

HB 870 – Black Fly Control Program

SPONSORED BY: DELEGATE NEIL PARROTT

THE HOUSE ENVIRONMENT AND TRANSPORTATION COMMITTEE

MARCH 2, 2016

Black Fly – *Simulium Jenningsi*



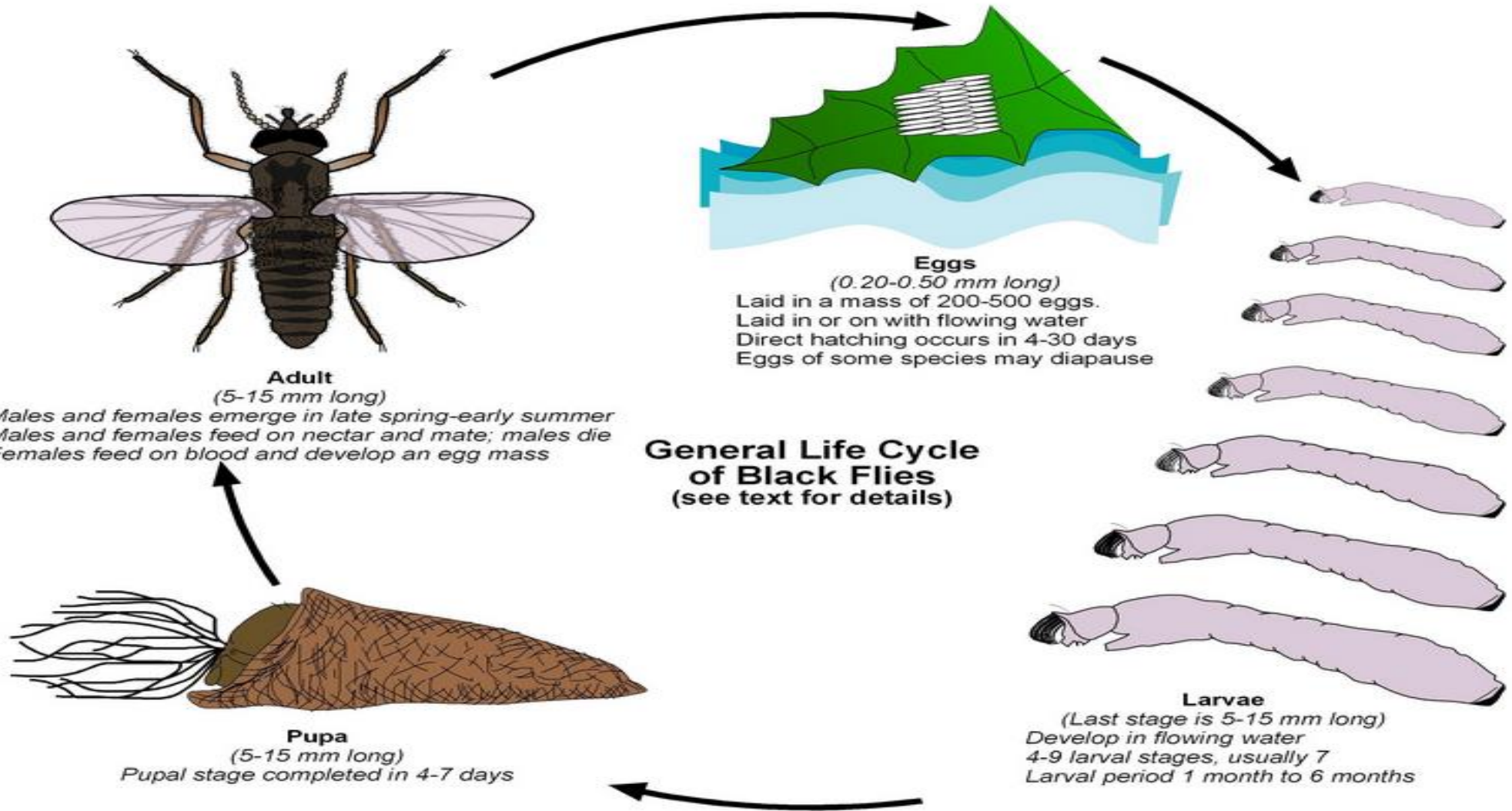
- Black flies are small, swarming, biting flies, locally called gnats.
- They breed in rivers--mainly the Potomac--and fly up to 30 miles.
- They are a severe nuisance to humans and animals, getting in the eyes, ears, nose, and mouth.

Black Fly – *Simulium Jenningsi*



- Like mosquitos, only the females attack. Often flying in swarms, they bite and suck blood around the eyes, ears, scalp, arms, and legs.
- Many people react to the bites with itchy, long-lasting welts. Some people are severely allergic to the bites.
- Black flies are present from spring through fall, during most days depending on conditions.

Black Fly – *Simulium jenningsi*



Black Fly – *Simulium jenningsi*



- The eggs are deposited in flowing waters – won't be found in ponds.
- They are found in large streams and rivers.
- Most clean, flowing waters have at least one species of black fly.
- In our case, the majority are found in the **Potomac River**.
 - This affects Southern Washington, Frederick, and parts of Montgomery County.

What Washington County has to say.

“It’s not uncommon to be standing with guests talking about the battlefield and instead of having their focus on attacks and counterattacks of America’s bloodiest day in military history, they are instead focused on aerial attacks from black flies. Their minds are away from what they’re seeing -- they’re just swatting at blackflies. You have to be walking, or pray that the wind comes up.”

Randy Buchman, a tour guide at Antietam Battlefield

“In the summer, I can't even take my 2 year old outside to play because he gets swarmed and attacked by these black flies. Bug spray doesn't work so he just misses out of the best part of childhood which is playing in your back yard.”

Sarah DiCarlo Baker, Keedysville, Maryland

What Washington County has to say.

“As soon as the weather warms up a little, the gnats are out. Our family cannot enjoy picnics, swimming in our pool or just sitting on the deck. My husband loves to garden, usually sprays himself with bug spray and still ends up with bug bites that usually swell and are very uncomfortable. We have swarms of gnats in our area.”

Christy Jones, Yarrowsburg, Maryland

“Other states have listened to their communities and have done something about it. I just want to breathe without inhaling black flies!!!”

Carol Homan, Keedysville, Maryland

“They're in my hair... they're in my nose... they're in my mouth. They bite and they sting. Black flies frequently ruin a pleasant afternoon in my garden and force me indoors.”

Kevin Raleigh, Middletown, Maryland

History – What has been done so far?

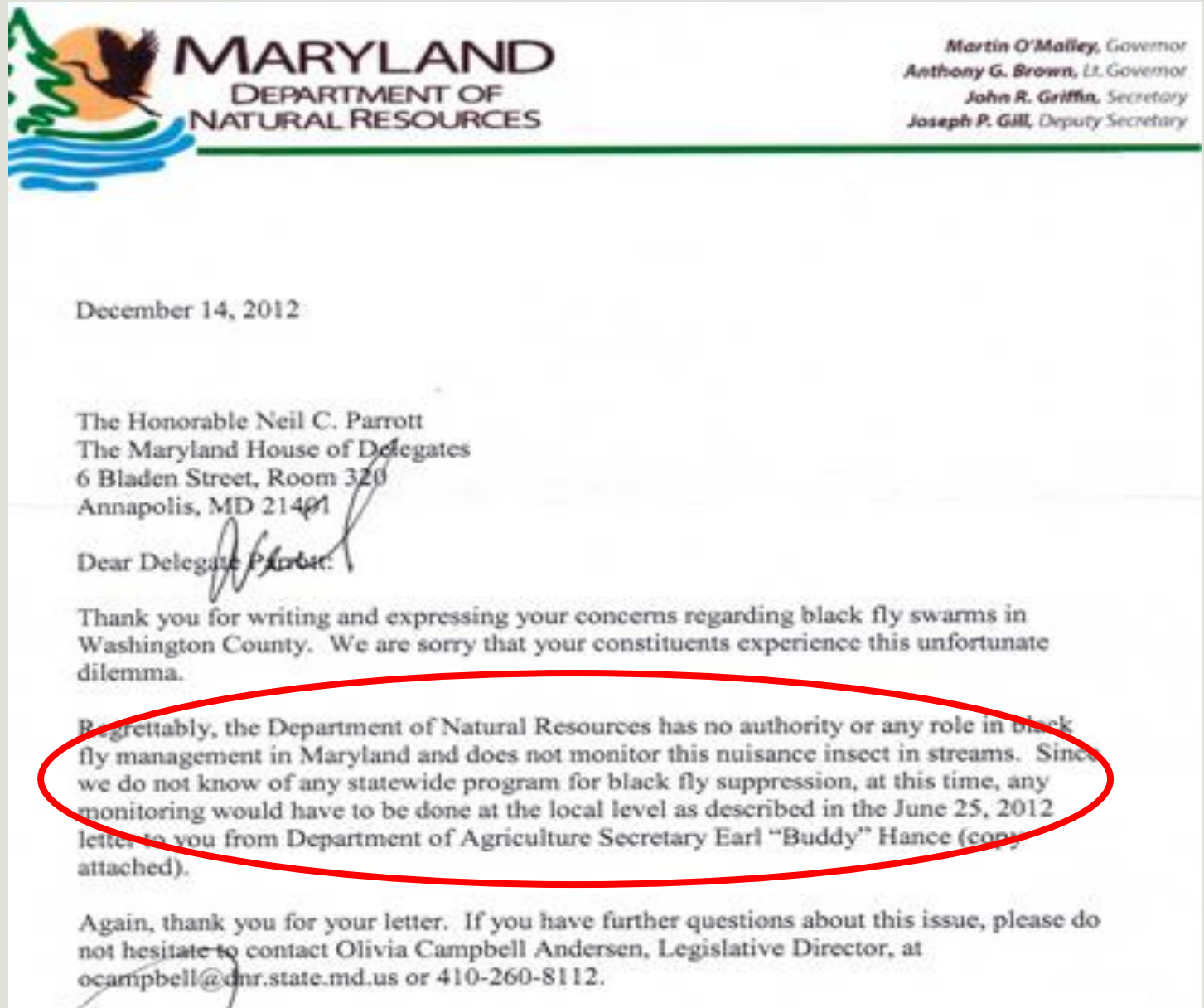


- In 2012, a group of my constituents approached me about this problem.
- It affects the quality of life in our area as well as tourism, at Antietam Battlefield, for example.
- From May to October, you can't go outside without being assaulted by these pests.
- Kids don't play outside, people don't garden – most outdoor activities are limited.

DNR: No Authority to establish a program.

This is a letter I received, after asking what could be done.

December 14, 2012



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Regrettably, the Department of Natural Resources has no authority or any role in black fly management in Maryland and does not monitor this nuisance insect in streams. Since we do not know of any statewide program for black fly suppression, at this time, any monitoring would have to be done at the local level as described in the June 25, 2012 letter to you from the Department of Agriculture Secretary Earl “Buddy” Hance (copy attached).

History – Department of Entomology, Univ. of MD



- With the help of former Senator Chris Shank, the Entomology Department at the University of MD got involved, got funding, and started testing streams and rivers for the source of the black flies.
- The “Lamp Lab,” headed by William Lamp, director of the department, made significant progress to identify the problem areas.

The Lamp Lab – 2014 Objectives

Locate larval breeding sites within the Potomac River and its larger tributaries.

- Combined sampling of 2013 and 2014, *S. jenningsi* has now been identified at:
 - 6 locations within the Potomac River,
 - 1 location on Antietam Creek
 - 1 location on the Monocacy River
 - 1 location on the Shenandoah River
- DNA indicates more breeding locations will be found

The Lamp Lab – 2014 Objectives

Find the geographic range of the nuisance problem.

- Responses in 2014 came from residents in both Washington and Frederick counties (Only Washington County in 2013.)
- In addition, collection kits were distributed to residents in both counties.
- Of the 1087 identifiable flies collected by residents in 2014, all were found to be black flies, *S. jenningsi*.
- In Montgomery and Prince George's counties, specimens were also collected from locations that we had not heard from residents – very low numbers.
- **Findings: Primary nuisance regions appear to be within Washington and Frederick counties.**

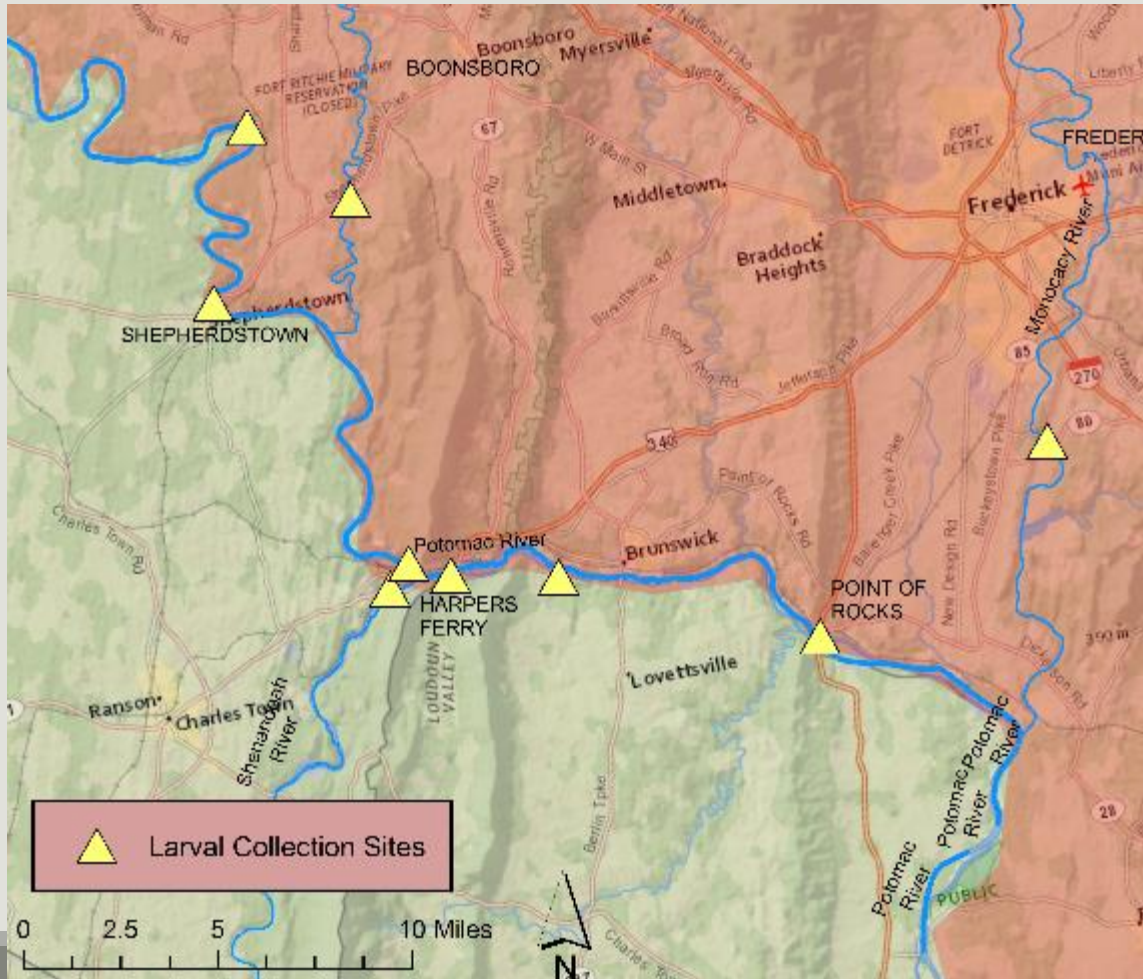
The Lamp Lab – 2014 Objectives

Determine the relationship between fly distributions and land use.



- Fly Collection: An aerial net swung over the head of a researcher – 18 sweeps per location.
- Preliminary analysis:
 - Paved areas in the sampling region were less likely to contain black flies.
 - Black flies were uncommon in the areas near Frederick and Hagerstown (biggest cities.)
- Moderate to high nuisance levels found near the smaller communities of Rohrersville, Keedysville, Middletown, Thurmont, and Brunswick.

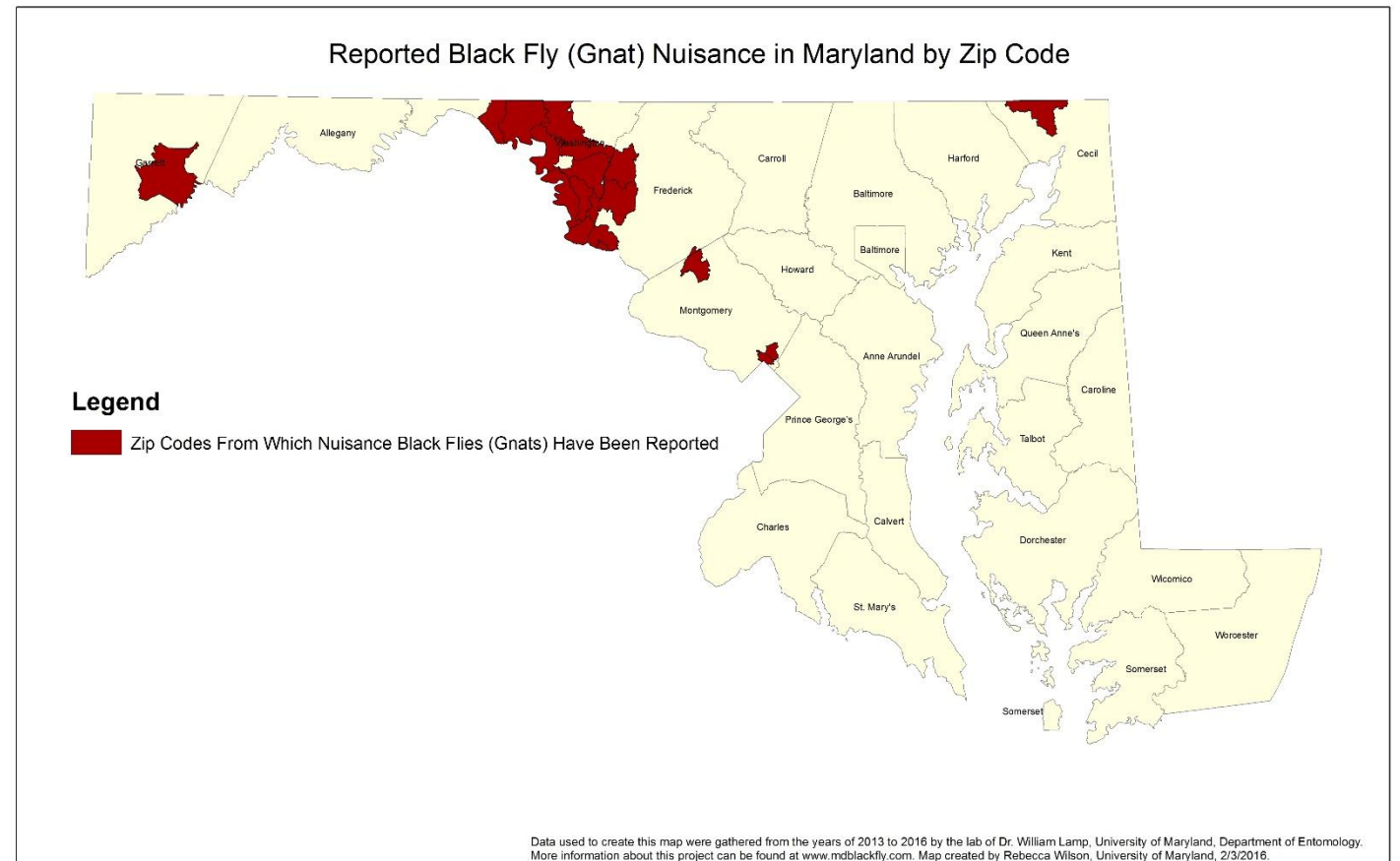
The Lamp Lab - Findings



- The yellow triangles are the breeding sites the Department of Entomology lab was able to identify over the last 2 years.
- You can see the history of their work, surveys, and findings on the website, mdblackfly.com, and the specifics in the written testimony.

The Lamp Lab - Findings

- The Lamp Lab first received nuisance complaints from residents in Washington and Frederick Counties in 2013.
- **As of February 2016, they have additionally received reports from residents in Garrett, Montgomery, and Cecil Counties.**
- These reports do not appear to indicate black flies are a new occurrence in these counties, rather that the residents are only now learning of someone to contact about the problem.



The Solution – Bti, *Bacillus thuringiensis israelensis*

- Bti was invented and patented in 1979 by Leonard J. Goldberg.
- Bti, a natural soil bacteria, is used to control both black flies and mosquitoes.
- Bti is practically non-toxic to humans and non-target insects and is photodegradeable meaning it will not build up in the environment.
- Bt must be consumed by target insect's larvae to activate the toxins; it is not a contact killer.
- Different Bt strains affect different insects.
 - VectoLex[®]CG, Aquabac[®], and LarvX[®] are examples of common trade names for Bti.
 - *Bacillus thuringiensis kurstaki* (Btk) can be used for gypsy moth control. An example is Foray 48B[®].

What are other states doing?



- Pennsylvania, New York, Idaho, Florida, West Virginia, and California have black fly control programs, using Bti, to suppress these black flies at the larval stage.
- Pennsylvania has the world's second largest black fly control program treating 1711 miles of rivers, just after the World Health Organization (WHO).
- Douglas Orr – PA DEP, Program Specialist (doorr@pa.gov)

Black Flies – Health Concerns

- These gnats have been known to carry parasites and spread diseases to humans and livestock in other areas.
- Due to the spread of river blindness and other health concerns, numerous programs have been established throughout the world to control the black fly population

World Health Organization (WHO)



- Onchocerciasis, “River Blindness” – most common cause of blindness in the world
 - Caused by the parasitic worm and transmitted to humans through exposure to repeated bites of infected blackflies of the genus Similium.
- The World Health Organization has used Bti for 30 years to combat this devastating disease from South America to Yemen with the majority of affected areas in Central Africa.
- Bti is a proven solution.

Agricultural Concerns

- "Apart from the annoyance and discomfort, black flies cause economic losses through reduced beef and milk production, reduced efficiency of agricultural and industrial workers, and spread of diseases."
- "In Canada, black flies transmit blood-borne parasites to turkeys, geese, and ducks. Cattle (not previously exposed) have died following a heavy attack by black flies in Alberta."

Fish and Macroinvertebrate Population

- Studies of Bti use conducted in Pennsylvania show minimal impact on non-target species.
- Bti, which in PA is used at half the label rate allowed by the EPA, has no effect on the fish population.

Bti for Treating Black Flies Has No Effect on Fish Population

Some Studies Examining The Effects of *Bti* on Fish

- Brook Trout, Slimy Sculpins, 10 ppm, No effects on survival, growth or diet (Gibbs et al. 1986)
- Smallmouth Bass and other species, 11.5 ppm, No effect on growth, condition, abundance (Jackson et al. 2002)
- Rock Bass, 22.5 ppm, No effect (Merritt et al. 1989)
- Brook, Brown, and Rainbow Trout (juveniles) 1,000 ppm, No mortality and no lesions (Wipfli et al. 1994)
- Bluegill Sunfish, Rainbow Trout, Sheepshead Minnow 2,500 ppm to 12,500 ppm (100-500X label rate), No mortality and no lesions (Christensen 1990)

Bti for Treating Black Flies Has No Effect on Fish Population

Studies Examining The Effects of Bti on Fish



HB 870 – What it does

- Establishes a black fly management and control program.
- Sets up Washington County as the Pilot location to begin the program.

HB 870 – What it does

- Costs to set up the program are minimal. The fiscal note indicates \$110,700 needed to hire a biologist and a contractual seasonal employee within DNR to implement the program in Washington County. Perhaps though, existing personnel could be used to set up the program.
- Based on Pennsylvania's program, the average cost to treat a mile of a river is approximately \$4,000.
- Using Pennsylvania's average cost, to treat Washington County's 35 miles of the Potomac River would cost approximately \$140,000 for the year.

HB 870 – What it does

- The program will allow the state to work with residents and county governments who want to start a black fly program. Currently, there is no avenue in Maryland to treat for black flies.
- Project funds can be obtained by grants, private sources, local funds, or a shared funding approach to manage and control the black fly population using BTi, a natural bacterium which has been proven to work safely in Pennsylvania for over 35 years.

Please vote favorably on HB 870 to:

- Manage and Control the Black Fly population.
- Increase the desirability for tourists to come to Maryland's sites like Antietam Battlefield and the C&O Canal.
- Enhance production of Dairy Cows.
- Enhance the livability of areas affected by black flies.
- Enable children in these areas to play outside more of the year.

Questions???