

Salmon Spawners

Background

The return of salmon to their home streams and lakes is an essential part of the West Coast ecosystem.

Salmon that migrate to the sea must return to find an environment that is suitable for their offspring to mature. Salmon eggs and fry cannot survive in the salty water and unprotected conditions of the sea. The salmon's return also allows them to nurture their offspring even after their death, and to provide sustenance for other species by fertilizing the forest environment with their remains.

West Coast watersheds, including lakes, streams and stream banks, are often low in nutrients essential for plant growth, especially nitrogen. Recent studies have shown that nutrients from the sea make an important contribution to plants and animals along salmon spawning streams. Spawners bring these nutrients from the sea and leave them in their carcasses when they die.

Some animals take up marine nutrients by eating the salmon carcasses. A single dead spawner can feed thousands of insect larvae, which in their turn form the food source for fry that will spend the winter in lakes and rivers.

Algae, fungi and bacteria, which live in the water, also take up marine nutrients before dying and providing food for small invertebrates which are then eaten by salmon fry. Forest lakes and streams provide little nutrition compared with the richness of the estuary and ocean, and many species might not survive without the nutrients released by decaying spawners.

After the spawners return to their spawning grounds, the increased nutrients in the water can allow fry to double their rate of growth. When salmon cannot return to their home lakes and rivers because of overfishing or blockages en route, or when their carcasses are removed, the lack of nutrients can mean that fewer survive in the next generation. The result can be a long-term decline in the number of survivors, and a threat to already weak runs of salmon.

Salmon carcasses may also form part of the forest ecosystem. Birds, bears and smaller mammals drag some

carcasses ashore, carrying marine nutrients through the forest adjacent to lakes and streams, and depositing the nutrients in their feces. The remains of the salmon fertilize the forest soil in regions where heavy rainfalls quickly leach out nutrients that are essential for strong tree growth.

Pacific Salmon Bring It All Back Home

"Salmon are the only animals that return nutrients to the land from the sea," says Jeff Cederholm, a salmon biologist for the Washington Department of Natural Resources.

"The healthiest salmon streams," he points out, "are loaded with salmon carcasses." Cederholm and his coworkers observed a surprising array of species feasting on dead coho, including otters, black bears, raccoons, and skunks. These larger animals often pulled carcasses onto streambanks, where leftovers were scavenged by wrens, shrews, mice, and other small creatures. Even white-tailed deer sometimes feed on salmon carcasses.

Coho spawn in the fall, and their carcasses remain through the winter, the hungriest time of year for wildlife in the Pacific Northwest forests. Perhaps most, if not all, woodland animals rely on salmon to help sustain them until spring.

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Salmon Feed Forests; Forests Shelter Salmon

"Salmon benefit from the plants that line the banks of their spawning grounds. These trees and bushes, known as riparian vegetation for their proximity to rivers' natural banks, provide many of the conditions that salmon need for successful spawning.

The riparian plants provide shade, which helps to regulate the temperature of the spawning grounds. Trees and large bushes provide snags and other debris that create sheltered areas along the river in which young salmon can find refuge. Their roots also keep river sediments in place, reducing erosion."

*Cat Lazaroff, Environment News Service,
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