegradable chip bags, takeout containers and doggy waste bags. Leave examples of 'Corn Eco Ware' and 'Taterware' for the kids to experiment with. Ask them how they could avoid using even these biodegradables-bring your own bag, sml reusable food container/mug or water bottle.

Composting- Vermiculture

All Grades:

Vermicomposting. Compost with worms in your classroom. A limited number of bins with red wiggler composting worms are available each year to classes. Worms can eat most of your lunch time compost leftovers and all your classroom paper towels and produce compost 12 times more powerful than regular compost!

Bin composting. Some schools have been provided with outdoor compost bins, particularly those who have a school garden and are trying to compost school wide!

4. Grade 5/6/7 Module 3 Waste my time

Expanded version of "Getting off the Bottle" Business presentation. Present 5 minute Slide Show "Thirst" in silence.

Provide the students with the opportunity to do a class project/event for Earth Day, Biodiversity Week, World Water Day and help them organize it and put it on. Empowering their ability to see the changes they can make as youth citizens

5. Grade 5/6/7 Module 4 Get it To Go

Expanded version of "Get it to Go" Business presentation for packaging. Consumerism and how Waste is controlled by it. "Vote with your money" buy things that conform to what you want them to produce. Includes "Wasteline" shopping game where students in two teams have three different "stores" to shop at. Students discuss which products they chose to buy and why based upon manufacturing, materials, cost, packaging, recyclability, and repurposability. Topics include Clothing, Entertainment and Food.

6. Grade 8 Module 5 Waste Reality: Classroom and field trip

In class review of waste issues in Williams Lake as well as on a more global scale i.e Great Garbage patch the size of BC and Yukon put together. Review of waste sources, recycling and landfills. Discuss the connectivity with Water, that the “garbage juice” can contaminate water. Introduce chemical wastes, paint, batteries, CFL Light bulbs, Electronics, junk cars. Discuss “End of Life” for products and product stewardship ie. Tires. Field Trip portion: To Williams Lake Transfer Station located above the Module 5 Water Wise field trip to Williams Lake River Valley.

Identify animals that are affected by the way we treat our waste (marmot behind recycle shed, ravens, crows, bears, seagull’s etc) Picture of Albatross chick killed by plastic (Chris Jordan)

7. Grade 6/7 Sustainability Module

This is for those classes that have taken all the Waste Wise modules and would like to extend the idea of ‘waste footprint’ to the overall ‘ecological footprint’. Topics covered include where greenhouse gases come from and how they are changing the planet (methane from landfills, CO2 from Vehicles/planes, CFC’s from aerosols, Nitrous Oxide from combustion . The concept of sustainability is introduced and the module goes on to discuss small choices we can make everyday in our lives to reduce our individual ecological footprints.

Chris Jordan Power Point 30 minutes is presented sharing the ways we may feel small in our contributions to the waste but the solution can be just as small for a big solution.

8. High school/University

Water Waste- through use of films such as Flow, and Water on the Table (Teachers Guide) work with older students on issues of overuse of resources, public engagement in processes to assure sustainable practices.

COMMUNITY ENVIRONMENTAL EDUCATION – WASTE WISE

When: Year round

Where: Williams Lake, BC and surrounding areas.

The Waste Wise Program of the CCCS runs a year round community education program. This program currently brings awareness to the general public through various means including: the *Waste Steward Programs* (Business Presentations), *Waste Wise Workshops, Displays and Events* (see below).

Waste Steward Programs

1. **Business Education-** This program works with local businesses to increase resource conservation and waste reduction through: placing small signs with waste tips & sustainability facts in public (and employee) areas to increase public awareness and repetitive conservation, teaching employees (adults) how to conserve resources while at work.

“Getting off the Bottle” a free 10 minute presentation to local businesses provides staff with facts about plastic and single use bottles so they can make healthy choices for themselves their families and the planet.

“Get it to Go” a free 10 minute presentation to local business provides staff with facts about local recycling available, plastic packaging, Styrofoam and biodegradable containers so they can be aware that “easy and cheap” Styrofoam has an expensive personal and environmental cost.

COMMUNITY EDUCATION through ART by WASTE WISE students

Children take their knowledge of how to live sustainably by reusing and recreating with second hand materials to create artistic messages to share with the public.

2. **Workshops-** Waste Wise hosts homemade reclaimed paper making with potato stamps and wrapping station for Christmas at a local retail outlet. Encouraging shoppers to consider alternative options to packaging and wrapping as a gift to Mother Earth.
3. **Displays-** Waste Wise six panel display for use around the community year round at locations such as Thompson Rivers University, Provincial Stewardship Workshops, Discovery Ctr, Recreation/Leisure Ctr, Regional Library, Gavin Lake, Mall, Nature Centres, and special events within the community such as Rivermania, Earth Day Festivities, Oceans Day & Canadian National Rivers Day, and Environment week and custom displays by request.
4. **Events-** Waste Wise participates in public events such as Science World Science and Innovators Schools and Open the Door Trade Show, CCCS Sustainability Forums, SINC's Marsh Festival, and Tri-City Sustainability Trade Shows, as well as hosts their own events such as: Chris Jordan Photographic Environmental Activism Slide Show and Presentation "Our Plastic Habit is hurting Wildlife", Recycled Art Displays for Waste Reduction Week in October, May Community Sustainability Day at local Marie Sharpe Elementary, Experiential Learning Initiative at Marie Sharpe Elementary, Children's Festival, Earth Day Environmental Activities at Chilcotin Road Elementary, and other events related to waste conservation (e.g. Boys & Girls Club and Summer Recreation events). We also participate in events such as BC Rivers Day, Earth Day Festivities, World Water Day, Biodiversity Week, Oceans Day & Canadian National Rivers Day events, parades (WL Stampede & Horsefly Festival) and Environment week activities.
5. **Bikes for All and Skates for All projects-** aimed at preventing good, repairable bikes and skates from ending up in a landfill, while providing those who would otherwise not have a bike or skates. **Bikes for All** is a program in which we work with the Bike Rodeo, held every May, and various bike shops and residents who donate these repairable bikes. CCCS volunteers, with the assistance of bike shop repair specialists, assure they are in good running order for the children.

COMMUNITY EDUCATIONAL MATERIALS DISTRIBUTED INCLUDE:

INTERNAL: 1) *Brochures-* What is your Footprint - lead by example so others may follow in your footsteps; Once Upon A Time There Was Garbage
2) *Corrugated reminder plaques that provide information and reminders about sustainable and waste related topics.* 2) *Waste Wise Displays-* 6 panels tabletop display; *Interactive Recycle display and Interactive Composting Display (including Vermiculture); Waste Management 3-D tabletop engaging activity Waste Management- Landfill and Recycling; Drinking Water & Wastewater Treatment*

EXTERNAL: *Brochures - City of Williams Lake Solid Waste Management, CRD Recycling Guide and fold-out location list* 2) *Magnets from Amada Enterprises "Return-It" Recycle centre, Magnets from City of Williams Lake garbage can placement reminders.*

Public Media Campaign: Radio ads and newspaper articles