

Report as of FY2006 for 2006DE72B: "Sustainable Mosquito Control for Stormwater Ponds "

Publications

- Water Resources Research Institute Reports:
 - Sturtz, S., and J. Gingrich, 2007, Sustainable Mosquito Control for Stormwater Ponds, Delaware Water Resources Center, University of Delaware, Newark, Delaware, 6 pages.
- Other Publications:
 - Boyd, A., ed., 2006, Delaware Water Resources Center WATER NEWS Vol. 6 Issue 2 Nine DWRC Internship Winners for 2006 2007, <http://ag.udel.edu/dwrc/newsletters/Summer2006.pdf>, p. 6-7.

Report Follows

Undergraduate Internship Project #3 of 9 for FY06

“Sustainable Mosquito Control for Stormwater Ponds” was the title of Sarah Sturtz’s internship, cosponsored by the *DWRC / College of Agriculture and Natural Resources* under the advisement of Dr. John Gingrich of the *University of Delaware* Department of Entomology and Wildlife Ecology. Sarah built on previous research by two previous *DWRC* interns studying conditions promoting the breeding of West Nile virus vector mosquitoes in retention ponds. She investigated the success and cost-effectiveness of applications to retention ponds of aluminum sulfate with the goal of reducing mosquito-feeding nutrients with minimum effects on non-target organisms.



Abstract

Nuisance species and West Nile vectors (WNV) thrive and prosper in retention ponds. This study investigated the effectiveness of aluminum sulfate (alum) treatments on 26 retention ponds throughout Delaware from June to August 2006. We analyzed mosquito abundance, bacteria levels, water quality, types of vegetation, degree of vegetation coverage, and predator levels in each pond. After analysis, we found that *Anopheles punctipennis*, *Anopheles quadrimaculatus*, *Anopheles walkeri*, and *Culex erraticus* increased in the ponds treated with alum. *Culex pipiens*, *Culex restuans*, *Culex territans*, and *Uranotaenia sapphirina* had noticeably less larvae in alum ponds than in the control ponds. The ponds treated with alum also contained lower phosphorus and bacteria levels than the control ponds. The species of mosquitoes that increased in the treatment ponds are surface feeders, and the species of mosquitoes that decreased due to treatment are column feeders. Among the column feeders are *Culex pipiens* and *Culex restuans*, two of the most important species of WNV. The alum likely influenced the effects on these mosquitoes by limiting the food sources of these column feeders. The alum accomplished this by reducing the mean phosphorus and bacteria levels in the retention ponds.