



## **CES RIVERS AND CLIMATE CHANGE TALKING POINTS**

Encompassing over 640 million acres, America's public lands contain an incredible diversity of wildlife, landscapes, and natural and human history. Four federal agencies are charged with management for the long-term health of the land and the American people -- but every American has a role and a right to protect them.

Learn how rivers are connected to our climate, and why they're so important to the future of public lands and a livable planet.

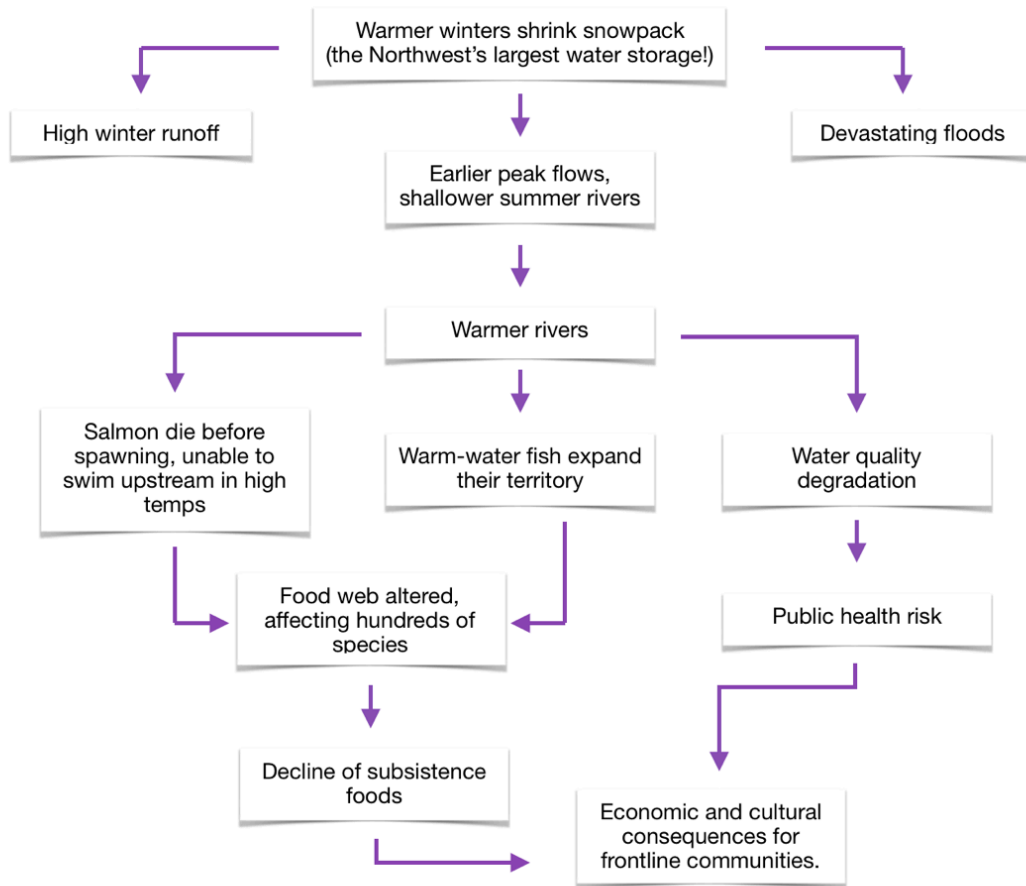
### **WHY RIVERS?**

Rivers are the arteries of the Northwest. We rely on them for clean water, agriculture, the health of natural systems, and the iconic species central to our culture.

Rivers reveal **natural interconnectivity**. They are fed by watersheds—groundwater, surface water, and lands that drains to a central location. What happens in one part of a watershed can impact plants, animals, and people many miles away.

Ultimately, the health of rivers is an indicator of the land's health and our communities' health. Rivers are critically linked to both climate change and our region's future health. How does climate change impact rivers?

It's all connected...





## **WHAT IS A WATERSHED?**

Watersheds can be thought of as a massive natural bowl or basin where water from across a region drains into a central waterway.

- There are **24 major watersheds** in Washington, Oregon, and Idaho. Within these major watersheds can be countless smaller regional watersheds.
- The Columbia River Basin is a massive watershed that covers **258,000 square miles** and includes seven states and one Canadian province.

## **WATERSHEDS AS A CULTURAL LANDSCAPE**

The Columbia River Basin—along its 1,200-mile course across the Pacific Northwest, is home to numerous and diverse Indigenous groups who are the original caretakers of these landscapes, and who have shaped the watershed's past, present, and future.

Today, these landscapes are shaped by ever-increasing human impacts, including the effects of climate change.

## **RIVER AND RIPARIAN ECOSYSTEMS IN A CHANGING CLIMATE**

Intact riparian ecosystems are ribbons of land that serve as the transition from an aquatic ecosystem (a river) to the upland terrestrial ecosystem (forest, prairie, mountains, etc.).

Riparian ecosystems are invaluable to healthy, resilient public lands, as they:

- **Act as a "carbon sink"** and absorb and store carbon through photosynthesis.
- **Trap moisture** like a sponge and reduce flooding by allowing heavy winter rains and spring snowmelt to soak into the soil and enter root systems instead of contributing to hazardous storm flooding.
- **Recharge groundwater** by absorbing excess water and slowly releasing it throughout dry summer months
- **Act as "refugia"** or particularly good habitat for salmon to shelter from climate impacts by providing a braided mosaic of side channels and quality habitat in log jams from riparian forests.
- **Act as natural water treatment plants.** Wetlands remove pollutants from water so effectively that this function is valued at **\$11,000 per acre per year.**



## **CHALLENGES TO REACHING FULL CLIMATE-DEFENSE POTENTIAL**

Although many people imagine public lands to be pristine, protected landscapes, they face a variety of challenges that are limiting these landscapes' abilities to withstand the impacts of climate change.

### **Dams**

- There are over 200 dams of varying size and purpose in the Columbia River Basin alone.
- Many dams act as an **impenetrable barrier** to fish migration. For example, both the Grand Coulee Dam and the Chief Joseph Dam on the Columbia River were constructed without fish ladders, blocking salmon migration to the upper Columbia River basin.
- Water behind dams tends to warm to a point that becomes **dangerous to many native fish species**.
- Dams and their related infrastructure are often **not designed, constructed, or prepared** for the increasing effects of climate change, such as increased rain and snowmelt runoff and major flooding events.
- The average age for a dam across the United States is **60 years old**.
- Approximately 15,500 of dams in the United States are rated as having a **high potential for failure** due to increasingly frequent and severe flooding.

### **Culverts**

Culverts are pipes and other structures that channel streams under roads.

- Culverts and other flood control structures can eliminate watershed connectivity, making fish migration to natural spawning waterways physically impossible.
- In Washington alone there are **20,000 known culverts and similar barriers** to salmon and steelhead across the state.



## **Grazing**

Scientists have determined that the interior Columbia River Basin is already severely affected by combined overgrazing and climate change impacts.

- Overgrazing can cause the **degradation of soils** through compaction (making the soil less able to absorb water), lower overall water quality due to increased animal waste, shrink wildlife habitat due to the loss of food and shelter, and destabilize stream banks, increasing soil erosion.
- Globally, livestock contribute an estimated 18% of total anthropogenic greenhouse gas (GHG) emissions.
- Recent estimates show that nearly **29 percent of allotted BLM land fails to meet agency standards** due to livestock impacts—including watershed conditions, water quality, soil health, habitat for at-risk species, and other variables.

## **Logging Roads**

There are an estimated 110,500 miles of “forest roads” across the Pacific Northwest.

- At current funding capacity, **the U.S. Forest Service can only maintain about 15% of these roads.**
- An estimated **1.5 billion tons** of soil enters the nation’s waterways each year from unpaved logging roads. This is a big issue because water clouded with soil raises the temperature of streams and harms aquatic life.
- Roads allow water to move across the ground much faster, increasing the stream energy. This can cause greater erosion and scouring of channel banks, **increasing the likelihood of flooding downstream.**



## **REBUILDING WATERSHED RESILIENCE**

Restoring and protecting watersheds can offer major steps in mitigating the impacts of climate change, preserving native plant and animal species, and lessening the environmental and economic impacts of climate-related droughts and floods across the region.

- Plant native trees and vegetation in riparian zones, removing invasive species, and protecting mature forests.
- Remove logging roads and restore areas with replanting.
- Dam removal, culvert removal or enhancement, and landscape remediation. Over the last 20 years, more than 900 dams have been removed across the United States. Government entities in the Northwest often have a legal obligation to finance projects that assure the survival of endangered salmon populations.
- Reintroduce beavers into ecosystems, or create artificial beaver dam-type structures to stimulate the recovery of wetland areas where beaver reintroduction isn't feasible.
- Reintroduce wood into river systems to provide shelter for salmon/steelhead spawning.