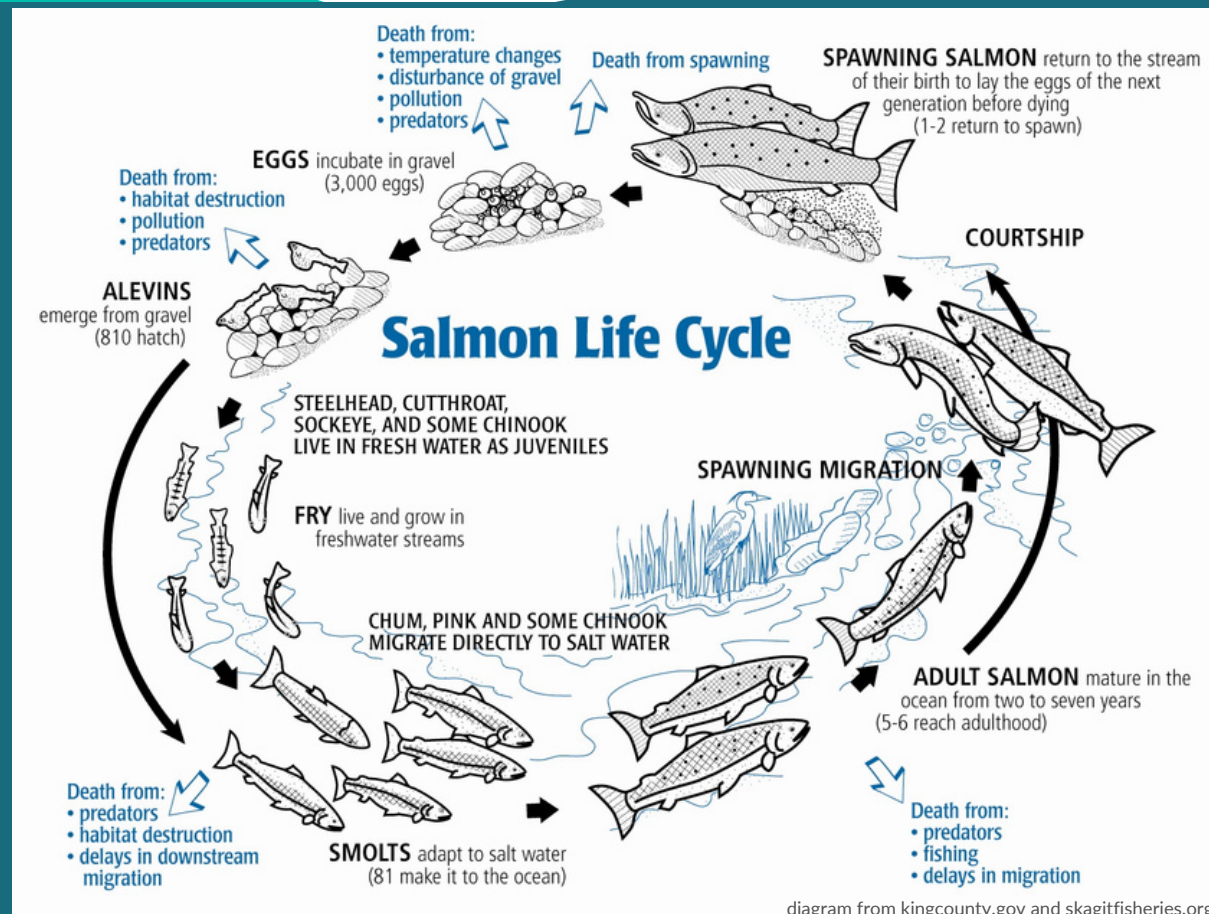


Salmon: A Keystone Species

Five species of salmon live in the Pacific Northwest: Chum, Sockeye, Chinook, Coho, and Pink. In the Willamette River we see Chinook and Coho. Salmon are considered keystone species, which means the ecosystem would be greatly altered without them. One of the reasons they are so important is because they are anadromous - they migrate from their freshwater birthplace to the ocean, where they bulk up on marine-derived nutrients before returning to the natal streams, where they spawn and die. When they die, the nutrients they gathered in the ocean become fertilizer for the iconic forests of the Pacific Northwest.

Ask

How are your everyday actions tied to salmon and their habitats?
What can you do to protect watershed health?



Riparian Habitat

A riparian area is the land surrounding a water body. We also call them stream banks, riverbanks, or shores. Healthy riparian areas serve several functions in the watershed.

→ Wildlife Habitat

Birds, pollinators, and other wildlife find food, shelter, and safe places to rear their young in the riparian area. Aquatic organisms benefit from riparian vegetation as well. Macroinvertebrates eat the leaves and wood that drops into the stream.

→ Bank Stability

Roots of riparian plants provide erosion control, holding the soil in place, which is especially important during heavy rains and floods. Without bank stability the river can become murky, making it hard for salmon to see and breathe.

→ Clean & Store Water

Runoff can carry pollutants like pet waste, loose soil, and chemicals into the river. When rainwater is slowed down by vegetation it can enter the soil, which cleans and stores it for slow release into streams.

→ Shade

Shade helps keep the water cool during the warm season. Colder water can hold more dissolved oxygen. What makes a riparian area shady? Trees!

Water Quality

Salmon need water that is **Cold, Clear, and Clean**. We measure chemical and physical properties of the river water to determine its quality.

→ pH

Used to indicate how **Clean** the water is, the pH scale ranges from very acidic (low pH) to very basic (high pH). Lemon juice, an acid, has a pH of 3, while household bleach, a base, has a pH of 12. Most living organisms, including salmon, do best with water that is neutral, around pH 7.

→ Dissolved Oxygen (D.O.)

The air we breathe contains about 21% oxygen, but salmon have to make do with much less. Optimum D.O. for spawning salmon and their eggs is about 12 parts per million.

→ Turbidity

A measure of how **Clear** or cloudy the water is. Cloudy, sediment-filled water is hard for fish to see and breathe in. Can you see the bottom of the river?

→ Temperature

Colder water can hold more D.O. than warmer water. Juvenile and spawning salmon do best with temperatures under 58 °F. Streamside trees provide cooling shade.

Macroinvertebrates

Aquatic macroinvertebrates (macros) are more than an important food source for juvenile salmon, they are also excellent **bioindicators** of the health of the stream. Different macros can tolerate different conditions such as temperature range, water clarity, and water pollution.



Stonefly, mayfly, and caddisfly nymphs (pictured from left to right) cannot tolerate pollution, so when you find them, the water is probably high quality.

Macros are animals, just like we are, and just like us they need oxygen to breathe. Macros have a range of adaptations for accessing oxygen. Most macros that are intolerant of pollution use **gills** to obtain dissolved oxygen from the water. Macros with **breathing tubes** or siphons that stick up above the water's surface to breathe are more tolerant of low water quality. Water beetles capture bubbles of air at the water's surface and dive down with their own portable SCUBA tank!

Who We Are



City of Keizer
City of Salem
Marion County
Marion SWCD



MARIONSWCD.NET/MWOG

The Fascinating World of Pacific Salmon



Community Salmon Watch Day is brought to you by Mid-Willamette Outreach Group (MWOG).



MWOG partners (City of Keizer, City of Salem, Marion County, and Marion Soil & Water Conservation District) collaborate to provide water quality outreach and inspire behaviors that result in healthy streams and communities.