



# Soils influence the fate of salmon-derived nutrients

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Tuxekan soil (Spodosol). Photo courtesy of David D'Amore.

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Riparian soils mediate the transfer of material and energy between terrestrial and aquatic environments. Adult Pacific salmon spend most of their life in the ocean, but their life begins and ends in streams of the Alaskan coastal rainforest. The spawning of adult salmon returns nutrients obtained in the ocean to the watershed.

Aquatic and terrestrial scientists have studied salmon-derived nutrients (SDN), but the role of soils had yet to be recognized in the fate of SDN. David D'Amore and a team of scientists studied how different soils respond to the delivery of SDN in Alaska in an article recently published in the *Soil Science Society of America Journal*.

The team studied Spodosol soils, rich in organic matter and highly enriched in organic-metal complexes on terraces, and younger Entisol soils on floodplains with

little horizon development. These soils varied in soil properties, which influenced nutrient retention. Both plant-available nitrogen and phosphorus decreased over time but were retained in the soils between the end and the beginning of the spawning cycle.

Although the extractable N and P amounts did not differ between soil types, the way the nutrients were processed did vary, revealing contrasting nutrient cycling pathways between the two soil types. These findings indicate how identifying specific soil types can advance the understanding of nutrient processing, uptake, and loss from SDN additions to riparian soils.

### **Dig deeper**

D'Amore, D.V., Chaloner, D.T., Gerig, B.S., Berkowitz, J.F., & Bridgham, S.D. (2020). The nutrient legacy left by salmon tissue on riparian soils in Southeast Alaska. *Soil Science Society of America Journal*, 84. <https://doi.org/10.1002/saj2.20043>

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