Water Quality Education with the Rolling Rivers Watershed Model

Water quality greatly impacts salmon and other aquatic species. It is important that all generations, young and old, understand these impacts to be good stewards of natural resources throughout their lives.

Cascadia Conservation District (CD) staff bring the message on the importance of water quality to students during events like the Wenatchee River Salmon Festival (Salmon Fest).

Salmon Fest is an award-winning, hands-on outdoor event whose mission is to connect people and nature by providing opportunities that create meaningful and enriching outdoor interpretation and education.

Each year hundreds of Salmon Fest volunteers provide educational activities for approximately 2500 students. Natural resources and recreation specialists, community exhibitors, multi-cultural and tribal educators, and other presenters from throughout the entire Pacific Northwest are involved. The event is open to the public and can draw more than 4,000 attendees.

Salmon Fest has been an important educational event in the Wenatchee Valley since 1991, however, due to the impacts of the Covid-19 pandemic, this much-beloved event has been cancelled for 2020; however, we plan to bring it back in 2021 for its 30 year celebration!

During Salmon Fest, Cascadia CD staff demonstrate the importance of water quality and how it is affected by human activity by using the US Bureau of Reclamation's "Rolling Rivers", which is a hands-on interactive watershed model that focuses on watershed processes and function, Best Management Practices (BMPs) for land-use, and human and salmonid co-existence.

Properly functioning fish habitat consists of healthy riparian areas, appropriate BMPs in land-use, clean water, and unimpeded travel. In the Rolling Rivers model, students design a simulated land form using BMPs to conserve fish and wildlife habitat, healthy riparian areas, water quality, and ensure fish access. Students can also build beaver dams to show their benefit of trapping sediment and nutrients.

Some specific water quality related concepts covered with this activity include:

River water is energetic & powerful.

Students investigate how water can literally move mountains.

- Rivers carry sediment, sand, gravel, rocks, and water downstream.
- Sudden storms, snow melt-off, and river diversions can contribute to sediment movement.
- Clean sediment improves the health of marine and freshwater environments.
- Sediment particles absorb heat from the sun, therefore increasing water temperature which in turn causes stress for fish.
- Sediment can also damage salmon spawning grounds.
- Large amounts of sediment can displace plants, invertebrates, and insects in the stream bed. This can result in fewer fish as it depletes their food supply.
- Contaminated sediment can harm aquatic animals that live on or in it. Other animals, including fish, harbor seals, orcas, and people, that depend on these sediment-dwellers, like shellfish and worms, for food can also be harmed.
- When habitats are cleaned up, they can in turn improve human and environmental health.
- They can also increase recreation opportunities and improve the economy (https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Sediment-cleanups).

Healthy riparian areas protect rivers.

Students use the model to view how riparian areas slow the flow of water, trap and filter sediments, and provide streambank stability.

- Native, riparian vegetation along the water is important for bank stabilization and shade for fish.
- Without this vegetation, the banks of the stream begin breaking down as there are no tree or plant roots to hold water or soil in place. This contributes to poor water quality.

Non-point source pollution affects river systems.

A river can be contaminated by pollutants that are put on the ground far away from or near the river. Students use the Rolling Rivers model to predict where the pollution will travel and use the model to trace the pollutants flow into the river.

The model illustrates that "non-point pollution" is different from a pipe that pours contaminated water into a river at one location. The source of non-point pollution can come from many places and is often hard to find.

This fun, hands-on interactive way to teach students about water quality is a favorite at any event we bring it to. We hope that students keep these concepts in mind and work towards being good stewards of our natural resources. For more information on the Wenatchee River Salmon Festival visit: http://www.salmonfest.org/

Funding for Cascadia CD staff to provide water quality education during Salmon Festival is provided by the WA State Department of Ecology.