

B05: Marine Derived Nutrient Water and Sediment Interactions Within Pacific Salmon Streams

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Session Description

Spawning Pacific salmon return to their spawning grounds having gained the majority of their mass at sea. As they migrate upstream through their natal watersheds they provide a valuable food source for many animals and once they arrive at their spawning grounds they excavate the streambed to create redds to house fertilized eggs. The excavation of redds causes a significant streambed disturbance suspending fine sediment, redistributing bedload clasts, and disturbing benthic algae, plants and invertebrates. Spawning salmon concurrently release gametes and waste products to the system. Once spent and salmon die, they contribute the biomass and marine derived nutrients (MDN) they gained at sea, which may represent a significant contribution of matter and nutrients to their natal watershed. The contrasting actions of disturbance and nutrient addition can result in a range of in-stream responses reflecting spawning return numbers as well as watershed geophysical and stream hydrological conditions. MDN signals have been identified in many stream and terrestrial biota, the water column, suspended and fine bed sediments, as well as the hyporheic zone yet there is still debate on the cumulative value of MDN to natal watersheds. The goal of the session is to draw together biogeoscientists, aquatic ecologists and fisheries specialists, along with geomorphologists, to share their recent findings in this research area. The objective is to advance our understanding of MDN sediment and water interactions, transfer and storage, to increase our understanding of the potential enrichment or disturbance effects of returning spawning salmon and MDN on natal stream reaches and watersheds. In particular, contributions will be welcomed that focus on sediment and water interactions with MDN, salmon and streambed interactions, and MDN transfer, storage, and transformation processes.

Primary Affiliation: Biogeosciences / Hydrology