

Nutrient cycling in coastal ecosystem complexes



CORE QUESTION:

How does the spatial complexity of coastal ecosystems affect nutrient cycling and removal?

COMPLEX COASTAL ECOSYSTEMS

Great Lakes coastlines support complex blends of habitats, such as wetlands, streams, estuaries, dunes, and more. Coastal wetland complexes are also junctions where nutrients coming from upland watersheds, including nitrogen and phosphorus, meet the Great Lakes.

Coastal wetlands can play a vital role by absorbing and processing land-based sediments and nutrients, thus improving Great Lakes water quality. Unfortunately, human activities post-European settlement have destroyed more than half of the wetlands once present in the Great Lakes region, and many remaining wetlands are degraded.

Excess nutrient loads, or inputs, from Great Lakes rivers and streams could alter the nutrient processing functions in coastal wetlands. Understanding these functions and how they vary across coastal ecosystem complexes is key to managing and restoring healthy Great Lakes habitats.

WHERE WETLANDS, STREAMS, AND LAKES MEET

Michigan Sea Grant Graduate Research Fellow Erin Eberhard at Michigan Technological University will collaborate with Michigan's Department of Environment, Great Lakes, and Energy to investigate how nutrients

move through coastal ecosystems where wetlands, streams, and lakes meet.

Eberhard and her partners will sample nitrogen and phosphorus gradients and other environmental factors at five wetland-stream-lake interfaces on the shores of Lake Huron, Lake Michigan, and Lake Superior. They will also manipulate nutrient concentrations in small experimental habitat plots in an Upper Peninsula nature reserve to determine the effects on ecosystem processes.

This project will provide key understanding of nutrient cycling in Great Lakes coastal regions.

CONTACT

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