

Colville Tribes Climate Vulnerability Assessment – Youth Activity

Objective

After completing this activity, youth should have a basic understanding of how projected changes in climate and species sensitivities to these changes interact to determine how plant and animal species important to the Colville Tribes may be vulnerable to (i.e., negatively affected by) climate change. They should also have a basic understanding of actions that could reduce species vulnerability, and how they themselves could help promote climate resilience.

Rationale

Climate change is affecting global environmental conditions through changes in temperature and precipitation. These changes affect animals and plants both directly (e.g., through heat and water stress) and indirectly (e.g., through loss of suitable habitat and disturbances such as fire, drought and floods).

The Climate Impacts Group at the University of Washington undertook a climate vulnerability assessment in partnership with the Colville Tribes, which summarized the climatic changes expected across the Colville Tribes' Traditional Territory, and estimated the climate change vulnerability of 72 plant and animal species identified as important to the Tribes.

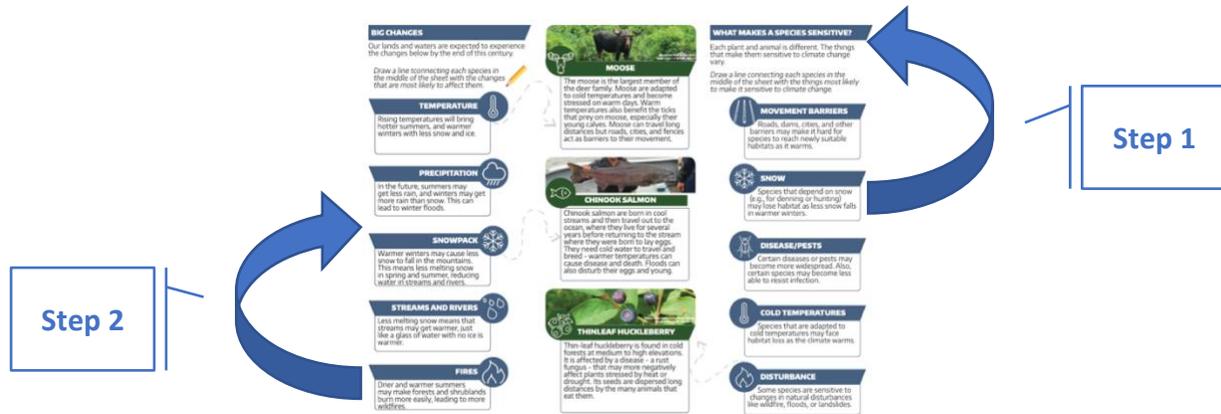
Conveying the findings of this report is important to all Tribal members, but especially youth. By understanding the effects of a changing climate in the context of animals and plants they know, youth will build intimate mental models of future conditions and what they can do to promote the resilience of their natural and cultural resources.

Materials

Activity materials consist of a double-sided, single page pamphlet. To ensure the pamphlet pages are correctly oriented, select 'Flip on short edge' and 'actual size' when printing. The pamphlet's inside and outside sheets are depicted below.

"Outside"			"Inside"		
<p>WHAT CAN WE DO TO HELP? How do you know about the changes we expect, can you imagine ways to help plants and animals?</p> <p>Fill in the boxes for below with ideas on how we could help each species adapt to climate change!</p> <p>...FOR MOOSE?</p> <p>...FOR CHINOOK SALMON?</p> <p>...FOR HUCKLEBERRY?</p>	<p>OTHER THINGS YOU CAN DO There are many things you can do to help plants and animals respond to climate change. For example:</p> <p>Become a citizen scientist! Help understand how species are changing in response to climate change by monitoring plants and animals where you live.</p> <p>Volunteer with habitat restoration efforts! Look for opportunities to improve habitats, which will help species respond to climate change.</p> <p>Talk to your parent! Share this activity with them and teach them what you learned.</p> <p>Create art! Make videos, drawings, or find other creative ways to share how climate change is affecting plants, animals, and your community - and what people can do to help!</p> <p>FIND OUT MORE BIA Youth Tribal Resilience Resources: https://zhangsp.doi.gov/biayouthresilience/ https://www.audubon.org/conservation/education/Christmas-Bird-Court</p> <p>Become a citizen scientist through the Audubon Christmas Bird Count: https://www.audubon.org/conservation/education/Christmas-Bird-Court</p>	<p>WE NEED YOUR HELP! Our lands and waters are expected to experience the changes below by the end of this century. Draw a line connecting each species on the middle of the sheet with the changes that are most likely to affect them.</p> <p>CAN YOU HELP US FIGURE OUT HOW OUR LANDS, PLANTS AND ANIMALS MAY CHANGE OVER THE NEXT 100 YEARS?</p> <p>The lands and waters of the Colville Tribes are changing.</p> <p>Climate change will bring hotter, drier summers and wetter winters. What does this mean for the plants and animals you care about?</p> <p>Understanding these changes can help us help plants and animals and their habitats adapt to future changes. Let's get started!</p>	<p>BIG CHANGES Our lands and waters are expected to experience the changes below by the end of this century. Draw a line connecting each species on the middle of the sheet with the changes that are most likely to affect them.</p> <p>TEMPERATURE Rising temperatures will bring hotter summers, and warmer winters with less snow and ice.</p> <p>PRECIPITATION In the future, summers may get less rain, and winters may get more rain than snow. This can lead to winter floods.</p> <p>SNOWPACK Warmer winters may cause less snow to fall in the mountains. This means less melting snow in spring and summer, reducing water in streams and rivers.</p> <p>STREAMS AND RIVERS Less melting snow means that streams may get warmer, just like a glass of water with no ice is warmer.</p> <p>FIRES Drier and warmer summers may make forests and shrublands burn more easily, leading to more wildfires.</p>	<p>MOOSE The moose is the largest member of the deer family. Moose are adapted to cold temperatures and become stressed on warm days. Warm temperatures also benefit the ticks that prey on moose, especially their young calves. Moose can travel long distances but moose, calves, and fawns act as barriers to their movement.</p> <p>CHINOOK SALMON Chinook salmon are born in cool streams and then travel out to the ocean, where they live for several years before returning to the stream where they were born to lay eggs. They need cold water to travel and breed - warmer temperatures can cause disease and death. Floods can also disturb their eggs and young.</p> <p>THINLEAF HUCKLEBERRY Thin-leaf huckleberry is found in cold forests at medium to high elevations. It is affected by a disease - a rust fungus - that it can't fight. Negative affect plants stressed by heat or drought. Its seeds are often long distances by the many animals that eat them.</p>	<p>WHAT MAKES A SPECIES SENSITIVE? Each plant and animal is different. The things that make them sensitive to climate change vary.</p> <p>MOVEMENT BARRIERS Rocks, dams, cities, and other barriers may make it hard for species to reach newly suitable habitats as it warms.</p> <p>SNOW Species that depend on snow (e.g., for denning or hunting) may lose habitat as less snow falls in warmer winters.</p> <p>DISEASE/PESTS Certain diseases or pests may become more widespread. Also, certain species may become less able to resist infection.</p> <p>COLD TEMPERATURES Species that are adapted to cold temperatures may face habitat loss as the climate warms.</p> <p>DISTURBANCE Some species are sensitive to changes in natural disturbances like wildfires, floods, or landslides.</p>
Inside Flap	Back Cover	Front Cover	Inside Left	Inside Center	Inside Right

To fold the pamphlet, orient the paper so the inside sheet is facing you. Fold the Inside Right section so that it covers the Inside Center section with the Inside Flap section. Then fold the Inside Left section so it covers the Inside Flap section. The Front Cover should be facing you:



Procedure

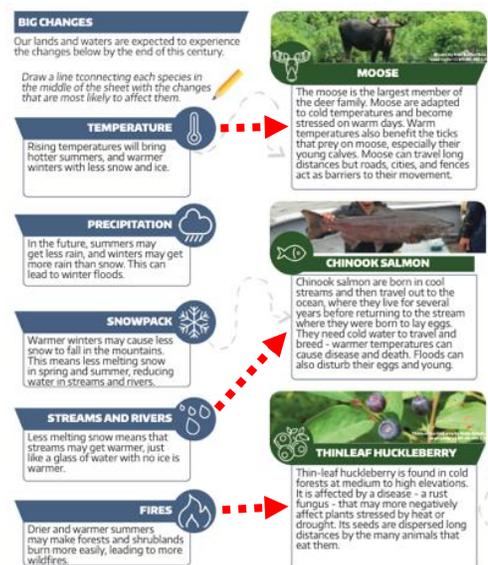
Before the pamphlet is distributed to youth, some priming discussion should take place.

Facilitated questions of the youth are recommended, similar to the following:

- What plants and animals are important to you and your community? How do you and your family use them (e.g., subsistence, cultural, or economic uses)? Is there anything you or your family does to help support the health and wellbeing of the plants and animals that are important to you?
- How do you think climate change might affect our plants and animals? What if the summers were really hot? What if winter was rainy but there was no snow? What other kinds of changes can you imagine?
- How do you think plants and animals could adapt to these kinds of changes?
- How do you think we could help them adapt?

The pamphlet can then be distributed. Prior to opening the pamphlet, youth may read aloud the cover to further prime their analytical skills and frame the exercise.

The pamphlet should be opened so the full inside sheet can be revealed. Youth should take turns reading aloud the species descriptions (Inside Center). These descriptions highlight habitat and life-history characteristics that may affect the species' climate change vulnerability. Then youth should read aloud the "Big Changes" section (Inside Left). The big changes column highlights some of the projected changes in climate that are expected by the end of the 21st century. The facilitator should then instruct youth to draw lines from the Big Changes on the left to the



species they think would be most affected by each change (see dotted red arrows at right for example). Note that some changes may affect more than one species.

Once this is completed, the youth should then read aloud the “What Makes a Species Sensitive” section (Inside Right). Once read, a similar matching exercise should be undertaken, matching each sensitivity to the species most likely to experience that sensitivity. The facilitator can periodically ask students to share their thinking, or facilitate through an example.

The facilitator should then ask some of the youth to share their arrows and explain their thinking. Following this, the youth should then fold the Inside Right panel over to show the “What can we do to help?” section (Inside Flap). They can then write one or two ideas of what kinds of actions (taken by the youth, the community, and/or land or wildlife managers) could be taken to help each species adapt to these projected changes in climate. Actions could help reduce big changes (e.g., planting trees to cool hot streams) or address a sensitivity (e.g., removing fences to help species move across the landscape to track suitable habitat). Youth should share their ideas, and may work in teams or groups to complete this section.

Some ideas can be shared, after which the facilitator should review the “Other Things You Can Do” section on the Back Cover.

Closure

To close, the facilitator should review the main areas of discussion and “best ideas” suggested for what the youth can do to help. Some follow-on exercises are depicted in the “Other Things You Can Do” section, namely:

- Set up a follow-on citizen science experience (Christmas Bird Count, etc.)
- Volunteer in habitat restoration activities (e.g., with the Colville Tribes’ Natural Resources Department).
- Create art depicting conservation efforts, favorite species, etc.

Additional Resources

There are a few additional resources that may be offered, including:

- BIA Youth Tribal Resilience Resources: <https://biamaps.doi.gov/tribalresilience/resourceguide/youth/index.html>
- Audubon Christmas Bird Count: <https://www.audubon.org/conservation/science/christmas-bird-count>

For more information about the Colville Tribes Vulnerability Assessment, please see:

- Krosby, M., and H. Morgan. 2018. Colville Tribes Natural Resources Climate Change Vulnerability Assessment. Climate Impacts Group, University of Washington.
- Krosby, M., Morgan, H., Raymond, C., and Z. Bloomfield. 2018. Climate Change and the Colville Tribes. Climate Impacts Group, University of Washington.

Suggested citation for youth activity:

- Krosby, M., Morgan, H., and Z. Bloomfield. 2018. Colville Tribes Vulnerability Assessment – Youth Activity. Climate Impacts Group, University of Washington.