

US EPA/PWB Webinar Program: Effects of Total Nitrogen and Total Phosphorous on Chlorophyll-a Concentrations in Flowing Waters
October 27, 2021

Webcast Summary:

Overview:

Nitrogen pollution and phosphorus pollution are major stresses on stream and river ecosystems globally. Despite general acceptance of nutrient pollution as a problem, understanding the ways that biological communities respond is complicated, in part because conditions in streams and rivers are quite variable. For example, chlorophyll a, a pigment in primary producers, is used to estimate algal biomass and is a widely used measure of biological response to nutrient pollution. However, the response of chlorophyll a to nutrients can depend on environmental context. A compilation and synthesis of research about biological responses to nutrients across environmental contexts is needed to support environmental decisions, including the identification of streams and rivers with unhealthy biological communities and the setting of targets for maintaining or reviving healthy ecosystems.

EPA scientists conducted a systematic review and meta-analysis of 105 published studies to examine the response of primary producers (as measured by sestonic and benthic chlorophyll a) to total nitrogen and total phosphorus concentrations in the water column of streams and rivers, and how that response is affected by other environmental factors. This webinar will discuss the results of this research, implications for environmental decision-making, and forthcoming efforts to expand the analysis to other biological responses.

Presenter Biography Information

Caroline Ridley, Ph.D.

Caroline is an ecologist in EPA's Office of Research and Development, Center for Public Health and Environmental Assessment. She develops and applies methods for synthesizing literature-based evidence in support of air and water quality decisions that protect biological communities.

Sylvia Lee, Ph.D.

Sylvia is a biologist in EPA's Office of Research and Development, Center for Public Health and Environmental Assessment. Her research interests include ecological assessments, development of biological indicators of water quality, and the ecology and systematics of diatoms