

Title: Ecosystem services in lakes of the Northeastern United States: An assessment of lakes ecosystem services beneficiaries

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Abstract: Lakes and ponds provide numerous ecosystem services including fishing, swimming, drinking water, and aesthetic enjoyment. Much analysis to date has focused on understanding the interplay between ecological condition and availability of services. For instance, prior analyses suggest that reductions in nitrogen loads could result in improved aesthetic condition of lakes. We expand this work with two analyses. First, we analyze the effect of three potential nitrogen reduction strategies (agricultural, urban, and air reductions) on human populations around lakes. The number of beneficiaries was estimated at three scales: local residents (<1km), non-local frequent users (between 1-10km), and infrequent users who may still benefit from the improved availability of ecosystem services (between 10-100 km). In our second analysis, we examine populations impacted by scarce availability of lakes providing ecosystem services. Preliminary analyses suggest that 1) reductions in atmospheric deposition of nitrogen could impact the greatest number of lakes, 2) urban reductions could benefit relatively greater numbers of people, and 3) portions of the population in the northeast are relatively underserved due to the scarcity of lakes providing adequate ecosystem services.

Keywords: Nitrogen; Ecosystem Services Research Program; National Lakes Assessment

Purpose of research: This research begins to examine how and where on the landscape ecosystem services may or may not be reaching beneficiaries. This is a step forward in how we look at ecosystem services in that we are examining the human populations most likely to receive the benefits of ecosystem services provided by ecological resources in varying condition.