QUICK GUIDE

# COMMUNITY SCIENCE TOOLKIT

*for*

# Mosquito Surveillance

Climate change, transportation, and trade networks have and will continue to introduce mosquito species to new habitats. Community science invites public participation in scientific research and data collection through collaborations with scientists. The data generated through community science projects will contribute to data surveillance across diverse geographic landscapes and inaccessible rural areas.

This toolkit is designed for community organizations, health and environmental groups, and researchers to implement a mosquito surveillance project. For more information please visit:

**https://ncceh.ca/resources/subject-guides/community-science-approaches-mosquito-surveillance**

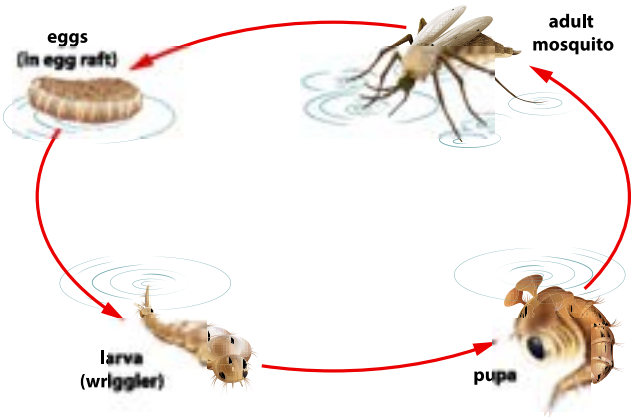
National Collaborating Centre for Environmental Health

Centre de collaboration nationale en santé environnementale

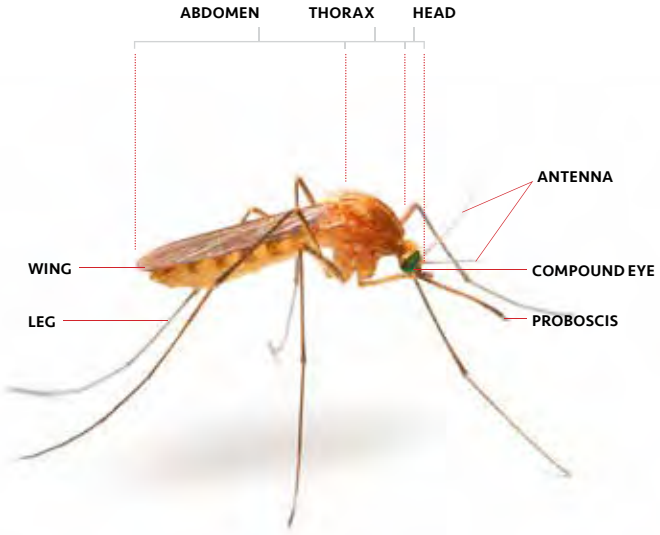
www.ncceh.ca

# MOSQUITO OVERVIEW

## Mosquito Lifecycle




## Parts of a Mosquito




# SETTING UP COMMUNITY PARTNERSHIPS

**Successful community science projects rely on active community participation and collaboration.**

**Which organizations in your community can you partner with?**

# DEFINING PROJECT GOALS

## What are the goals of your community science project?

Successful surveillance projects require clear goals and objectives prior to action

Some common goals for mosquito surveillance community science projects are:

### GOAL 1: Map Mosquito Habitats

#### Objective

- Collect information on mosquito habitats and identify strategies to reduce mosquito populations.

#### Best for

- Building a mosquito species database in a specific location, where ongoing surveillance is limited.

#### Activities

- Encourage participants to identify mosquito habitats such as stagnant water, freshwater, brackish water, potholes, or even moist surfaces instead of water.
- After identifying mosquito habitats, control measures can be implemented to reduce them.

### GOAL 2: Identify Mosquito Trends and Diversity

#### Objective

- Map and identify mosquito species by tracking the presence of mosquitoes in an area.

#### Best for

- Areas with routine surveillance that does not cover all regions in the jurisdiction.
- Regions where mosquito species are unevenly distributed or inconsistently found.
- Locations where traditional surveillance might not represent the true mosquito population.
- Projects that can access labs for molecular testing.

#### Activities

- Most common mosquito community science project.
- Individuals can be trained to visually identify mosquitoes.
- Mosquito samples can be submitted for identification either through examination of physicalspecimens or by sending images of mosquitoes.
- Molecular techniques such as PCR testing can be used for accurate identification.

### GOAL 3: Pathogen Detection

#### Objective

- Detect and identify mosquitoes that carry disease-causing pathogens.

#### Best for

- Communities with a higher incidence of mosquito borne disease or areas at risk of emerging diseases.
- Projects that can access labs for molecular testing.

#### Activities

- Assist in mosquito trapping in hard-to-reach areas, such as remote locations or private properties where traps are not typically placed.
- Specific pathogens can be confirmed through molecular lab techniques.

PHOTO: STEFAN IWASAWA

# OTHER CONSIDERATIONS

## Benefits and Potential Limitations of Project

| Project Goal | Benefits | Limitations |
|---|---|---|
| **Map mosquito habitats** | ▪ Simple participant engagement<br>▪ Minimal training<br>▪ Limited sample submission | ▪ Integration into existing data<br>▪ Data quality and validity |
| **Mosquito trend and diversity identification** | ▪ Variety of different approaches to choose from<br>▪ Captures a variety of mosquito species<br>▪ Especially good for working with specific communities (such as school groups) | ▪ Participants may need additional training<br>▪ Careful and timely handling and submission of samples |
| **Pathogen detection** | ▪ Accurate identification of mosquito species and pathogens<br>▪ Damaged samples can still be tested | ▪ Participant training and support on trap use<br>▪ Need to pack and ship samples rapidly<br>▪ Costs can be quite high |

## Other Questions to Consider

How will you collect and analyze data?

What protocols are in place to ensure accurate data collection and minimize errors?

How will you engage and celebrate community science participants?


## Want to Learn More?

Check out the full report for more information, tips, and resources