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Road salts are primary driver of freshwater salinization in urban areas

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In Bear Run, a stream in western Pennsylvania, salinity is declining thanks in part to improving air quality. Photo by Ryan Utz.

Salt concentrations are rapidly rising in freshwater ecosystems globally. Excess salinity in freshwater threatens human health, damages infrastructure, and stresses aquatic ecosystems. Many researchers point to road salt application in winter as the primary driver. However, freshwater ecosystems in warm climates also exhibit rising salinity, suggesting that multiple sources contribute to the problem.

In an article recently published in the *Journal of Environmental Quality*, researchers quantified long-term trends in salinity and watershed attributes for more than 300 streams and rivers in the northeastern United States where roads in urban areas are treated with salt. Researchers also tested sites in rural settings, where salt application is less common, allowing them to determine if other environmental stressors contribute to saltier rivers.

Results demonstrate that urbanization and associated road salts solely drive freshwater salinization in the region. Rising salinity was detected in most sites while streams with no urban land in the watershed are not salinizing. However, the patterns are not homogeneous. For example, salt concentrations in western Pennsylvania rivers are declining, thanks to improving air quality. Observed differences among states, including mildly rising salinity in colder locations, suggest intelligent management can help protect freshwater resources.

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Utz, R., Bidlack, S., Fisher, B., & Kaushal, S. (2022). Urbanization drives geographically heterogeneous freshwater salinization in the northeastern United States. *Journal of Environmental Quality*. **https://doi.org/10.1002/jeq2.20379**

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