

How Does Green Infrastructure Protect Fish in our Rivers?

Jody Sackett

Thousands of fish floating on top of the water and washing up on the beach. It was a shocking sight for April; fish kills happen typically in summer, but this was early, before the waters had warmed up. The cause was mystifying.



The death of thousands of menhaden (aka bunker) has been attributed by the NJDEP to the *Vibrio* bacteria. Menhaden are a more environmentally-sensitive species, and function like the “canary in the coal mine” to warn us of problems in our waterways. They are warning us now that fish kill conditions are developing early, due to nutrient pollution stemming from sewer, septic and storm water runoff, as well as climate change.

Part of the problem is due to excessive stormwater runoff. When rains fall on impermeable surfaces like driveways, sidewalks, and parking lots, it cannot be absorbed so it runs off into the nearest storm drain, picking up trash, bacteria, heavy metals, and other contaminants along the way. Storm sewers in the street will carry this water directly into the nearest receiving waterway, such as the Navesink or Shrewsbury Rivers, or Sandy Hook bay. Rainwater that falls on our lawns and gardens may also not be absorbed, and as it runs off the land into the streets, it picks up any lawn chemicals or fertilizers that we have applied to help our gardens grow.

Can we prevent future fish kills? Individual homeowners can help by simply reducing their use of landscaping fertilizers, which can over-enrich waterways and encourage algae and bacterial blooms that impact aquatic life. These chemicals that wash off during rains into the nearest storm drains will empty directly into our waterways. Multiply one lawn by the thousands that abut rivers and bays, and it's easy to see how the effect magnifies. So we also need to catch that stormwater runoff before it hits the streets.

One idea to reduce stormwater impact is to utilize simple green infrastructure to stop or slow the stormwater runoff from roof gutter drains, lawns, and driveways. Green infrastructure comes in various forms – bioswales, rain gardens, permeable pavements, and other bioretention systems. Rutgers has a great website (<https://rutgersgardens.rutgers.edu/gardens/rain-garden/>) explaining this, and they are available to advise on appropriate green infrastructure for home or business owners as well. Basically, a rain garden or bioswale is just a shallow indentation in the ground which is planted with vegetation. It will collect and slow down rainfall runoff enough so that it has time to percolate down through the soil to the groundwater. The plants help by absorbing the nutrients from the runoff so that it doesn't reach storm drains and the waterways. Planting sturdy native species in the bioswale translates into not only a pretty garden, but a nearly maintenance-free one as well. Rain gardens not only pull excessive nutrients from the runoff, but reduce flooding too, as the water now has time to infiltrate the soil correctly. They are easy to install and highly effective.

Other green infrastructure techniques include disconnecting gutter downspouts so they don't drain into the storm sewers, and instead putting rain barrels there (excellent for collecting garden rainwater) or a bioswale to catch the heavy flow. Reducing the amount of impermeable pavement around your house always helps too, or interspersing pavement with small mini-rain gardens, bioswales, trees, or planter boxes to catch rainwater before it enters the waterways.

Green infrastructure is a cost-effective and relatively simple way to reduce the contamination entering our beloved waterways which surround our peninsula, as well as limit flooding around our homes. Rumson will be incorporating green infrastructure to better manage our stormwater and create healthier suburban and aquatic environments. So if you see a rain garden or bioswale or permeable pavement around town, please take a minute to stop and admire how its simple beauty is making Rumson and our rivers a cleaner place to live.

About the Author: Jody Sackett

Jody V. Sackett has been an environmentalist all her life. She graduated from Allegheny College in Pennsylvania with a BS in Aquatic Environments, and has a Master of Science degree in Environmental Sciences from the Ohio University. While working full-time for the Ohio Environmental Protection Agency, she attended law school and earned a Juris Doctor degree; she is licensed to practice law in Ohio and NJ. She has worked in municipal and state governments, as well as an Environmental Attorney for the local law firm of Giordano, Halleran, & Ciesla. Changing gears to promote marine science and environmental education, she now works for the NJ Sea Grant Consortium as an educator and program administrator.