Common Vermont Ticks and Mosquitoes

Patti Casey, Environmental Surveillance Program Director
Vermont Agency of Agriculture, Food & Markets

Pest Management Professionals Meeting, October 8, 2024

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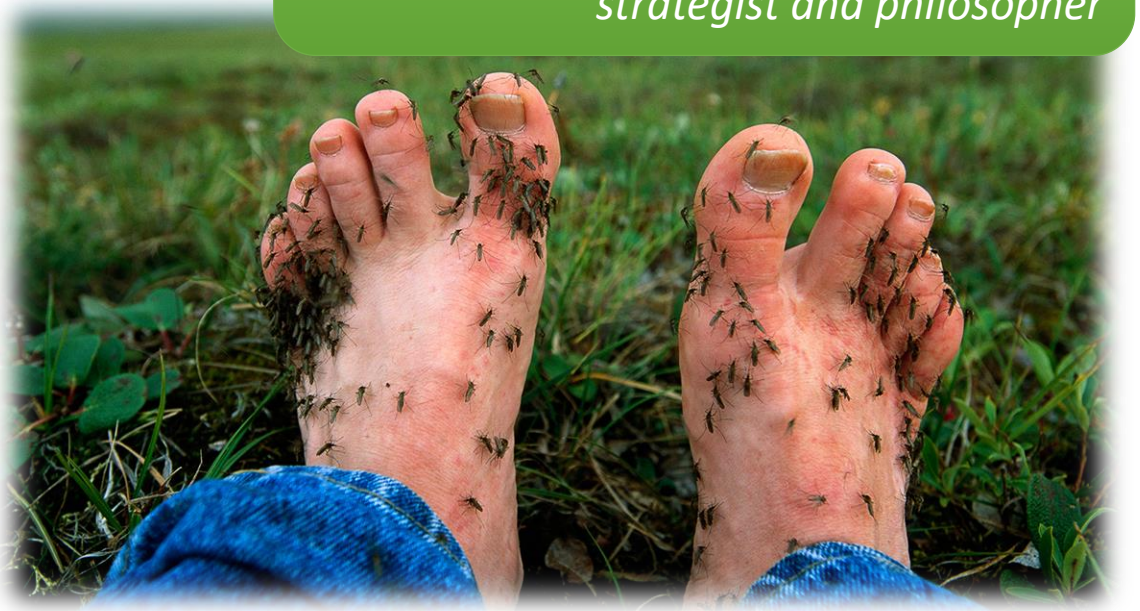
Overview

Ticks

- Life cycles and habitat
- Management and bite prevention
- Identification

Know thy enemy!

—Sun Tzu, ancient Chinese military strategist and philosopher



Mosquitoes

- Life cycles and behavior
- Breeding habitats and host preferences
- Basic surveillance

But first!

A word about Integrated Pest Management…

The balanced use of cultural, biological, and chemical strategies to reduce pest populations to tolerable levels while minimizing damage to the environment and staying within fiscal constraints

Integrated = using lots of different strategies

Principles of IPM

Knowledge based

Surveillance driven

Resource limited

What is a tick?

Ticks are arthropods (not insects) that are closely related to mites, spiders, scorpions, and daddy-long-legs

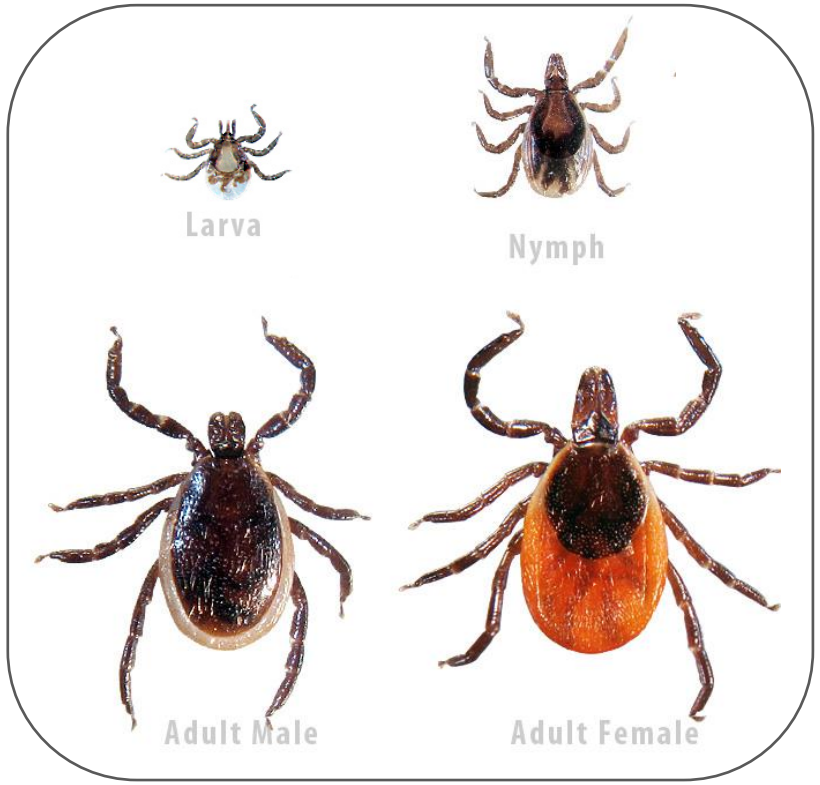
80 species in the US and 850 species worldwide

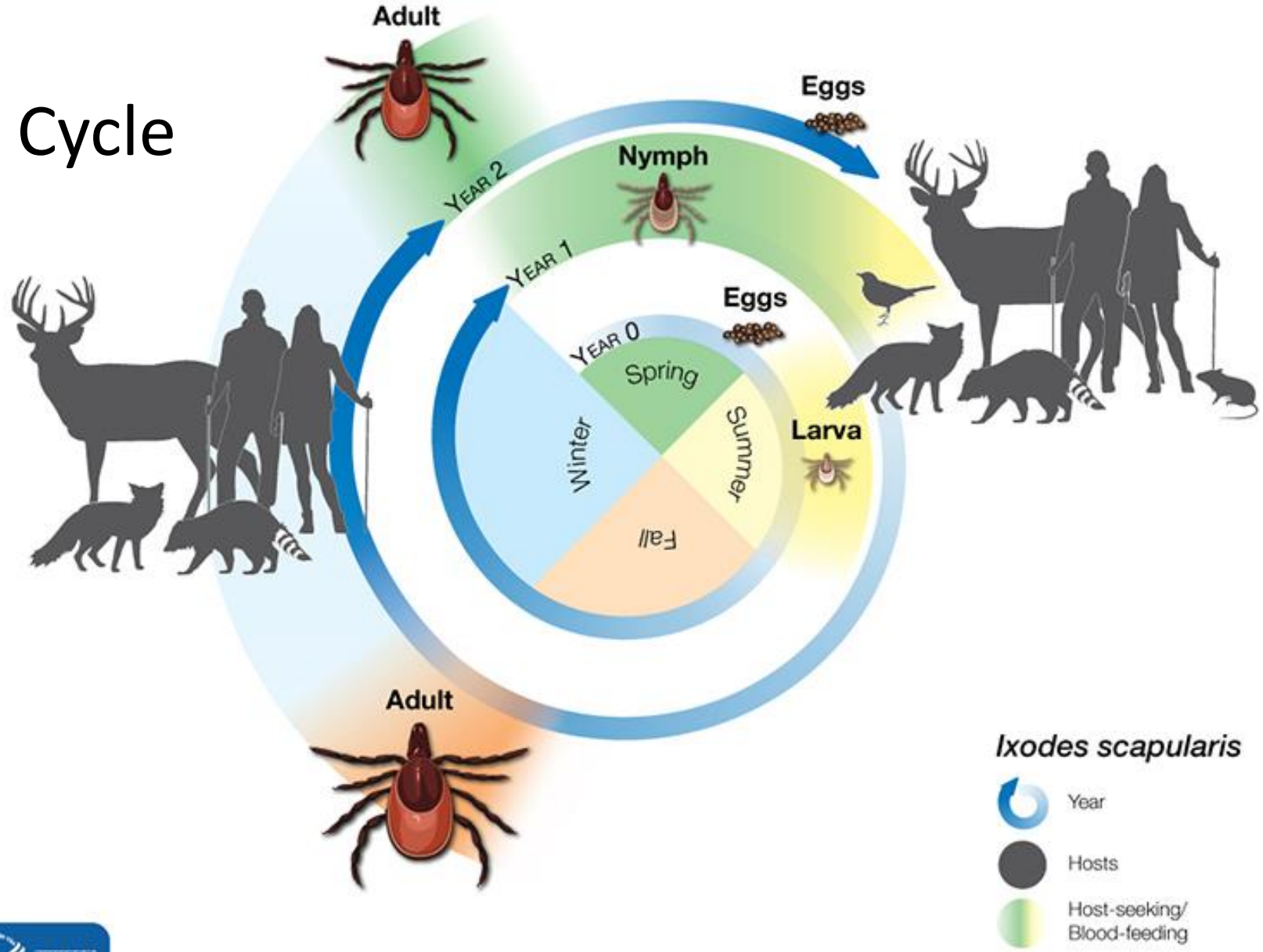
There are 15 species of ticks in Vermont

- 5 species bite humans
  - Four are capable of spreading disease
  - One is responsible for all confirmed tick-borne illness in Vermont

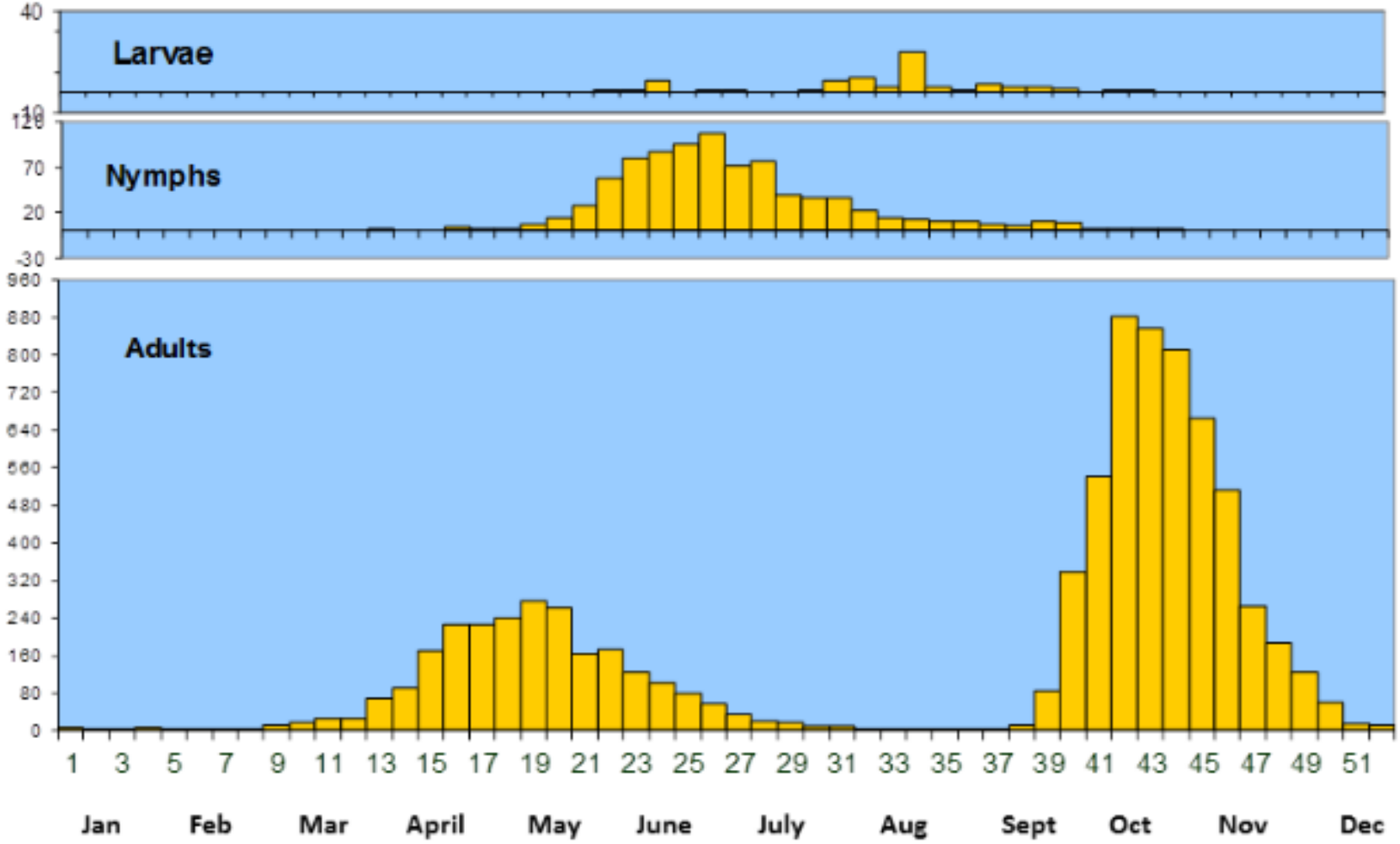
Blacklegged Tick *(Ixodes scapularis)*

Blacklegged Tick Life Cycle





Blacklegged Tick Life Stage Activity in Vermont



(Vermont Dept of Health)

Blacklegged Tick Behavior

- Ticks do not jump, fly, or drop from trees
- Ticks “quest” off vegetation at the height of their preferred host
  - Larvae and nymphs seek small rodents and birds and quest off leaf litter or short vegetation
  - Adults seek larger animals like white-tailed deer and quest off taller vegetation

Habitat Preference

- Hardwood/mixed forest with leaf litter
- Areas with invasive vegetation
- Ecotone
- Fragmented landscape
- Old stone walls

Widespread Tick Control Issues

No large-scale, coordinated municipal or state tick control programs
Homeowners can hire pesticide applicators to treat perimeters

WHY NOT???

Mosquito Control

Over 100 years of research
Well funded
Many treatment options
Worldwide interest in controlling mosquitoes
Easier to control larval stages
Habitat reduction is easier (standing water)
More public acceptance

Tick Control

Relatively "new" problem in the northeast
No organized public efforts yet
"Patchy" response to management
Lower efficacy products
Habitat is microlocal and difficult to access
Leaf litter
Involves chemicals applied on private lands
Less public acceptance

What *can* we do?

Tick habitat reduction

Remove invasives
Clear brush
Mow paths
Use mulch, wood chips, or gravel for paths, under swing sets, patio furniture, wood piles
Maintain grass or mulch barriers between ecotones and areas where you spend time outdoors

Host reduction or management

Deer exclusion through fencing or repellants
Deer-resistant plantings
Remove other food sources for deer and rodents: birdfeeders, cleaning up apples and berries
Store bird seed and pet food in tight containers
Remove host-friendly habitat like piles of logs, leaves, brush, rocks, building materials, trash
Repair or seal holes in house foundations or outbuildings to remove nesting habitat

Public education

Signage, trail closure, municipal clean-up efforts like curbside leaf and plant debris collections

Landscape/Property Management

Tick-Safe Zone Through Landscaping

Avoid areas with forest and brush where deer, rodents and ticks are common

Use a 3 ft. barrier of wood chips or rock to separate the tick zone and rock walls from the lawn.

Keep wood piles on the wood chip barrier

Mantain a 9 ft. barrier of lawn between the wood chips and patios, gardens and play sets.

Enjoy your daily activities here!

Adapted from: Connecticut Agricultural Experiment Station's Tick Management Handbook [http://www.ct.gov/caes/lib/caes/documents/special_features/tickhandbook.pdf]

Tick Bite Prevention

- Use an EPA-registered insect repellant
- Wear light-colored long sleeves and pants
- Tucks pants into socks
- Wear permethrin-treated clothing
- Avoid tick-heavy areas if possible
- Put clothes into dryer on high for 15 minutes to kill ticks
- Shower after being outside and do daily tick checks
- Promptly remove ticks and watch for symptoms

Resources for Tick Protection

- At-home clothing treatment
- Mail-order treated clothing
- Boot gaiters

Tick Surveillance

Tick dragging/flagging

White fabric drag (1 m^2)

Hand lens for field identification

Tick Identification

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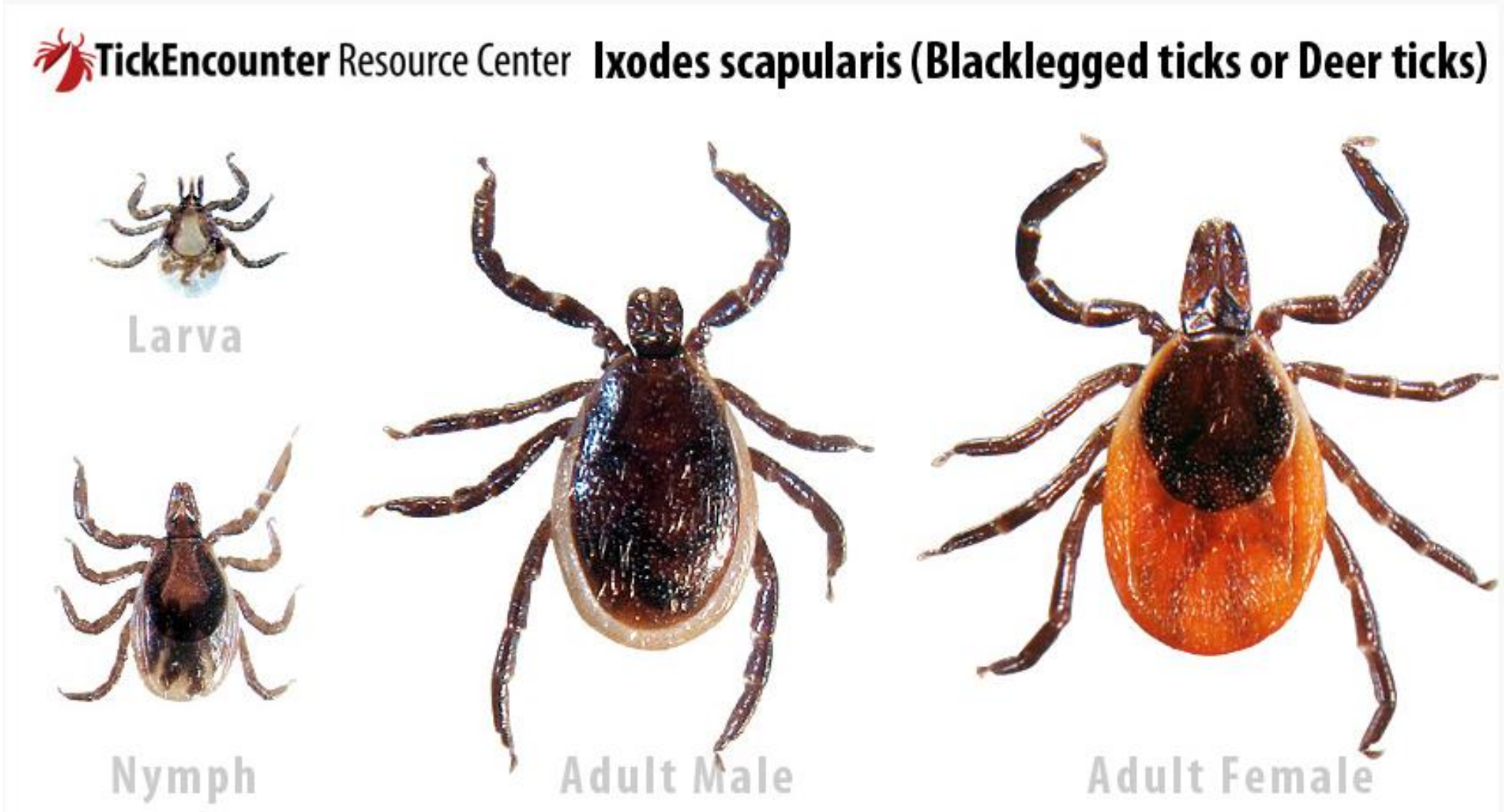
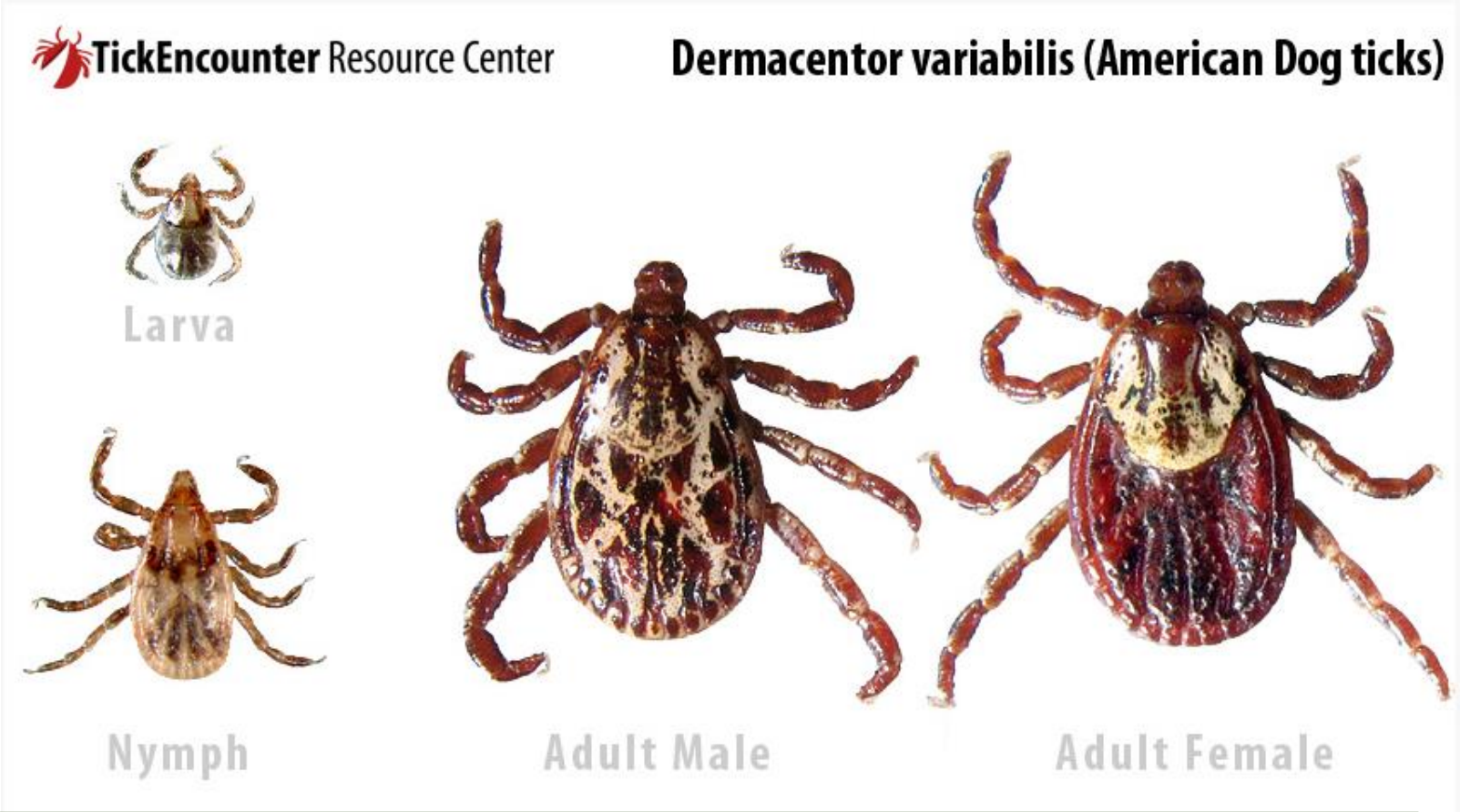
Blacklegged Tick

Woods, leaf litter, field edges
More prevalent in southwest Vermont
Very small
Can transmit diseases



American Dog Tick

Tall grass, more open fields, late summer
More prevalent in the Northeast Kingdom
Larger and faster than Blacklegged Ticks
Not a competent vector in the northeast



Lone Star Tick

Woodlands, dense undergrowth
Rarely seen in Vermont
Aggressive feeders, “hunt” prey
Can transmit diseases (alpha-gal)

Vermont Ticks Compared

ASIAN LONGHORNED TICK

Mosquitoes in Vermont

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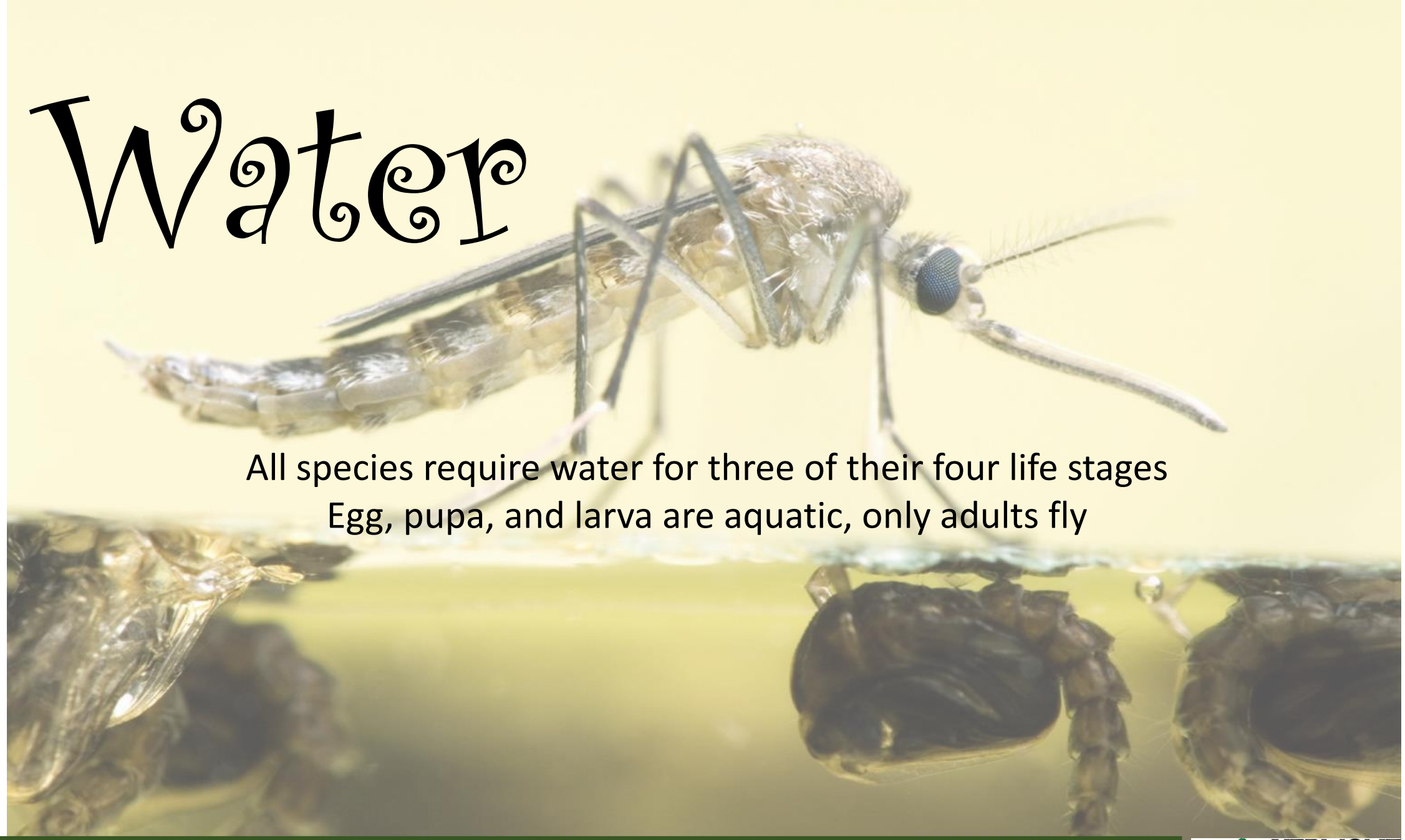
Water



All species require water for three of their four life stages
Egg, pupa, and larva are aquatic, only adults fly

Vermont has 46 species of mosquitoes

Mosquitoes vary widely in ways that affect how they may be controlled

Drawing courtesy of Allie Brosch

Host preferences

Reptiles and amphibians

Birds

Mammals (including us!)

Breeding habitats

Tree holes

Flood plains after snow melt

Waste tires

Artificial containers

Cattail marshes

Hardwood acidic swamps

Other factors

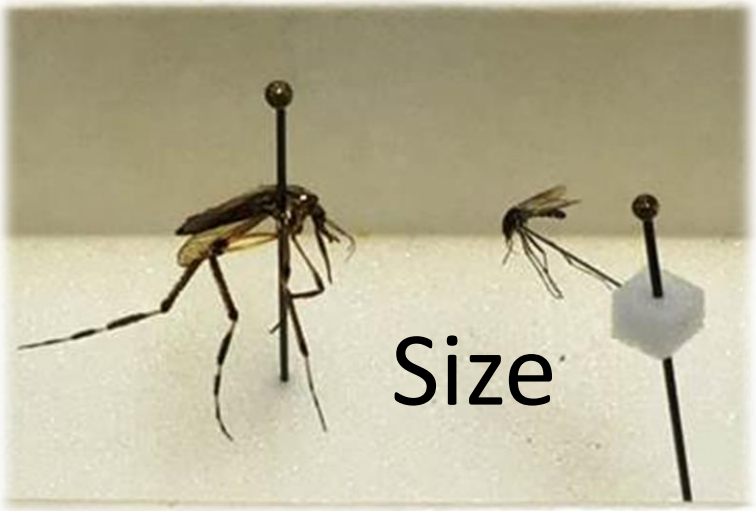
Peak activity

All are active at dawn and dusk, but there are aggressive daybiters and some nighttime-only biters

Overwintering capabilities

Adults – basements, attics, sheds, natural cavities
Larvae – dormant phase
Eggs – some can survive 7 years

Number of hatches per year



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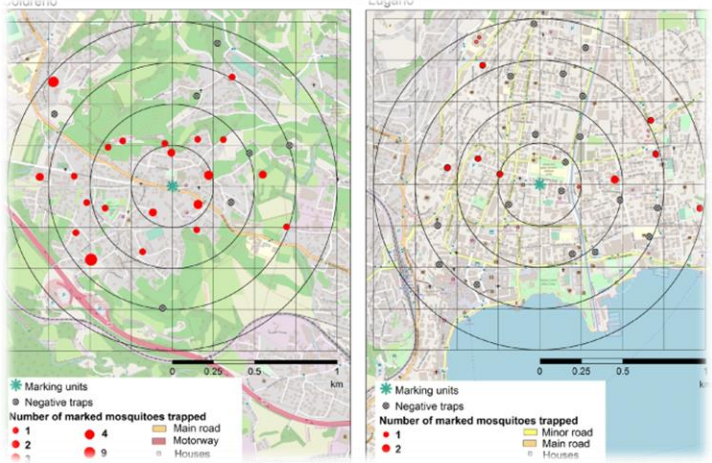


Flight range

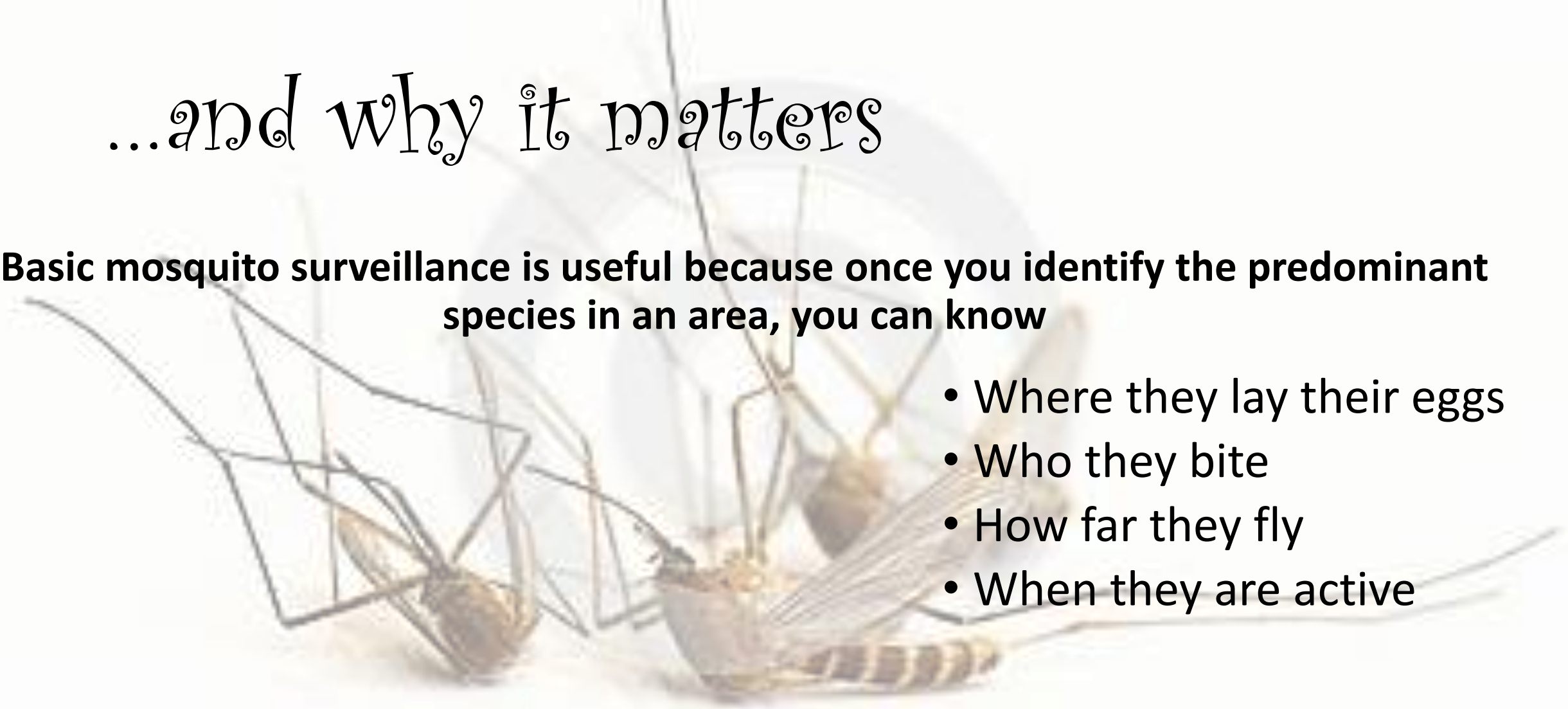
A couple hundred yards to several miles

Mosquito surveillance…

Larval count using dipper cups

Adult sweep net sampling

...and why it matters



Basic mosquito surveillance is useful because once you identify the predominant species in an area, you can know

- Where they lay their eggs
- Who they bite
- How far they fly
- When they are active

achieving better results and minimizing harm to the environment

Self protection

Many of the tick PPE solutions apply to mosquitoes as well

- Cover up
- Use an EPA-registered insect repellent
- Avoid dusk to dawn outdoor activity if possible
- Repair broken or ripped screens and doors
- Remove standing water

My Favorite part of fall is when the mosquitoes go back to Hell.

Thank you for your time and attention

Questions?

Patti Casey

Patti.Casey@Vermont.gov

Phone: (802) 522-6858

agriculture.vermont.gov

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