

Whatcom Conservation District presents  
**Make Your Own Watershed Lesson: Grades K-5**

**What is a watershed?**

A watershed is an area of land from which all the water drains to the same location such as a stream, pond, lake, river, wetland or estuary. *Analogy: like all the water that falls into a bathtub flows down a single drain.* Rivers and streams are paths where surface water collects and moves from high to low elevation. Initially, water moves downhill in small streams. The small streams flow into larger streams until they eventually merge into rivers and flow into lakes or oceans.

**How do rivers form?**

Flowing water cuts a path into the surface of the earth. Velocity (speed of water), water quantity, vegetation, and the geography of the landscape (i.e., slope, geology) all determine the shape of a river's path, or channel. Most river and stream channels develop a meandering (curving) pattern naturally as they flow across the landscape.

**What is erosion?**

As water flows, it carries sediment (soil particles such as sand, clay, and rock). The movement of sediment plays an important role in shaping stream channels. Various sizes of sediment particles can move along with the water. Fast-moving water can pick up, suspend, and move larger particles more easily than slow-moving water. Heavy storms can make a significant impact on sediment movement.

**What is a riparian zone?**

The riparian zone is the strip of water-loving vegetation near streams, lakes, and other bodies of water. The word "riparian" comes from the Latin word "*ripa*", which means riverbank. Riparian vegetation is crucial to the health of a river. It provides bank stability, habitat for diverse communities of plants and animals, shade (which plays a major role in determining water temperature), organic materials, protection from flooding, and storage for a sustained summer flow. In turn, the river provides water for the riparian vegetation. When the riparian zone is cleared of vegetation, or degraded, the health of the river suffers as a direct result.

**Why does flooding happen?**

Flooding occurs when water exceeds the capacity of a body of water such as a river or lake. Floods can also occur from the oceans when heavy storms, high tides, or tsunamis cause water to overflow into coastal lands and communities. Periodic flooding of rivers occurs naturally and is usually the result of heavy rain or rapid snowmelt. This flooding results in the creation of floodplains that can help hold excess water. Flooding can be especially dangerous and destructive in urban areas where streets create corridors for swift moving water. In order to prevent flooding of developed areas, sometimes artificial levees are constructed.

**How do communities influence our watersheds?**

Communities are often developed on floodplains. As a result, land is converted from fields or woodlands to roads and parking lots (impervious surfaces), and the land loses its ability to absorb rainfall or rapid snowmelt. Impervious surfaces increase runoff in urban areas by two to six times that which would occur on a natural landscape.

**What do salmon need in a river system?**

When in freshwater, young salmon (fry, parr, and smolt) like to live in areas of gravel, where the water is cool, clean and clear. Young salmon also like to live in rivers which have natural grassy banks with some deciduous trees near the river. This is because lots of insects (that salmon eat for food) live in the overhanging grasses and trees. Sometimes these insects will fall into the river where the young salmon can eat them. Deciduous trees are also useful to shade the edges of riverbanks. This shade provides cover for the fish so that predators find it harder to find them.

The young salmon eventually migrate from our rivers to the sea.

After a year or more at sea, adult salmon return from their feeding grounds back to their river to spawn. These spawning areas may be in small tributaries of river systems where there is clean gravel and a good flow of fresh clean water.

Because they live in streams, lakes, rivers, estuaries and ocean, the health of salmon populations are a good indicator of how well we are taking care of the marine and terrestrial ecosystems along Canada's Pacific coastline. If we have abundant healthy salmon runs, then we have probably achieved the goal of managing human activities with ecosystems in mind.

**VOCABULARY:**

**Alluvium:** Clay, silt, sand or gravel carried by water.

**Best Management Practices (BMPs):** structural or nonstructural methods that prevent or reduce the movement of sediment, nutrients, pesticides, and other pollutants from the land to surface or ground water.

**Cover crops:** By planting seasonal cover on annual cropland, farmers can reduce soil erosion and reduce fertilizer use. Some common examples of cover crops are grasses or legumes such as ryegrass, wheat, crimson clover and radishes.

**Culvert:** Metal pipe that allows water to flow under a road.

**Erosion:** The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves, etc. Example: When the riverbank collapses, falls into the river and is carried downstream.

**Fry:** Young fish at the stage they begin to move in schools and feed in the river.

**Habitat:** The place where a population (e.g. human, animal, plant, microorganism) lives and its surroundings, both living and non-living.

**Impervious surfaces:** Predominantly artificial structures—such as pavements (roads, sidewalks, driveways and parking lots) that are covered by impenetrable materials such as asphalt, concrete, brick, stone—and rooftops.

**Large Woody Debris:** Logs, branches, or sticks that fall or hang into rivers. This debris gives salmon places to hide and provides food for insects and plants which salmon feed upon.

**Levee:** A natural or artificial slope or wall usually made of earth and placed parallel to the course of a river.

**Non-point Source Pollution:** Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

**Parr:** The salmon are known as parr once they are over a year old. They stay in freshwater for between one and four years, feeding on small insects and growing larger.

**Riparian:** The area of vegetation along a river, streambank or lake.

**Redds:** A nest for egg deposition which the female salmon digs in the gravel on the river bottom using her tail.

**Run-off:** The water from rain or snow that runs across land and then into streams and rivers.

**Sediment:** The sand, gravel, rock or other materials (alluvium) that settle down to the bottom of the river.

**Steward:** Someone who takes care of and protects the environment.

**Velocity:** The speed of water flowing downstream.

**Watershed:** The area of land that is drained by a river or stream system, or the total area that lies up slope from any point on that river or stream. Also called drainage basin.