North Carolina’s Nutrient Sensitive Waters

Why is nutrient pollution a problem?

Two major nutrients, nitrogen and phosphorous, can negatively affect waterways like the Neuse River and Pamlico-Tar River if they occur at levels that are too high. A main effect of excess nutrients in water, otherwise known as eutrophication, is an increased number of algal blooms per year. Prior to implementation of protections like Nutrient Sensitive Water designations and standards, the following impacts were felt throughout our watersheds during the 1990s:

- An estimated one billion fish in the Neuse River alone have been documented as killed by 1997 as a result of harmful algal blooms.¹
- The same type of algae causing this bloom was linked to neurological and respiratory health effects in humans, showing that impacts were not just limited to the natural environment.²
- Impacts were so common from the mid 1980s to mid 1990s that the warmer months were known as "fish-kill season" by locals along the Neuse and Pamlico-Tar Rivers.¹
- Thousands of acres of shellfish harvesting ground were closed by the mid-1990s due to high levels of bacteria in the water.³


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Figure 1. The Neuse and Pamlico-Tar River basins.

Figure 2. Dead fish line the shore following a fish kill event in the river. (Photo credit: Rick Dove)
Since implementing nutrient sensitive water strategies...

- Two-thirds of nitrogen input to the Neuse River from point sources has been eliminated by 2006.\(^4\)
- North Carolina's nutrient trading program has been identified as one of four successful models nationwide by Rutgers University.\(^5\)
- Costs are estimated around $2 million for the current program compared to a common, less flexible "command-control" approach that could total $50 - $100 million.\(^5\)
- Collectively, agricultural sources in the Pamlico-Tar River basin have reduced nitrogen output by 43% as of 2014, ten years after the nutrient strategies were first implemented. This exceeds the mandated 30% goal.\(^6\)


\(^{5}\) Water Resources Program. (2008). Further details of four successful water quality trading projects. Rutgers, the State University of New Jersey.