



## Mosquitoes and Mosquito-Borne Risks

### Contents

<b>Introduction .....</b>	<b>2</b>
<b>Massachusetts.....</b>	<b>2</b>
<b>West Nile Virus.....</b>	<b>2</b>
<b>Eastern Equine Encephalitis Virus.....</b>	<b>2</b>
<b>Other Mosquito-Borne Infections.....</b>	<b>3</b>
<b>Personal Protection.....</b>	<b>3</b>
Avoidance .....	3
Attire .....	3
Repellents .....	3
<b>Environmental Management.....</b>	<b>4</b>
Source Reduction .....	4
Exclusion .....	4
Larviciding .....	4
Adulticiding .....	5
Anti-Malarials.....	5
<b>Resources.....</b>	<b>5</b>



## Introduction

Whether you remain on campus, travel elsewhere in the metropolitan area, or visit other regions in the United States or abroad, you are likely to encounter mosquitoes. Some of these mosquitoes may simply annoy you, but others may pose a distinct risk to health because they may transmit (vector) viruses or other organisms. Hence, it is wise to remain mindful of your risks and to pursue efforts to protect your health.

## Massachusetts

In Massachusetts, the main mosquito-related risks to people currently include West Nile virus (WNV) and eastern equine encephalitis virus (EEEV). Mosquitoes acquire either kind of virus by feeding upon a bird that is infected. The mosquito may then transmit the virus several days later as she bites again in search of blood.

Risks are seasonal and dependent upon geographic location, the time of day, the weather, and your activities. Be aware that whereas some kinds mosquitoes attack mainly at night, yet others are active during the day or during dawn and dusk. Hence, be mindful of mosquitoes at any hour.

## West Nile Virus

West Nile virus is transmitted mainly by a mosquito that thrives in organically fouled water in sites such as street catch basins that are ubiquitous in urban and suburban communities. These basins are treated with an environmentally appropriate biological larvicide by the mosquito control districts serving Boston and Cambridge, and by licensed personnel and vendors serving the Harvard campuses. This effort reduces the abundance of these mosquitoes, but you can pursue actions to further reduce your risks.

Risk of West Nile transmission tends to be greatest as the summer progresses. Whereas West Nile virus infection may sometimes result in serious disease or death, most infections tend to be fairly mild and self-limiting. Vaccines or specific treatments for people are not currently available.

## Eastern Equine Encephalitis Virus

Eastern equine encephalitis virus can be transmitted by any of several other kinds of mosquitoes that occur mainly in or near cedar swamps and other wetland habitats throughout rural areas of New England and along



the Atlantic seaboard. Because these habitats are difficult to treat, interventions tend to rely upon the application of mists of mosquito adulticides delivered by trucks or aircraft.

Risks from EEEv within Boston and Cambridge are historically small, but travels to outlying communities in surrounding counties may increase risk of exposure. Birds that acquire infection elsewhere may also carry this virus to other communities, including to the areas on and around our campuses.

EEEv infection frequently results in profound and life-altering illness as well as death. Vaccines for people are not currently available.

EEE risk was exceptional elevated during 2019, and this virus has already been detected in mosquitoes and people in 2020. Accordingly, pursue efforts to reduce your risks (See [Personal Protection](#) and [Environmental Management](#)).

## Other Mosquito-Borne Infections

Diverse other mosquito-borne infections may be encountered when one travels elsewhere in the United States and abroad. On occasion, certain kinds of these infections may be brought back in returning travelers. Examples of such infections include the viruses such as those that cause Dengue, Chikungunya and Zika, and blood parasites such as those that cause malaria and filariasis. Whether on campus or elsewhere, there are steps you can take to reduce your mosquito-associated risks.

## Personal Protection

### Avoidance

If you are outside and encounter mosquitoes, consider retiring to the indoor environment.

### Attire

Most kinds of mosquitoes will not bite through clothing. Cover up exposed skin to reduce opportunities for mosquitoes to bite.

### Repellents



Several kinds of EPA (Environmental Protection Agency)-approved insect repellents are available for use on skin and clothing. They can dramatically (though transiently) reduce the level of annoyance and risk from mosquitoes. Read and follow label instructions.

## Environmental Management

### Source Reduction

Many kinds of mosquitoes will exploit small collections of water in containers such as:

- Buckets
- Trash barrels
- Cans
- Tarps
- Canoes and kayaks
- Disused tire casings

Indoors, some mosquitoes will develop in water contained within water jugs and dishes under plant vases. Because a mosquito may mature in less than one week in warm conditions, empty, cover or screen water-holding containers. If you see containers or puddles that retain water for a week or more, contact EH&S (Environmental Health and Safety) or your building manager.

### Exclusion

Screened windows and doors effectively keep most mosquitoes outdoors. Repair and install screens, as permitted and appropriate. The draft produced by fans can reduce human-mosquito contact.

When traveling abroad or camping locally, sleep more safely and comfortably by protecting yourself with bed nets or screened tents. Long-lasting insecticide-treated nets that are in good condition and used appropriately can significantly protect your health while you are abroad. These are often available locally, or you may purchase and pack them for your trip.

### Larviciding

Licensed pesticide applicators distribute environmentally appropriate larvicides to designated sites on Harvard properties. Homeowners may contract for such services or apply these products on their own properties, but not elsewhere.



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## Adulticiding

Regional mosquito control agencies may apply mists of adulticides in some communities to reduce the abundance of mosquitoes on the wing. This can also reduce risks of mosquito-borne infection. During seasons of intense risk, the State may have broad areas treated by aircraft.

## Anti-Malarials

Contact Harvard University Health Services (HUHS) or your own clinician long before you travel abroad for guidance on medications you should consider to protect yourself against malaria and diverse other health concerns.

## Resources

Resources and links for more information:

- [Centers for Disease Control and Prevention: Prevent Mosquito Bites](#)
- [Centers for Disease Control and Prevention: Travel Guidance Yellow Book](#)
- [EPA: Insect Repellents: Protection against Mosquitoes, Ticks and Other Arthropods](#)
- [Massachusetts Department of Public Health: Mosquito-borne Diseases](#)
- [Boston Public Health Commission: Mosquito-Borne Illness](#)
- [Cambridge Public Health: Mosquito-Borne Diseases](#)
- [HUHS: Travel Consultation](#)