

Salmon & Wetlands

Understanding the Role of Wetlands in the Salmon Lifecycle

Many people enjoy wetlands as places of beauty. These are places we can go to enjoy the experience of walking through nature, watching birds and other animals, as well as the bountiful plant life. As more people move into the cities, wetlands and other undeveloped areas become more valuable as places where we can experience and learn about the natural world.

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The Salmon Lifecycle:

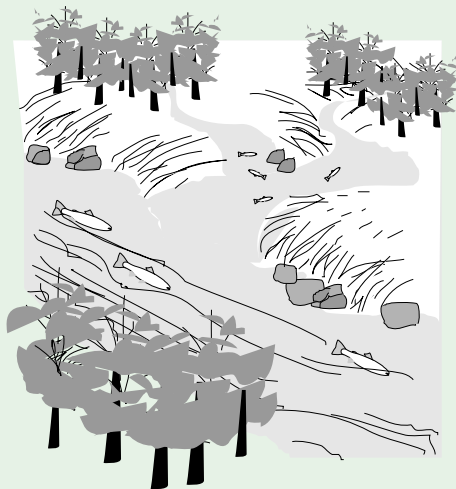
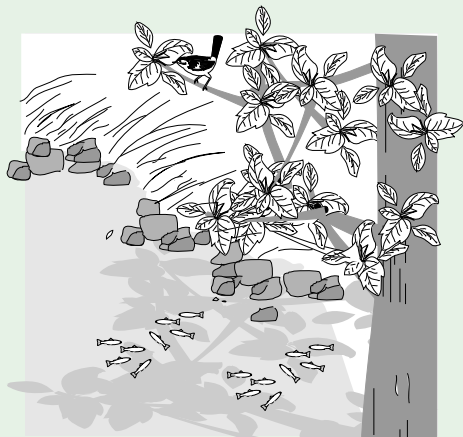
UNDERSTANDING THE ROLE OF WETLANDS

Salmonids lay their eggs in gravel beds called redds. This gravel must be small enough to be moved by the female in creating her nest, but large enough to provide sediment-free cavities for the eggs and fry to develop. Fine sediments and silt, which can come from clearcuts and developments, may coat the eggs, depriving them of oxygen.

Wetlands slow water before it gets into the stream, so these sediments can settle in the wetland, not the gravel beds. Wetlands also help to reduce peak flows in streams - these sudden high flows can sweep away all or part of the redds.

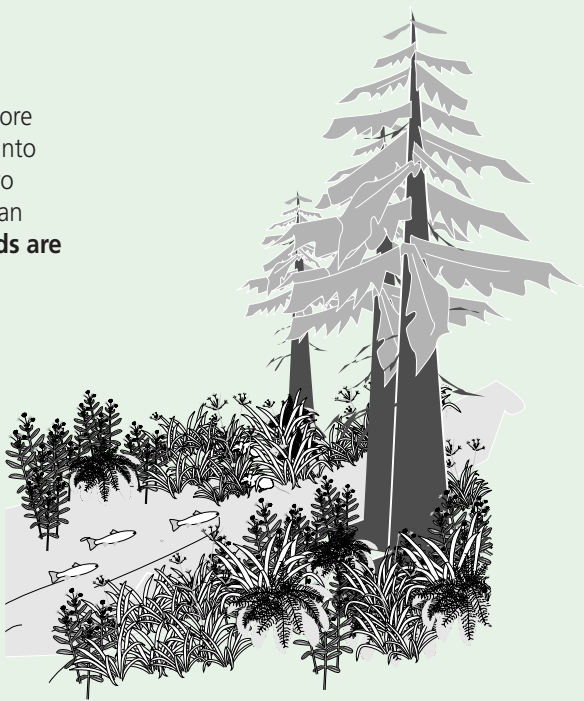


The eggs hatch into fry with yolk sacs that provide food for the first few weeks of their lives. When the yolk sacs are used up, the fry feed on insects. These insects may drop into the stream from overhanging trees, or may live in streams and wetlands. The trees on the stream banks also shade the stream and keep



the stream cool enough for the fry.
Wetlands help to keep the water cool by releasing cool ground water into the stream flow.

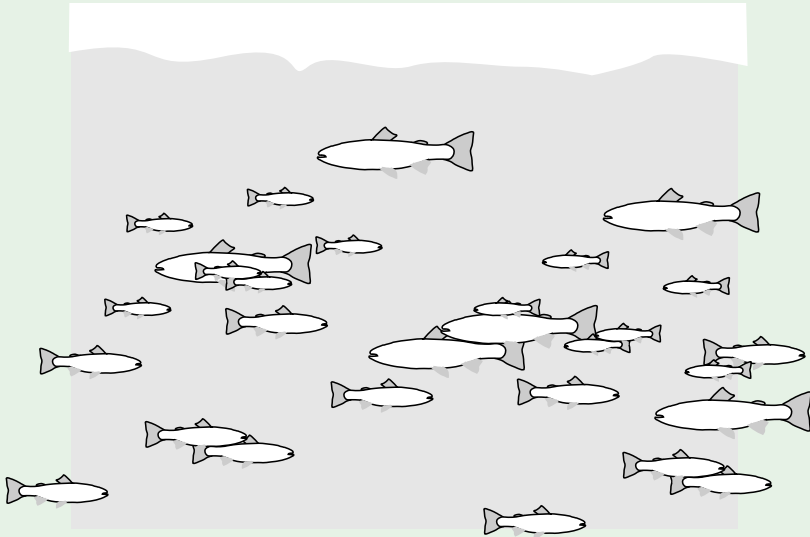
Different species of salmon and trout spend different amounts of time in their streams before migrating to the ocean where they will grow into adults. Coho may live in streams for up to two years; chinook spend more time in streams than sockeye, chum or pink. **Freshwater wetlands are used by small cutthroat trout, steelhead trout and coho salmon for winter rearing.** By living in a wetland rather than the fast moving river channel, these fish spend less energy fighting the current, have more energy for feeding and so can grow much faster than fish that stay in the main channel. During floods, young fish take refuge in wetlands. **Without wetlands and beaver ponds, many young fish can be swept to their deaths by floods.**



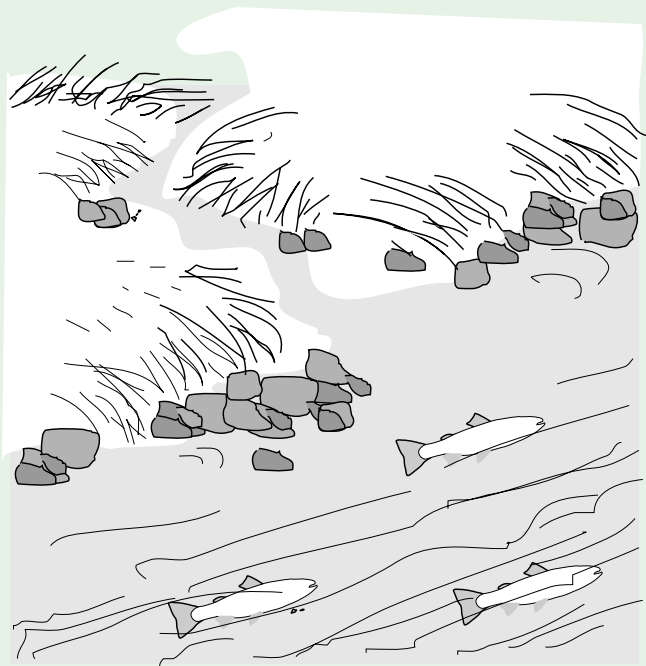
All anadromous fish head downstream to the ocean. Now called smolts, they need to move quickly because their physiology is changing so that they can survive in saltwater. This migration is timed to match the spring runoff, which helps to rush the smolts to the ocean. Dams and reservoirs disorient the smolts and slow them down. **The smolts stay for a while in estuaries, to acclimate to saltwater, and use estuarine wetlands for food and shelter.** The time spent in the estuary varies with species, but chinook smolts rear extensively in estuarine wetlands before entering the salt ocean.



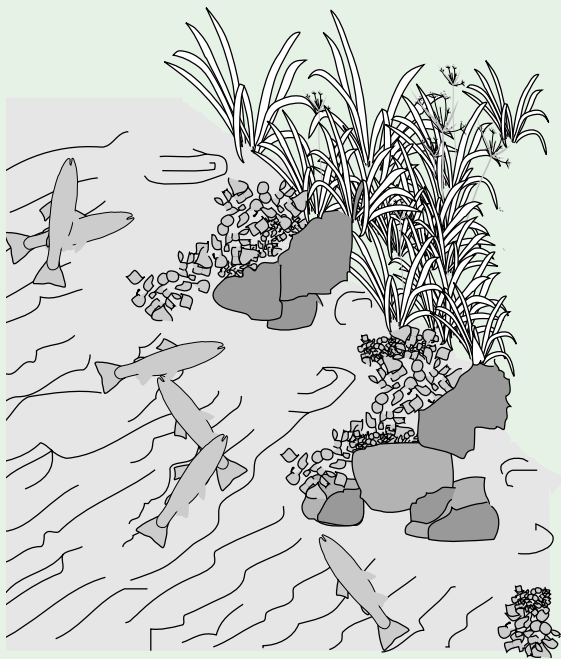
Some salmonid species spend several years in the ocean and can grow to large sizes before returning to their home stream for spawning; varieties adapted to small tributaries do not grow very large. How the salmon and trout find their way back to the place where they hatched is still unknown, although smell is thought to play a part.



Once back in the streams, adult salmonids move quickly upstream to spawn as their bodies begin to deteriorate. Blockages such as dams, culverts and low water levels slow their movement upstream. **Wetlands help maintain *in-stream flows* by holding water from wetter seasons and releasing it during the dry summer months.**



Once safely upstream, the salmonids must find gravel beds for spawning, after which their life comes to an end. Their carcasses provide food for aquatic insects which will themselves become food for the next generation of fry to emerge from the gravel. Trapped in wetlands, these carcasses also act as a fertilizer for the wetland, stream and forest. In death the salmon benefit not only future generations of salmon, but also the wetlands, streams and forest that in turn sustain them and us.



Glossary of Terms

ANADROMOUS FISH: fish that hatch in freshwater, migrate to the ocean as young, then return to freshwater to spawn. This complex life cycle allows them to exploit different parts of the environment at different points of their life cycle, reducing competition for resources between young and old. But it adds physiological complications not experienced by other animals, as the requirements for living in freshwater are quite different from those for saltwater. Salmon and some trout species are anadromous.

ESTUARINE WETLANDS: – wetlands in estuaries – where rivers meet the ocean. The water in estuaries is brackish—it is a mixture of saltwater from the ocean and freshwater from the river.

FRESHWATER WETLANDS: wetlands that are dominated by fresh water.

FRY: young salmon that have used up the yolk supply from their egg.

INSTREAM FLOW: the level of water in a stream or river. Fish need a minimum level of water to live in.

PEAK FLOWS: the highest level of floodwater in a river or stream.

REDDs: gravel beds where salmon and trout lay their eggs.

SALMONIDS: a family of fish that includes salmon, trout, grayling and whitefish.

SMOLT: juvenile salmon moving to the ocean.

WETLANDS: places that have water at or just below the surface of the soil.

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