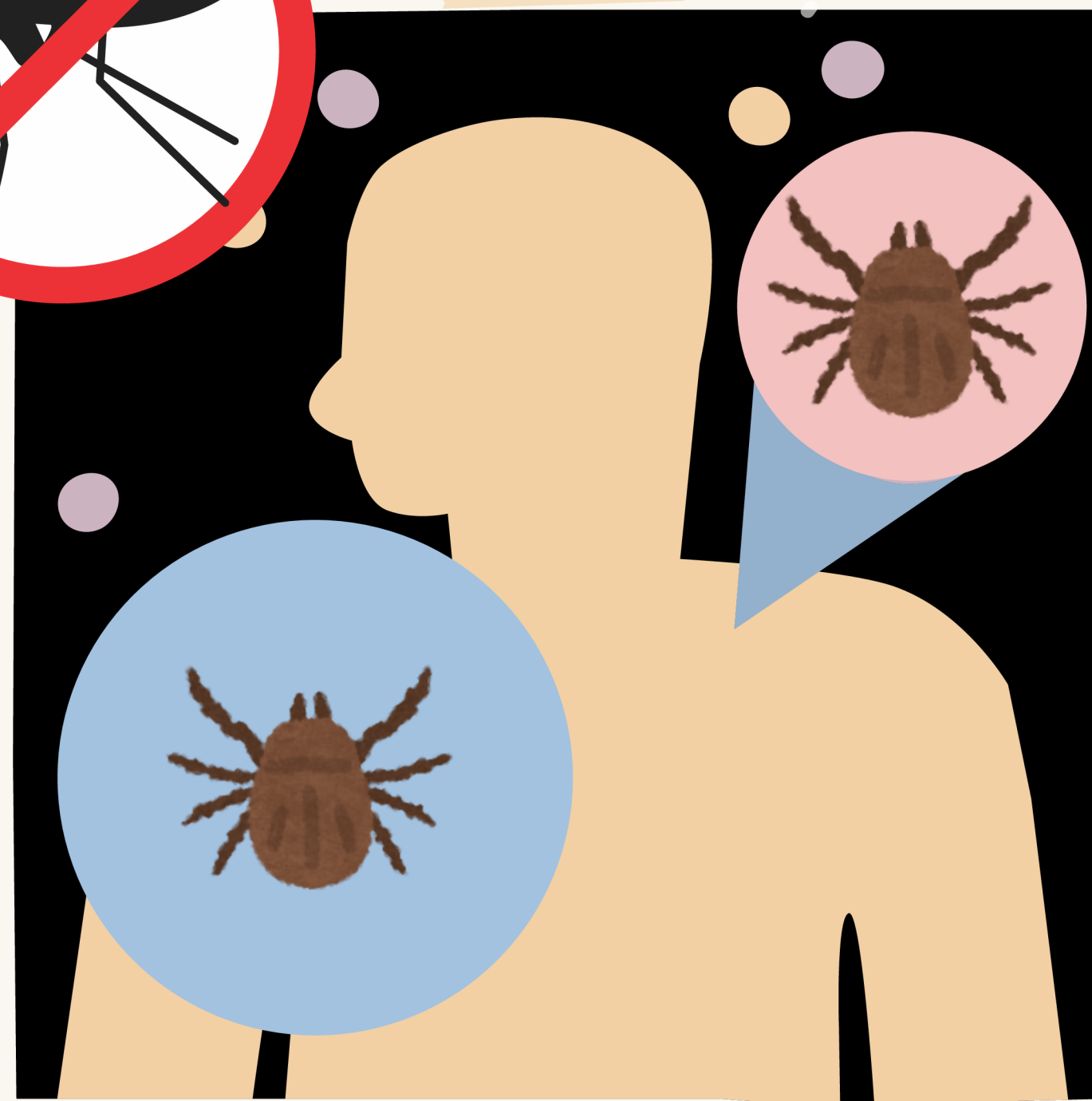


TICK-BORNE AND MOSQUITO DISEASE AWARENESS AND PREVENTION

PREVENT-CHECK-REMOVE



Presented by Be Well

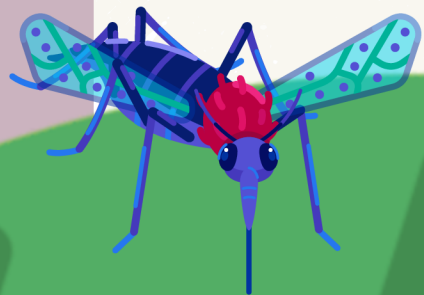
IN THIS DISCUSSION, WE WILL FOCUS ON...

MOSQUITOES AND TICKS

Identify Types of Mosquitoes and ticks in the CT region and where their habitats are.

Learn about Mosquito-borne and Tick-borne illness, signs and symptoms.

Mosquito and Tick prevention tips and tick-removal Strategies.





MOSQUITOES

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>



WHAT ARE MOSQUITOS?



- Mosquitoes are small flying insects with 3,700 types of mosquitoes found world wide.
- Adults mosquitoes can live indoors and outdoors and can bite day or night
- Mosquitoes breed in and around areas with standing water.
- Adult mosquitoes can be found in weeds and shrubbery.

Citation: Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs#:~:text=A%20mosquito%27s%20life%20cycle%20has, stagnant%20water%20cannot%20be%20removed.>

MOSQUITO SEASON IN CONNECTICUT

- In Connecticut, mosquito season typically runs from late March through late September or early October, with activity peaking during the warmest months of July and August, and when temperatures consistently reach 50°F or above.
- Mosquito activity generally ends with the first hard frost, which is usually around October.

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>



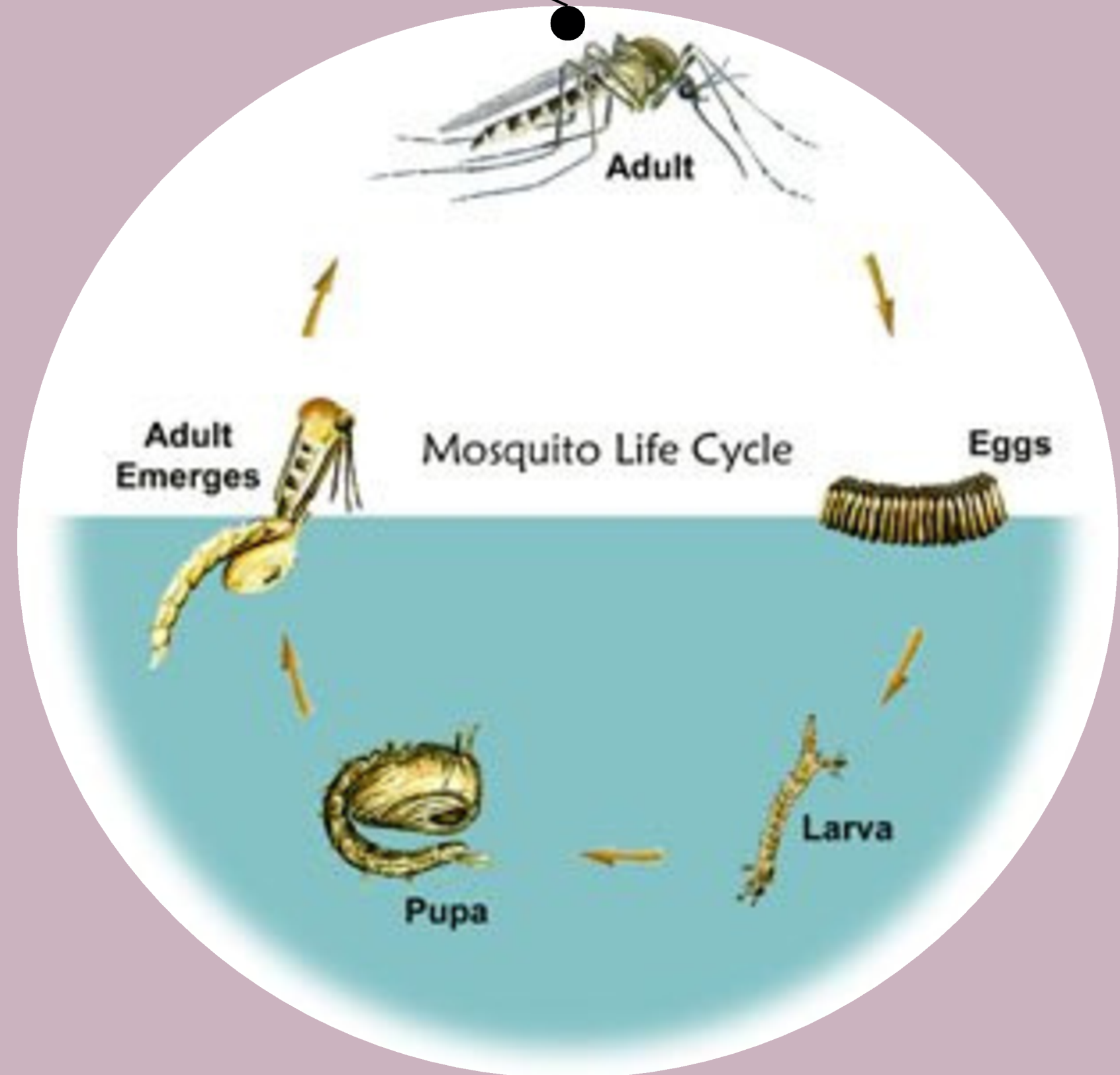
STAGES OF LIFE FOR A MOSQUITO

All mosquito species go through four distinct stages during their life cycle.:

- Egg - hatches when exposed to water.
- Larva - (plural: larvae) "wiggler" lives in water; molts several times; most species surface to breathe air.
- Pupa - (plural: pupae) "tumbler" does not feed; stage just before emerging as adult.
- Adult - flies short time after emerging and after its body parts have hardened.

The first three stages occur in water, but the adult is an active flying insect.

Environmental Protection Agency. (n.d.). EPA. <https://www.epa.gov/mosquitocontrol/mosquito-life-cycle>



MOSQUITO FACTS

- Only the female mosquito bites and feeds on the blood of humans or other animals which can spread disease.
- Males mosquitoes are harmless, mostly feeding on nectar and as a food source to animals but can still be as annoying female mosquitoes.
- Males have feathery antennae that help them sense their potential mates' wingbeats. Conversely, female mosquitoes have especially plain antennae. Females are also larger than male mosquitos.
- The life cycle typically takes up two weeks, but depending on environment with most adult mosquitoes wind up as food for birds, dragonflies, or spiders. Others succumb to the effects of wind, rain, and drought. Those that survive those threats may persist for as long as 2 to 3 months and adults that hibernate can live as long 6 to 8 months.



Environmental Protection Agency. (n.d.). EPA. <https://www.epa.gov/mosquitocontrol/mosquito-life-cycle>

QUESTION?

Is this a male or female mosquito ?



QUESTION?

This is a male mosquito!

Female vs. Male Mosquito



Female Mosquito

Male Mosquito



TICKS

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>





WHAT ARE TICKS?

- Arachnids (relative of spiders and mites).
- Need blood to survive.
- Exposure can occur year-round, but April through September is when ticks are most active.
- Thrive in warm and humid areas.
- Live in wooded and brushy areas with high grass and leaf litter.
- Can also be found in beaches and moist and humid environments which tend to be close to the ground.

COMMON TICK HABITATS

Ticks can be found in urban areas such as parks, fields, picnic areas and even your own backyard!

Places to keep a close eye out for ticks include:

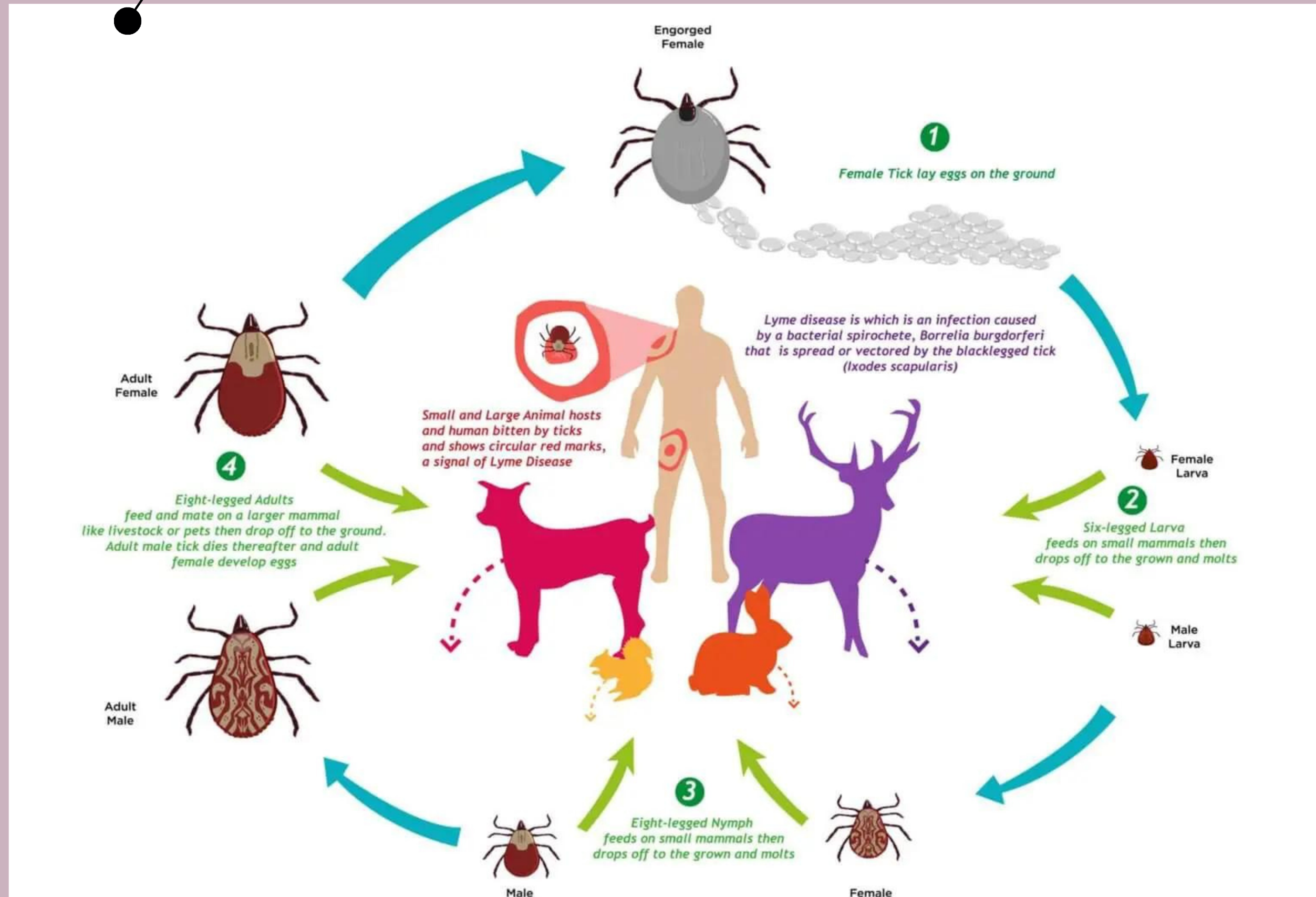
- **Wood piles, which can often harbor mice and other rodents**
- **High grassy areas**
- **Wooded areas**
- **Stone walls and other features that may retain moisture**
- **Leaf piles and litter**
- **Fallen and low-hanging branches**
- **Overgrown shrubs**
- **Bird feeders (because they can invite other tick-attracting wildlife)**

STAGES OF LIFE FOR A TICK

Eggs are laid in Spring and when they hatch in the Summer they become larva. Larva has six legs and will start to look for a host.

After hibernating through Winter it will become a Nymph in the Spring. It will look for a bigger host and then after another hibernation will become an adult.

Nymphs and Adults have 8 legs and can transmit disease through blood meal.



Generally, ticks feed three times before they mate, reproduce and die.

- **To find hosts, ticks wait on the tips of grass and vegetation and lift up their front legs to find a host. This is called questing.**
- **Ticks detect body odors, heat, moisture, and vibrations of passing animals and latch on when a host brushes by. Once a tick attaches to a host, it will usually start feeding within a few hours.**
- **Ticks secrete a concrete-like substance through their mouthparts to help stay attached longer during feeding.**



QUESTION?

Is this a tick?



YES

This is a lone star tick in its Nymph stage.



DID YOU KNOW?

Humans are usually bitten by the Nymph tick due to its small size and it feeding during the Spring and Summer months.

WHY ARE THERE MORE TICKS?

Since 1995, an average of 2,718 cases (range 1,348 to 4,631) have been reported to the DPH annually. The Northeastern United States is a region with many lush wooded areas, featuring a typically cool climate that makes for delightful spring and summer weather. Such an environment is also ideal for ticks to thrive.

ENVIRONMENTAL FACTORS



Climate Change



Warmer Winters



Greenhouse Gases

TICK SEASON IN CONNECTICUT

- Season is generally April- October (but ticks can emerge on warm winter days too!)
- Connecticut is in the top 20 percent of states with the highest likelihood of tick-borne diseases.

DID YOU KNOW?

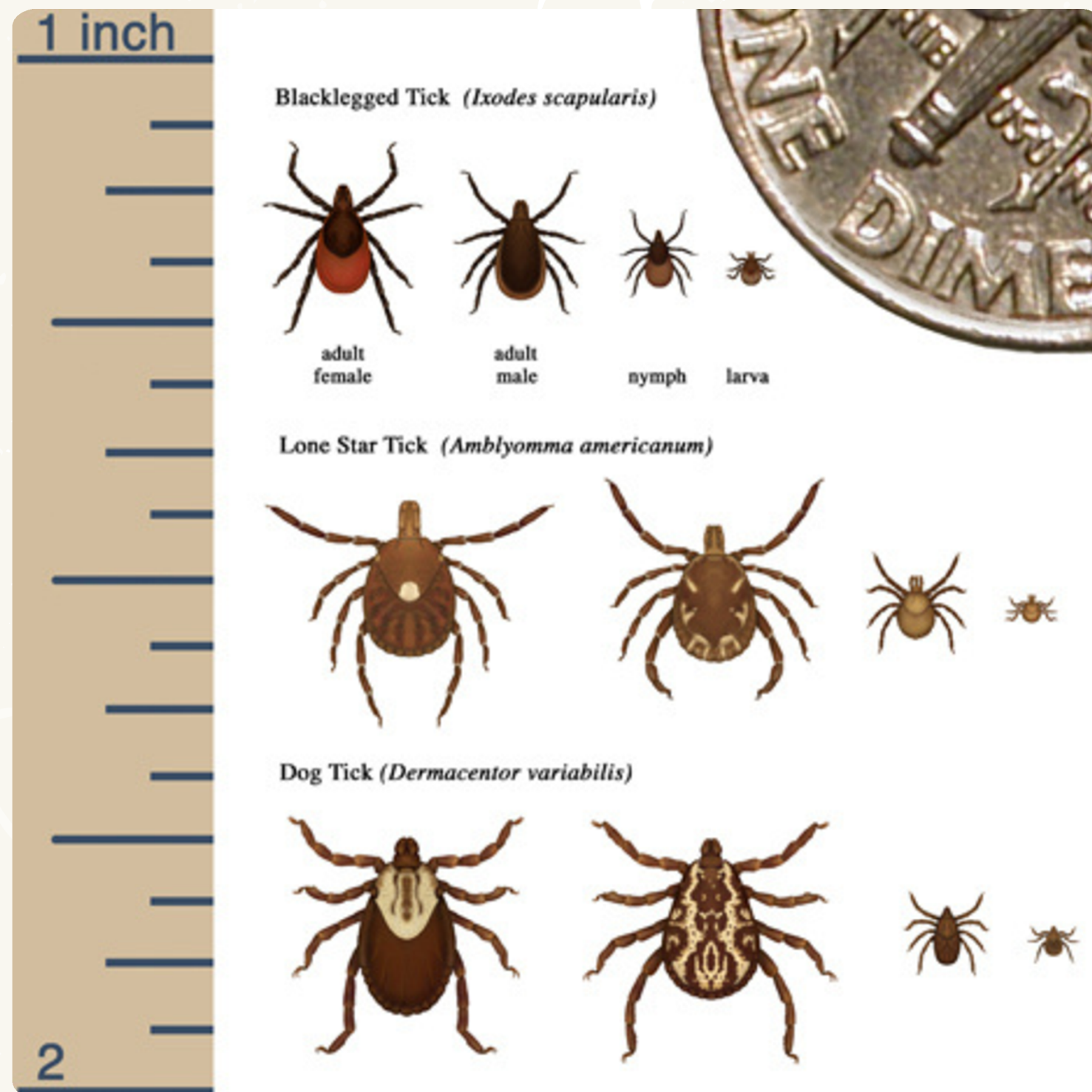
Lyme Disease is named after Lyme, Connecticut, where the full spectrum of illness was first described in 1975.



COMMON TYPES OF TICKS IN CONNECTICUT

THE MOST COMMON TICKS IN THE STATE INCLUDE:

- **BLACK LEGGED "DEER" TICK**
 - LONE STAR TICK
 - AMERICAN DOG TICK
 - ASIAN LONGHORNED TICK





BLACKLEGGED "DEER" TICK

Small, (adults are the size of a sesame seed) flat and oval shaped. They are dark reddish brown in color.

- Prefer to feed on large animals, such as deer and humans
 - Spread the bacteria that causes **Lyme Disease**
- (50% of Adult Blacklegged Ticks are infected with Lyme Disease)**

Also carry other types of infectious agents!

Other diseases associated with this tick include:

- Anaplasmosis- caused by Anaplasma bacteria.
- Babesiosis- common- parasite that infects red blood cells.
- Borrelia Miyamotoi Disease- bacteria Borrelia miyamotoi- distant relative to Lyme.
- Powassan Virus Disease- harbors Lyme Disease bacterium- Rare and can be fatal.



LONE STAR TICK

Ticks that have reddish brown oval bodies that become slate grey when engorged. Females have a single whitish to silvery spot on their backs.

- Aggressive biter! Attack humans more frequently than any other tick species in Eastern states
- Does NOT carry Lyme Disease

Diseases commonly spread:

- Ehrlichia chaffeensis- transmits Ehrlichia bacteria which infects human white blood cells.
- Tularemia- highly infectious-caused by bacterium, Francisella tularensis, found in wild animals (rare but serious).
- Alpha-gal syndrome- a food allergy to redmeat.



AMERICAN DOG TICK

Ticks that are reddish brown in color with white markings on the back or upper body. They are about 1/4 of an inch long as an adult.

- Adults prefer to feed on domestic dogs.
- If you own a dog, it's important to keep your grass well trimmed and inspect your pets!
- Adult females are more likely to bite humans.
- Found everywhere in the US except the Rocky Mountains.

Diseases Carried:

- Rocky Mountain Fever-caused by the bacterium *Rickettsia rickettsii*, rare but serious!
- Tularemia- disease of rabbits and rodents caused by the bacterium *Francisella tularensis*, rare, but serious!



ASIAN LONGHORNED TICK

Ticks are light reddish-tan to dark reddish with brown, dark markings. Adult females are grey-green with yellowish markings and the size of a pea after feeding.

- As of February, 2020, this non-native tick has been found in Connecticut.
- Aggressive biter!
- Females can produce massive amounts of offspring without mating. Males are rare.
- During the unfed stages the tick can be very small, about the size of a sesame seed, or even smaller.
- These ticks don't appear to contribute to the spread of Lyme disease but, in other countries, germs spread via bites from these ticks can make people and animals seriously ill.

SUBMITTING A TICK TO EHHD



Tick Submission Form

Date: _____

***Instructions: Complete this form and include it with your tick specimen
(It is important to print information legibly).***

**Information on person/health department submitting tick (to whom report will be sent):
(Please identify name and e-mail address of the person/health department official to whom the report will be sent.)**

Name: Eastern Highlands Health District

Address: 4 South Eagleville Road

City: Mansfield State: CT Zip Code: 06268

E-mail Address (required): ehhd@ehhd.org Telephone number(s): 860-429-3325

Please note that the Tick Testing Program is intended for the identification and/or testing of ticks which have fed on humans. Ticks removed from pets will be identified, but not tested.

Was this tick removed from a pet? Y____N____

Pet species/name/age: _____

Information on person bitten by tick:

Name (if different from above): _____

Address (if different from above): _____

Telephone number(s): _____

Age: _____ Gender: M____F____

Date tick was removed: _____ Part of body where tick was found: _____



MOSQUITO-BORNE ILLNESS

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>



WEST NILE VIRUS



Most common mosquito-borne viral disease in the United States and occurs every summer in Connecticut.

One hundred eighty-one human cases of West Nile virus, including four fatalities, have been reported in Connecticut residents since 2000.

The virus is spread through the bite of infected mosquitoes, particularly Culex species, which are commonly found in residential areas. While many people infected with WNV don't show symptoms, some develop a fever or other related illnesses.

Risk of mosquito-borne diseases continues. CT.gov. (n.d.-b). <https://portal.ct.gov/mosquito/press-room/2023-press-releases/risk-of-mosquito-borne-diseases-continues#:~:text=EEE%20is%20a%20rare%20but,in%20Connecticut%20residents%20since%202000>.

West Nile virus - faqs. CT.gov. (n.d.-c). <https://portal.ct.gov/mosquito/diseases/west-nile-virus-faqs>

EASTERN EQUINE ENCEPHALITIS

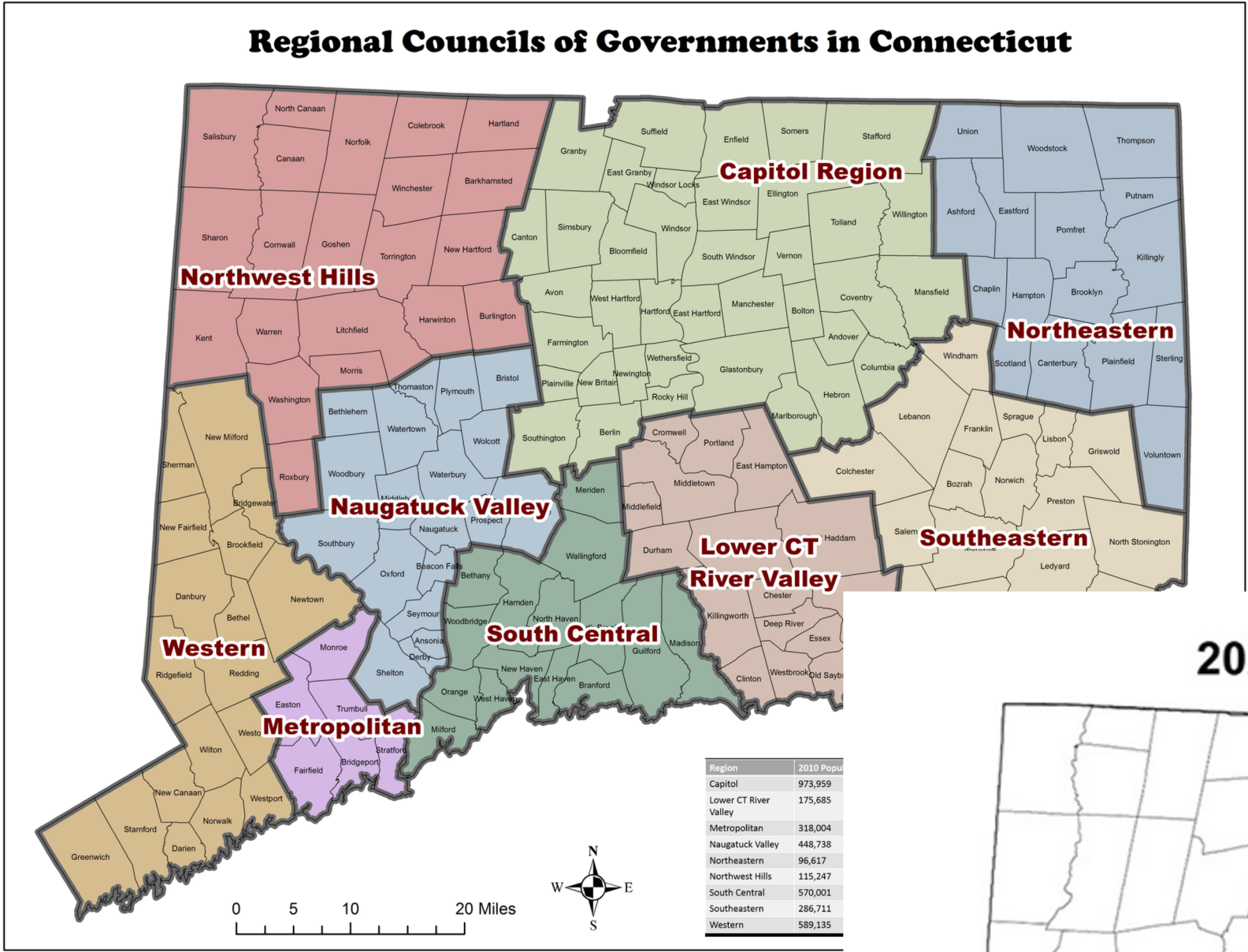
EEE is a rare but serious illness in humans with 4–8 cases reported in a typical year in the U.S.

The last major outbreak occurred in 2019, involving 38 human cases nationally, with 19 cases occurring in New England.

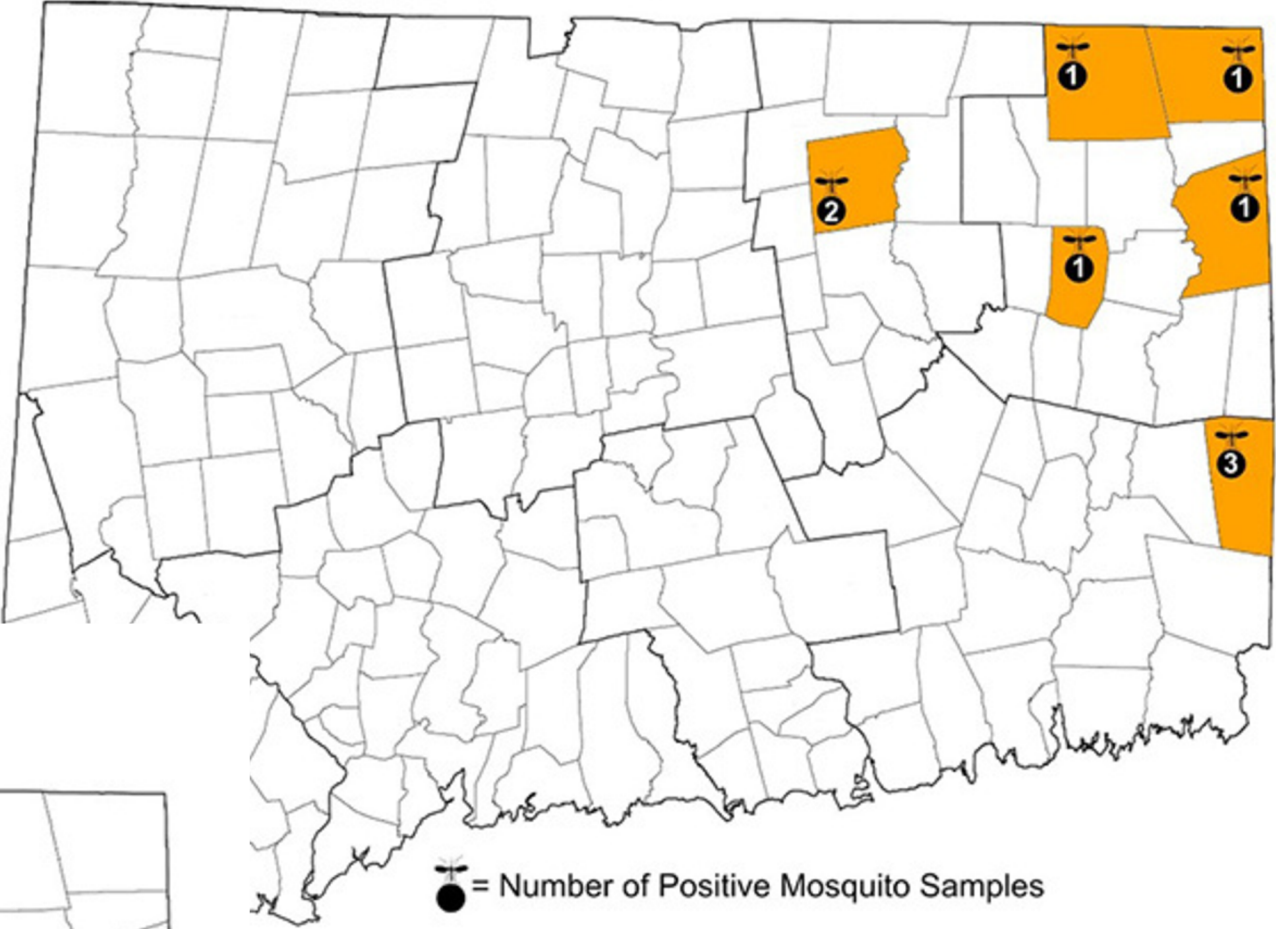
EEE is the most severe mosquito-transmitted disease in the U.S., with approximately 40 percent mortality and significant brain damage in most survivors.

OTHER MOSQUITO-BORNE ILLNESSES

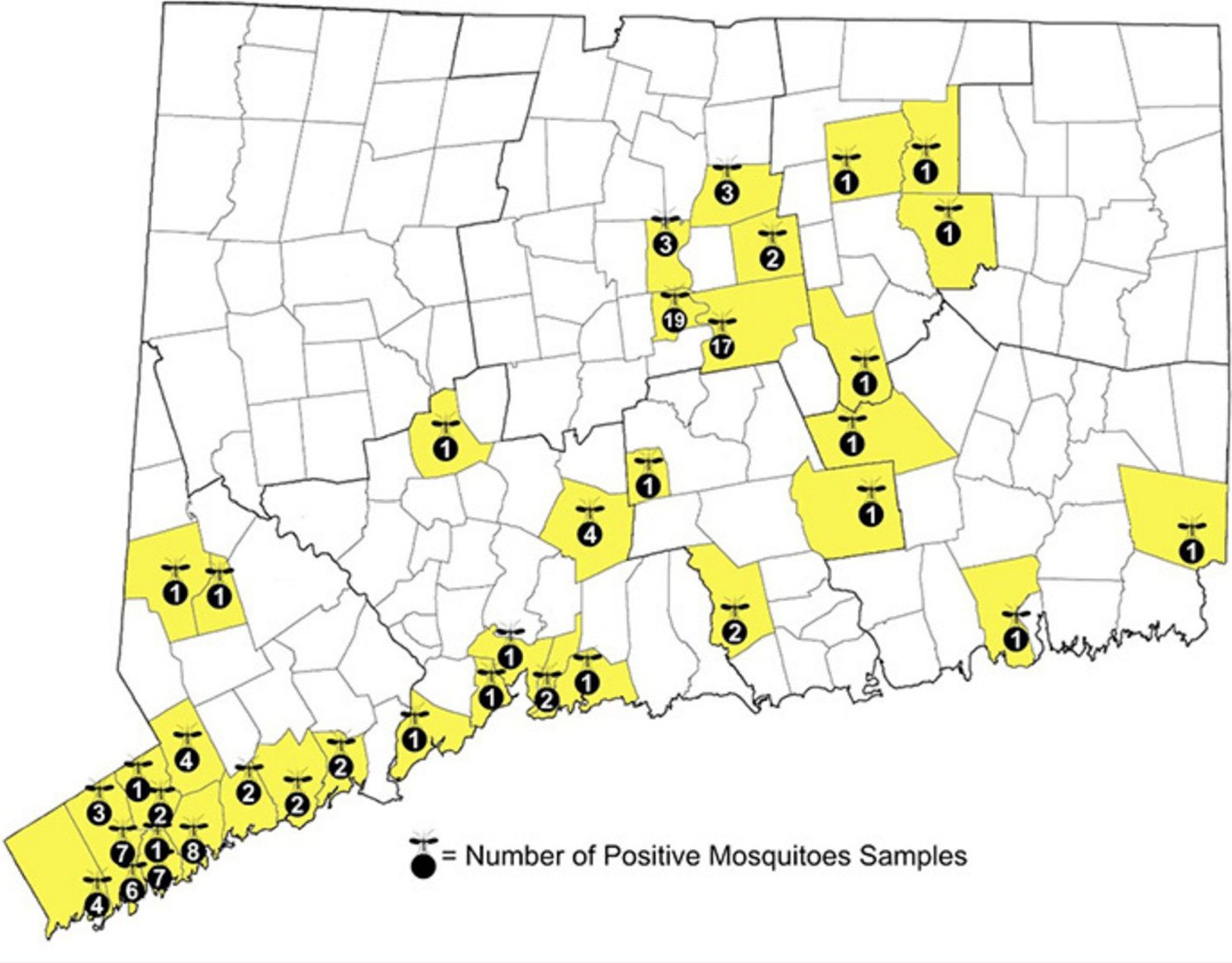
- LaCrosse encephalitis virus (Southern states and Midwest)
- Jamestown Canyon Virus (Mostly Midwest)
- Zika Virus (In southern states and Caribbean)
- Dengue Fever (In southern states and the Caribbean)
- Malaria (tropical and subtropical regions of the world)
- Yellow Fever (



2023 Eastern Equine Encephalitis Activity



2023 West Nile Virus Activity



TICK-BORNE ILLNESS

Mosquito faqs. CT.gov. (n.d.). <https://portal.ct.gov/mosquito/faqs/mosquito-faqs>



LYME DISEASE



Most common vector borne disease and tick-borne illness.

Caused by the bacterium *Borrelia burgdorferi* and rarely, *Borrelia mayonii*.

Transmitted to humans through the bite of infected blacklegged ticks.

Research has shown that ticks need to feed for 24 hours to spread Lyme Disease.

DID YOU KNOW?

In the United States there are 14 states including Connecticut that count for 96% of Lyme Disease cases.

SYMPTOMS OF LYME DISEASE



- Rash at the site of the tick bite that may look like a “bull’s-eye”
- Headaches
- Fever
- Muscle aches
- Fatigue

DID YOU KNOW?

70-80% cases will get a bulls-eye rash which is a tell-tale sign that it is Lyme Disease.

ALWAYS A BULLS-EYE RASH? THINK AGAIN!

Bull's Eye (Erythema migrans) rash can present itself in different forms such as multiple rashes.

The rash can show anywhere on the body and not just at the bite site because the bacteria is in the blood stream.



STAGES OF LYME DISEASE

STAGE 1

After being bitten by a black-legged tick, a quickly growing Bulls-eye rash can appear.

STAGE 2

Small, oval rashes appear anywhere on your skin. Some people develop a bluish-red lump.

STAGE 3

MAY BE PERMENANT

Skin begins to swell, and you may notice some redness. These signs are caused by having a bacterial infection for a long time. The affected skin may also feel sore.

STAGES OF A RASH

STAGE 1



Bulls-eye Rash

- Symptoms start 3 to 30 days after a tick bite.
- Feels smooth and warm to the touch.
- Can be itching and painful.
- Has an outer edge that feels scaly or crusty.

STAGE 2



Borrelial lymphocytoma

- Symptoms begin about 30 to 45 days after a tick bite.
- Rashes stay the same size.
- Lump may appear on ear.

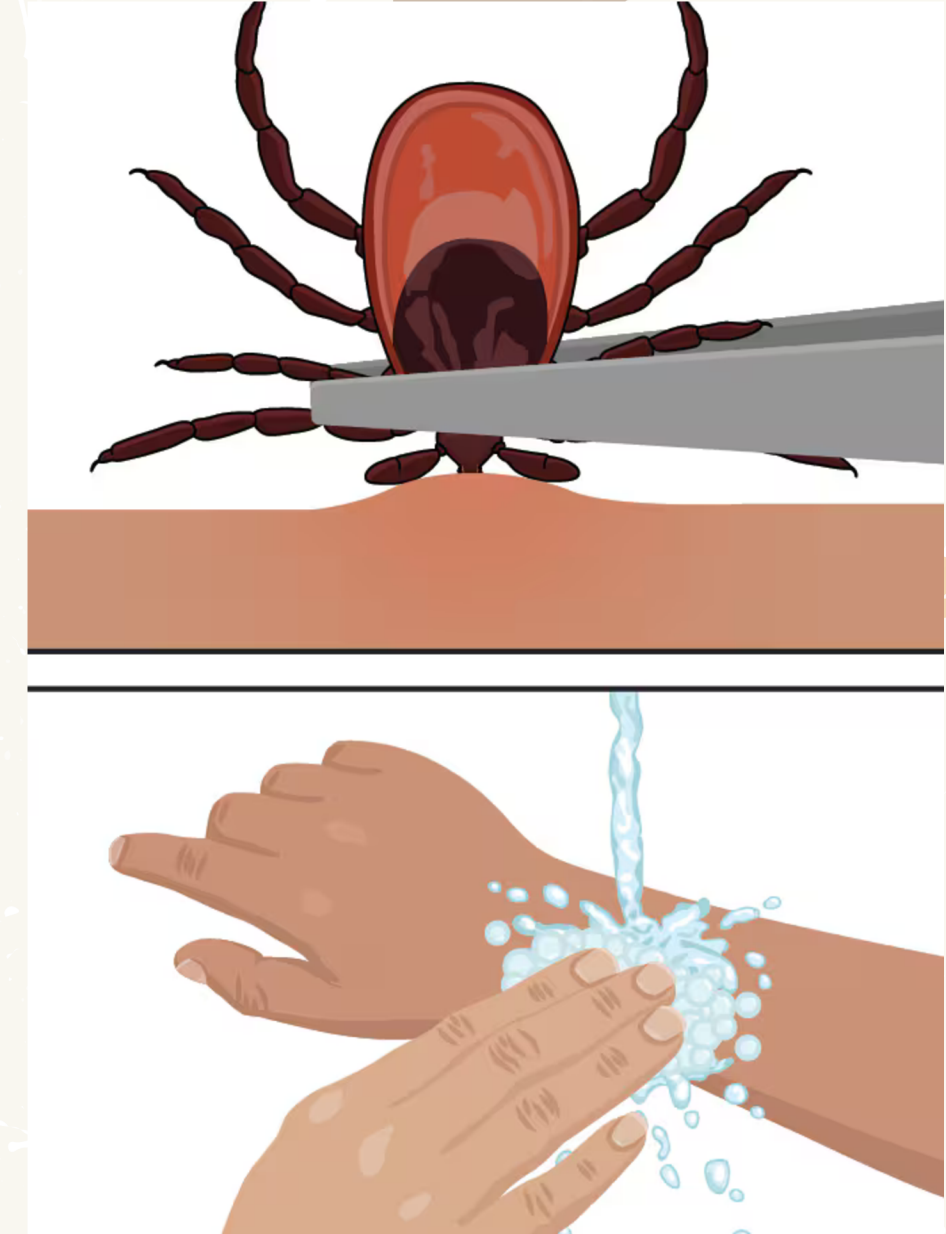
STAGE 3



Acrodermatitis chronical atrophicans

- Symptoms begin 2 to 12 months after a tick bite.
- Skin starts to harden and shrink, causing deep lines to form.
- Hair in the area tends to fall out.
- Skin tears easily.

PREVENT-CHECK- REMOVE



PREVENTION!

The most effective way to avoid getting a tick-borne disease is to prevent tick bites



**Wear light clothing,
long sleeves/pants
tucked into socks**



**Use insect repellent
(following EOA-registered
repellent
recommendations)**



**Create a Tick-safe zone:
Keep grass short, stay on
paths, remove litter and
spray perimeter.**



**Check for ticks as soon
as coming indoors
(change
clothes/shower and
check gear)**

WHEN IN DOUBT BLAST IT OUT!

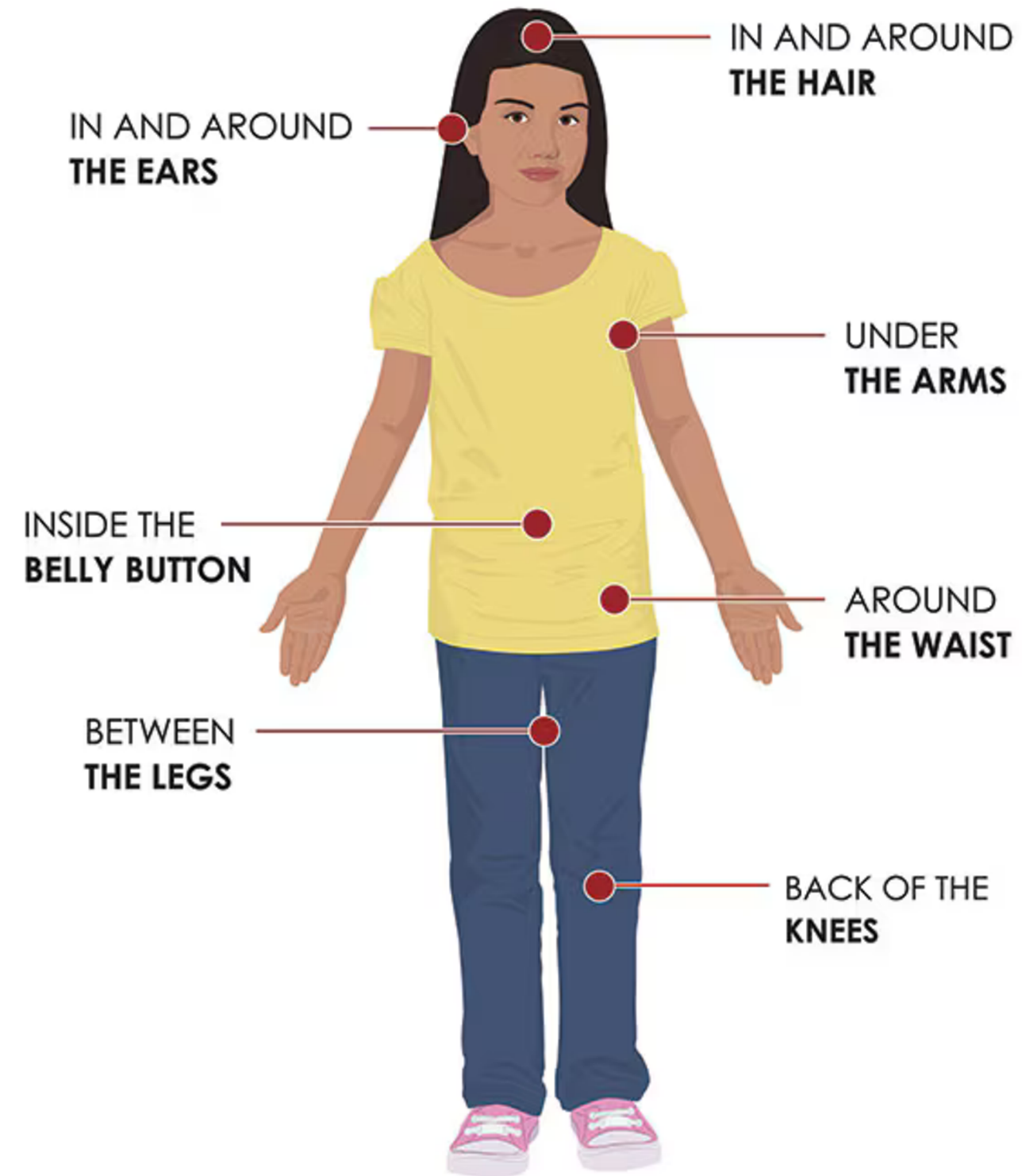
- Bathe or shower soon after coming indoors.
- Look for ticks and remove with fine tipped tweezers.
- Apply repellents to skin and/or clothing.*
- Spray the perimeter of your yard for ticks.*
- Treat your pets with a product recommended by your vet.



CHECK

Conduct a full body check upon returning from tick-infested areas, including your own backyard!

Use a hand-held or full length mirror to view all parts of the body.



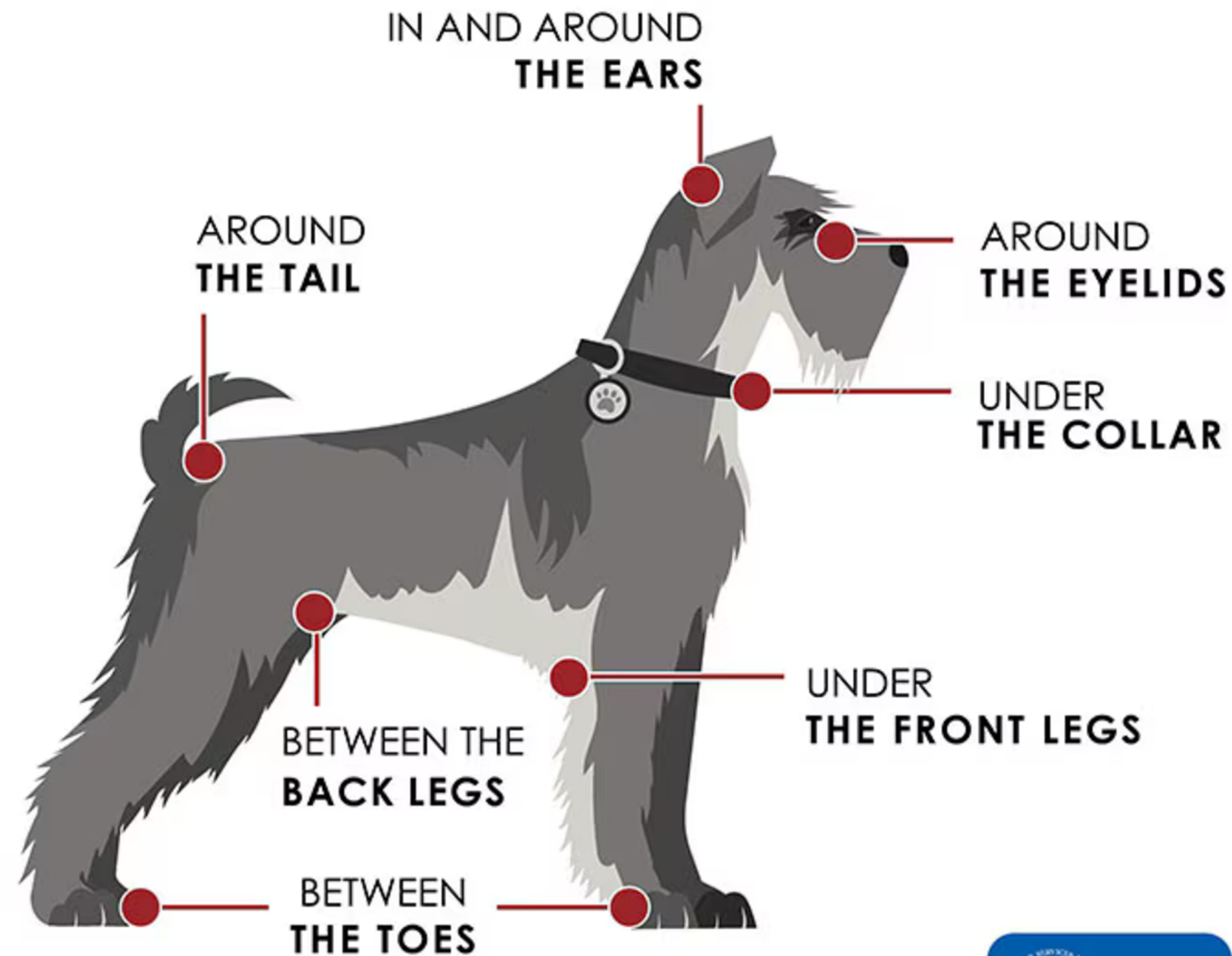
CHECK

Don't forget to check your pets too!

Ticks crawling on or biting a pet can be hard to spot, especially for breeds with long and dark fur.

Daily checks to find and remove ticks that are crawling on or biting your pets helps to keep them healthy.

WHERE TO CHECK YOUR PET FOR TICKS



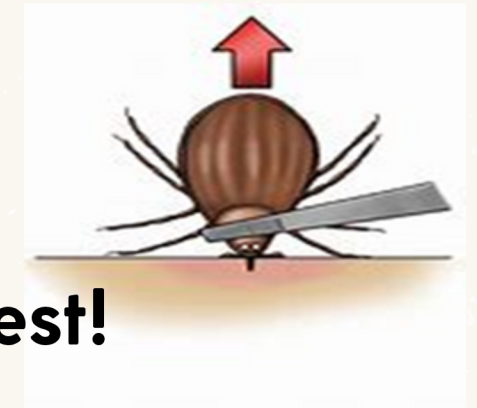
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TICK REMOVAL

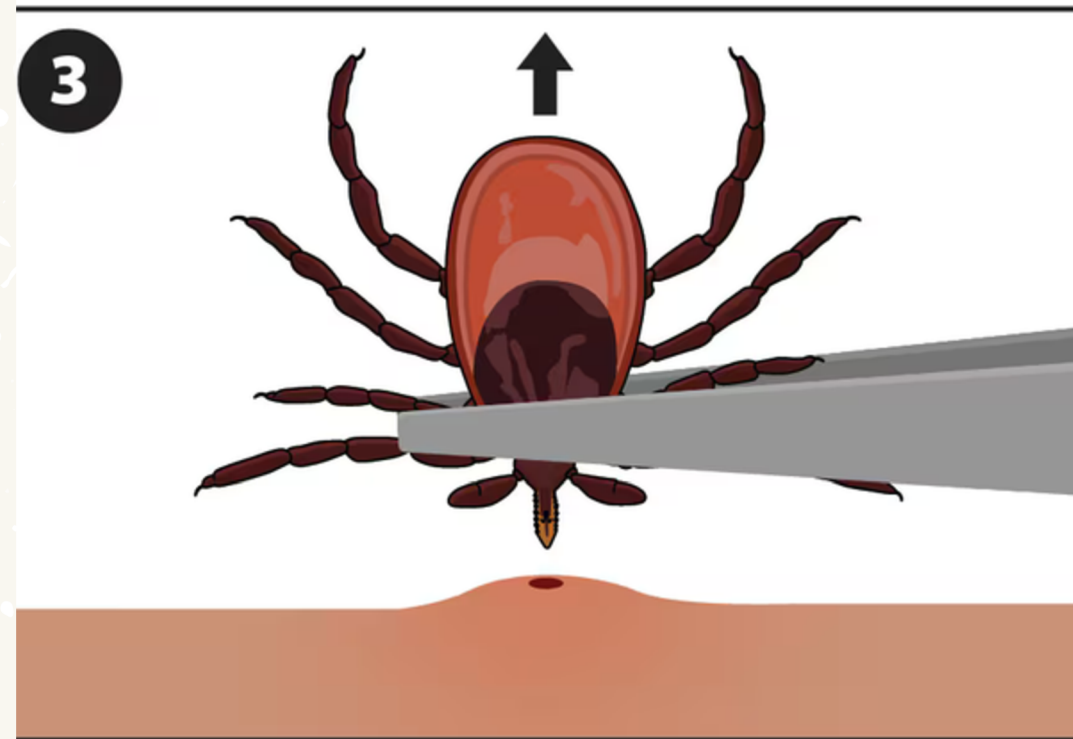
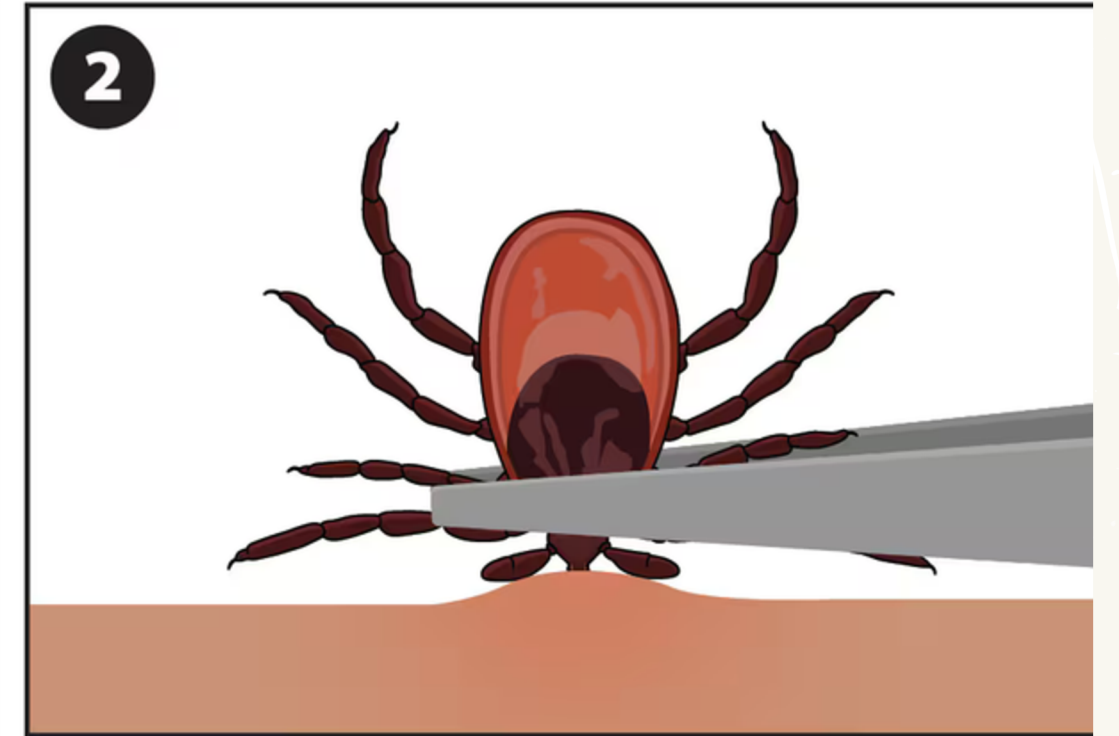
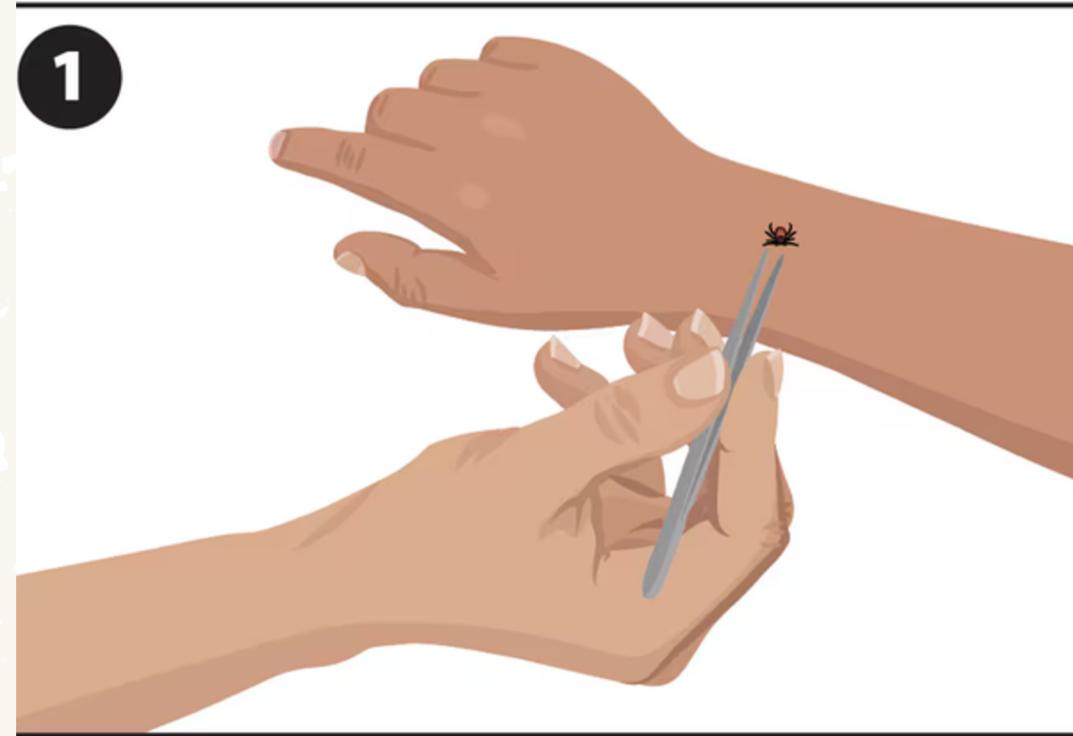
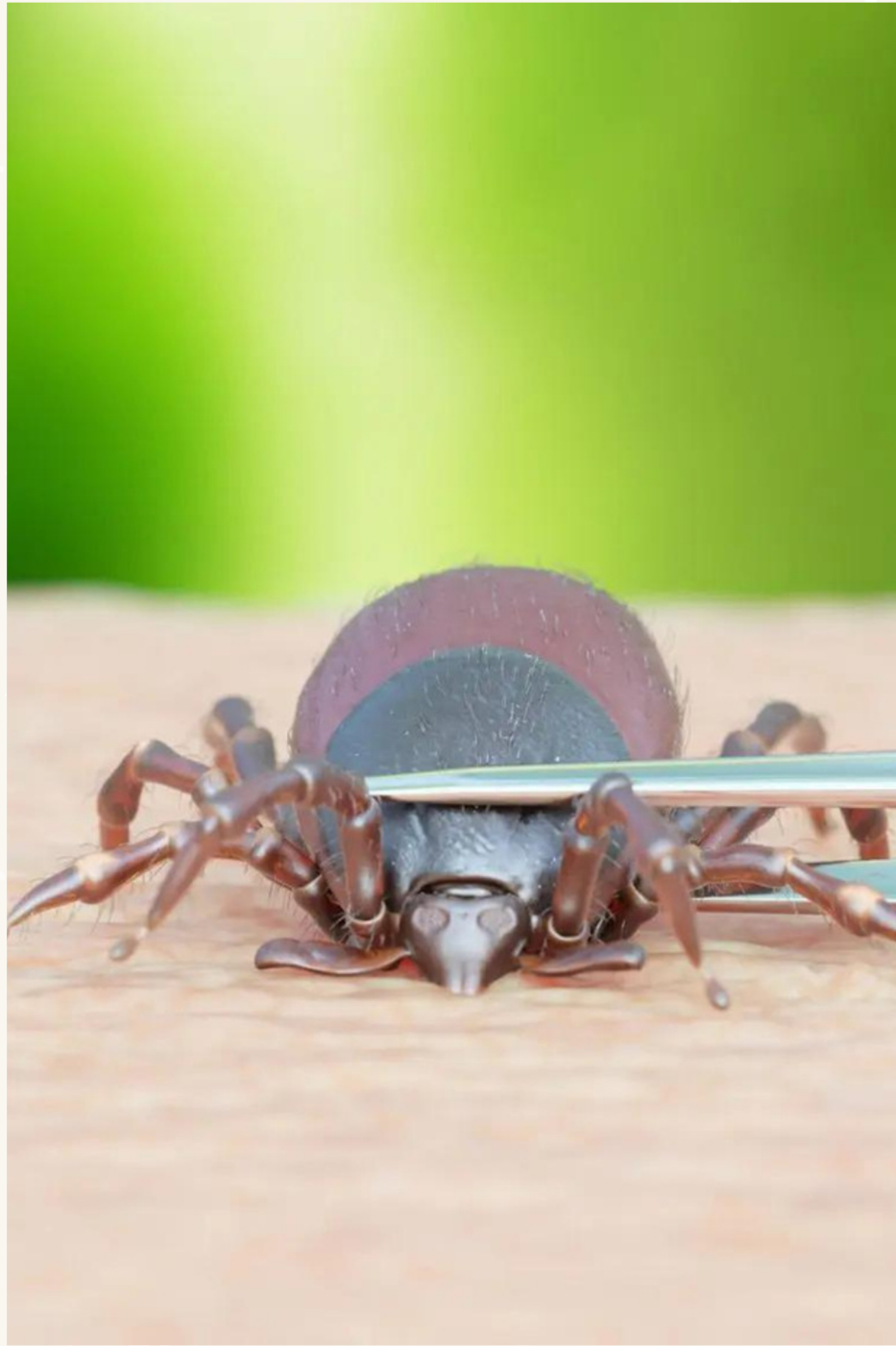
Found a Tick? Don't Panic!

Tweezers are the best method to remove ticks. Fine tip tweezers are best!



- **DO NOT** try to burn the tick off or squeeze the tick. Doing so can result in injury, and can cause the tick to expel its contents and increase risk of disease transmission.
- **DO NOT** use tape, antibiotic ointment, alcohol or Vaseline to remove the tick. Please do not freeze the tick. Doing so can damage the sample.
- **DO** monitor the affected area for signs of infection or rashes. If tenderness or pain develops, seek medical attention immediately.

Take advantage of the interactive tool called “**Tick Bite Bot**” put out by the CDC on their website to assist individuals on removing attached ticks and determining when to seek health care, if appropriate, after a tick bite.



AFTER TICK REMOVAL

I REMOVED THE TICK NOW WHAT DO I DO?

·Sending a tick for testing is an option- alive if possible and no trauma to head/ body! This service is Free through the EHHD.org but is not a diagnostic tool.

OR

- Dispose by flushing down toilet, putting in alcohol, wrapping in tape or placing in sealed bag/ container.
- Watch for signs and symptoms for 30 days and follow up with your medical provider if you develop rash, fever, fatigue, headache, muscle pain, joint pain/ swelling.



LYME DISEASE VACCINATIONS



A vaccine for Lyme disease is not currently available.

The only vaccine previously marketed in the United States, LYMERix®, was discontinued by the manufacturer in 2002, citing insufficient consumer demand. Protection provided by this vaccine decreases over time.


LYME VACCINE IN LATE-STAGE TRIALS

Valneva and Pfizer have developed a Lyme disease vaccine currently in Phase 3 of human trials. This vaccine is designed to protect people against North American and European strains of the Lyme disease bacterium.

The University of Massachusetts Medical School's MassBiologics has developed a human monoclonal antibody designed to be used as pre-exposure prophylaxis (PrEP) for Lyme disease. Phase 1 of human trials was a success. This would provide seasonal protection against Lyme disease. Phase 2/3 will start soon. If successful and FDA approved the antibody can be available to the public by 2025.

USEFUL TOOLS FOR PROTECTION





United States
Environmental Protection
Agency

Search EPA.gov

Environmental Topics ▾

Laws & Regulations ▾

Report a Violation ▾

About EPA ▾

Insect Repellents

CONTACT US

Repellents Home

About Insect Repellents

Tips to Prevent Mosquito Bites

Tips to Prevent Tick Bites

Finding the Right Repellent for You

Using Repellents Safely and Effectively

Ingredients in Skin Applied Repellents

Regulation of Skin Applied Repellents

Find the Repellent that is Right for You

[Información relacionada disponible en español](#)

Use the [search tool below](#) to help you choose the repellent product that is right for you. You can specify:

- mosquitoes, ticks or both;
- protection time;
- active ingredient; or
- other product-specific information.

Consider these factors when choosing a repellent:

- Do you need protection from mosquitoes, ticks or both?
- How long will you be exposed to them? Be sure to use a product with a protection time that fits your activity.

[Learn about using repellent products to protect against mosquito-borne illnesses \(e.g., Zika, Dengue, West Nile Virus\).](#)



For the safe and effective use of pesticide products, always read the product label before using the product. [More](#)

Related Information

- [Using Repellent Products to Protect against Mosquito-Borne Illnesses](#)
- [Using repellents safely and effectively](#)
- [Information on active ingredients in EPA-registered repellent products.](#)
- [Learn more about registered and unregistered repellent products.](#)
- [Repellency awareness](#)

- The information in this database was last updated in June 2019.
- If you believe a product not on the list should be included, use the contact us link to request that the product be added.

How much time will you need to be protected from biting insects? ⓘ
5 - 8 hours ▾

Do you need protection from mosquitoes, ticks or both ?
Ticks ▾

All products work against mosquitoes, and not all against ticks.

You can refine your search by specifying one or more of the following options:

Which product are you interested in?

You can leave blank to get a list of all products which fall under your criteria

Are you interested in a particular [active ingredient](#)?
All Ingredients ▾
All Ingredients
2-undecanone
Catnip Oil
Citronella
Citronella Oil
DEET
IR3535
Oil of Lemon Eucalyptus
Picaridin
p-Menthane-3,8-diol

Specific company name?

You can leave blank to get a list of all products which fall under your criteria.

Registration number of the product you are looking for? ⓘ

You can leave blank to get a list of all products which fall under your criteria.

[Export the entire insect repellent dataset to PDF format](#)
Search Reset

<https://www.epa.gov/insect-repellents/find-repellent-right-you>

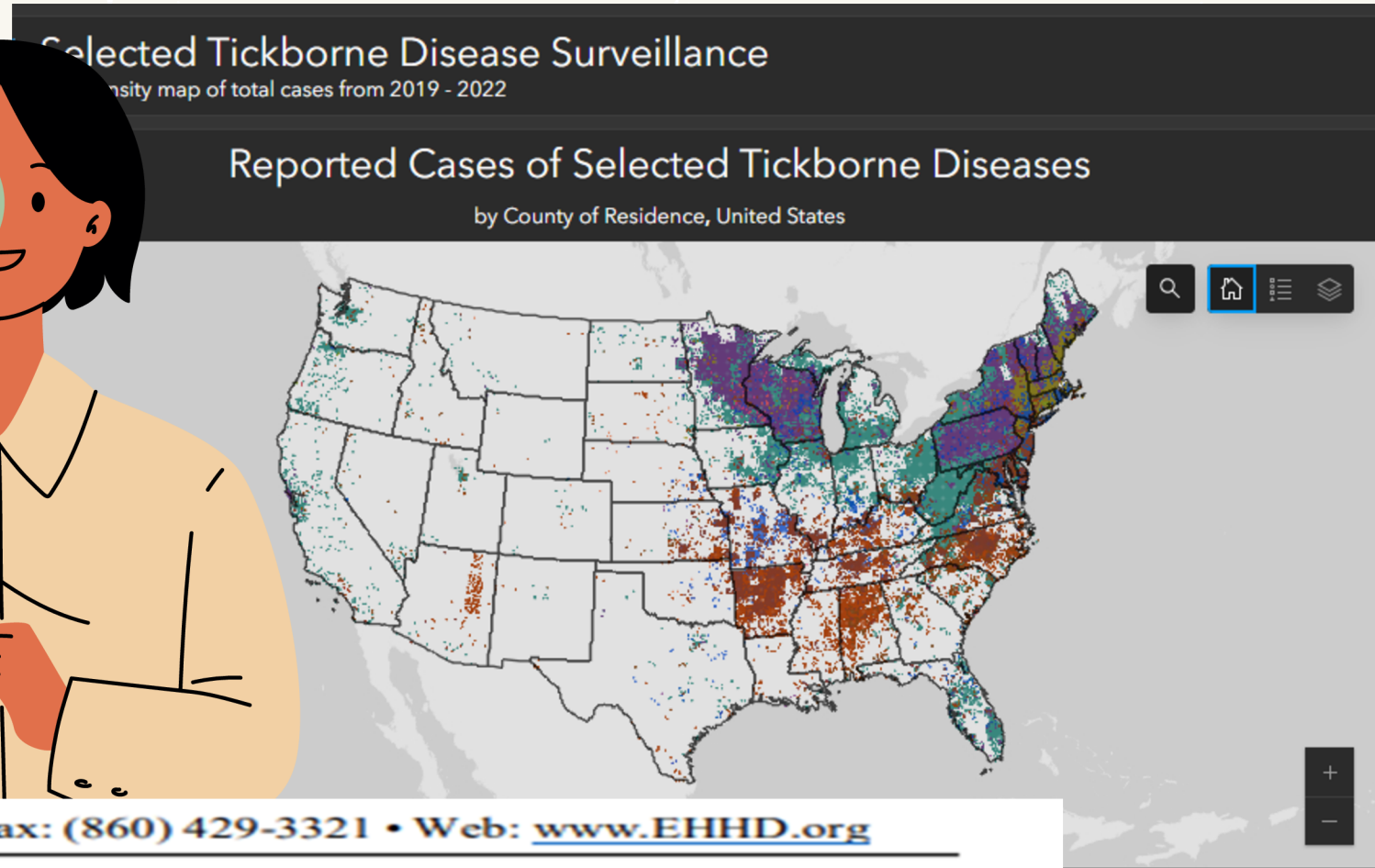
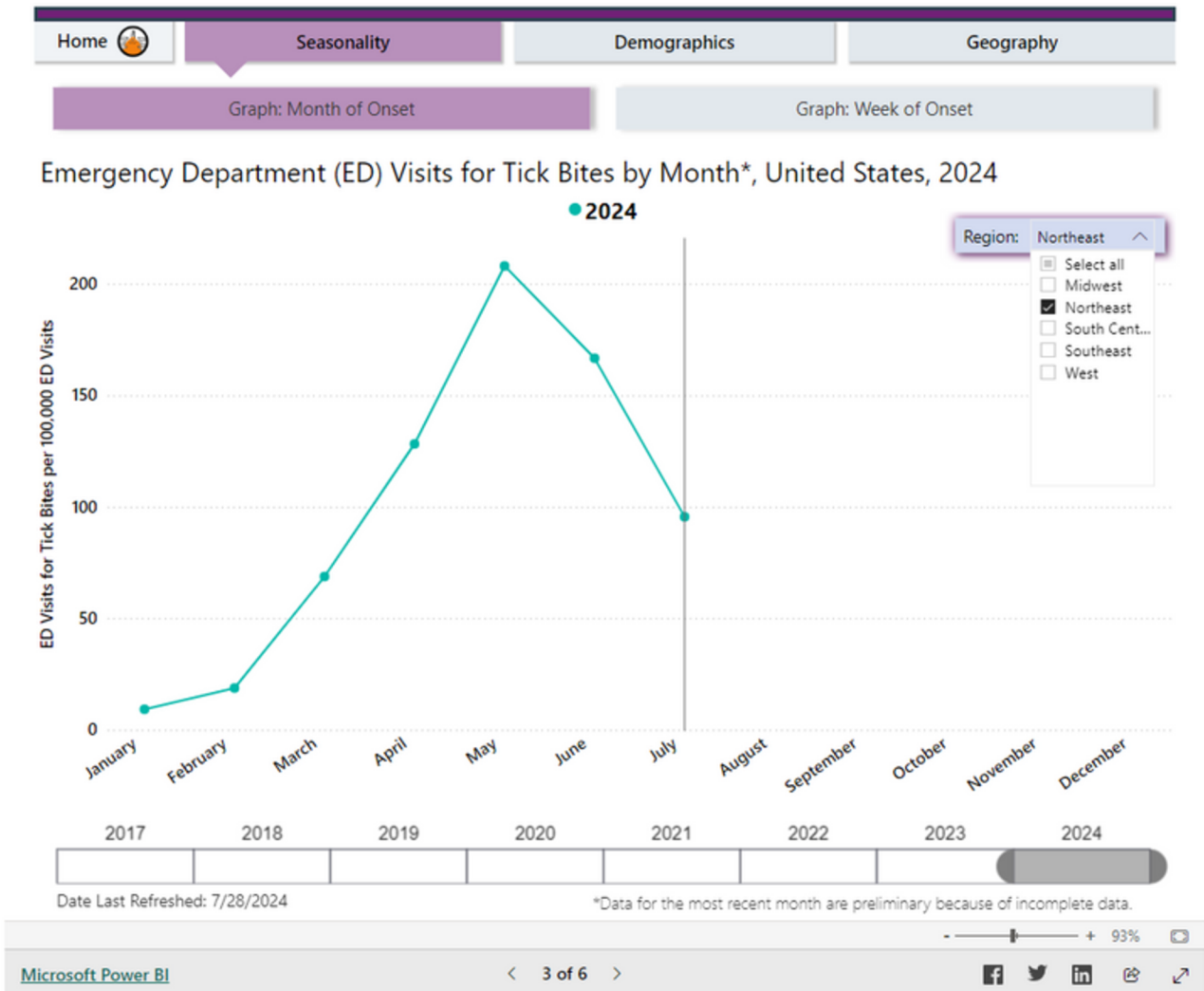
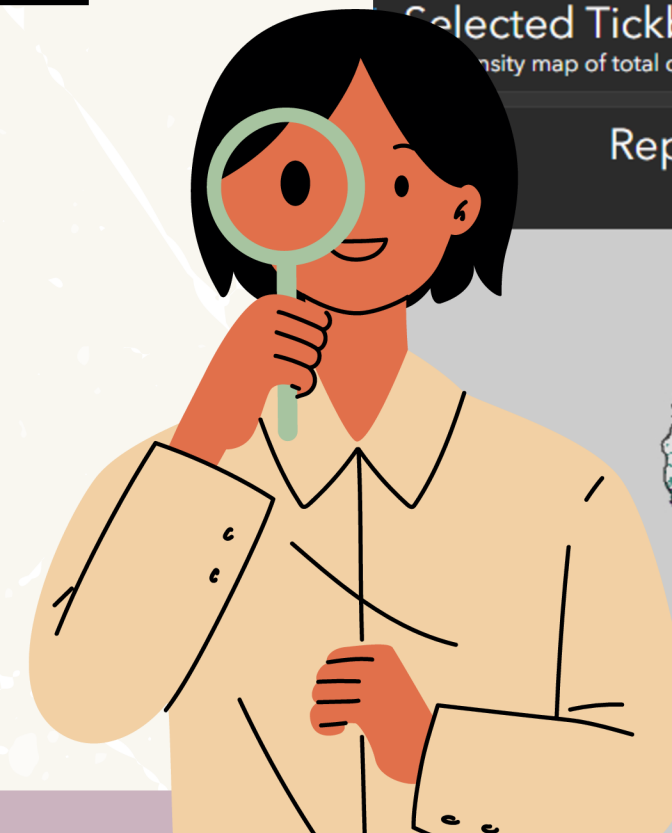
PROTECT

Do your Research

<https://www.cdc.gov/ticks/data-research/facts-stats/tick-bite-data-tracker.html>

<https://www.cdc.gov/ticks/data-research/facts-stats/tickborne-disease-surveillance-data-summary.html>

www.ehhd.org





REFERENCES

www.ct.gov

<https://www.cdc.gov/ticks/about/>

<https://www.epa.gov/ipm/ticks>

<https://lymediseaseassociation.org/>

[Mosquito faqs. CT.gov. \(n.d.\). https://portal.ct.gov/mosquito/faqs/mosquito-faqs#:~:text=A%20mosquito%27s%20life%20cycle%20has,stagnant%20water%20cannot%20be%20removed.](https://portal.ct.gov/mosquito/faqs/mosquito-faqs#:~:text=A%20mosquito%27s%20life%20cycle%20has,stagnant%20water%20cannot%20be%20removed.)

<https://www.ctinsider.com/connecticut/article/ct-ticks-lyme-disease-back-yard-stone-walls-19368894.php>

<https://www.telegram.com/story/news/healthcare/2023/04/16/drug-to-fight-lyme-disease-passes-1st-trial-at-umass-chan-med-school/70107143007/>



THANK YOU!

TO GET BE WELL CREDIT GO TO :

[HTTPS://WWW.SURVEYMONKEY.COM/R/QBQ](https://www.surveymonkey.com/r/QBQ)

TP2N