



GLOBE Observer

Mosquito Habitat Mapper

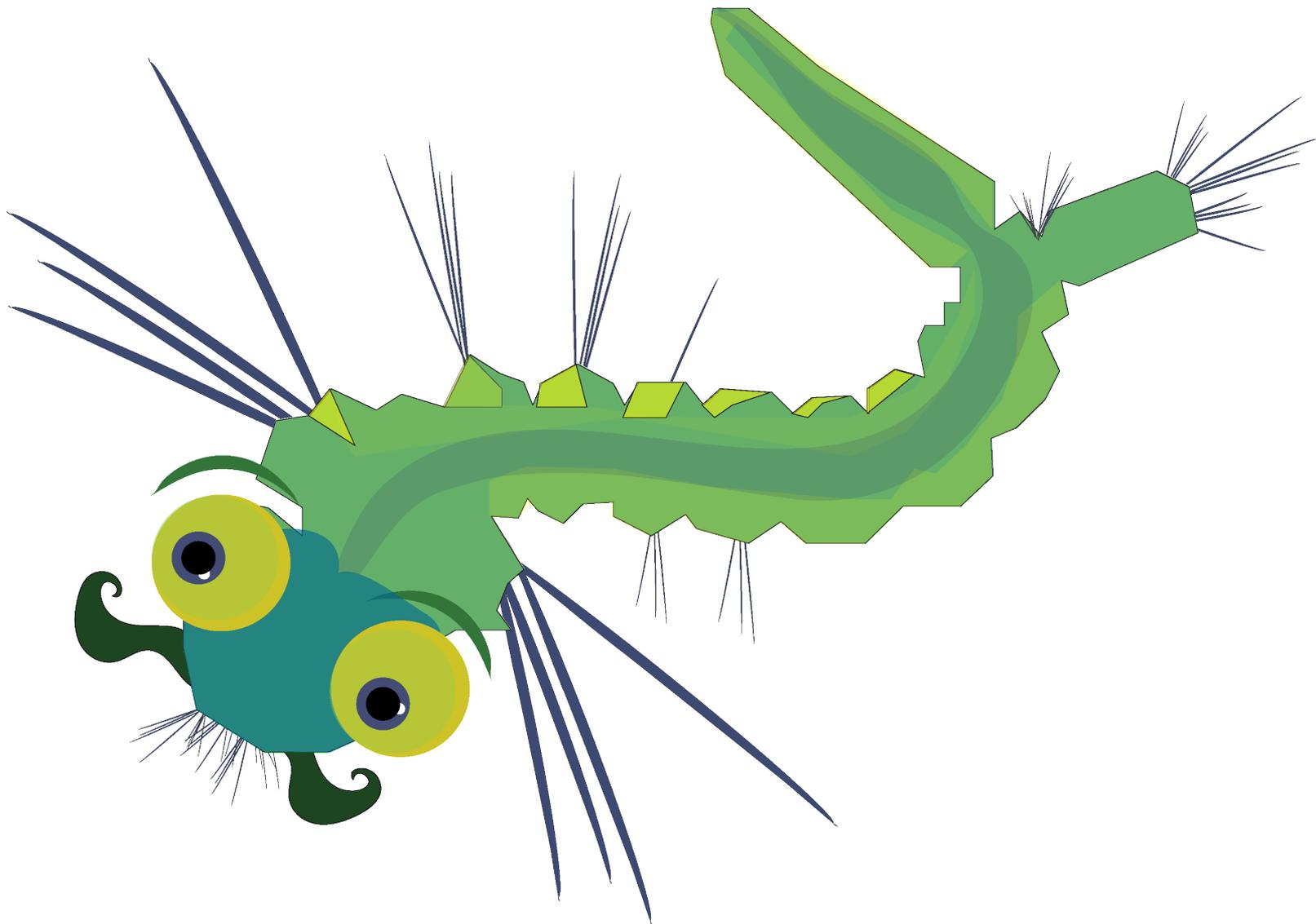
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Institute for Global Environmental Strategies, USA

Rising Voices 5

Boulder CO

April 12-15, 2017





Problem:

Communities around the world lack access to tools and techniques needed to participate in decisions that directly affect them, especially in relation to environmental health hazards



Mosquito Habitat Mapper



Empower communities by providing a tool that that can be used to identify and assess public health risk from mosquito vector borne disease.



• Data Collection

← Time and Location

Enter the **local** date and time of the observation:

Jul 7, 2016

9:28 AM

Enter location coordinates:

Latitude: 34.1244

Longitude: -117.7491



Next

← Observe and Count

Step 2 - Observe and Count Larvae

Would you like to sample larvae and perform a count?

You will need to carefully scoop or suction larvae from the water source



Yes

No - I'm done

← Identify

Photograph Larva

Take up to 3 photographs of the full body of the larva. Your goal is to get a picture similar to the pictures below.



+ Photo + Photo + Photo

Finished Taking Photos

← Eliminate Breeding Grounds

Step 4 - Eliminate Breeding Grounds

Thank you for recording your observations. Please review or add any comments you'd like us to know about this observation.

Comments from earlier are already listed here. User can add to/modify/delete contents.

Step 4 eliminates mosquito breeding grounds. By dumping or treating water, you can significantly decrease the spread of mosquitoes. Public health officials in your area may have suggestions on how to treat water that cannot be dumped.

Did you dump out the water?

Yes No





• Data Quality and Assurance

9:28 AM 100%

Larvae Photo

Siphon

The 3 segments indicate this is a mosquito larva. Now take up to 3 photographs focusing on the "terminal" or back end of the larva. Fine details such as the hair on the larva are important to see, so use a magnifier and lighting to get the best possible image.




+ Photo

+ Photo

Nearly all mosquito larvae have a "siphon" on the back of the larva. The siphon is used by the larvae to breathe. Look closely at the back of your larvae and determine if it has a siphon.

siphon absent siphon present

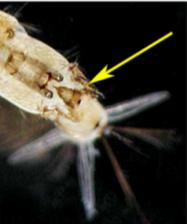



PHOTO REVIEW

GLOBE.gov View: Unapproved Sort by: Oldest Display: 5

62 submissions with 301 unapproved photos are pending approval Submit Changes

Citizen Scientist: robynhertz@comcast.net 2017-03-27 18:17:00

North South East West Up Down



North - Altostratus
South - Altostratus
East - Altostratus
West - Altostratus
Up - Altostratus

Mark All In Row:

Citizen Scientist: eero.rantalaiho@pp.inet.fi 2017-03-28 10:43:00

North South East West Up Down





- **Data Analysis and Sharing**

THE GLOBE PROGRAM A Worldwide Science and Education Program

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GLOBE Data > Visualize Data

Home

- GLOBE Data
- Data Entry
- Visualize Data
- Retrieve Data
- Science Honor Roll

Visualization System

GLOBE provides the ability to view and interact with data measured across the tool to map, graph, filter and export data that have been measured across GLOBE the GLOBE Data Visualization Tool supports a subset of protocols. Additional continually being added.

[Enter the Visualization System](#)



School: Al Fisalah Gifted School at Jeddah

Site: Hydrology 4#

Next Site 1/3

Measurements Data Counts School Info Site Info Photos

Hydrosphere

Mosquitoes

Mosquitoes

Data Date Range: 2017-03-13 to 2017-03-15

Measurement: 1

Measured At: 2017-03-13 14:00:00
 Season: dry
 Water Body Depth Gt 50cm: True
 Water Body Size M: 1-10m
 Shaded Area Percent: 75
 Plants: False
 Algae: True
 Odor: normal/none
 Surface Oil: none
 Turbidity Subjective: clear
 Container Types: plastic bottles
 Most Freq Habitat Type: artificial
 Container Water Level Percent Median: 75
 Lid Types: plastic
 Most See Container Color: light

Larva Count Ratio

Date	Larva Count Ratio
2017-03-10	0
2017-03-18	0
2017-03-21	0
2017-03-24	0
2017-03-27	0
2017-03-30	0
2017-03-05	0
2017-03-08	0
2017-03-11	1
2017-03-14	4
2017-03-17	10

30 Days 1 Year Custom

The background of the slide is a stylized illustration of a mosquito habitat. It features a central black silhouette of a mosquito standing on a light blue patch of water. The water is surrounded by various shades of blue representing grass, reeds, and lily pads. In the upper left, there is a white circle representing the sun or moon. The overall aesthetic is clean and modern, using a monochromatic blue palette with white and black accents.

Mosquito Habitat Mapper



We examine larvae, an immature developmental stage of the mosquito that lives in water, doesn't bite and doesn't pose a health hazard to humans





1. Document habitat





2. Sample and Count

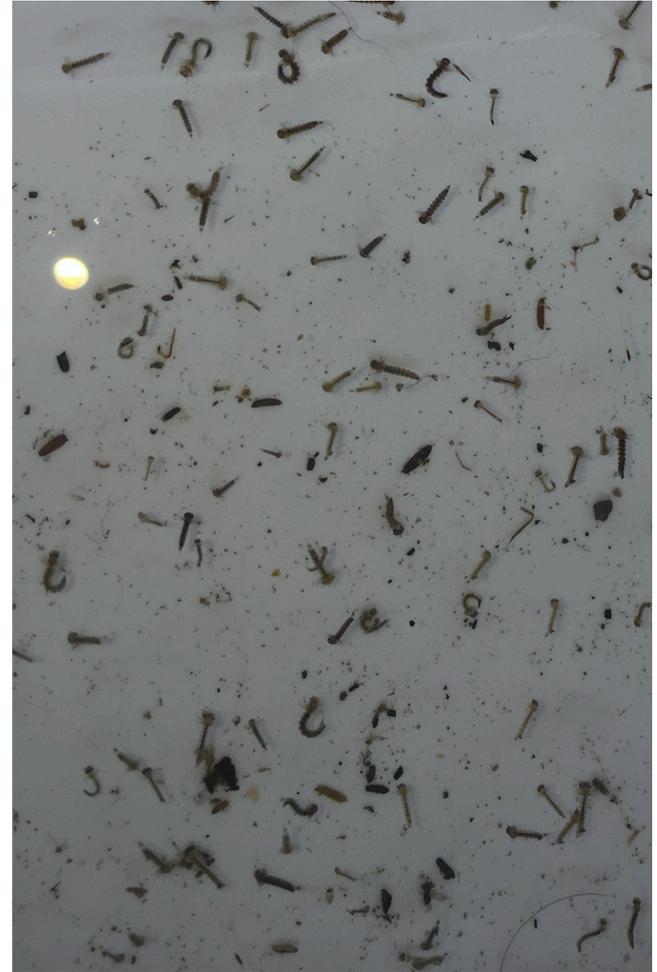
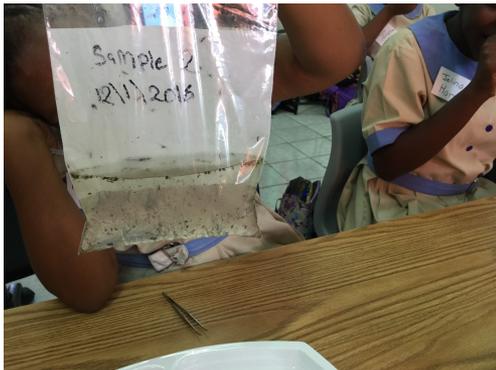




Sample and Count

Provide a count of the larvae in your sample.

You can provide an estimate or an exact number. Here, there is between 75-100 larvae.





Step 3. Photograph and Identify-1

Pour part of the sample containing larvae on to a white tray or plate.





Step 3. Photograph and Identify-2

You can use a dropper or spoon to isolate one larva and put it on a white surface. Suspend in a small drop of water.





Step 3. Photograph and Identify-3

If there is too much water, the larva can swim and will be hard to keep the lens in focus. You can remove most of the water by blotting it up using the corner of a paper towel.

If the larva is still moving too fast to see, you can euthanize it with a drop of alcohol.





Step 3. Photograph and Identify-4

Use a probe or toothpick to position the larvae so you can see the diagnostic features.





Step 3. Photograph and Identify-5

Attach a macro lens to a mobile device so that you can take a picture and upload it to the app.





Step 3. Photograph and Identify-6

Clip the macro lens over the lens of the camera and line it up so that you see a perfect circle of light on your phone screen.





Step 3. Photograph and Identify-7

Line up the lens so that the specimen is in the circle of light on the viewer.

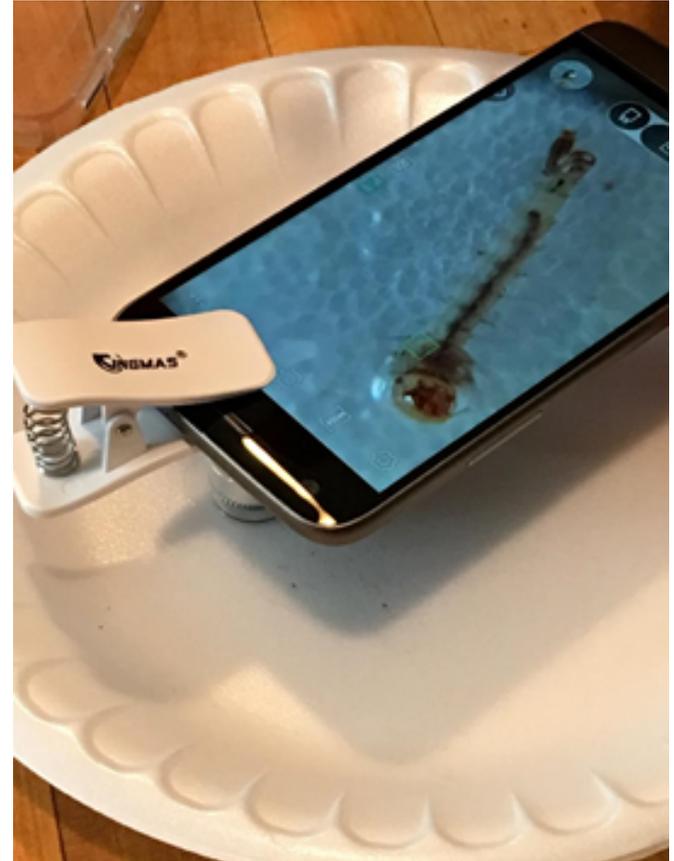




Step 3. Photograph and Identify-8

Many clip-on devices have a clear collar on them at the end of the lens. You can rest the collar of the lens on your plate.

The collar helps to you to find the focal length that is ideal for looking at your specimen.

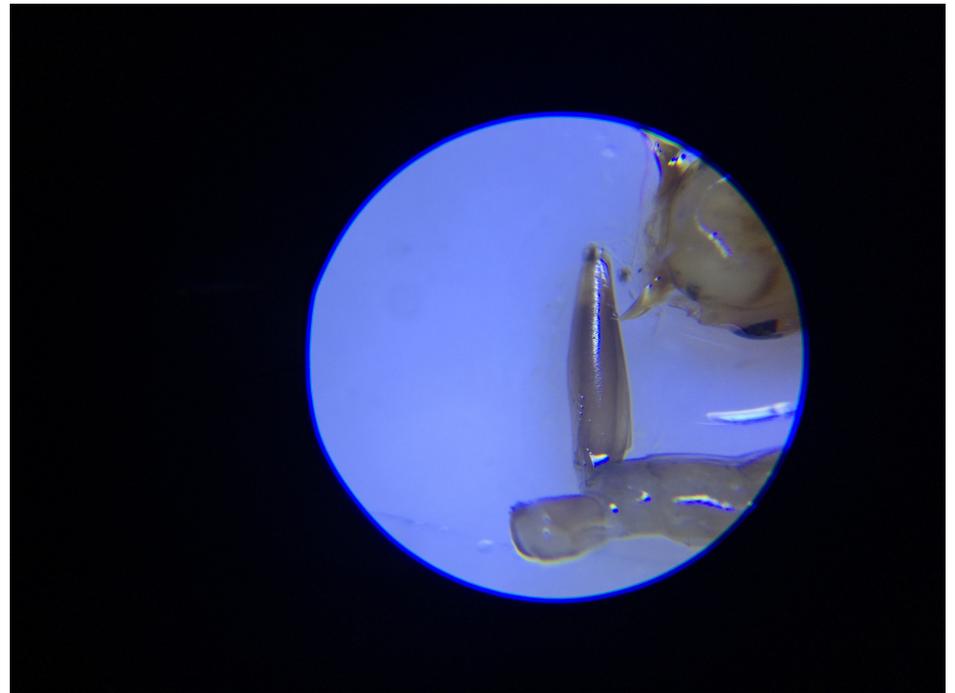




Step 3. Photograph and Identify-9

Once you have determined that you have a mosquito larva, you will want to focus on the diagnostic features.

Now you are ready to identify your specimen, using the app, or a local mosquito larva key.





Tip and Toss: Step 4

Remove the breeding site from use by mosquitoes

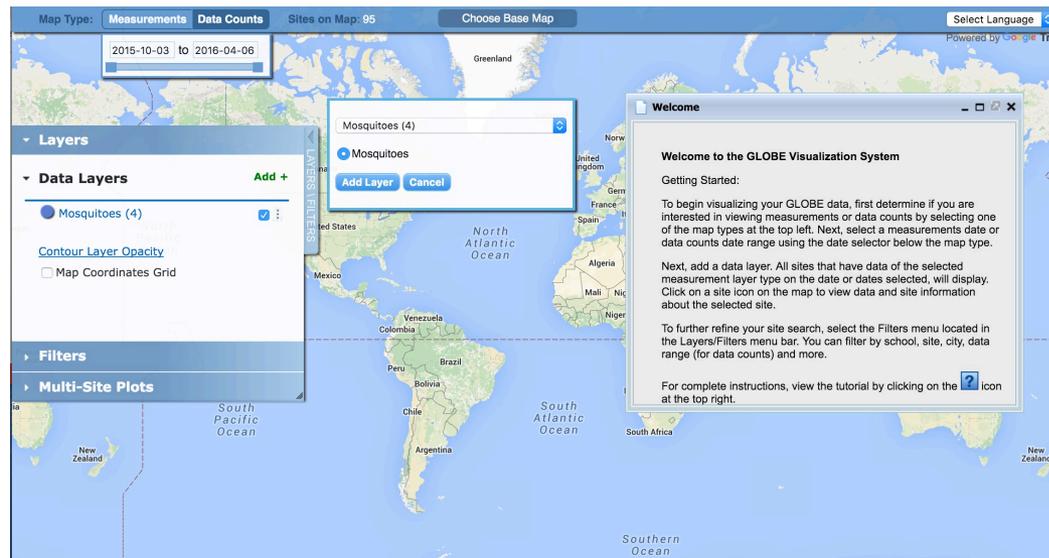
- tip and toss water
- cover container
- contact public health official if you locate a breeding site that you can't remove from use by yourself





Visualize and Retrieve Data-1

GLOBE provides the ability to view and interact with data measured across the world. Select our [visualization tool](#) to map, graph, filter and export data that have been measured across GLOBE protocols since 1995. The Mosquito Protocol is new and so we look forward to seeing your data!

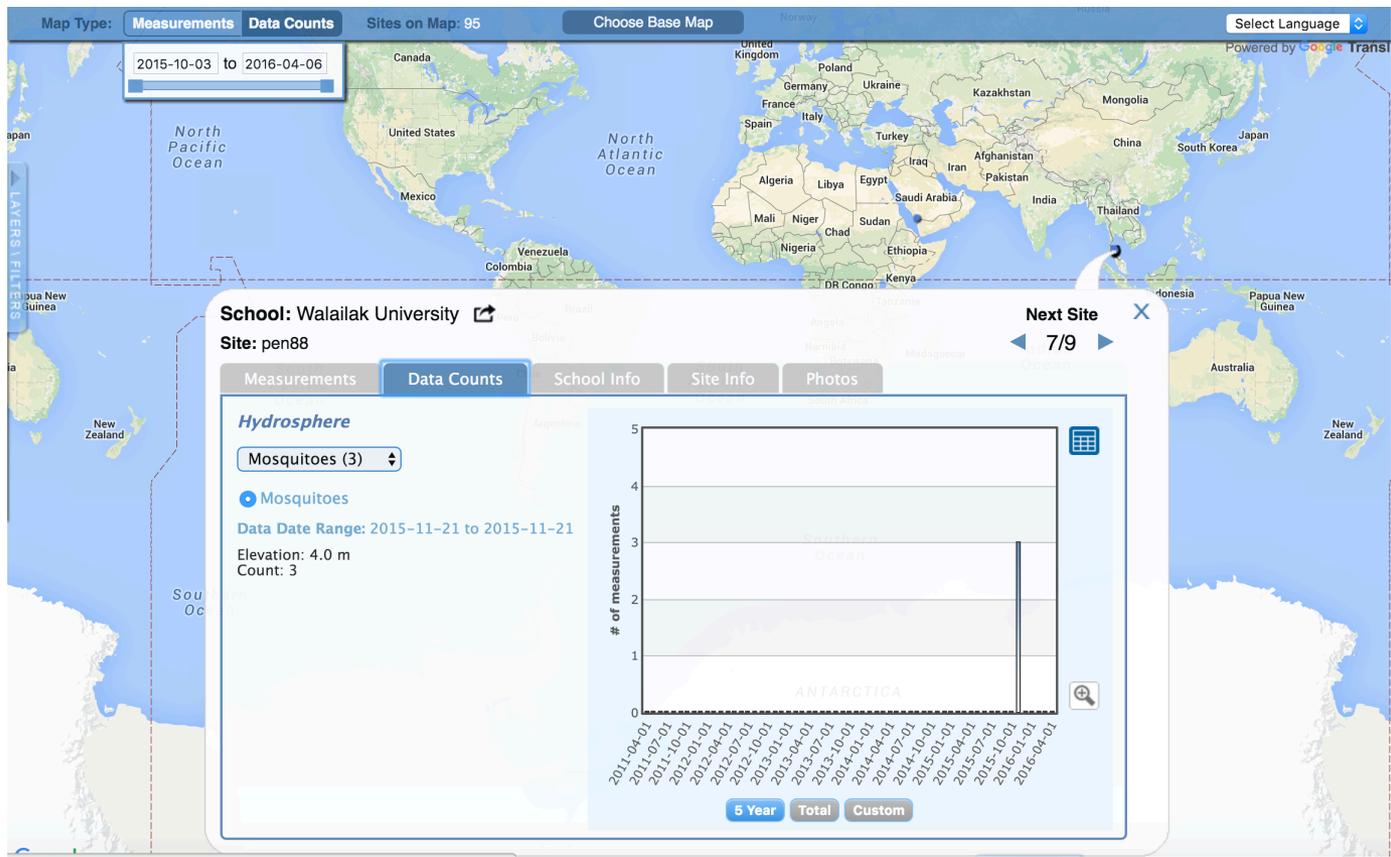


[Link](#) to step-by-step tutorial on using the GLOBE Data Visualization Tool



Visualize and Retrieve Data-2

Select the date for which you need pH data, add layer and you can see where data is available.



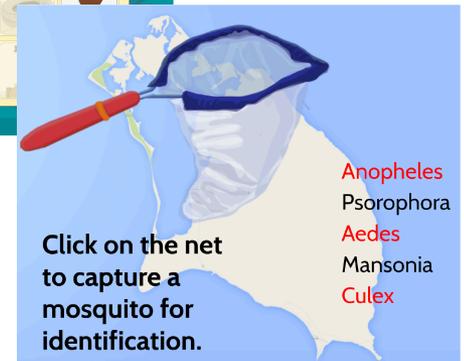
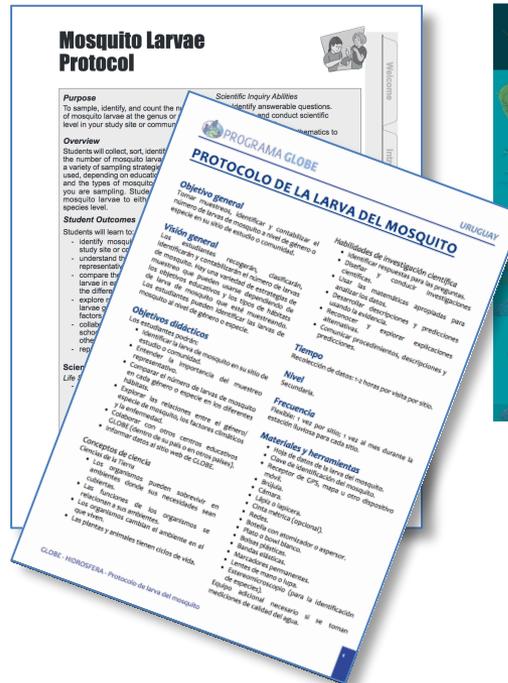
The screenshot shows the GLOBE Observer interface. At the top, there are tabs for 'Measurements', 'Data Counts', and 'Sites on Map: 95'. A date range selector is set to '2015-10-03 to 2016-04-06'. A world map is displayed with a blue dot indicating the location of Walailak University in Thailand. A popup window is open for this site, showing the following information:

- School:** Walailak University
- Site:** pen88
- Measurements:** Mosquitoes (3)
- Data Date Range:** 2015-11-21 to 2015-11-21
- Elevation:** 4.0 m
- Count:** 3

On the right side of the popup, there is a bar chart titled '# of measurements' showing a single bar for the date 2015-11-21. The x-axis lists dates from 2011-04-01 to 2016-04-01. Below the chart are buttons for '5 Year', 'Total', and 'Custom'.



- Educational Materials
- Volunteer Training Protocols





App **SEEs** three intended functions supporting citizen scientists:

- **S**cientific data collection and analysis: Identifying locations of mosquito taxa of interest to public health authorities.
- **E**mpowerment: Actively reducing mosquito risk- by dumping containers and monitoring environment
- **E**ducation: learning opportunistic breeding habits used by *Aedes aegypti/albopictus* in built environments and about vector borne disease risk communities.



GLOBE Observer is an international network of citizen scientists and scientists working together to learn more about our shared environment, changing climate and its impacts.





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Next Steps

Global Mosquito Alert

UNEP funded prototype





Acknowledgements

The **GLOBE Observer Mosquito Habitat Mapper** is a NASA-sponsored project that is the result of the combined efforts of an extended team that includes the Institute for Global Environmental Strategies (IGES); NASA Goddard Space Flight Center, Langley Research Center, and Jet Propulsion Laboratory; Space Science Applications, Inc. (SSAI); the GLOBE Implementation Office (GIO), GLOBE DIS and Brooklyn College.

The **Mosquito Challenge Community Campaign (MCCC)** is focused on demonstrating the usefulness of citizen science data collected using the GO Mosquito Habitat Mapper for combating Zika in Brazil and Peru. MCCC is led by IGES in partnership with the University Corporation for Atmospheric Research (UCAR), and leverages the NASA App, and the GLOBE Program networks of scientists, teachers, students, and citizen scientists. The MCCC project is made possible through the generous support of the Combating Zika and Future Threats Grand Challenge through the United States Agency for International Development (USAID).

This presentation was prepared by the Institute for Global Environmental Strategies (IGES) and does not necessarily reflect the views of the NASA or USAID. For more information, contact

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