

PROGRAM
2

Mosquito Habitat Mapping

Learning goal: Understand why scientists are studying mosquitoes. Learn about mosquito anatomy and types, mosquitoes as disease vectors, and how to identify and remove mosquito habitats. Find out how to help scientists collect data on local mosquito habitats using GLOBE Observer's Mosquito Habitat Mapper module.

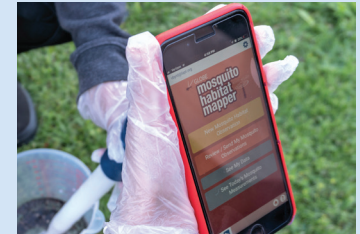
Audience level: Families and children age 7+

Length of program: 90-120 min.

Supplies needed: (equipment, books, apps)

- Large Mosquito Puppet (optional)
- Smart Device with data plan
- Mobile Hotspot/MiFi (optional)
- Mosquito repellent
- ACTIVITY: Mosquito larvae observation materials:
 - Clip-on coin magnifiers for phones (available on Amazon.com)
 - Smartphone or tablet with camera
 - White paper plate 2-3 per group
 - Turkey baster
 - Measuring cup or 12-16-oz paper cup
 - Paper and pencils (one per participant)

- ACTIVITY: [Mosquito Larvae-Habitat Scavenger Hunt materials](#) (enough for 12 participants):
 - Mosquito Identification Worksheet (one per group or one per participant)
 - 1 Mosquito Identification poster
 - Adult mosquito images on letter-size sheet (one per species)
 - Images of various mosquito habitats
 - Mosquito larvae image printed cutouts (12 per mosquito habitat image)
 - Envelopes (optional)
 - Scotch tape
 - [GLOBE Observer Mosquito Habitat Mapper Step-by-Step Guide](#) (one per participant)
- ACTIVITY: Build a Mosquito Trap materials:
 - Recycled soda bottles (2 liter bottle preferred)
 - Scissors or box opener (not needed if pre-cut the bottles per instructions)
 - Netting or mesh with $\frac{3}{8}$ " holes
 - Rubber bands
 - Water (just enough for demonstration)
 - Sharpie
 - Black construction paper
 - Packing tape or scotch tape
 - [Instructions](#)



Booklist:

- Hansen, Grace. *Mosquitoes*. Abdo Kids, 2015.
- Hansen, Grace. *Becoming a mosquito*. Abdo Kids Jumbo, 2019.
- Novak, Jordan P. *Mosquitoes Can't Bite Ninjas*. Bloomsbury USA Childrens, 2017.

Videos:

- [GLOBE Observer Mosquito Habitat Mapper](#)
- [GLOBE Observer Mosquito Habitat Mapper App \(Getting Started\)](#)
- [How Mosquitoes Use Six Needles to Suck Your Blood | Deep Look](#)
- [Mosquito Life Cycle](#)

Apps:

- NASA [GLOBE Observer](#) Mosquito Habitat Mapper module

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Download, play, and familiarize yourself with the features in the [NASA GLOBE Observer Mosquito Habitat Mapper Module](#).
 - Watch [GLOBE Observer Mosquito Habitat Mapper Getting Started](#) Youtube video.
 - Review the [GLOBE Observer Step-by-Step Mosquito Habitat Mapper Tutorial Powerpoint slides](#).

3 Days before the program [optional]:

- Build and set up mosquito traps to catch live mosquito larvae to view with magnifiers.

Day before the program:

- Set up indoor habitat hunt activity if needed. Placing mosquito habitat pictures or props around the room. Hide printed cutouts of corresponding mosquito larvae under habitat props. (Cutouts can be loose or in a small envelope).
- Collect the mosquito traps.

Let the program begin...

1. Divide participants into groups of 2-4.
2. Introduce Neighborhood Science and mosquitoes with [Powerpoint presentation](#).
 - Discuss how mosquitoes spread disease and how GLOBE's Mosquito Habitat Mapper can help NASA scientists mapping and tracking the spread of mosquito species.
 - Use the mosquito puppet and mosquito books to discuss mosquito life cycle and anatomy.
3. ACTIVITY: Mosquito larvae observation
 - Distribute traps and ask each group to look inside to see if there is anything moving on the surface of the water. If yes, have one member from each group use a turkey baster to draw it out onto the white paper plate.

- Use a smart device with clip-on magnifier lens to get a closer look at the larvae and take a picture.
- Ask participants to draw the larvae they observed.

4. ACTIVITY: Mosquito habitat scavenger hunt

- Go over the steps to set up a GLOBE Observer account:
 - For participants who do not wish to create an account, ask them to sign in using the library's GLOBE Observer account.
- Demonstrate how to collect and share data by using the GLOBE Observer's Mosquito Habitat Mapper module step-by-step.
- **OUTDOOR Scavenger Hunt (if weather permits)**
 - Prep the groups for the activity:
 - Make sure all participants wear insect repellent or appropriate clothing.
 - Start the ACTIVITY:
 - Take the group to safe outdoor space and search for possible mosquito habitats, collect and share data using the app (15-20 min).
 - Ask participants to tip and toss any items or sites with stagnant water that have been identified as potential or confirmed mosquito habitats.
 - Return to the program room and allow 5-10 minutes to compare and share observations.
- **INDOOR Larvae-Habitat Scavenger Hunt (Plan B):**
 - This activity does not need the GLOBE Observer app.
 - Allow 15-20 minutes for participants to go around the room to collect, identify and graph numbers of different mosquito larvae types.
 - Allow 5-10 minutes to provide answers and share observations.

5. Start ACTIVITY: Build a Mosquito Trap for participants to take home.

- Demonstrate the steps to build the trap and ask participants to follow along.
- Ask participants to add water when they get home before they place the trap outside.
- Remind participants not to leave the trap out for too long (3 days max). It will give larvae time to become adult mosquitos!
- Remind participants to tip and toss any potential mosquito habitats.