



Science Background

1. Introduction to GO MHM
2. Mosquito Vectors of Disease
3. Satellite Data and NASA Connections-
- 4. Prior Knowledge Quiz**
5. Using the app for the first time
6. Describing your mosquito habitat site using the GO MHM App

Lunch and Fieldwork

Hands-on session and Tour of GO MHM

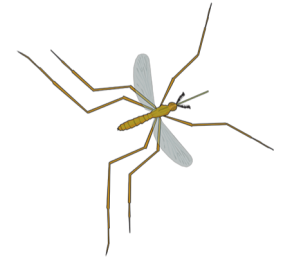
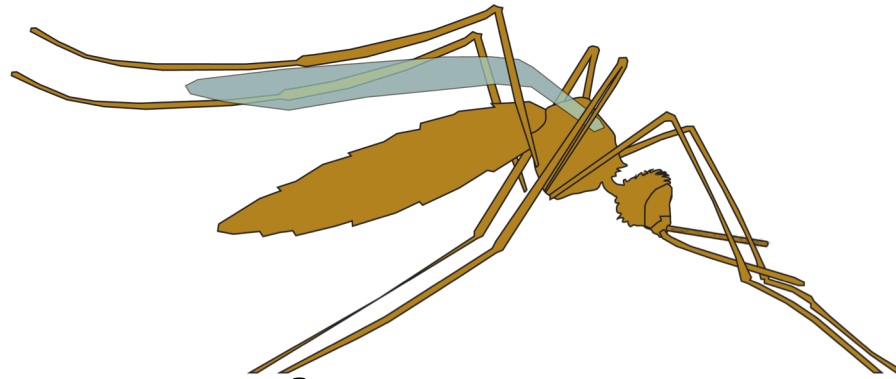
7. Using the macrolens
8. Identifying specimens
9. Breakouts- Small Group Work
10. Education and Training Resources/ Bingo and

The background of the slide features a stylized illustration of a pond. In the center, a large black mosquito is shown in profile, standing on the water's surface. The water is a light blue color, and there are several lily pads floating on it. In the background, there are blue hills and a light blue sky with a single white circle representing the sun or moon. The bottom of the slide shows a dark blue area with some reeds or grasses.

**What do you know
about the mosquito?**



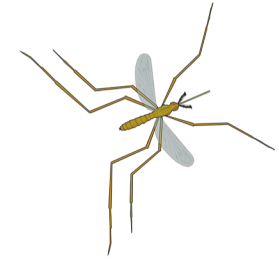
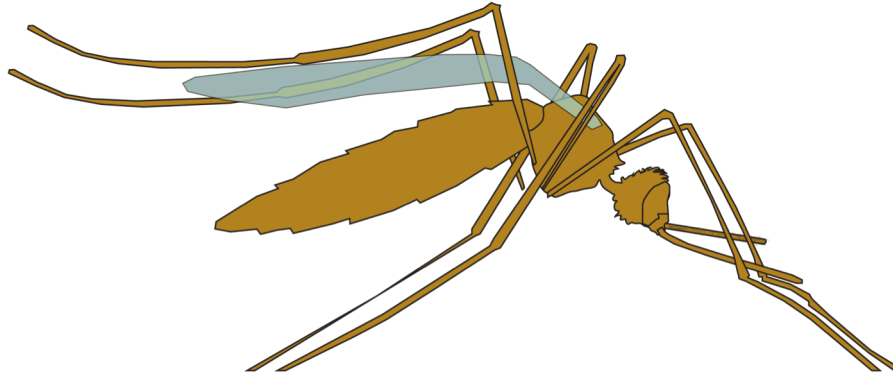
true or false



There are about 3500 species of mosquitoes.



True

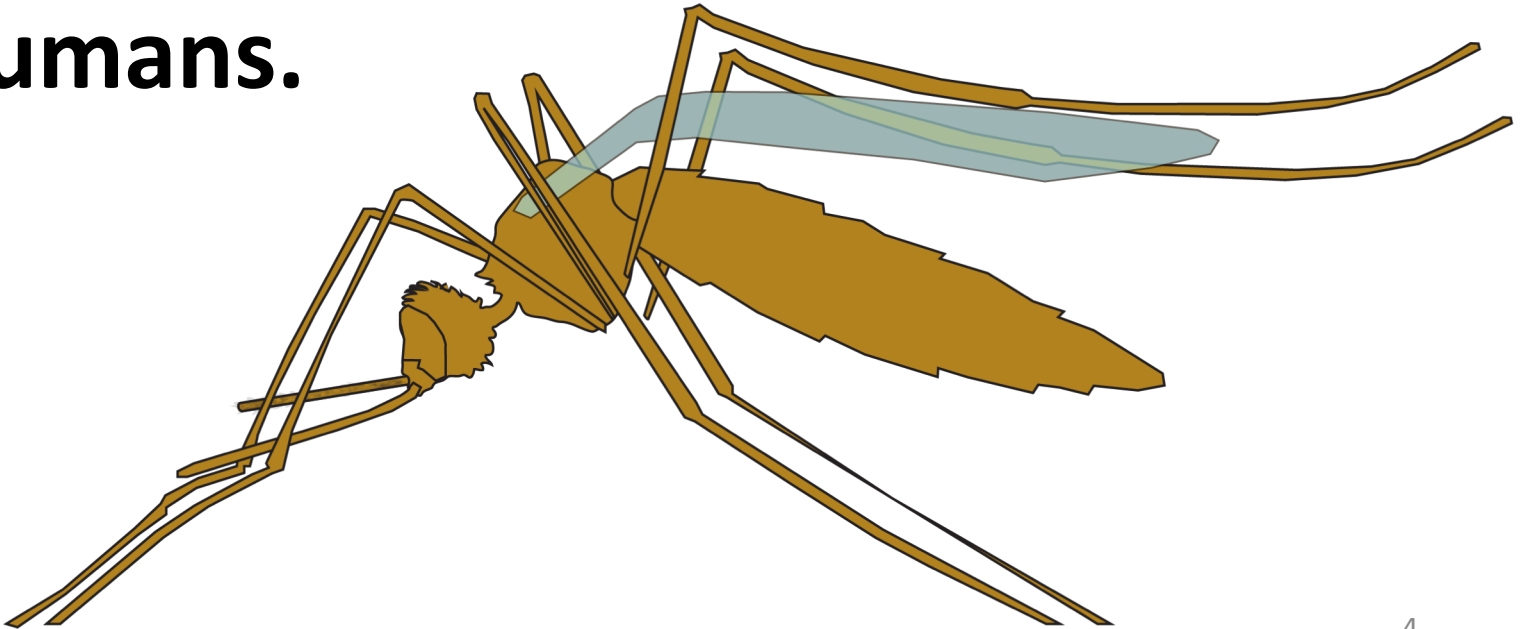


There are about 3500 species of mosquitoes Around the world.



true or false

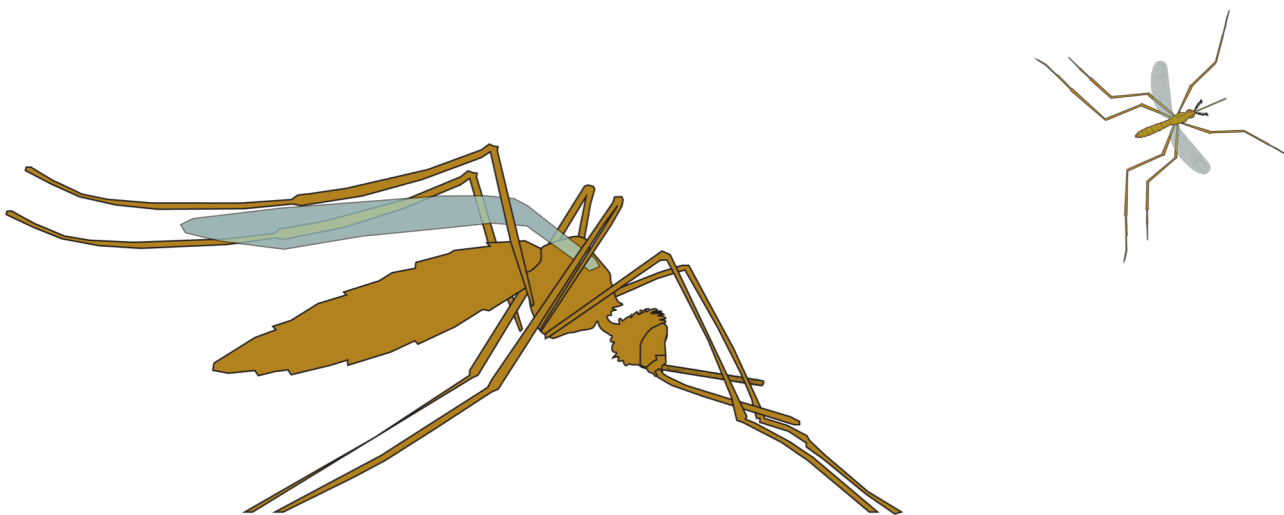
**Both male and female mosquitoes
bite humans.**





false

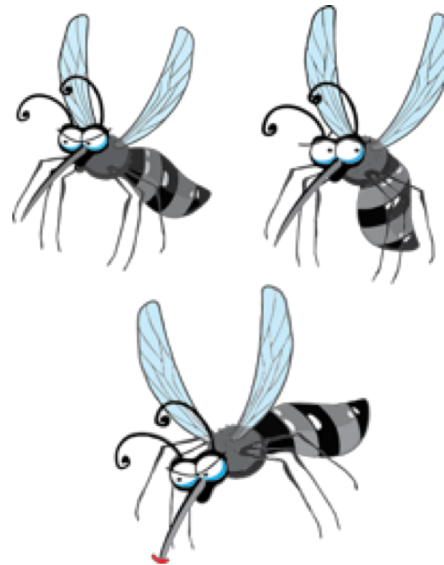
**Only females bite humans,
they need a blood meal for
their eggs to develop.**





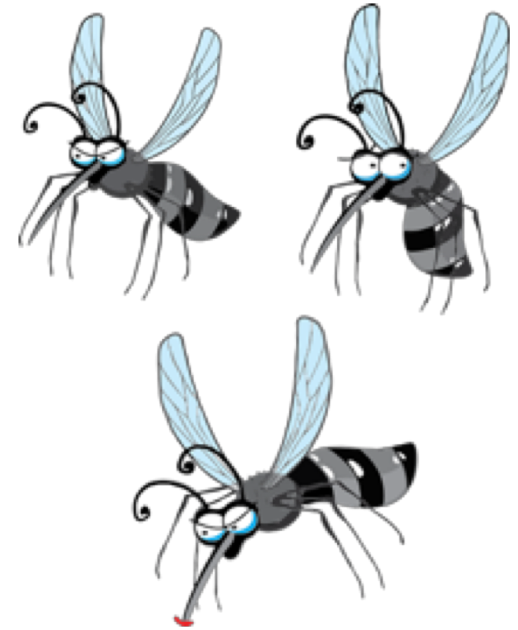
true or false

If you find the yellow fever mosquito (*Aedes aegypti*) or the Asian tiger mosquito (*Aedes albopictus*), it means that you have Zika, chikungunya, yellow fever or dengue in the region





false



You need to have a infected host for the mosquito to bite in order for the mosquito to acquire and transmit the pathogen



true or false

Mosquitoes don't have a useful role in the ecosystem- we would be better off without them!





false

For humans, mosquitoes are a nuisance as well as a carrier of disease, but they also play an important role as food for amphibians, birds and fish, They also pollinate plants when they feed on nectar.





true or false

Mosquitoes tend to prefer clean water sites when they lay their eggs





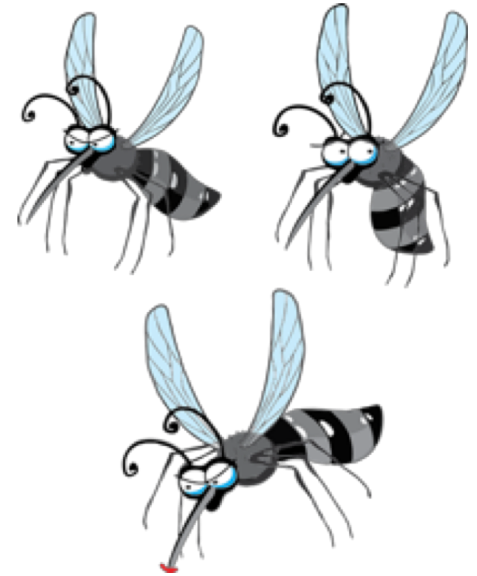
False

Preferences of clear water used to be reported for some vector species but now it is recognized that water of different characteristics- from clear to highly eutrophic are regularly are used by many species.





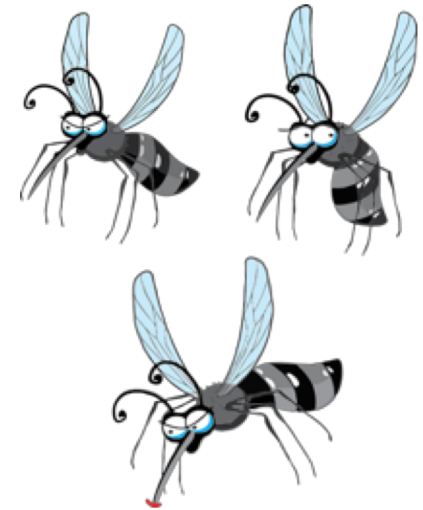
true or false



Mosquito bites, especially those from mosquitoes who are vectors of disease, mostly bite at dusk and in the evening.



false



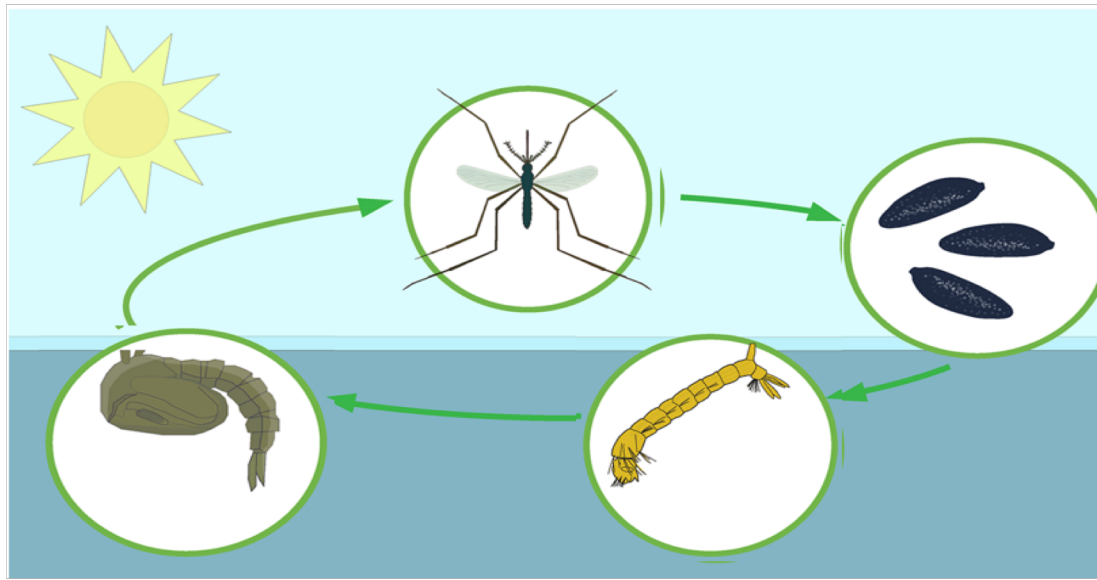
When a mosquito tends to be active depends on the species. Anopheles mosquitoes with the potential to transmit malaria, tend to bite at night, but the yellow fever mosquito and the Asian tiger mosquito are also equally active during the day.

This is one reason why bed nets provide protection from malaria but not Zika virus.



true or false

All stages of the mosquito life cycle pose a disease danger to humans- egg, larva, pupa, adult





false

Adults become infected by parasites or viruses through biting infected hosts, and then transmit the pathogen when they bite future victims. Only adults pose a disease hazard to humans.





true or false

**Dark clothing is
more attractive
to many species of
mosquitoes**





true

Dark clothing has been shown to attract some species of mosquitoes more than light clothing. Wearing lighter colored clothing can provide some added protection from mosquito bites.





True or False?

Smelly feet attract some species of mosquitoes





True

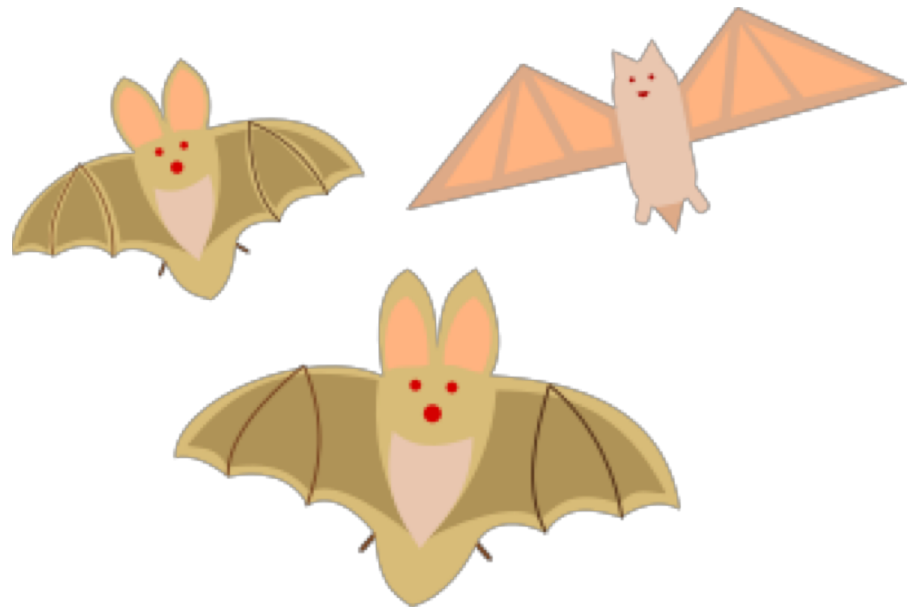
Smelly feet attract some species of mosquitoes. Why? Maybe because dirty socks smell of carbon dioxide, sweat and lactic acid, but we are not sure.





true or false

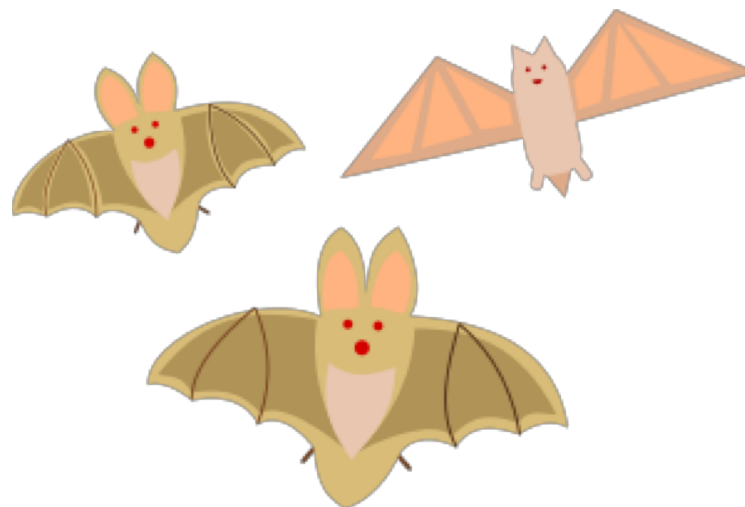
Mosquitoes locate their hosts by sound and radar, like bats





false

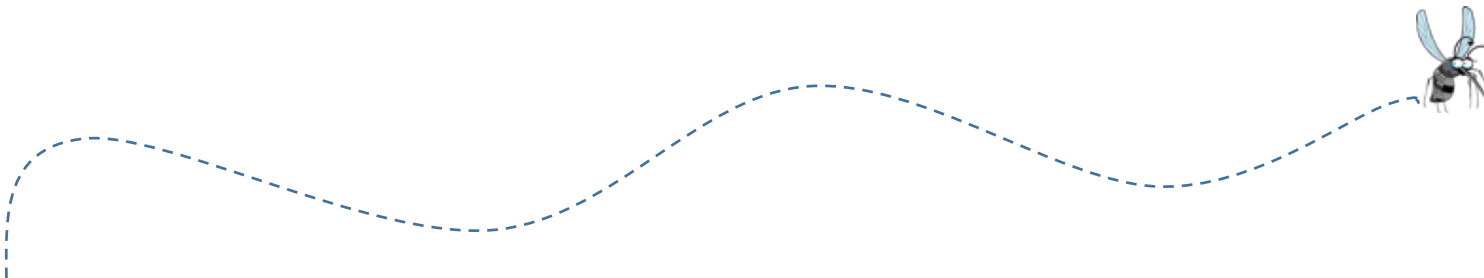
Mosquitoes find hosts by sight (detect movement), by detecting infrared radiation emitted by warm bodies, and by chemical signals (carbon dioxide and lactic acid)- from a distance of 25-35 meters! They do not use radar like bats.





true or false

Depending on the species, some mosquitoes fly more than 60 km to obtain a blood meal.





true

Some mosquitoes, such as salt marsh mosquitoes can fly more than **60 km** for a blood meal, others, such as *Aedes aegypti*, the mosquito that can transmit Zika, dengue, yellow fever and chikungunya may fly only **a hundred meters** in her lifetime.

That is one reason why home and community mosquito surveillance and mitigation are especially effective in reducing risk for these diseases





true or false

The only protection we have against mosquito-borne disease is vaccines.





false

It is important to educate yourself about mosquito-avoiding behaviors you can do to protect yourself from bites. Using an insect repellent- DEET preparations are very effective. For night biting mosquitoes, such as Anopheles, bed nets are effective protection.



For vector borne diseases for which there is no vaccine, the only protection we have is **surveillance, breeding site destruction, and public education.** The GLOBE Observer Mosquito Habitat Mapper does all three!



Acknowledgements

Mosquito Habitat Mapper Team USA

Russanne Low, IGES

Holli Riebeek Kohl, GSFC

Kristen Weaver, GSFC

Dorian Janney, GSFC

Theresa Schwerin, IGES

Cassie Soeffing, IGES

David Overoye, SSAI

Rebecca Boger, Brooklyn College

Pablo Munoz, INTEL

Krishna Woerheide, UNL

NASA Mosquito Mapper Project Scientists

Dr. Assaf Anyamba GSFC

Dr. Radina Soebiyanto, GSFC

Dr. Sara Paul, UC Denver

Dr. Lee Coenstadt, USDA

NASA Develop Team

Project Leads- GLOBE Brazil

Dr. Rodrigo Leonardi, Country Coordinator

Dr. Nadia Sacenco, Deputy Coordinator

Dr. Aline Venoso, AEB, Brasilia

Prof. Ines Mauad, Rio de Janeiro

Prof. Renee Codsí, Salvador

Dr. Rodrigo Antes Reis, Matinhos

Project Leads- GLOBE Peru

Jose Martin Cardinas Silva, Country Coordinator

Marissa Valdez, Peace Corps

Karina Quintero, GLOBE Master Trainer

Contact:

rusty_low@strategies.org



Author:

Russanne Low PhD

Science Lead GO Mosquito Habitat Mapper
Institute for Global Environmental Strategies
Arlington VA

Rusty_low@strategies.org



Attribution-NonCommercial-ShareAlike
4.0 International (CC BY-NC-SA 4.0)

<https://creativecommons.org/licenses/by-nc-sa/4.0/>

Educators: did you modify this file for your class? Put your name and the date here!