

# Getting Batty About the Soft Tick

## Part 1: Bat Ticks (& Bugs)



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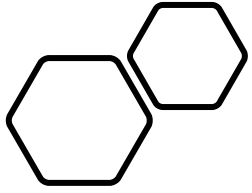
University of Vermont

Entomology Research Laboratory

Pest Management Operators Meeting

November 1, 2022





- Unknown “bug” observed crawling on ceiling near exposed chimney in old farmhouse (May 2021).
- Suspicious parasites on big brown bat (*Eptesicus fuscus*) (August 2021).
- Both were from Chittenden Cty.
- DNA analyses (Rutgers University) and morphology examination (Smithsonian Institution) confirmed identity.



## Bat Tick Discovered in VT!

**First Report of the Bat Tick *Carios kelleyi* (Acari: Ixodida: Argasidae) From Vermont, United States**  [Get access >](#)

Cheryl Frank Sullivan , James L Occi, Julia R Brennan, Richard G Robbins, Margaret Skinner, Alyssa B Bennett, Bruce L Parker, Dina M Fonseca

*Journal of Medical Entomology*, Volume 59, Issue 2, March 2022, Pages 784–787, <https://doi.org/10.1093/jme/tjab232>

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<https://doi.org/10.1093/jme/tjab232>



**Say What !!!!!**

The larvae engorged on bat blood,  
but the adult helped itself to the  
family's dog, a Beagle.



# The Bat Tick

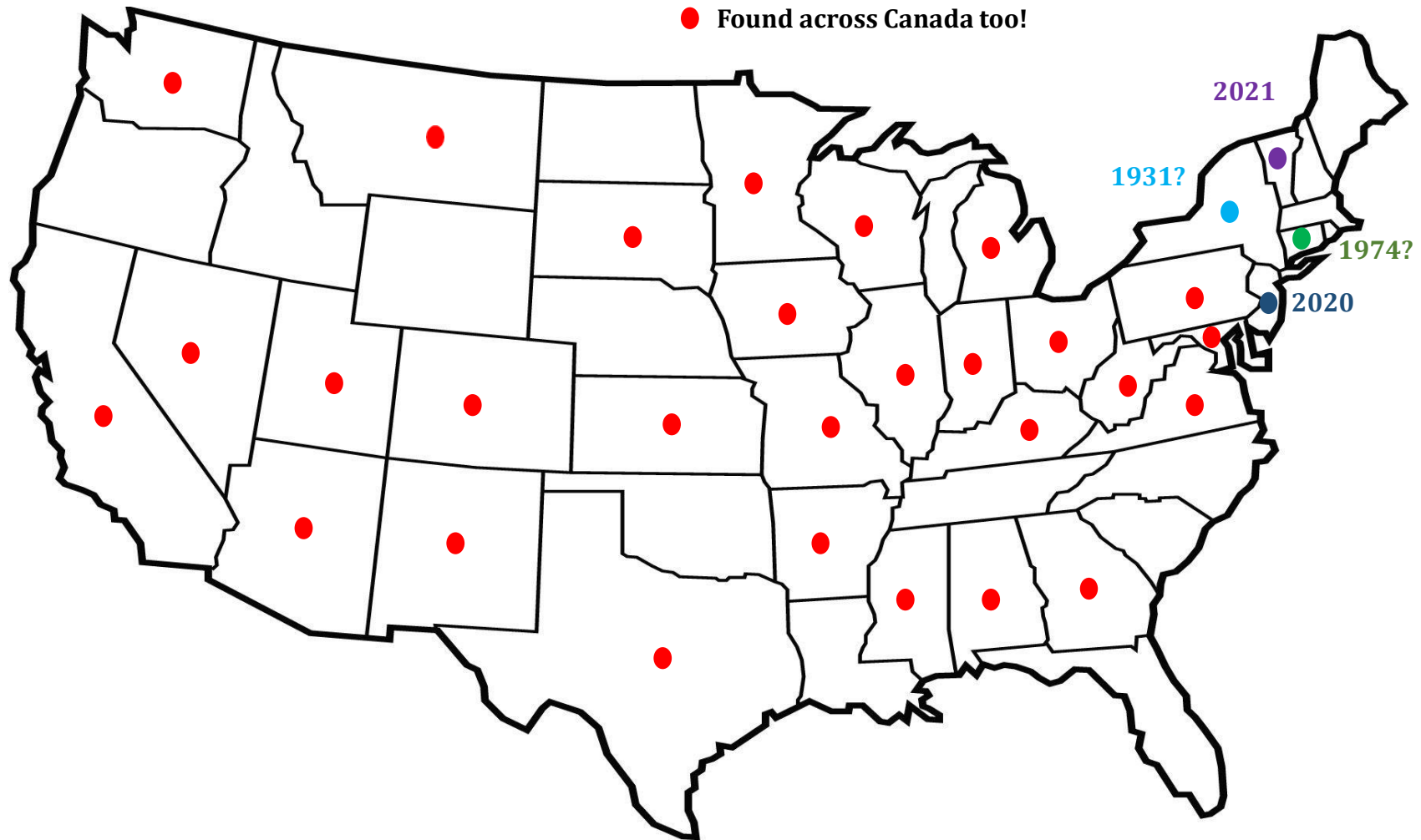
*Alectorobius kelleyi*

formerly *Carios kelleyi*  
(Ixodida: Argasidae)

- Secretive and feeds almost exclusively on bats.
- “Usually” remain in the vicinity of their bat hosts (attics, barns, etc.).
- Occasionally, wander off and accidentally bite humans/pets, esp. when bats removed/disturbed.

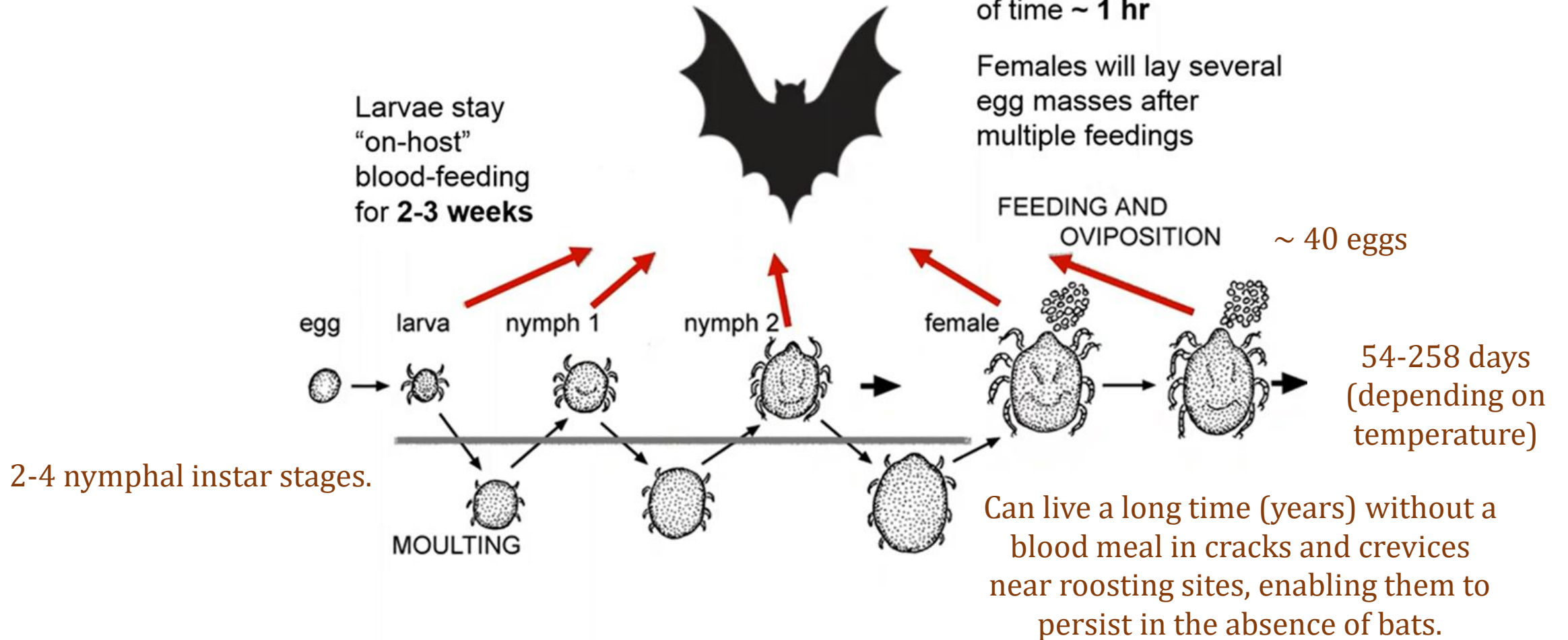


# Found in 32 states (including VT)



# Bat Tick Life Cycle

4 life stages: egg, larva, nymph and adult.





A

Length approx. 3 mm

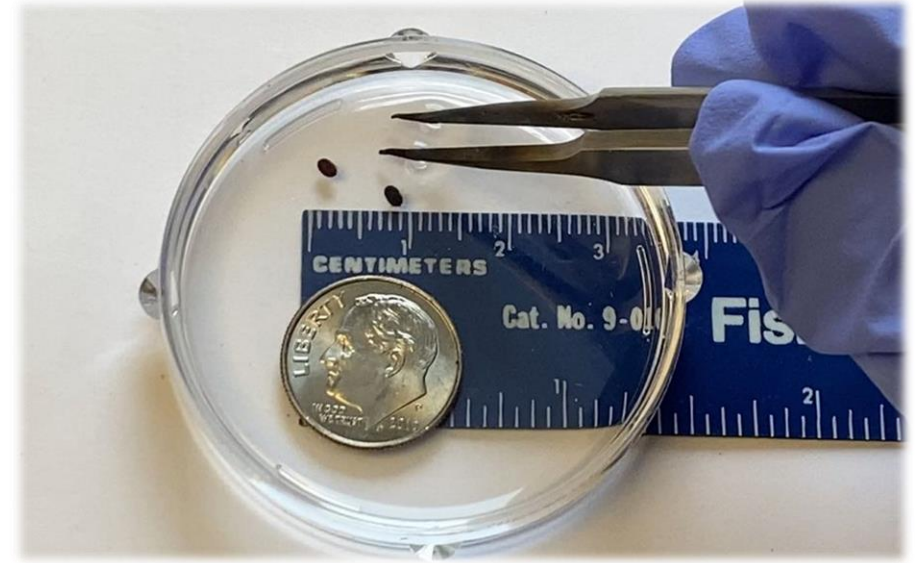
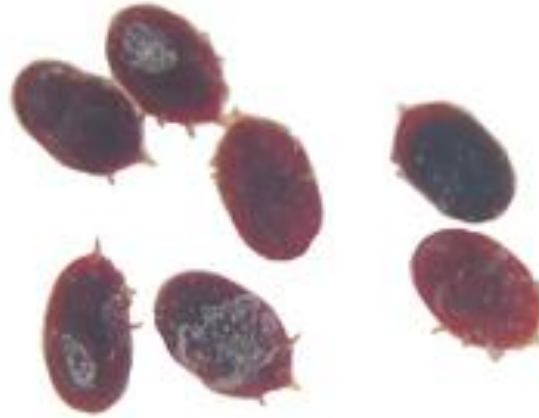
Topside



B

Underside

## Larvae



A



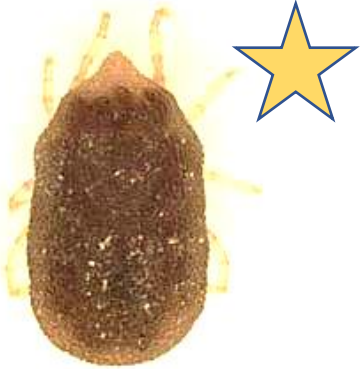
B

Length approx. 6 mm

Adult

# Appearance

# Soft vs. Hard Ticks



*Ornithodoros* spp.



Bat

Soft (Argasid)	Hard (Ixodid)
Found close to where their hosts live (burrows, nests, caves or human-made structures).	Found widely distributed across the landscape.
Survive well in dry conditions.	Generally need high humidity for survival.
Commonly associated with birds, rodents and bats.	Wide host range.
Long-lived (some species can live up to 20 yrs).	Short-lived (~ 1-3 yrs).
Seek hosts for feeding primarily at night.	Seek hosts for feeding during the day.
Attach to feed quickly and intermittently.	Attach to feed for a long period of time.



Blacklegged/Deer



American Dog/Wood



Lone Star



# Are Bat Ticks a Problem?

- Occasionally
- Infestations warranting management reported from the Midwest (i.e., [Iowa](#) and [Kansas](#)).
- Usually occurs when bat colonies are removed/disturbed.
- Hungry ticks roam dwellings looking for a snack.



# Are Bat Ticks a Human Health Threat?

- Can harbor disease-causing bacteria (i.e., Spotted-fever *Rickettsia* spp., and relapsing fever, *Borrelia* spp. and *Bartonella* spp.).
- Unclear if these disease-causing pathogens are transmitted to humans by a bat tick bite.
- Likelihood for disease to humans rare due to elusive nature of bat ticks and their preference to feed on bats.



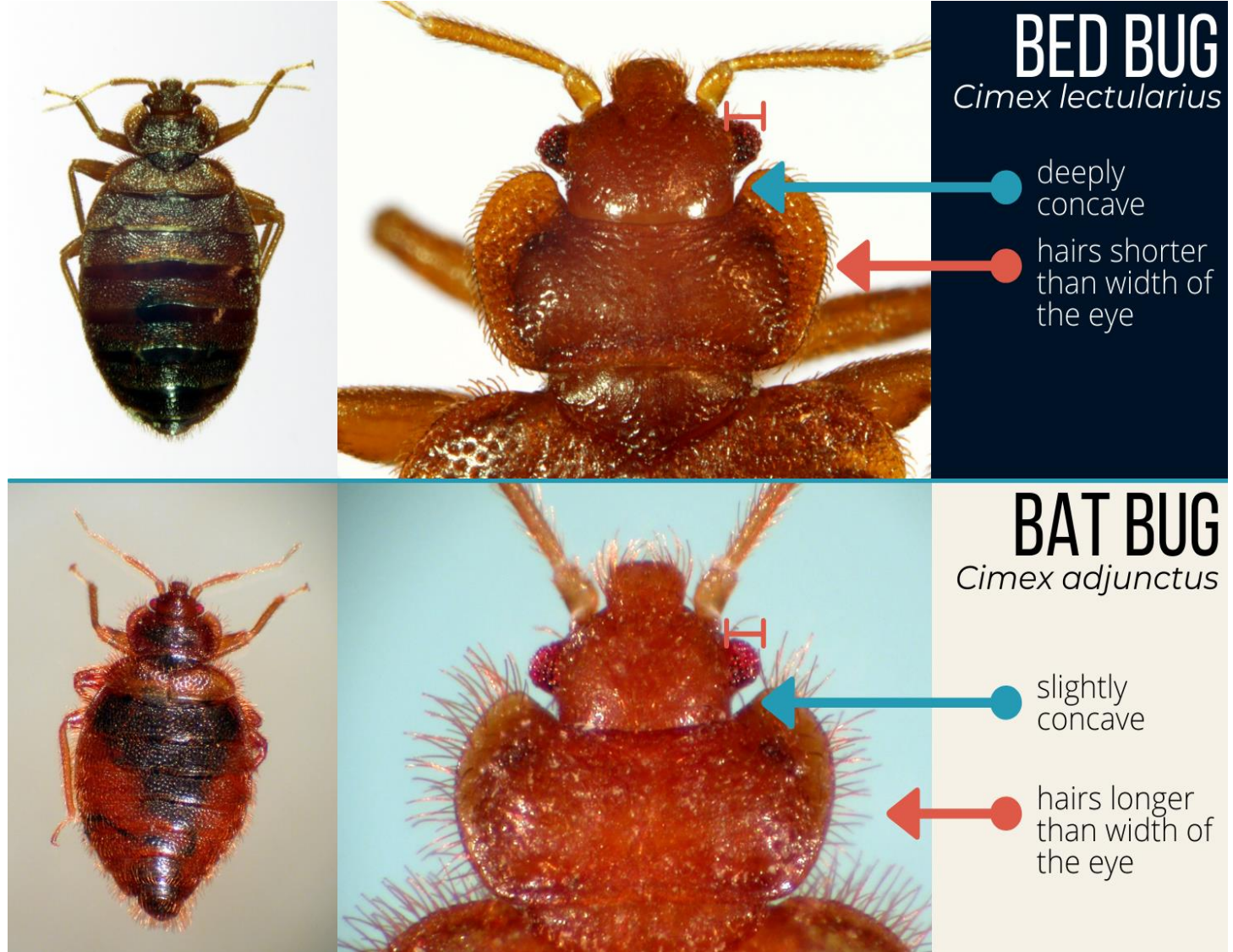
CDC Information:  
[Tick-borne Relapsing Fever](#)  
[Spotted-fever Rickettsia](#)  
[Bartonella](#)

# Bat Bugs vs. Bed Bugs

*Cimex adjunctus*

*Cimex lectularius*

Aspect	Bed Bugs	Bat Bugs
Color	Beige/Dark Brown	Red-Brown/Mahogany
Size	~ ¼ in (6.4mm)	~ 3-5mm
Hair length	Short	Long
Preferred Host	Humans	Bats
Habitat	Furniture, mattresses, cracks & crevices near humans (i.e., bedrooms)	Cracks & crevices near bat colonies (i.e., attics)
Management Target	The bugs & their habitat	The host (bats) & host's habitat



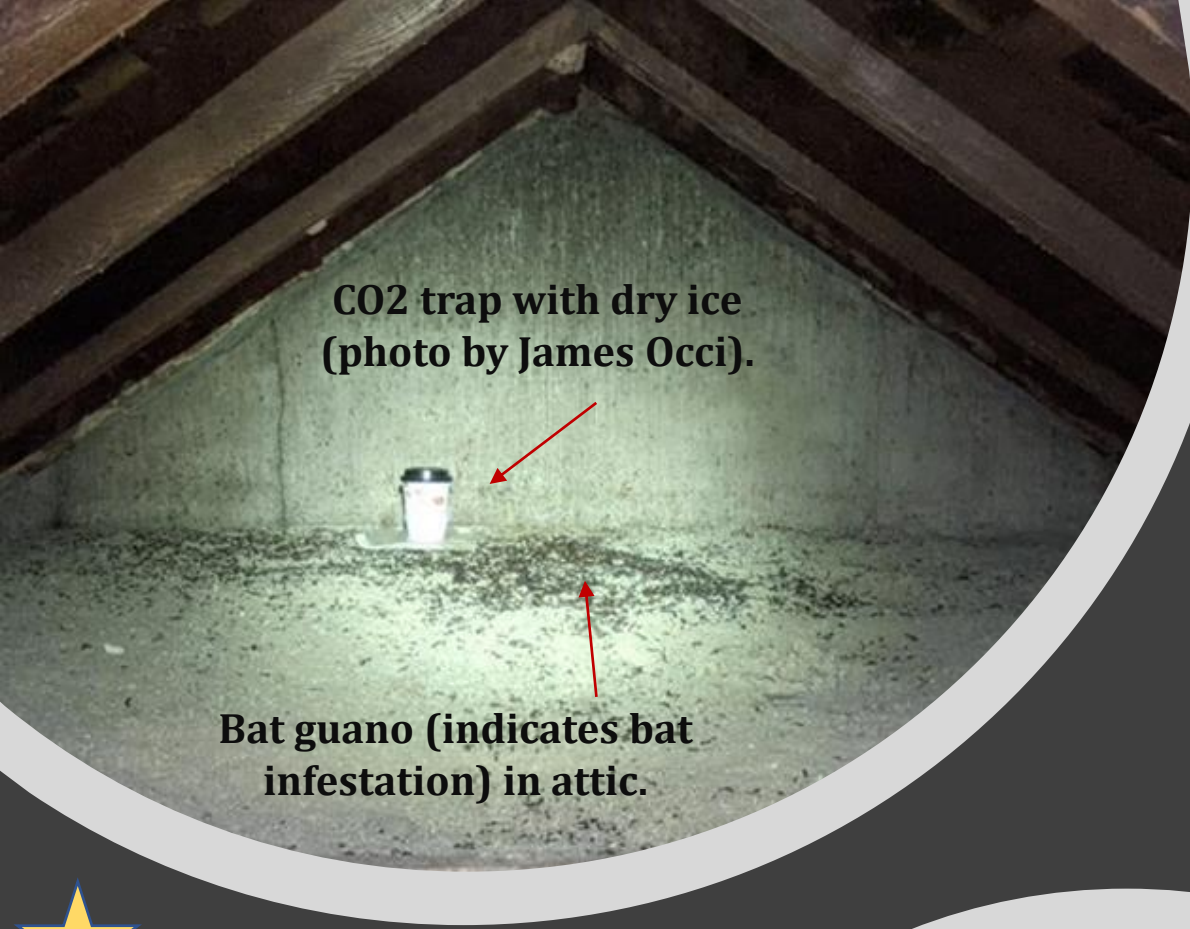
**BED BUG**  
*Cimex lectularius*

deeply concave  
hairs shorter than width of the eye

**BAT BUG**  
*Cimex adjunctus*

slightly concave  
hairs longer than width of the eye

# Dealing with Bat Ticks (& Bugs)



CO2 trap with dry ice  
(photo by James Occi).

Bat guano (indicates bat  
infestation) in attic.

- Use [best practices](#) for bat eviction/exclusion (some spp. endangered!) Alyssa Bennett @ VTFWD will cover bats and their [management](#).
- Disinfect/clean area after bat eviction.
- Detect with CO2 or glue traps (glue traps only when bats successfully evicted or used within human living space).



**Manage the bats to manage the parasites.**



Seal cracks.

- Treat cracks/crevices where ticks/bugs hide, products registered in VT, consult suppliers for advice, be sure read the label.
- Seal cracks/crevices (inside and out) to prevent tick/bat entry into living spaces.

# Additional Resources

## Bat Ticks

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[Bat Ticks in VT Factsheet](#). 2021. Univ. of VT

El Damir, M. 2012. [Bat ticks: How to control them](#). Adam's Pest Control, Inc.

Hahn, J. 2019. [Ticks: How to control ticks and prevent tickborne diseases – bat ticks](#). University of Minnesota Extension.

Iowa State University Extension. [Bat tick](#).

Raghavan, R., Harkin, K. 2018. [Bat ticks](#). Kansas State Veterinary Diagnostic Laboratory.

University of Rhode Island, Tick Encounter. [Bat tick](#).

University of Minnesota Extension. 2019. Ticks: [How to control ticks and prevent tickborne diseases – bat ticks](#).

## Bat Bugs

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[Bat Bugs, Bed Bugs and Relatives](#). 2013. Colorado State University

[Bat Bug](#). 2021. Iowa State University.

Nebraska State Univ. [Bat Bugs and Bat Ticks](#)

## Ticks in VT (General)

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Vermont Department of Health – [Tickborne Diseases](#)

State of Vermont Agency of Agriculture, Food and Markets – [Ticks](#)

Feel Free to Reach Out:

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[UVM Entlab](#) | [UVM Ticks](#)

It's [predicted](#) that parasites will lose 5–10% of their biodiversity by 2070 from climate-driven habitat loss.

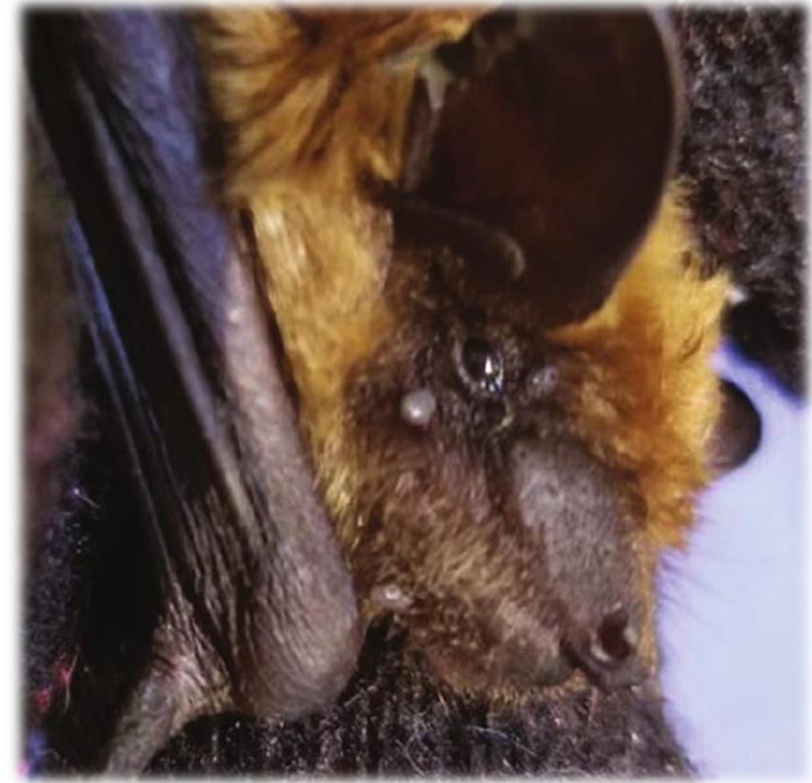
[Why We Need to Save the Parasites](#)  
Smithsonian Magazine.

Thank You!



**Please scan code with camera  
to help us gather info!**

[https://qualtrics.uvm.edu/jfe/form/SV\\_40jsN73F4GBJojk](https://qualtrics.uvm.edu/jfe/form/SV_40jsN73F4GBJojk)



Deer ticks recently discovered  
infesting a bat in NY.

Occi et al. (2021) <https://doi.org/10.1093/jme/tjab174>



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