Lesson 3

Climate Change and Our Watersheds

Introduction

Climate Change is having a range of challenging impacts on all of our watersheds. Across the Columbia Basin we have been witnessing warmer, wetter winters, and hotter, dryer summers. These are predicted to increase in severity as climate change continues.

Warmer winters means more rain instead of snow. This is a bad situation for our local ski areas and other winter recreation. But, more importantly, it also means that the precipitation is not accumulating and being stored as snowpack (snow stored on the ground in our mountains), and actually contributes to melting the existing snowpack. Our mountain snowpacks are critical as a reservoir for critical water in the summer months, helping keep our creeks flowing and cold all year round. Less snow on the ground in April means **warmer, dryer creeks in August and September**. This leads to stressed aquatic wildlife populations as warmer water holds less oxygen, resulting in changes to aquatic insect communities, more algae growth, and more stress on fish populations.

We are also seeing more Superevents with unprecedented amounts of precipitation in a shorter period of time. June 2013 saw one of these Superevents, where nearly 200mm of rain fell in 48 hours, resulting in floods that destroyed dozens of backcountry bridges and roads, and even flooded downtown Calgary.

Hotter drier summers lead to drought conditions, which can stress wildlife and native plant communities, and make it difficult for some Columbia Basin communities to provide enough water to their residents. Dry forests combined with hotter, drier summers leads to **increased frequency and severity of forest fires**.

Warmer winters can help some insect populations increase, as our historically cold winters tended to kill off a good percentage of overwintering insects including wasps and bark beetles. With more beetles surviving through warmer winters and large areas of unhealthy post-harvest forest across the Basin, this is leading to forest health issues where dead and

dying trees contribute further to the increased risk of forest fires in our watersheds. Other overwintering insects also are benefiting from milder winters such as moths, ladybugs, and butterflies. Increasing populations of wood ticks are becoming a real challenge for our wild ungulates as a large number of ticks can make animals ill, or even kill them, and ticks also carry human diseases like Lyme Disease.

We are also witnessing a rapid change in our ecosystems, as cold-adapted plants and animal communities migrate upslope and north as warmer temperatures and lower snowpacks make life easier in these zones. Heat and drought-tolerant plants and animal communities are moving into our warmer, dryer valleys. The Kootenay region is predicted to look more like the Okanagan does today in the coming decades, and the Okanagan is predicted to become even more desert-like as summers become hotter and drier, and winters deliver less snow.

Heat waves can be very stressful on human and natural communities as well.

Time: 15 minutes

Materials: Blank paper, pencil, computer with internet, optional green, brown, red markers

Climate change and our watersheds continued

Instructions

Think of some of the different impacts and sources of climate change that you have witnessed, or read about, or heard about in your town or in neighbouring communities. Use the Resources from the bottom of this lesson to help you with some examples. On your blank paper, draw a simple tree similar to the one below:

Use your creative energies to fill in the tree structure with any **causes, symptoms,** and **solutions** to climate change that you can brainstorm. For example, a cause might be too much carbon dioxide in the atmosphere, some symptoms might be warmer air, leading to intense rain events, resulting in increased erosion and destruction of property in our watersheds, and solutions might be twofold: create less carbon dioxide, and build stronger bridges and roads to withstand larger rain events.

Write the **causes** of climate change in the roots that could potentially affect your community.

Write the **symptoms** of climate change in the branches.

Write possible **solutions** to climate change in the leaves.

Summary

Climate change is a complex, long-term challenge that we are all facing. The causes are varied, the symptoms are sometimes hard to understand, and the solutions can seem difficult to reach. Despite all this we all play a role in combating climate change, and understanding some of the causes, symptoms, and solutions that affect our communities is the first step in the right direction to slowing down climate change.

Resources

https://climatekids.nasa.gov

https://climate.nasa.gov/interactives/climate-time-machine

https://ourclimateourfuture.org

https://www.biointeractive.org/classroom-resources/understanding-global-change

https://www.encyclopedia.com/science-and-technology/biology-and-genetics/environmental-studies/greenhouse-effect

https://archive.epa.gov/climatechange/kids/index.html