Citizen Science Kit:

MAPPING MOSQUITO HABITATS

Add your local observations to NASA satellite data!

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With this kit and the GLOBE Observer app, you can help spot and report potential mosquito breeding habitats (standing water or somewhere water could collect) and the presence of dangerous mosquito larvae. Optionally, you can sample and count the larvae and try to identify the mosquito type.

WHY THIS MATTERS

Mosquitoes are the world's most dangerous animal: millions of people die each year from mosquito-borne diseases. You can make a difference by helping with early warning of potential disease outbreaks. While climate and weather conditions can suggest to scientists where to expect spikes in mosquito populations during the year, we don't know for sure what is happening unless we make observations on the ground. By reporting possible mosquito habitats through the app, GLOBE Observers are able to share observations and local environmental conditions to enhance satellite-based research with local ground-based data.

The GLOBE Program

A mosquito larva under the microscope.

KIT COMPONENTS

Magnification Tool – a smartphone clip-on magnifier (capable of 60X–100X) for viewing and photographing mosquitoes
Small cup or container – used to transport the larvae
Bulb syringe – for collecting the larvae from water
Plastic tray - to place the larvae on to be photographed; you may also use a paper plate
Measuring tape - used for the Trees protocols, should you decide to participate in that project as well (see next page for more details)

REQUIRED, BUT NOT INCLUDED

Smartphone or **tablet**
GLOBE Observer app
Wi-Fi or **cellular data**

PREPARE

STEP 1: Scan this QR code or visit **cfpl.info/mosquito** for an online version of these instructions, how-to videos, and other resources. This is also where you can **create your free SciStarter account** (optional) if you haven't already. SciStarter is an online citizen science hub connecting millions of people from all walks of life to thousands of opportunities to participate in citizen science.

STEP 2: Download the "GLOBE Observer" app from the Apple App Store or the Google Play Store. Create an account, and link your SciStarter and GLOBE Observer accounts on your smartphone by going to the GLOBE app settings. Scroll down and click on the "Connect to SciStarter" button.

STEP 3: Make sure your **smartphone or tablet is fully charged**.

QUESTIONS?

Email us: info@scistarter.org

KEY TERMS

Larvae: the young form of an insect that differs greatly from the adult form before going through metamorphosis (like a caterpillar or tadpole)
Habitat: the natural home or environment of an animal, insect, or other organism
Mosquito-borne disease: diseases spread by the bite of an infected mosquito

PLAN

STEP 4: Find a potential mosquito habitat created by human activity or near where people live. Look for buckets or old tires with standing water, for example, or follow the instructions to build an artificial mosquito trap: **SciStarter.org/go/mosquito-trap**.

STEP 5: Open the app and follow the instructions. You'll verify the location, date, and time of your observation and identify the type of habitat you're observing.

PARTICIPATE

STEP 6: Photograph the site and the surrounding area. Are mosquito larvae visible in the water source? If there are no larvae, skip identification but enter additional comments about the habitat. If you find larvae, use the small cup or container, bulb syringe, and plastic tray to collect larvae samples to take close-up photographs of individual larvae. You may use the digital microscope included in the kit to take an even more close-up image! Follow the instructions for your specific microscope.

STEP 7: When possible, pour out any standing water you find in items to eliminate the habitat and help protect your community. Be sure to clean and dry the tray and collection container before returning them to the bin.

SAFETY TIP: While mosquito larvae are harmless, adult mosquitoes may be present when taking observations. Female mosquitoes bite and can potentially transmit disease. You should wear long sleeves and apply insect repellent containing DEET to avoid bites.

NOW WHAT?

Help scientists gain a more complete picture and understanding of changes occurring on Earth! Keep participating by using the other protocols featured in the same GLOBE Observer app:

GLOBE OBSERVER LAND COVER

Photograph the landscape, identify land cover type (trees, grass, etc.), and match your observations to satellite data. Your local land cover data will help hazard analyses for floods, fires, and landslides; help map wildlife habitat; and track the impacts of climate change.

GLOBE OBSERVER CLOUDS

Clouds are a key factor in both local weather and Earth's climate system. There are several satellites dedicated to observing clouds to understand how they affect energy flow through the atmosphere, but satellites can only capture a top-down view of our planet. Document what you see looking up at the sky to give NASA scientists a more complete picture of the atmosphere.

GLOBE OBSERVER TREES

Measure tree height and circumference using sensors in your smartphone and track the growth of trees over time. Trees cool and moisten our air, fill it with oxygen, and can help balance our carbon budget. Tracking how trees are changing over time can help us estimate the number of trees that make up an area.

GLOBE OBSERVER ECLIPSE

During active eclipse cycles, share your observations with scientists using this protocol to document air temperature and clouds.

How to view your data

Go to the GLOBE homepage at globe.gov and click on "GLOBE Data" from the top of the page. Click on "Visualize Data" from the link on the left side of the page. You will find a tutorial on how to retrieve and visualize data.

TAKE ACTION!

If you are concerned about the mosquito population in your area, contact your local vector control agency, which may be located in your state, county, or municipal environmental services or public works department. Vector control agencies may deploy mosquito traps or institute a fogging program.

COMMUNITY CONNECTIONS

Are you a member of the Girl Scouts, 4-H, NASA Night Sky Network, or NSTA? Check out **SciStarter.org/library-partners** to learn about how this project connects back to your organization.

Check that all items have been placed back into the kit before you return it to the library.

Thank you for participating in citizen science!

LOOKING FOR MORE?

Find more projects on your SciStarter Dashboard: **SciStarter.org/dashboard**

Citizen Science Kit: Mapping Mosquito Habitats

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REQUIRES FREE APP DOWNLOAD

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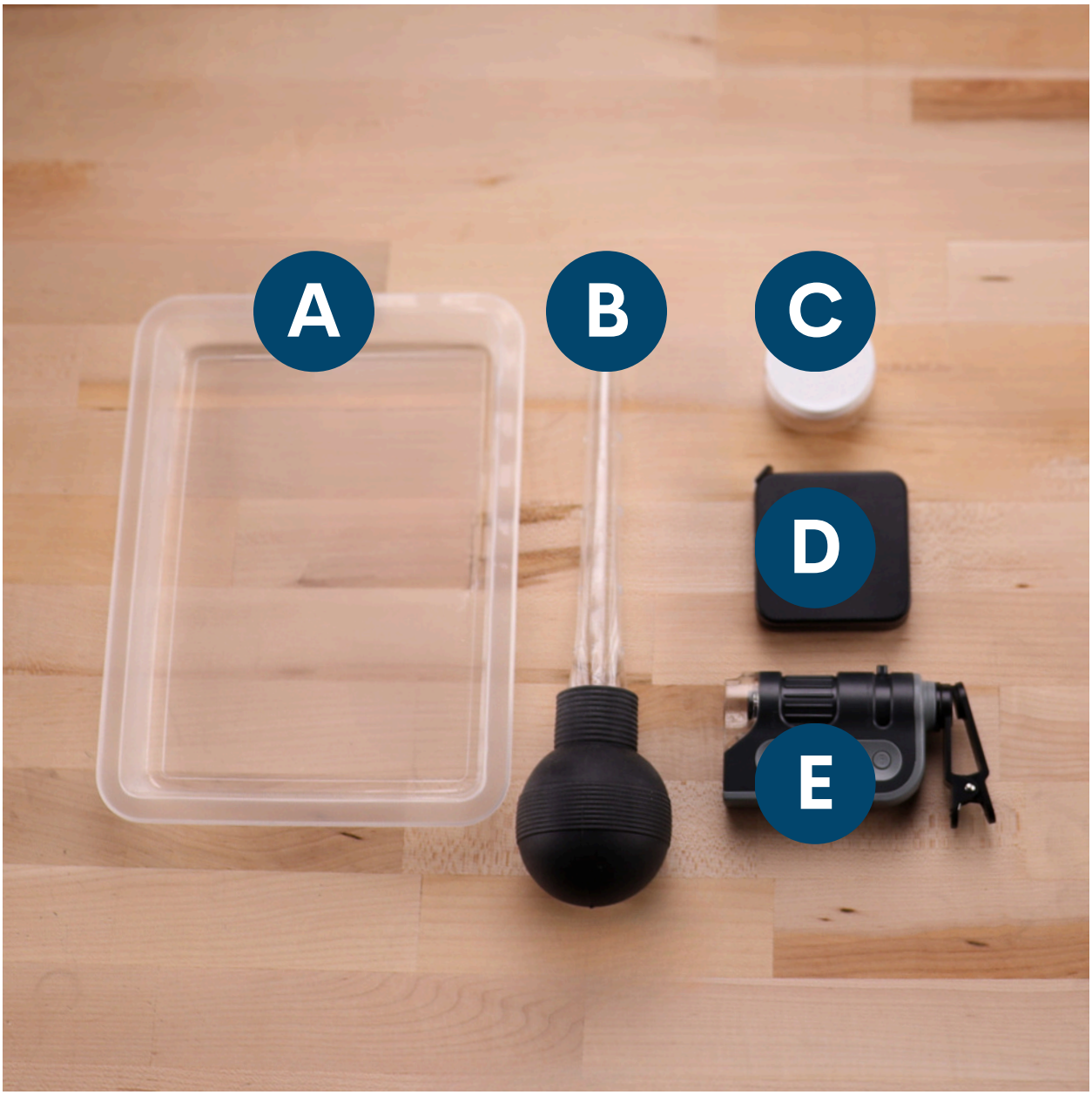

Total Replacement Cost: **$70**

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Science we can do together.