

# GLOBE Mission Mosquito

Newsletter #7  
May 15, 2019

## Welcome Message: Dorian Janney, Campaign Coordinator

The days are getting longer here in Maryland. My daffodils have come and gone, and the trees now have lovely green leaves. I love this time of year when the world seems to spring forth anew, filling me with energy and joy! I also love being able to spend more time outside, taking hikes or sitting on my front porch reading the daily news. As I watch the bees and butterflies return to my front yard, I also know that very shortly they will be followed by the world's most dangerous animal: the mosquito. It is time for me to touch base with my local mosquito control agency and review the ways in which my family and I can be prepared and can reduce the threat of mosquito-transmitted disease.

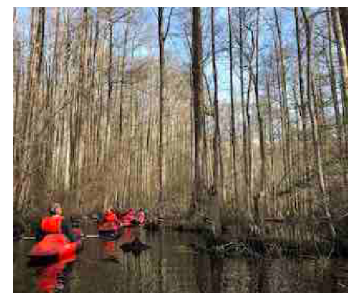
In this edition of the newsletter, we will share some ways in which you can also be prepared for an active mosquito season. In the Science Cafe, Dr. Rusty Low talks about the importance of healthy wetlands, and in the Educator's Corner, Liz Burck provides some background information on Mosquitoes, You, Blood and Disease. Notes from the Field: Los Angeles Public Library, Q&A with Vivienne Byrd by Theresa Schwerin describes how one community is raising awareness and coming together to reduce the threat of mosquito-borne disease. Our Spotlight this month shines on Erquinio Taborda Martinez and the students he is working with in Columbia. Check out the Research Opportunity starting May 15!

## Science Cafe: Dr. Russanne Low, Campaign Scientist

### Did You Dump Out the Water? When to Answer "No" to Eliminating a Mosquito Breeding Site When Using the GO Mosquito Habitat Mapper.

Our team has received several questions about what to do when mosquitoes are found in a natural habitat, such as an estuary or a wetland. When you use the Mosquito Habitat Mapper and your mosquito observations are finally logged, you are then prompted to do Step 4, "Eliminating Mosquito Breeding Habitat. By dumping or treating water you can significantly decrease the spread of mosquitoes.

It's important to clarify that Step 4 is referring to artificial or natural containers and human created water impoundments. Examples of water impoundments include things such as stock and cattle watering holes (an important source of mosquitoes in areas in the U.S. west),



*Photo 1 Citizen scientists paddling through the bald cypress blackwater swamp, Robertson Millpond Reserve, Wendell, N.C. March 2019 (Credit: Author)*

irrigation ditches (a primary source of the mosquitoes that transmit West Nile virus in Colorado, USA), and artificial ponds and water sources that are landscaping features on public and private lands. These sites collect water for an established purpose and we aren't suggesting that you remediate these sites. When you are recording these mosquito habitat sites, the right answer is to just say "no".

To read more, go to the Science Café: <https://www.globe.gov/web/mission-mosquito/overview/science-cafe>

## **Educator's Corner: Liz Burck, Senior Science Educator, IGES**

### **Mosquitoes, You, Blood, and Disease**

The work that you are doing- that of identifying mosquito habitats, checking for their presence, identifying those mosquitoes, getting rid of the standing water/breeding site, and sending in your results and photos- has important implications for human health.

And it all starts with your blood. Your blood helps to perpetuate mosquitoes. Female mosquitoes help themselves to your blood- from which they will extract specific proteins needed for the development of their eggs. In return for your blood donation, some species of mosquitoes can leave behind viruses and parasites that cause diseases.

Therein lies the paradox of a mosquito bite: things they take out of your blood help them survive; things they leave behind in your blood can make you sick.

While many of those diseases have been around a long time, it was not until the 1800's that scientists identified the mosquito as the carrier and transmitter of those diseases. We now know that mosquitoes have the distinction of being the organism that is responsible for more human suffering- and death- than any other.

One of the goals of GLOBE Mission Mosquito is to build an awareness of the diseases transmitted by mosquitoes. Six of those diseases routinely appear in the many toolkit resources. They include: chikungunya, dengue, malaria, West Nile virus, yellow fever, and Zika virus.

It is important that you know about the diseases that are created by pathogens transmitted by mosquitoes. Knowing this information will place a new emphasis on the importance of your work. In an effort to make this information easily available, GMM has developed a quick reference guide. Each of the six entries will include information on the following areas: cause (microorganism) of the disease, scientific name of the mosquito vector, geographic range for that mosquito, incidence of the disease, transmission, symptoms, treatment, general background information, and a brief history. There will also be a one-page introduction with explanations and definitions.

The guide will be available on the GMM website later this month. We hope you find it informative. Contact us with any comments or suggestions- we want the guide to be another useful tool in your toolkit. Contact: [Liz\\_burck@strategies.org](mailto:Liz_burck@strategies.org)

# Notes from the Field: Los Angeles Public Library

## Q&A with Vivienne Byrd by Theresa Schwerin, IGES/GLOBE Observer Lead for Libraries

In addition to being a GLOBE Partner, Los Angeles Public Library (LAPL) is engaging the public in citizen science using the GLOBE Observer app as part of their Neighborhood Science pilot program. During April 2019 they began offering programming using the GLOBE Observer Mosquito Habitat Mapper. Vivienne Byrd is Lead for the Full STEAM Ahead & Citizen Science Initiative LAPL and explained their interest in GLOBE Mission Mosquito.



Photo 2 Vivienne Byrd  
(Credit: Byrd)

**Question: Why are you interested in GLOBE Mission Mosquito and using GLOBE Observer Mosquito Habitat Mapper in your community and library programming?**

**Answer:** We feel the strong need to raise awareness and educate Angelenos about the threat mosquitoes can pose to local residents and families. Since the first sighting and spreading of Asian Tiger mosquitoes in 2001, which arrived with shipments of lucky bamboo from China, Los Angeles has been home to other invasive mosquito species, including the yellow fever mosquitoes that are known to carry Zika and dengue virus. As the second largest city in the U.S. with the world's fifth busiest airport and top two busiest shipping ports in the nation, Los Angeles is essentially the gatekeeper of many unwelcome pests that pose high health risks. With the amount of rain, we have this past winter and this spring, the spreading of mosquitoes is anticipated to be even more pervasive.

Through the Neighborhood Science program in the branches of Los Angeles Public Library, we are providing the participants with knowledge of mosquitoes and tools to track, record, and share their habitat information with researchers and scientists using the GLOBE Observer *Mosquito Habitat Mapper* app. We want our program participants to know that they also have the power to stop the spreading of the mosquito population and prevent possible disease outbreaks.

**Question: Are mosquitoes a problem in your community? How?**

**Answer:** Yes. There have been cases of human West Nile Virus reported in the Los Angeles area. West Nile Virus is spread to humans through the bite of an infected mosquito. The Greater Los Angeles Vector Control District has also been on the lookout for mosquitoes and warning residents that ongoing mosquito activity in the region is continuing to bring additional human West Nile infections, along with the threat of other illnesses transmitted by new invasive populations of *Aedes* mosquitoes.

**Question: Could you briefly describe your library program or plans for participating in GLOBE Mission Mosquito or piloting GLOBE Observer Mosquito Habitat Mapper and activities in your community?**

**Answer:** Our children's librarian at the Arroyo Seco Branch began piloting activities in April

from the GLOBE Observer Toolkits for Informal Educators (available at <https://observer.globe.gov/toolkit/mosquito-habitat-mapper-toolkit>). She put together a combination of GLOBE Observer activities with additional activities for a one-hour program targeted for children 5-7 years old (kindergartners to second graders). Following are the activities she put together for her program:

- The program started by reading a picture book about mosquitoes and their habitat, coupled with a mosquito puppet to make the topic more inviting and friendlier.
- Our branch librarian walked through enlarged charts posted on the wall showing the anatomy of mosquitoes.
- Children did a simulated search for mosquito habitats and larvae. Photos of habitats were posted on the wall and they identified images of three genera/types of mosquitoes - *Culex*, *Anopholes*, and *Aedes* - based on what they learned from the wall charts.
- Participants worked with the library staff to build their own mosquito trap using recycled water bottles. The librarian cut the plastic bottles for children.
- They also checked traps for mosquito larvae that were set out at the library. While there weren't any mosquito larvae, they did find a wiggly bug in the trap that they used a baster to catch then drip onto a white paper plate. They then observed the bug using a clip-on magnifier - all good practice to get ready for observing larvae using the GLOBE Observer Mosquito Habitat Mapper.



Photo 3 Photo of library staff working with children (Credit: Los Angeles Public Library, used with permission)



Photo 4 Students identifying larvae. (Credit: Los Angeles Public Library, used with permission)



Photo 5 Student sitting at a table with mosquito traps. (Credit: Los Angeles Public Library, used with permission)

## Spotlight: Erquinio Taborda Martinez in Columbia

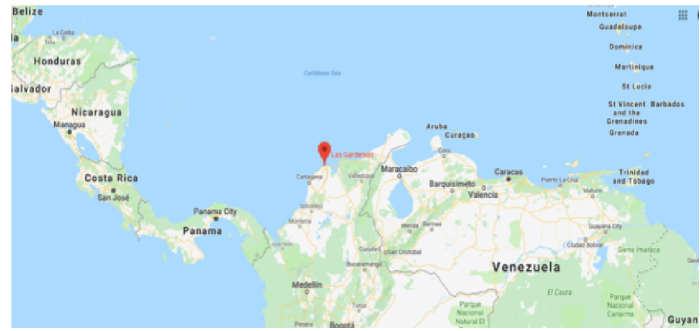
Erquinio Taborda Martinez works with children who have had interrupted schooling due to conflict in their home countries. He finds that they are very engaged when they are working with real-world problems that affect them and their families. The GLOBE Observer Mosquito Habitat Mapper is the perfect project for him and these students to work with, as it also allows their families to become involved.



Photo 6 Erquinio Martinez and students (Credit: Martinez)

Martinez notes that the region in which they live is endemic for such mosquito-transmitted diseases as dengue, Zika, and chikungunya. Around the school and in and outside of the apartments where his students live, there are many sources of standing water. Although some of these are natural, most of the water sources are artificial. An example of these man-made water sources includes the network of rain water drains that are usually dry in the summer but are filled with water during the rainy seasons. In addition to these outside water sources, many families grow plants inside their apartments.

The students document the standing water sources throughout their homes and neighborhoods by taking pictures using smartphones. They collect samples when they find mosquito larvae in containers which they mark with their names, the date of collection of the sample, the type of water source where they found the larvae, as well as the number of larvae they sampled in the container.



Map 1 Barranquilla, Columbia (Credit: Google Maps)

Martinez and the students spend time together working to identify the types of larvae that the students have collected. At the end of March, Martinez and his students had identified 274 larvae. Using the dichotomous key in the Mosquito Habitat Mapper, they found that 50% of these larvae were *Aedes aegypti* which can transmit yellow fever, West Nile virus, dengue, Zika, chikungunya, and other diseases. These larvae were primarily found in the vases and pots of aquatic plants which students had in their homes. They also identified *Culex*, *Aedes albopictus*, and other *Aedes* larvae. Fortunately, none of the larvae they identified were *Anopheles*, some species of which can transmit the pathogen that causes malaria.



Photo 7 Martinez and students identify larvae (Credit: Martinez)



Photos 8 and 9 Close-ups of terminal segments

The students share the results of their research with others in their community in an effort to help reduce the sources of these mosquitoes, and thus reduce the threat of mosquito-transmitted disease in their region.

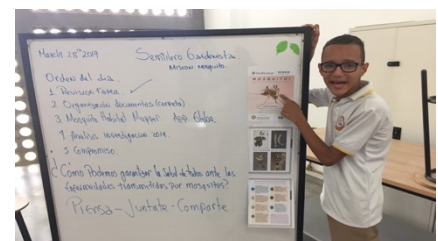


Photo 10 Student sharing research with local community

# Citizen Science Week 2019 Mosquito Blitz Results

## GLOBE Country Prize

GLOBE Senegal

### Top Submitters

- Escola M. Minas Gerais, Brazil
- Osnova škola Rugvica, Croatia
- Columbia GLOBE v-School, Columbia
- Joseph A. Borges III, U.S. Citizen Science

### Award for Scientific Photo

Mandoye Seck, GLOBE Senegal

## What's the Buzz? Mosquitoes in the News

### World Malaria Day:

On April 25th, the National Institutes of Health (NIH) recognized World Malaria Day and committed to a reinvigorated malaria research program.

<https://www.niaid.nih.gov/news-events/world-malaria-day>

### Parasites on the Clock:

From the moment a mosquito takes a blood meal containing malaria parasites, the parasites are in a race against time.

<https://www.niaid.nih.gov/news-events/malaria-races-against-mosquito-reproduction>

### How does DEET Repel Mosquitoes?

Ever wonder what it is about using DEET that keeps mosquitoes away? Find out the answer to this question!

<https://www.npr.org/sections/goatsandsoda/2019/04/25/716767256/how-do-mosquitoes-taste-deet-hint-its-not-their-mouthparts>

## Most active over the past 30 days (as of May 9th)

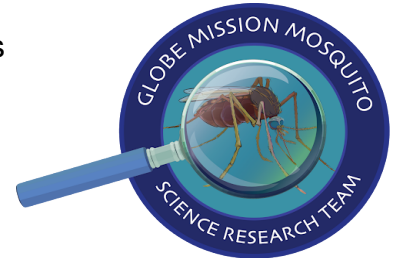
GLOBE Member	School/ Institution	Country
M. Seck	Lycee Thilmakha	Senegal
K. Gueye	Lycee Thilmakha	Senegal
M. Sarre	Lycee Thilmakha	Senegal
M. Ndiaye	Lycee Thilmakha	Senegal
D. Palacios	I.E.Enrique López Albújar -Piura	Peru
J. Bouwman	Shumate Middle School	USA
B. Fall	Lycee Thilmakha	Senegal
S. Guedes	Centro Educacional Leonardo da Vinci	Brazil
I. Mauad	Escola Minas Gerais	Brazil
E. Martinez	Columbia GLOBE v-School	Columbia
F. Gueye	Lycee Thilmakha	Senegal

# Seeking Mission Mosquito Research Teams for NASA Data Project

**May 15-August 15**

Congratulations! Your data are getting noticed by scientists. They are excited about your observations and hope you will keep sending more. If you're up for the challenge, we'd like to assign a special mission to you. Will you accept your mission?

NASA researchers are interested in obtaining a seasonal record of mosquito numbers and mosquito habitats from several communities around the world- and one of them could be yours! Scientists are requesting repeat observations to be conducted at one site for several weeks to obtain data that they can analyze in conjunction with other data sources, such as precipitation, temperature, or land cover. For this research project we are seeking groups of citizen scientists and student citizen scientists who are willing to commit to making one or more observations every week from the same place (such as a mosquito trap), in addition to their regular submissions using the Mosquito Habitat Mapper.



*Graphic 1 GLOBE Mission Mosquito Science Research Team Graphic*

## Your Mission

1. Pick a location.
2. Set up a mosquito trap (you can set several traps around your school/community). Visit your mosquito trap every seven days (if you have multiple traps, make sure to report on each one).
3. Make an observation using Mosquito Habitat Mapper.
  - a. Take pictures of the area where your trap is located.
  - b. Make sure you count the number of mosquito larvae and report that number. This is really important.
  - c. In your comments, tell us about the weather (is it hot and humid? raining?).
  - d. Take photos of the samples in the trap.
  - e. Clear the trap, if you found larvae or pupae. If not, record "0" using the Mosquito Habitat Mapper and leave the trap as is.
4. Repeat!

The first data collection period will run from May 15-September 15.

When you sign up, you will receive instructions on how to build a mosquito trap from materials found in your home. This will make it easier to count mosquito larvae.

Having citizen scientists like you build mosquito traps using the same instructions helps scientists compare data from different places. Having you go back to the same location again and again and again helps build a record of what's going on at that location – these kinds of data records are called “monitoring records” and are especially useful to scientists.

During the project you will have access to a special mission website. The GLOBE Mission Mosquito Campaign scientist and team will schedule an exclusive webinar with you. And

don't forget, you always have the opportunity to use the data you collect in your own GLOBE International Virtual Science Symposium project or science fair research project.

**Your prizes!** Everyone will receive a GLOBE Mission Mosquito Monitor digital badge you can display on the GLOBE website and in social media. Everyone will also receive certificate of participation in the NASA GLOBE Observer Program. **The top Monitor will get a special video call from a NASA scientist.**

Will you accept your mission?

For questions and to confirm "Yes, I accept!", please contact:

- Dorian Janney, GLOBE Mission Mosquito Campaign Coordinator, [dorian.w.janney@nasa.gov](mailto:dorian.w.janney@nasa.gov)
- Dr. Russanne Low, GLOBE Mission Mosquito Campaign Science Lead, [rusty\\_low@strategies.org](mailto:rusty_low@strategies.org)

## News

### 23<sup>rd</sup> Annual GLOBE Meeting

"Early-bird" (lower-price) registration for the 2019 GLOBE Annual Meeting ends on 15 May! The meeting, which will be held in Detroit, Michigan, USA, will take place from 14-18 July at The Crowne Plaza Detroit Downtown Riverfront Hotel. The Student Experience (16-18 July) will be held at the Howell Nature Center. The deadline to register for the meeting is 01 July. Space is limited, so register soon!

The theme of the meeting, which will be hosted by Dr. Kevin Czajkowski, University of Toledo, and David Bydlowski, Wayne RESA, is "Intersections of Diverse Environments." Detroit is a city positioned at the intersection of multiple types of diverse environments culturally, geographically, and economically, which is why the theme will be explored in multiple strands: Finding Nature in Urban Landscapes; Exploring Changing Environments; GLOBE and Technology; and GLOBE Gives Back.

**PLEASE NOTE:** The Student Experience at Howell Nature Center is full. If you would like to be added to the waitlist, please send an email to [meetings@globe.gov](mailto:meetings@globe.gov). In addition, oral sessions are no longer being accepted; however, students and community members can still submit proposals for posters.

For more information on this, [click here](#).

To learn more about the GLOBE Annual Meeting (#GLOBE23), [click here](#).

To learn more about registration (including accommodations, air and ground transportation, invitation letters and Visa requirements, the UCAR Participant Code of Conduct, what to know about the area, and the cancellation policy), and event details, [click here](#).



## Analyze Data with the Common Online Data Analysis Platform (CODAP)

So, you've collected mosquito data - what next? Analyze data with the Common Online Data Analysis Platform (CODAP). Following education and data collection, data analysis is a crucial next step for individuals or communities to take in the fight against Zika. CODAP is free online tool that enables anyone to become a data analyst. Whether for a student, teacher, or public health official, CODAP provides the basic necessary tools to make sense of large datasets. You can upload GLOBE data or other files to the platform depending on your needs. Visit the CODAP homepage [here](#). View the "getting started" tutorials [here](#). See the full GLOBE Data webpage [here](#).

## Mosquito Summer Reading Suggestions

What are you reading this summer about mosquitoes? Find out what we're reading and more in our GLOBE Observer lists on WorldCat. You can find the mosquito lists for children, teens, and adults in the new GLOBE Observer toolkits at:

<https://observer.globe.gov/toolkit/mosquito-habitat-mapper-toolkit/books-videos-and-presentations>

Send suggestions for additions to [cassie\\_soeffing@strategies.org](mailto:cassie_soeffing@strategies.org).

### For children:

#### ***Becoming a Mosquito*, by Grace Hansen**

From WorldCat: "Reviews each stage in a mosquito's metamorphosis from a tiny egg to an adult. Carefully chosen photographs accompany the copy, so readers can see and understand a mosquito's amazing transformation clearly."

### For teens and adults:

#### ***The Mosquito Book, The Next Edition* by Scott Anderson**

From the book jacket: "This guide has been updated and expanded with swarms of useful tips and new information including West Nile Virus facts, for a fun, fascinating, and enlightening look at the bane of summer: Mosquitoes!" 144 pages.

## Upcoming Events

### **Wednesday, May 29th at 2 PM (ET)**

Citizen Science webinar: "Mosquitoes, Land Cover, and GO on a Trail"

### **Wednesday, June 5th at 8 PM (ET)**

Education webinar: "Student Mosquito Research from Around the Globe"

### **Wednesday, June 19th at 2 PM (ET)**

Citizen Science webinar: "Tools for Reporting Data"

**GLOBE Mission Mosquito** is an initiative of **NASA Goddard Space Flight Center** and the **Institute for Global Environmental Strategies**, in partnership with **The GLOBE Program**.

Learn more at [www.globe.gov/web/mission-mosquito](http://www.globe.gov/web/mission-mosquito).

