



## shade our streams

A CLACKAMAS RIVER BASIN COUNCIL PROJECT

### What is Thermal Pollution?

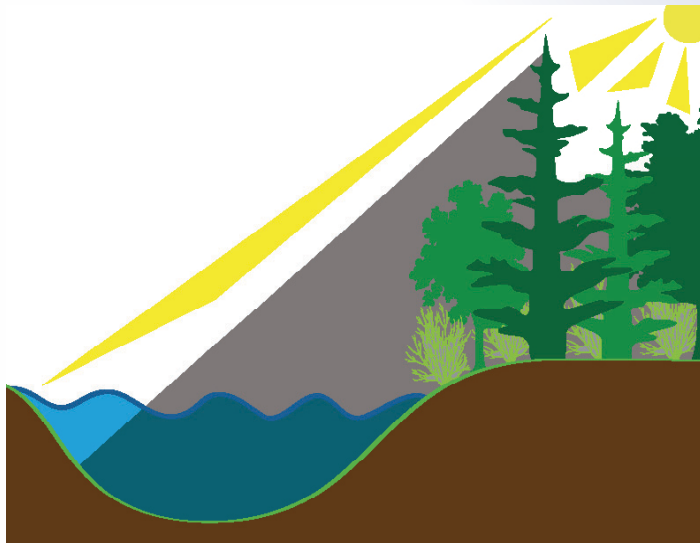
It sounds complicated, but **thermal pollution** simply refers to a water body that has heated up to a degree harmful to wildlife. Most people don't realize that warm water is considered a pollutant, but it's actually listed under the **Clean Water Act**, which works to protect the health of our nation's rivers and streams. From increased pavement, to lower stream flows and warmer air temperatures, there are dozens of factors contributing to warmer streams and rivers. The biggest of all human-caused factors is **canopy cover**, or rather a lack of it. The decline in our **riparian**, or streamside forests, exposes the Clackamas River and its streams to more and more sunlight. And just like a soda can left in the sun, our streams heat up. Lucky for us, there's something we can do about it. Let's reverse the trend through Shade Our Streams!



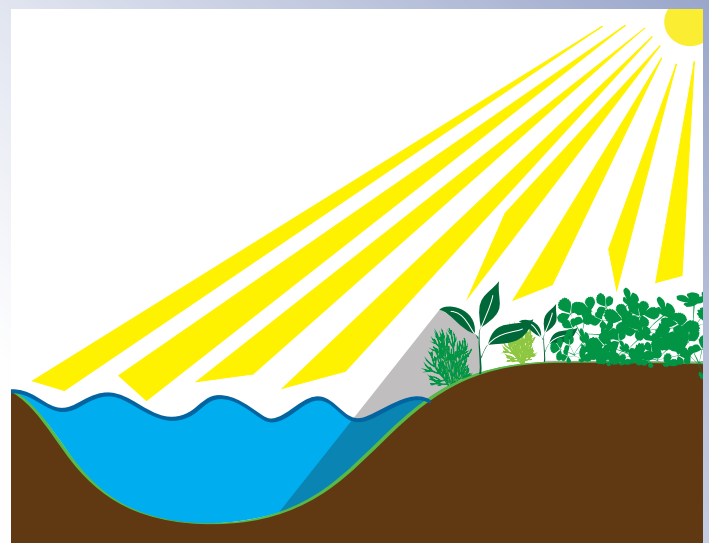
### The Lowdown on High Temps

What's the big deal? High stream temperatures can lead to:

- Decreased **biodiversity**, or variety of plants and animals
- An environment ripe for the spread of **invasive species**
- A shift of **native species** away from the affected area
- Reduced **dissolved oxygen**, which is essential for fish



Healthy riparian buffer provides cooling shade over streams



Small shrubs and invasive weeds provide minimal shade



## Warm Streams, Sad Salmon

Along with most aquatic organisms, salmon are **poikilotherms**, which means their body temperature and metabolism are determined by the temperature of the water around them. This makes them very sensitive to changes in stream temperature. Warmer water can affect salmon in the following ways:

- Decreased or lack of **energy** for feeding, growth, and reproductive behavior
- Increased exposure to disease: viruses, bacteria, and fungus
- Changes in behavior, possibly eliminating **migration** altogether
- Decreased **food supply**-- bug populations are also impaired by high stream temperatures
- Increased **competition** for food and shelter from other fish species that can tolerate warmer water



Photo Credit: Ris Bradshaw



Unshaded



Shaded

## My Role as a Landowner: It All Flows Downstream

The Clackamas River connects us. All water that falls on the ground in the Clackamas watershed eventually flows into the Clackamas, so the temperature of each stream, big and small, contributes to the river's temperature. This is especially true during summer months, when streamflows are lower and sunlight is stronger. The Clackamas watershed is home to federally-listed threatened and endangered **Chinook salmon**, **coho salmon**, and **steelhead**. Temperatures are higher than desired for healthy salmon, so by increasing shade along your stream, you help bring down temperatures and create a more hospitable **habitat** for fish in the Clackamas River.

## What Happens Next? Nurture Your Natives

You are a part of something huge. Through Shade Our Streams, 30 miles of **vegetated buffers** will be planted along streams like yours in the Clackamas watershed. As your plants grow, so do their impact on stream temperatures. In an effort to ensure that your plants grow into a big, shade-producing buffer, we monitor your property to determine their health and survival. Based on the results, we identify the best approach to address the needs of your property and adapt our methods accordingly.

## Contact us

Clackamas River Basin Council

PO Box 1869

Clackamas, OR

[www.ClackamasRiver.org](http://www.ClackamasRiver.org)

503-303-4372

[info@ClackamasRiver.org](mailto:info@ClackamasRiver.org)

