UNIVERSITY OF MARYLAND EXTENSION
Solutions in your community

Agronomy News

The University of Maryland Extension Agriculture and Food Systems and Environment and Natural Resources Focus Teams proudly present this publication for commercial agronomic field crops and livestock industries.

Volume 6 Issue 4 July 9, 2015

Female Simulium jenningsi. Photo by Jake Bodart.

Black Flies, or "Gnats" in Nuisance Swarms in Western Maryland

By Rebecca Wilson and Dr. Bill Lamp, Department of Entomology, University of Maryland

Many residents of western Maryland are bothered by persistent swarms of small flies while working outdoors during the summer. These flies are commonly called "gnats," and form characteristic swarms around the head and face of both humans and livestock. Following inquiries by Washington County residents in 2013, we determined that these gnats of western Maryland were a species of black fly, known as *Simulium jenningsi*. Research is ongoing to determine where in Maryland this species is a nuisance concern, and where its aquatic breeding sites are located.

Biology and Characteristics of Simulium jenningsi

Adult S. jenningsi are small flies, about 3mm long and dark brown in color. S. jenningsi larvae are aquatic and develop in fast-flowing regions of larger streams and rivers. In Maryland, the largest source of S. jenningsi appears to be the Potomac River. Although many residents of Western Maryland may feel confident their backyard streams are to blame for their flies, the larvae of this species do not live in any stream less than 20 feet wide. They are truly a large river species. Female adult S. jenningsi need blood meals to develop their eggs, and can fly nearly 35 miles away from their breeding source to find a meal. In this way, locations that are not directly next to the Potomac or its larger tributaries may still have a nuisance problem. Host-seeking S. jenningsi females are attracted to the carbon dioxide exhaled by humans and livestock. Unlike the more voracious species of black flies of New England, the primary annoyance of S. jenningsi comes from their swarming behavior rather than their bites. They are not vectors of any human diseases, but can transmit the parasitic nematode Onchocerca lienalis to cattle. S. jenningsi has several generations per year in Maryland and

adults have been found in Washington County from April until November.

Distribution of Simulium jenningsi in Maryland
S. jenningsi has been found to some extent in Washington, Frederick, Montgomery, and Prince George's counties. However, this in unlikely to be the full extent of the species range in Maryland.

Nuisance complaints from residents have primarily originated from Washington and Frderick counties, with complaints from Montgomery County reaching us in 2015. S. jenningsi populations in urbanized areas are often too small to create a nuisance concern. Rural communities experience the worst nuisance problems, as the flies appear to prefer vegetated habitats. Historically, S. jenningsi swarms were a problem throughout a large portion of central Maryland and D.C. as recently as the 1950's. S. jenningsi needs relatively unpolluted water to breed in, and as river conditions improve in Maryland the species may regain its former distribution.

Black Fly Suppression
Black flies are most effectively managed with pesticide during their less-mobile larval stage. The pesticide of choice is *Bacillus thuringiensis israelensis* (Bti), a bacterial based pesticide that targets aquatic fly larvae. In Pennsylvania and West Virginia, Bti is applied to large rivers to target S. jenningsi. Because the application of Bti to large bodies of water requires aerial or boat-based spraying over long distances to be effective, residents of these states rely on government programs to manage the fly populations. As of 2015, Maryland does not have any form of organized management against S. jenningsi.

Black flies are most effectively managed with pesticide during their less-mobile larval stage. The pesticide of choice is Bacillus thuringiensis israelensis (Bti), a bacterial based pesticide that targets aquatic fly larvae. In Pennsylvania and West Virginia, Bti is applied to large rivers to target S. jenningsi. Because the application of Bti to large bodies of water requires aerial or boat-based spraying over long distances to be effective, residents of these states rely on government programs to manage the fly populations. As of 2015, Maryland does not have any form of organized management against S. jenningsi.

Current Research
Our ongoing research involves determining not only where S. jenningsi is a nuisance pest, but why it is a pest in some regions but not others. Long term sampling in Washington and Frederick counties will be used to determine the effects of weather and land use patterns on fly populations. Over the course of the next few years our goal is to develop predictive models for the occurrence of both larval and adult S. jenningsi in Maryland. Residents of western and Maryland have greatly helped this project through reports of nuisance activity and through the sampling of flies in their backyards. Visit our website at **http://www.mdblackfly.com/** to learn more about our research or to contact us with questions or reports of S. jenningsi nuisance activity. A one-page fact

sheet on the black fly is available to download at our website. We appreciate any comments or observations from residents concerned with nuisance gnats!