

Poster presentation given at 2002 annual meeting of the Association of Southeastern Biologists

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Although humans pollute rivers with excess nitrogen (especially nitrates), not all of the excess nitrogen added to rivers reaches the coast. For example, man-made reservoirs may retain significant amounts of nitrogen. In South Carolina alone, over 2500 dams form ponds and lakes, including many small ponds on farms, golf courses, and in residential developments. We investigated the capacity for small (<13 ha) man-made ponds in the piedmont and mountains of South Carolina to lower stream nitrate concentrations. We sampled two ponds during October 2000-October 2001 and five additional ponds during June-July 2001. Land use around the ponds ranged from a golf course to residential development to primarily forested land. Stream nitrate concentrations ranged from 0.13 to 5.21 mg/L, while concentrations within the ponds ranged from <0.02 to 1.38 mg/L. In 35 of 38 comparisons from all sites and sample dates, nitrate concentrations in pond water were up to 98% lower than in inflowing stream water. The highest stream nitrate concentrations and highest decline in concentration (by 3.94 mg/L) occurred at a pond in a residential area. By contrast, a pond in a primarily forested mountain catchment had very low incoming stream nitrate concentrations and little or no decline in nitrate concentrations (by 0-0.10 mg/L). Although we infer from the changes in nitrate concentrations that these ponds retained incoming nitrogen (e.g., due to denitrification and biological uptake), it is possible that nitrates were converted to other forms of nitrogen, such as dissolved or particulate organic nitrogen, which then flowed downstream.