GLOBE Observer
Mosquito Habitat Mapper

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Rising Voices 5

Boulder CO

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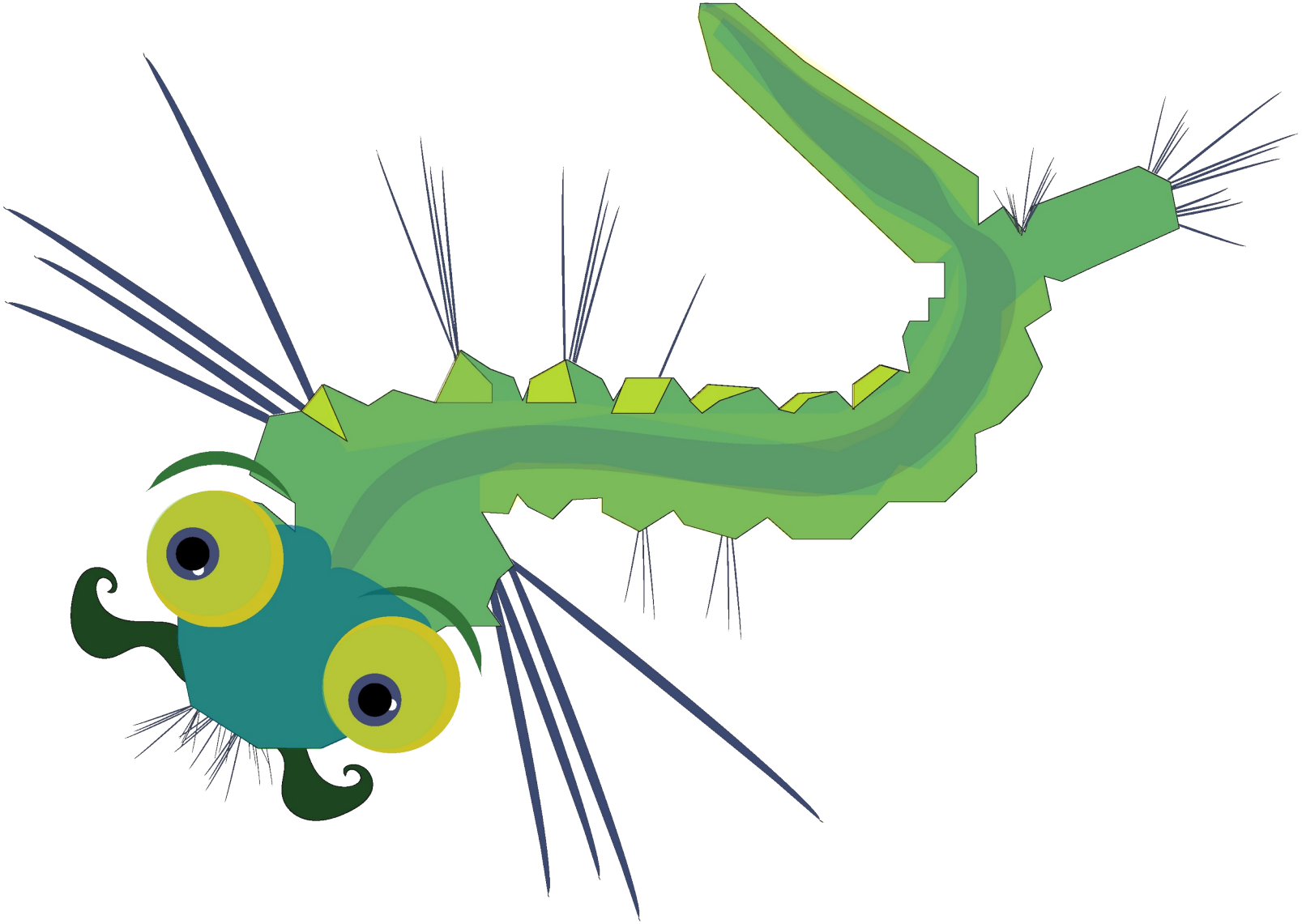


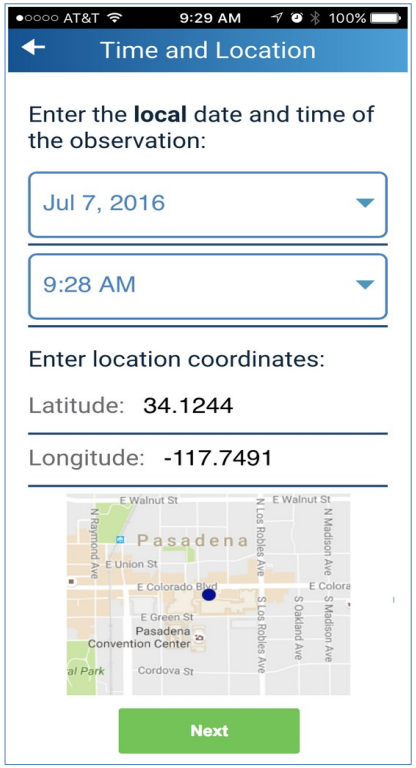
Problem:

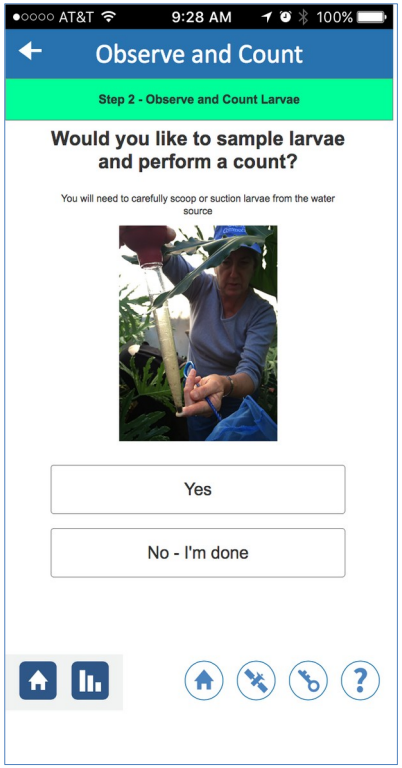
Communities around the world lack access to tools and techniques needed to participate in decisions that directly affect them, especially in relation to environmental health hazards

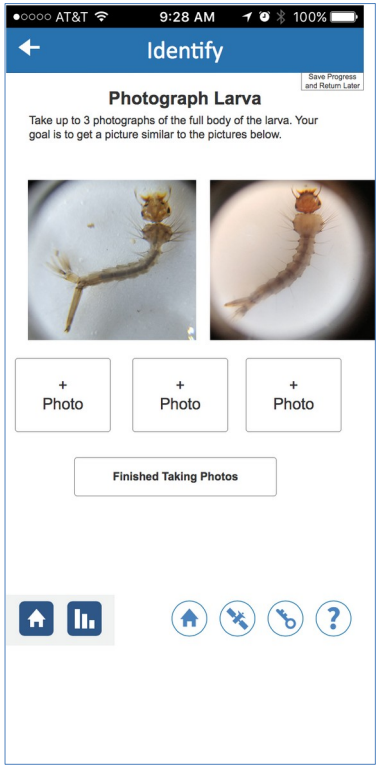
Mosquito Habitat Mapper

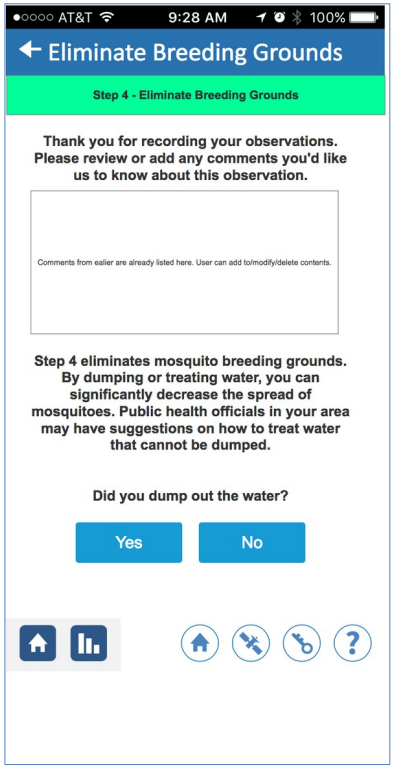
Empower communities by providing a tool that that can be used to identify and assess public health risk from mosquito vector borne disease.

- **Data Collection**





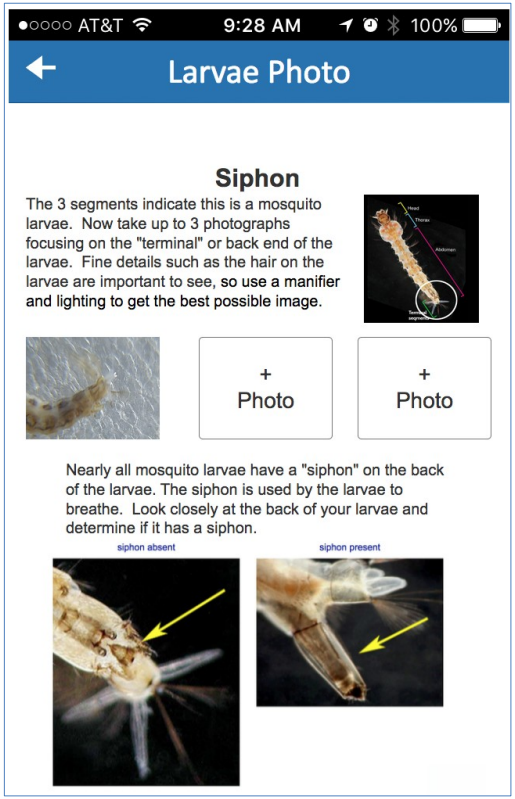


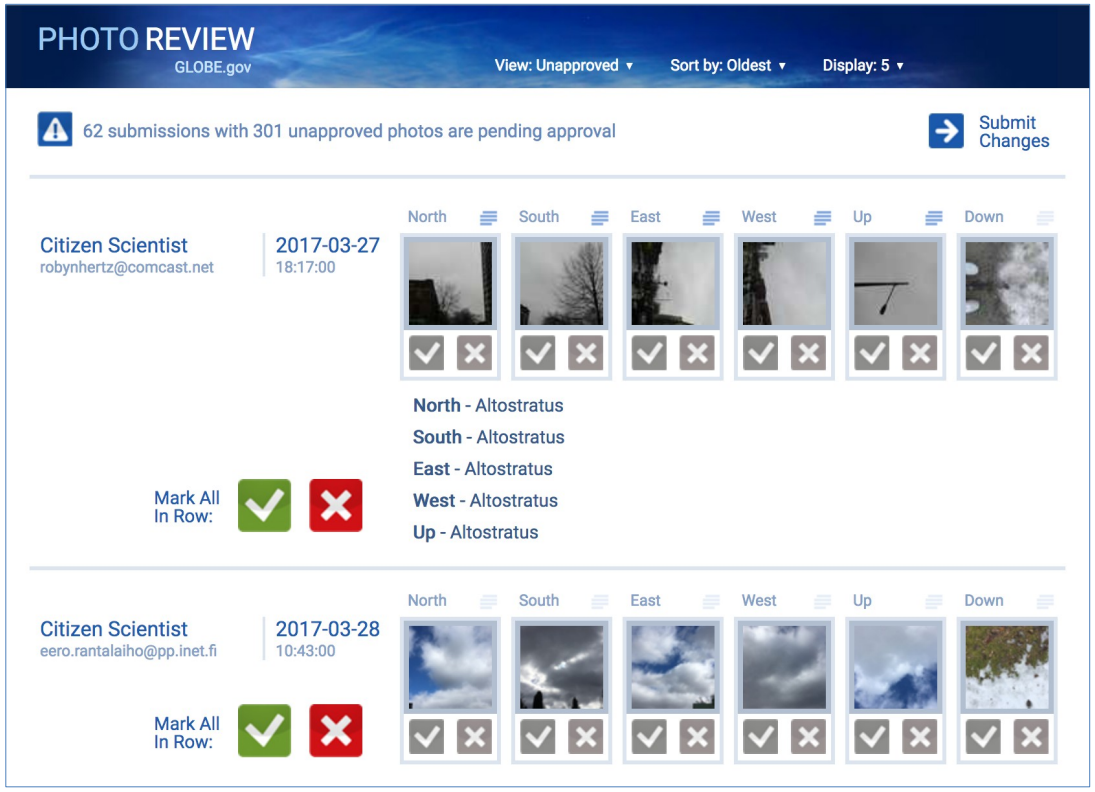


locate → **sample & count** → **identify** → **decommission**

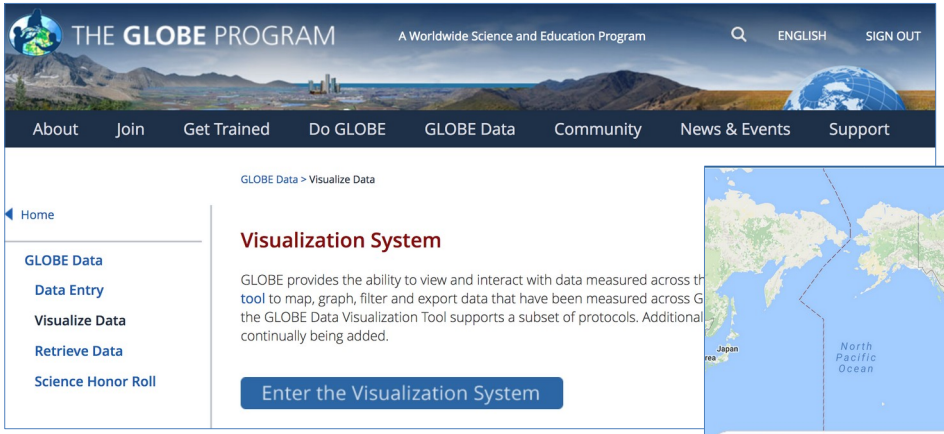
1 2 3 4

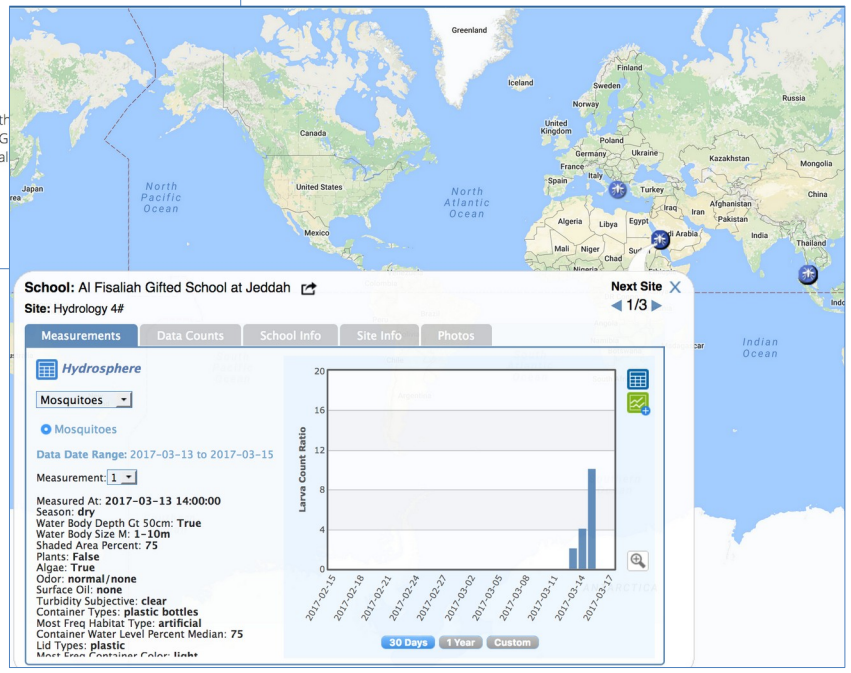
- **Data Quality and Assurance**



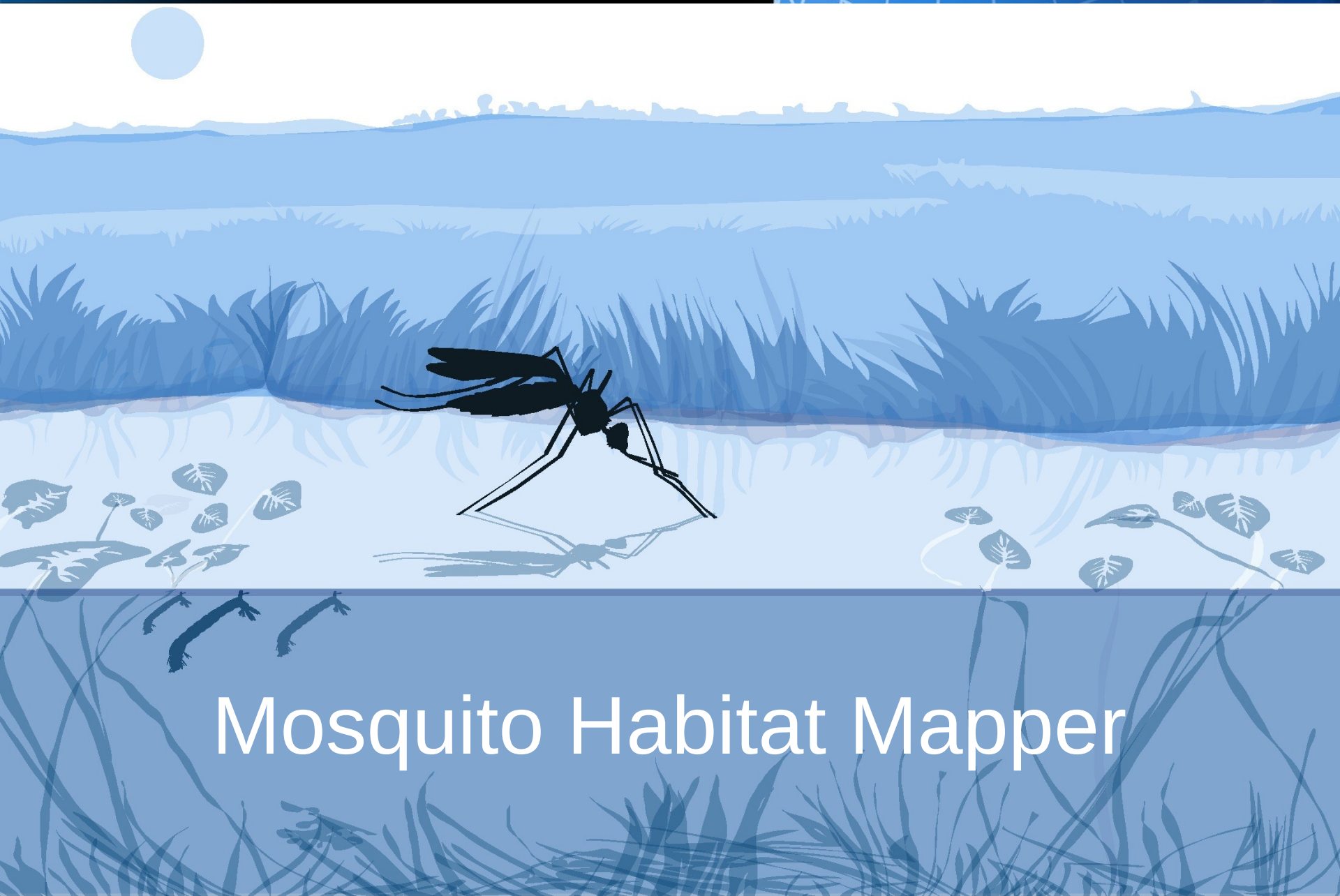


- **Data Analysis and Sharing**





GLOBE Observer



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

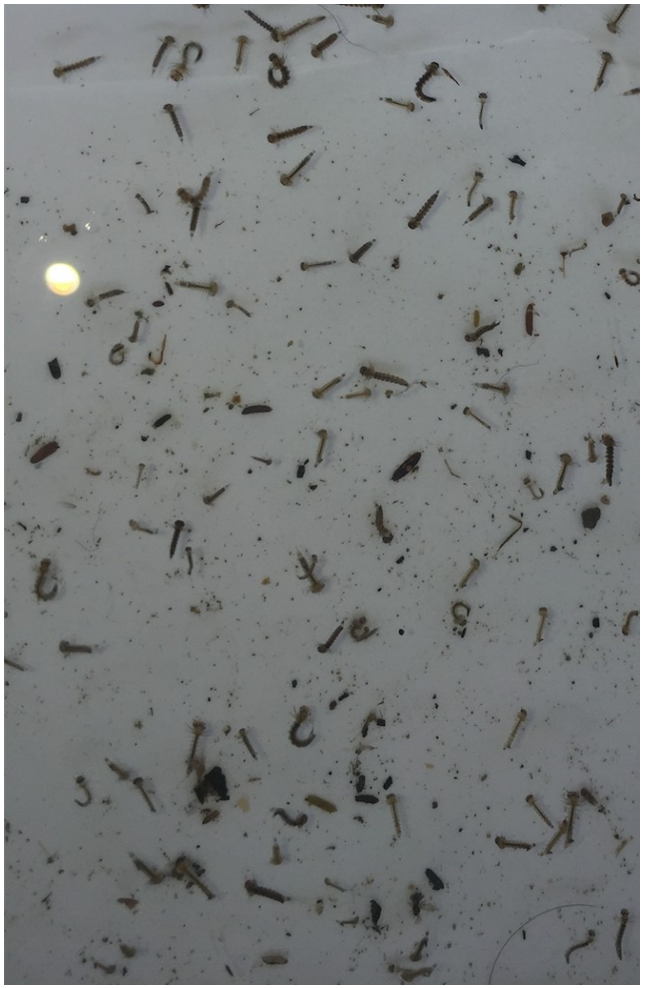
1. Document habitat

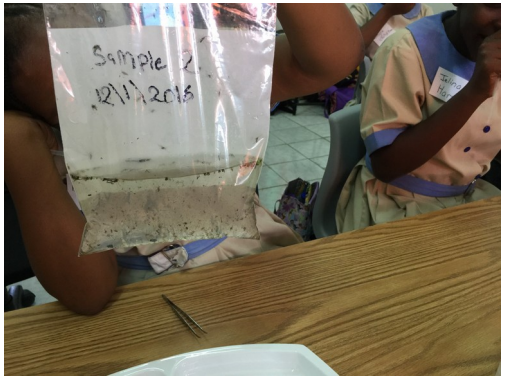
2. Sample and Count

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.

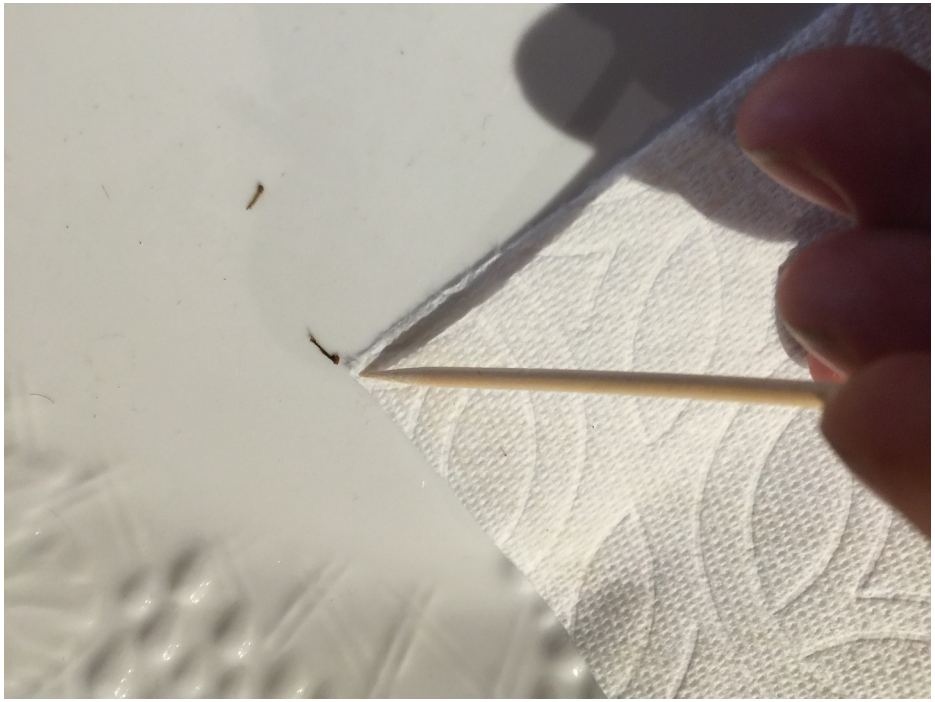
Step 3. Photograph and Identify-2

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

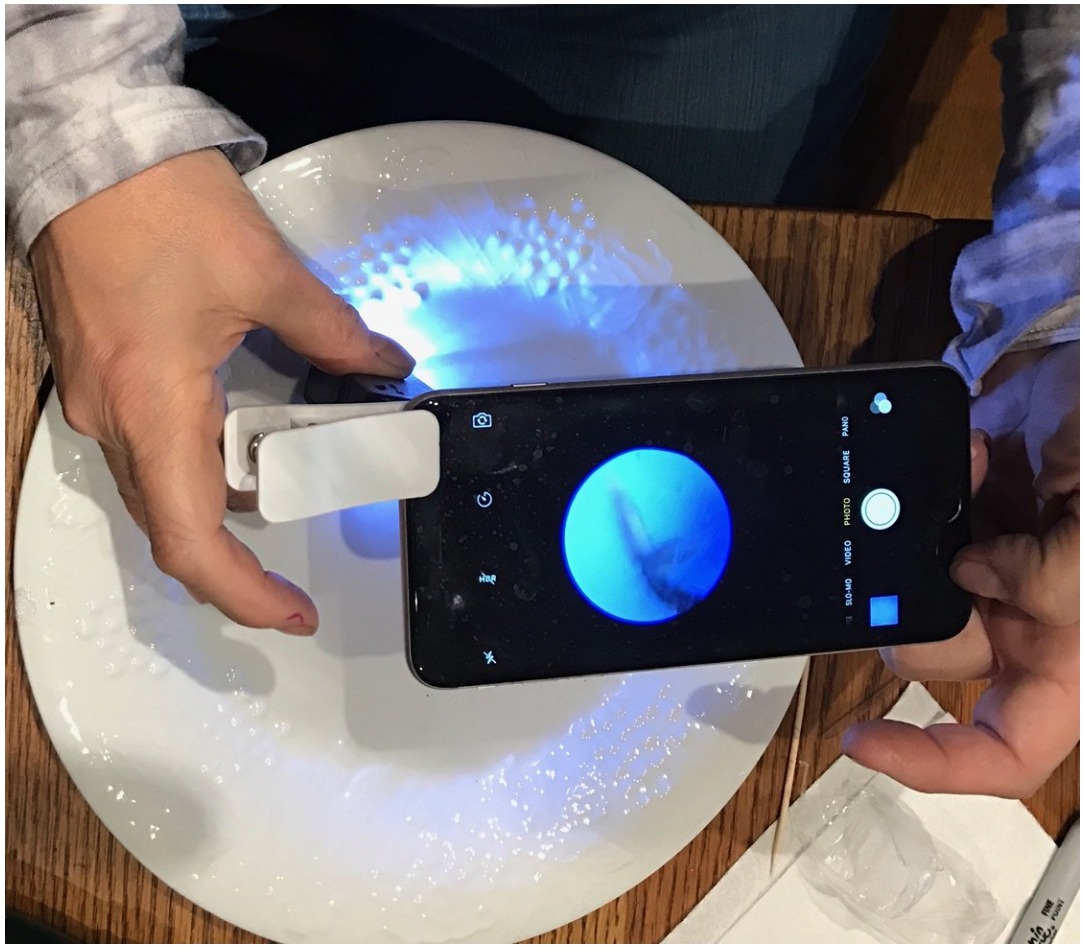
Attach a macro lens to a mobile device so that you can take a picture and upload it to the app.

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

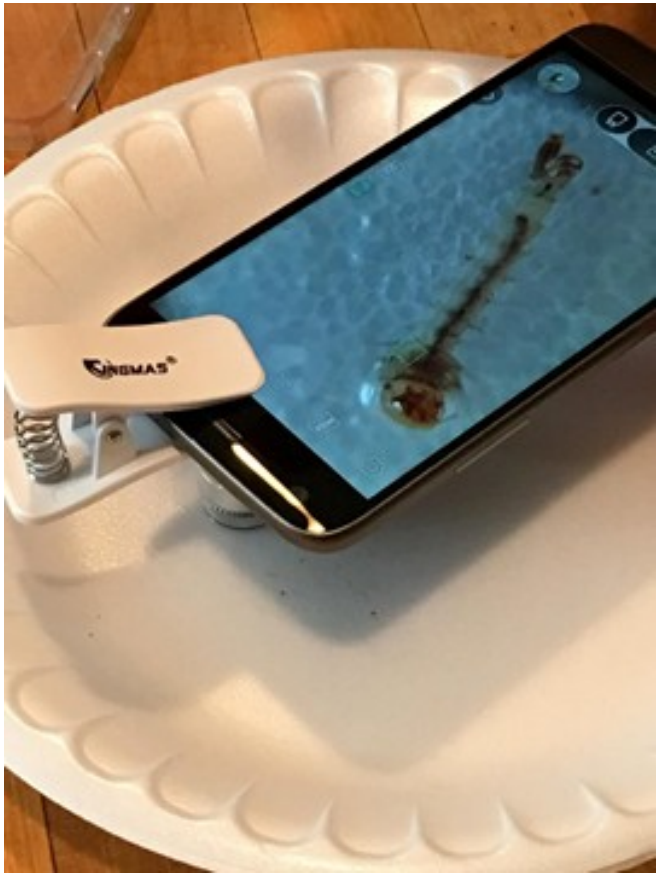
Line up the lens so that the specimen is in the circle of light on the viewer.



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.

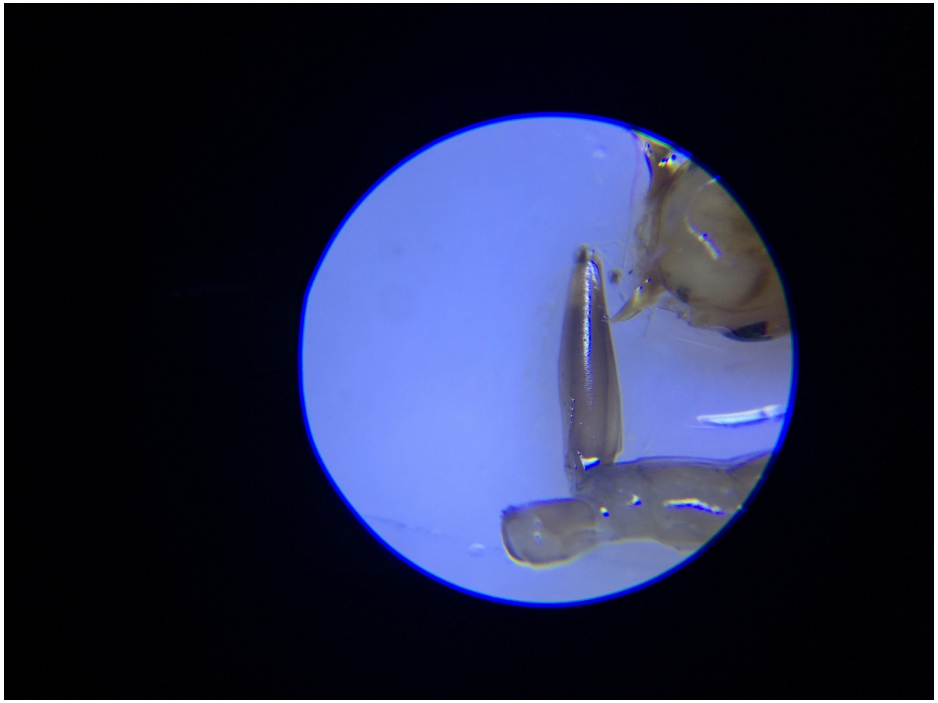
The collar helps to you to find the focal length that is ideal for looking at your specimen.



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.



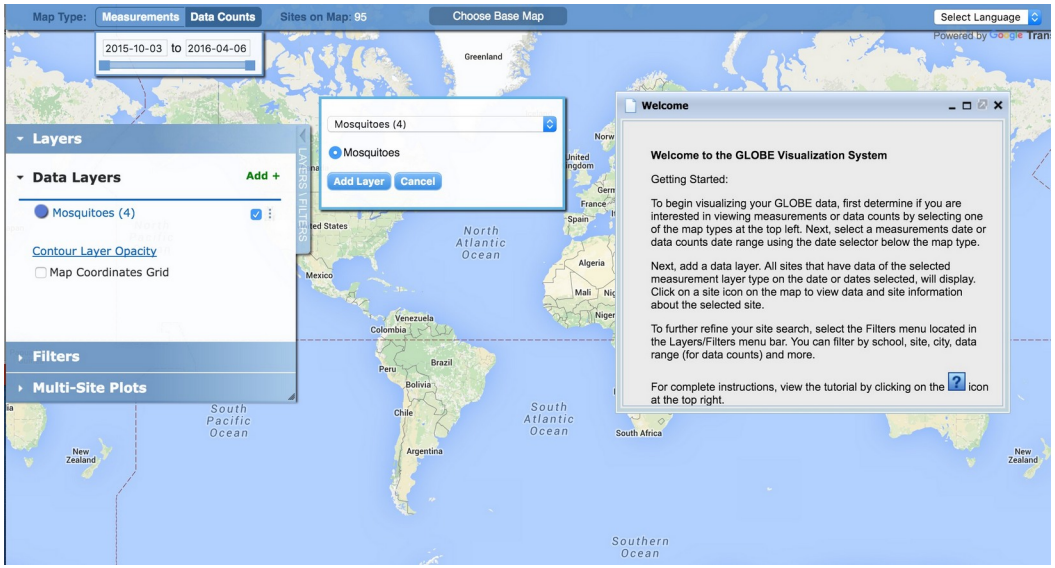
Tip and Toss: Step 4

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

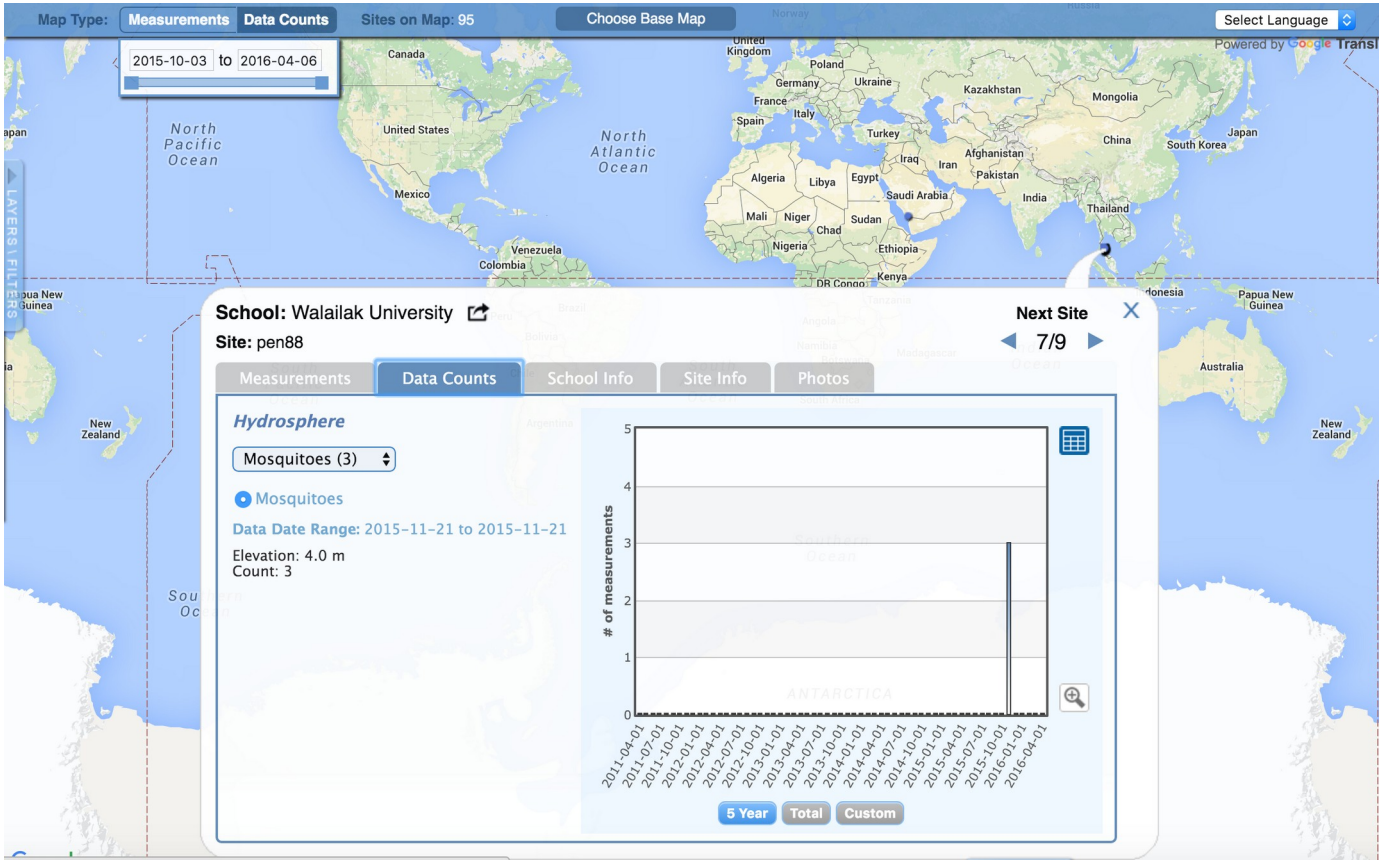
GLOBE provides the ability to view and interact with data measured across the world. Select our visualization tool to map, graph, filter and export data that have been measured across GLOBE protocols since 1995. The Mosquito Protocol is new and so we look forward to seeing your data!



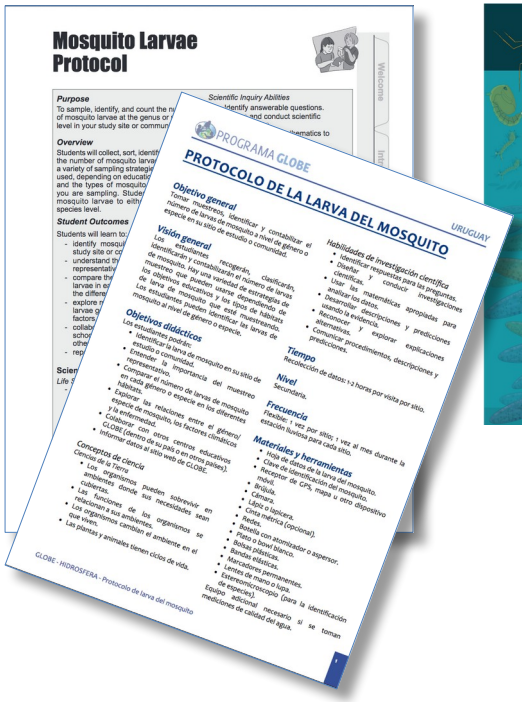
Link to step-by-step tutorial on using the GLOBE Data Visualization Tool

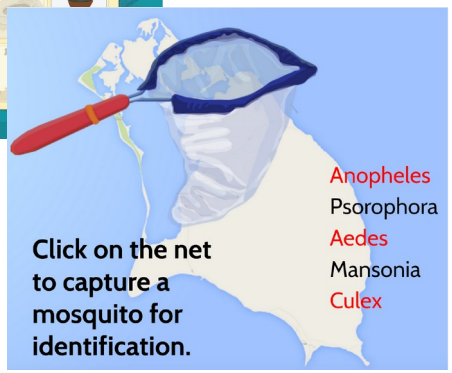
Visualize and Retrieve Data-2

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



- **Educational Materials**
- **Volunteer Training Protocols**





Educational resources **Training Protocols** **Gamification**

App **SEE**s 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 rusty_low@strategies.org.