

Lee County Mosquito Education

High School Biology “Biological Controls” Activity Menu

This activity menu provides online learning resources that continue to support the environmental sciences and Florida’s Next Generation Sunshine State Standards. Please do not hesitate to reach out if we can be of further assistance to you or students.

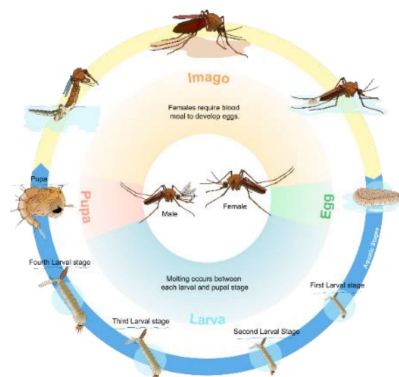
Introduction:

The mosquito is the deadliest animal in the world. Their ability to carry and spread disease to humans causes millions of deaths every year. For this reason, sustained mosquito control efforts and constant research are important to prevent outbreaks from these diseases. Integrated Mosquito Management (IMM) programs that are able to effectively incorporate as many control measures as possible are typically the most successful at reducing the mosquito populations in their areas, thereby minimizing the risk of mosquito-borne disease transmission to their residents. Biological control agents are an extremely safe and effective tool and should always be considered as part of a comprehensive IMM program. This WebQuest will introduce you to the basic mosquito biology, mosquito borne illnesses and transmission, biological controls, and the use of bioassays to monitor resistance among our mosquito populations.

Think:

Mosquito Biology

1. What are mosquitoes? [Which Mosquitoes Are Bad?](#)
2. How many mosquitoes do we currently have in Florida?
3. How many mosquitoes do we have worldwide?
4. How many mosquitoes are dangerous to people?
5. What are the stages of the mosquito’s life cycle?



Mosquito-Borne Illnesses

1. How do female mosquitoes take a blood meal? [How Mosquitoes Use Six Needles](#)
2. Why do mosquitoes take a blood meal?
3. What are the most common diseases that are spread by an infected mosquito?
4. [How do Mosquitoes Spread Disease?](#) The Florida Department of Public Health has a mission to monitor the geographic and arbovirus surveillance systems over the eastern and southern United States. There you can find the latest press release [arbovirus information](#).

Understanding Biological Control Agents

Biological control agents are simply naturally occurring organisms, such as bacteria or predatory animals, which can be used by mosquito control professionals to reduce local mosquito populations. Biological control agents are often an important tool in mosquito control because, when used correctly, they are both environmentally friendly and highly effective.

1. Compare and contrast two types of biological control agents. Be sure to include advantages and disadvantages for each.
2. Today, ladybugs are used to control aphids (a pest that suck sap from plants), just like predatory ants were used to control pests in Chinese orchards. What could be the advantages and disadvantages of using insects to combat pests?
3. What are some predators of mosquito larvae that could be used as biological control agents in Florida?
4. Can bacteria be used to control mosquito populations? If so, what type of bacteria and how?

Dig Deeper:

1. [Sterile Insect Technique \(SIT\)](#) is a technique used to sterilize specific species of mosquitoes to reduce their populations or eradicate them. It is insecticide-free. Which mosquito species does Lee County Mosquito Control target?
2. How does this compare to [genetically engineering mosquitoes?](#)
3. How is Lee County Mosquito Control using [SIT techniques](#) to combat local harmful mosquito species?

Personal Responsibility

[What can you do to reduce mosquito populations?](#) There are many ways to control mosquitoes at home. What does the [CDC](#) recommend?

Application Methods

[Mosquito Control 101](#) What recommendations does the [Florida Department of Health](#) make for mosquito disease prevention? How do scientist use [Bioassays](#) to monitor for mosquito resistance to surveillance techniques?

Discuss:

1. You are planning a research trip to study mosquitoes in Uganda. What precautions does the [Centers for Disease Control](#) recommend before traveling?
2. Review [Florida Resident's Guide to Mosquito Control](#)

Search Topics

- History of Mosquitoes in Florida
- Common Florida Mosquito Habitats
- Safe Approaches to Repel Mosquitoes
- Top Five Florida Mosquitoes

Learn More

1. Where can I find up to date information from [Lee County Mosquito Control](#) and the [Lee County Mosquito Education Program](#).
2. Where can I learn more about local mosquitoes and [mosquito control operations?](#)
3. Where can I find what areas of Lee County are being [treated?](#)
4. How would some make a [service request?](#)
5. [Take a Virtual Tour of Lee County Mosquito Control District \(LCMCD\) Operations](#)

