



NORTH CENTRAL INTEGRATED PEST MANAGEMENT CENTER WORKING GROUPS



SPOTLIGHT ON

Cultivating a pest management network

North Central
IPM
Center

Green Infrastructure Practices for Stormwater Management and Mosquito Control

Led by Brian Allan, University of Illinois
Andrew Mackay, project leader

The “mosquito” working group of the North Central Integrated Pest Management Center (NCIPMC) was awarded a 2014 grant for \$30,000. The group met their objectives in just one year and is continuing their project with a grant from the Institute for Sustainability, Energy, and Environment at the University of Illinois (iSEE).

The Green Infrastructure Practices for Stormwater Management and Mosquito Control Working Group points out that most municipalities are increasingly concerned about stormwater run-off; often due to local, state and federal policies setting new standards. And municipalities are vigilant about mosquitoes—especially since the rise in related human health concerns, chiefly West Nile virus.

But according to Brian Allan, the lead of this working group and Assistant Professor in the Department of Entomology and School of Integrative Biology at the University of Illinois and Andrew Mackay, project leader and postdoctoral associate in the same department, most cities weren’t connecting the dots on the potential for green infrastructure to be mutually beneficial to both stormwater management and mosquito control.

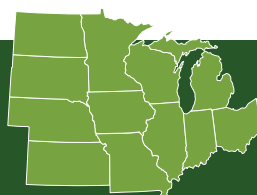


CDC public health image library

The urban *Culex* species mosquito.

One of the growing trends in mitigating stormwater runoff in urban areas is green infrastructure. Green infrastructure is a practice that protects, restores, or mimics the natural water cycle. Mackay said green infrastructure is a more natural way of handling water, allowing it to be treated where it lands, rather than moving it great distances. Green infrastructure could result in less water reaching catch basins and other areas where it can become habitat for mosquito larvae.

Green infrastructure can include permeable pavement, green roofs and rain barrels as well as rain gardens where managed



Funded by: **USDA**

United States
Department of
Agriculture

National Institute
of Food and
Agriculture

NCIPMC.ORG

Twitter icon @ncipmc



NCIPMC Working Group Liaison: Lynnae Jess, jess@msu.edu, 517-432-1702
NCIPMC Communications Specialist: Laurie Vial, lvial@illinois.edu, 217-300-1619



Rain garden constructed by the city of Aurora, IL.

vegetation functions to filter out and/or detoxify contaminants in runoff, improve infiltration and to promote evapotranspiration. Allan said these plantings help beautify the urban landscape. Bio swales planted with native vegetation that filter stormwater are another tool.

Mosquitoes complete their development in aquatic environments in eight to ten days. A goal of green stormwater management is for water to infiltrate in three days or less but the added value is that the habitat for the larvae disappears. Many urban areas use larvicide briquettes to kill mosquito larvae. Green infrastructure can lead to reduced use of insecticides targeting the larval stage. Fewer hatches equates to fewer adults and further reduction in insecticide use.

The first goal of this working group was to increase stakeholder awareness of the potential for green infrastructure tools to affect mosquito vector control and reduce public health risk.

Secondly, the working group strove to recruit members from all 12 of the states in the United States Department of Agriculture (USDA) North Central region. In its early stages the group was mostly composed of academics and practitioners from Illinois, and specifically from the Chicago metropolitan area.

The final objective of the working group was to provide a platform for collaborative research studies evaluating the impacts of green infrastructure on the ecology and management of mosquito vectors.

A significant outcome of the group can be described as communication and networking. The group surveyed public agencies in about 200 cities in the North Central region on stormwater management and mosquito control. The respondents created a database of responses researchers can use to study how stormwater managers and mosquito abatement districts approach this as a linked problem.

Although the working group met mainly through electronic communication, they organized one face-to-face meeting where members had the opportunity to hear experts lay out several conceptualizations on potential impacts of green infrastructure on stormwater control.

“To effectively manage the public health risk posed by West Nile virus it is critical that we understand how emerging green infrastructure-based strategies are likely to affect population dynamics of vector mosquitoes,” said Mackay.

What’s on the horizon for the group as they move forward with funding from the iSEE grant? Mackay and Allan say they and their collaborators are looking at using hydrological modeling to predict how the increasing reliance on green infrastructure techniques for managing stormwater runoff in the United States might affect the abundance and control of vector mosquitoes.

“The grant gave us the tools to gather information that provided a lot of clues as to where our research is going,” Allan said.

Green Infrastructure Practices for Stormwater Management and Mosquito Control
www.ncipmc.org/action/success_stories/greeninfrastructurewrg.php

This work was supported by the USDA National Institute of Food and Agriculture,
 North Central IPM Center project AG 2012-51120-20252.