



TICKS, TICK-BORNE PATHOGENS AND TICK-BITE PREVENTION IN SUFFOLK COUNTY

Scott R. Campbell, PhD
Suffolk County Department of Health Services
Laboratory Chief
Arthropod-Borne Disease Laboratory

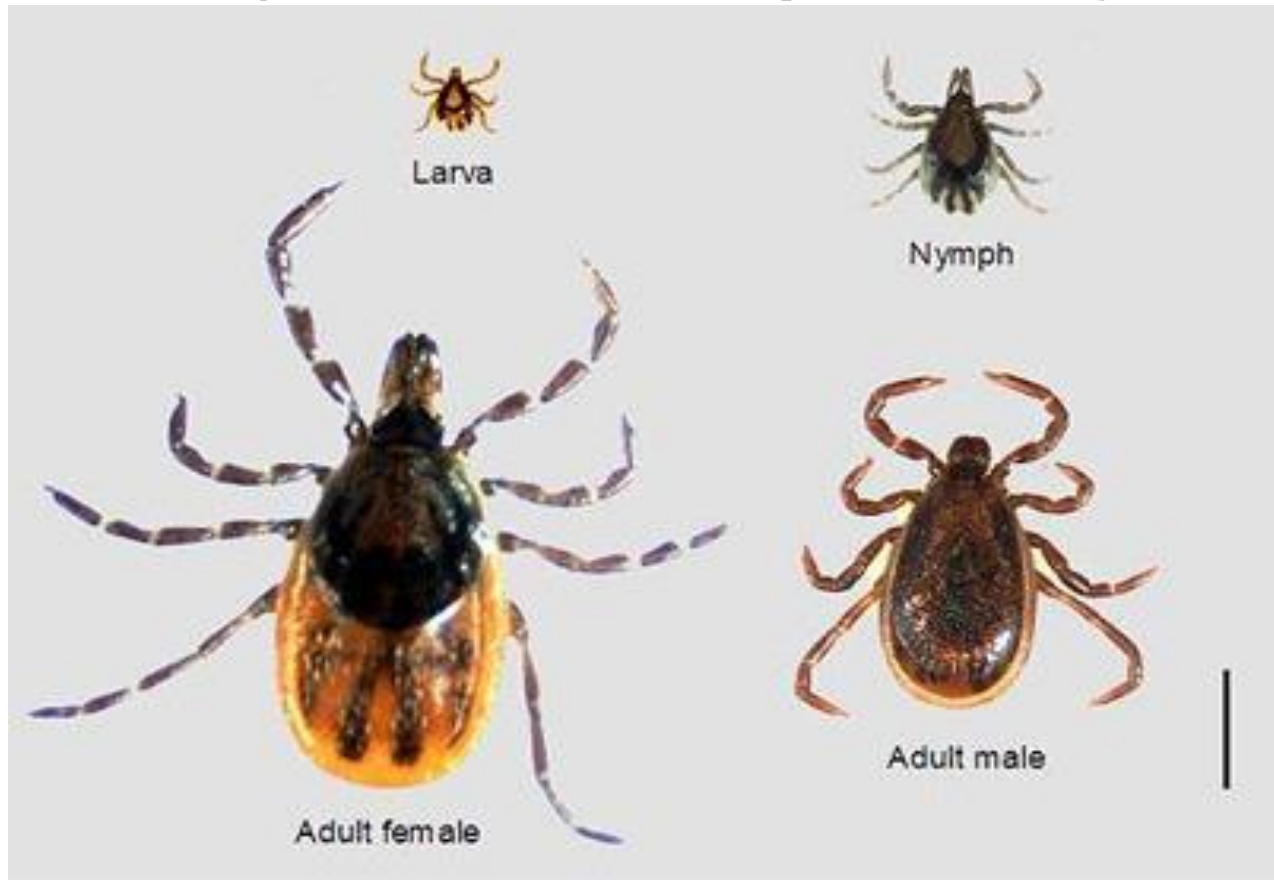


Ticks of Medical Importance

- Blacklegged or Deer Tick
 - *Ixodes scapularis* (*Ixodes dammini*)
- American Dog Tick
 - *Dermacentor variabilis*
- Lone Star Tick
 - *Amblyomma americanum*



Blacklegged or Deer Tick (*Ixodes scapularis*)





Questing Tick





Blood Feeding



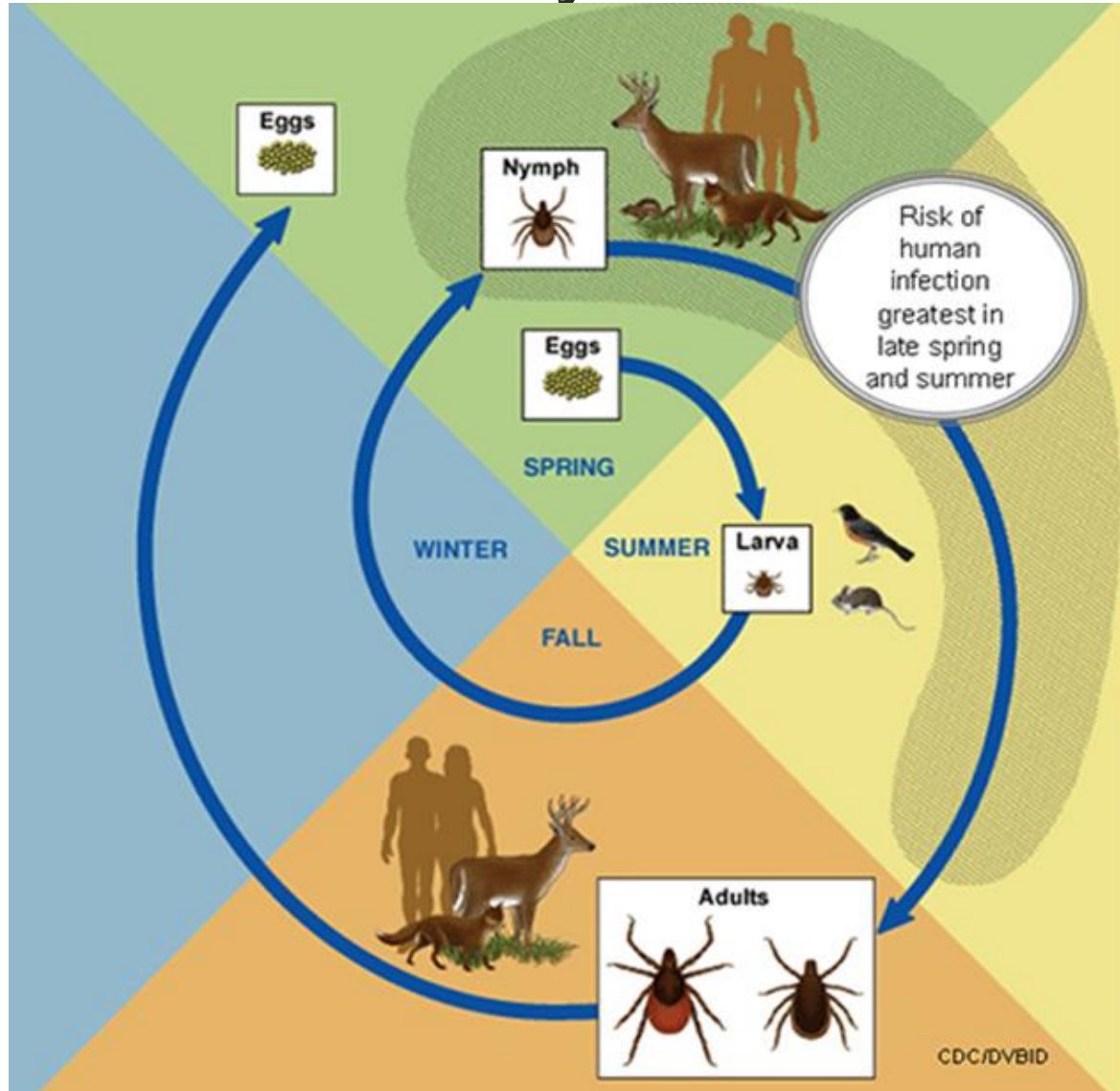
 Tick Encounter Resource Center



 Tick Encounter Resource Center

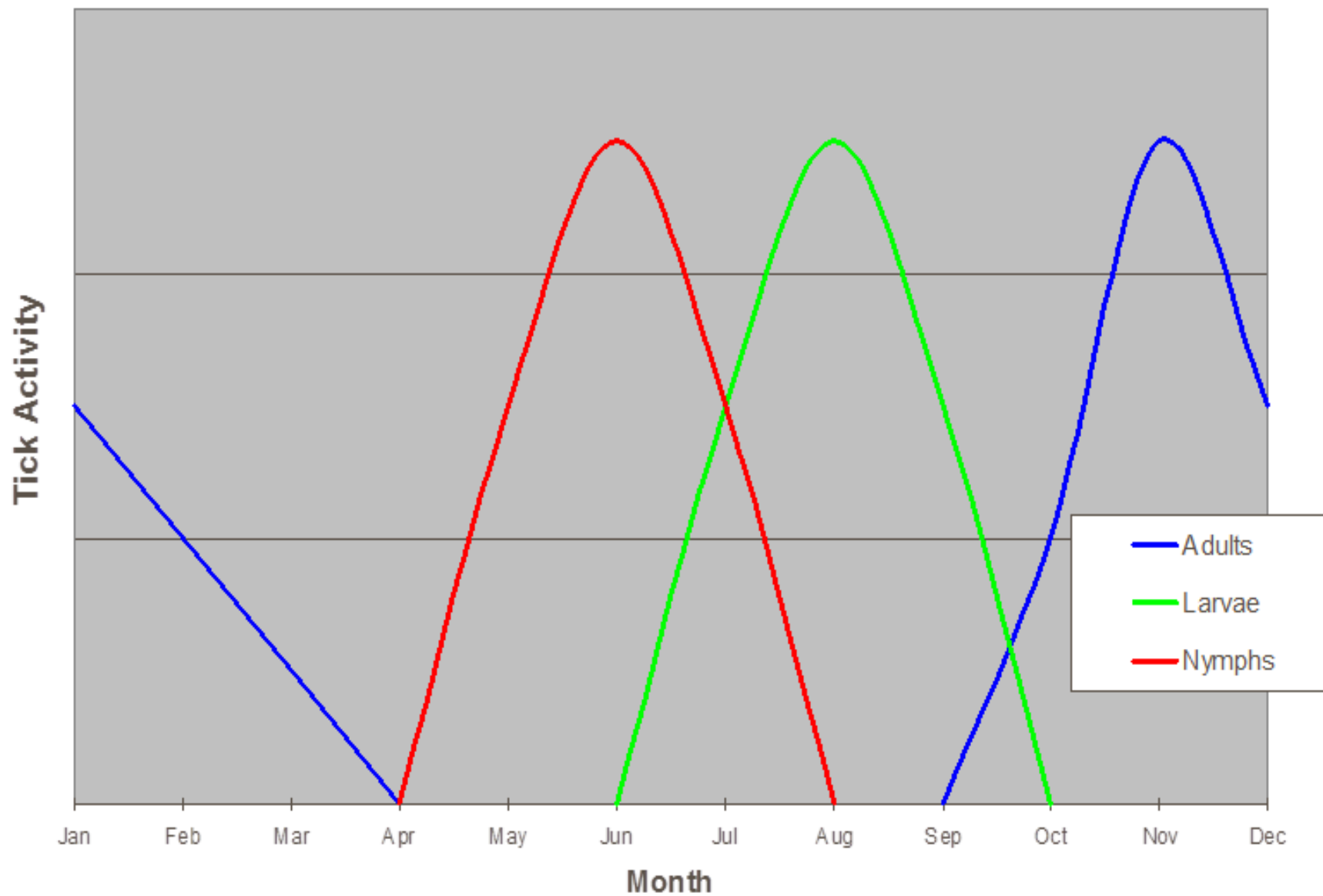


Tick Life Cycle – 2 Year





Activity of Blacklegged or Deer Tick (*Ixodes scapularis*)



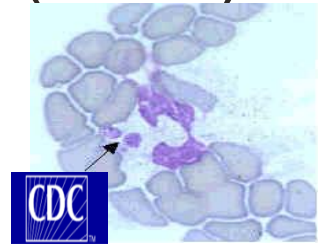


Tick-Borne Pathogens Associated with Blacklegged/Deer Ticks

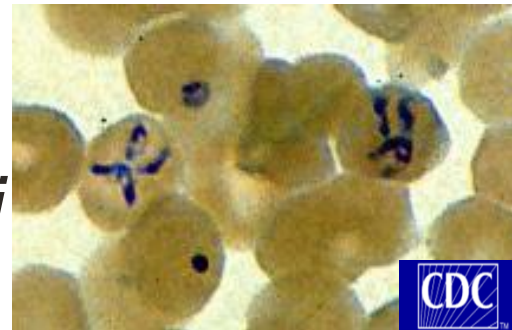
- Lyme Disease, Lyme Borreliosis
 - *Borrelia burgdorferi*



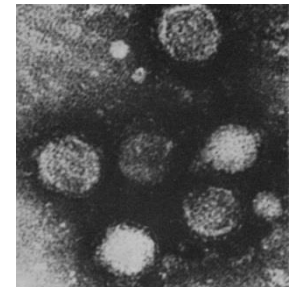
- Human Granulocytic Anaplasmosis (HGA)
 - *Anaplasma phagocytophilum*



- Babesiosis
 - *Babesia microti*



- Powassan Virus or Deer Tick Virus





Coinfection of pathogens for
Lyme Disease
Anaplasmosis
Babesiosis
may occur from one tick bite



White-Footed Mouse

Peromyscus leucopus

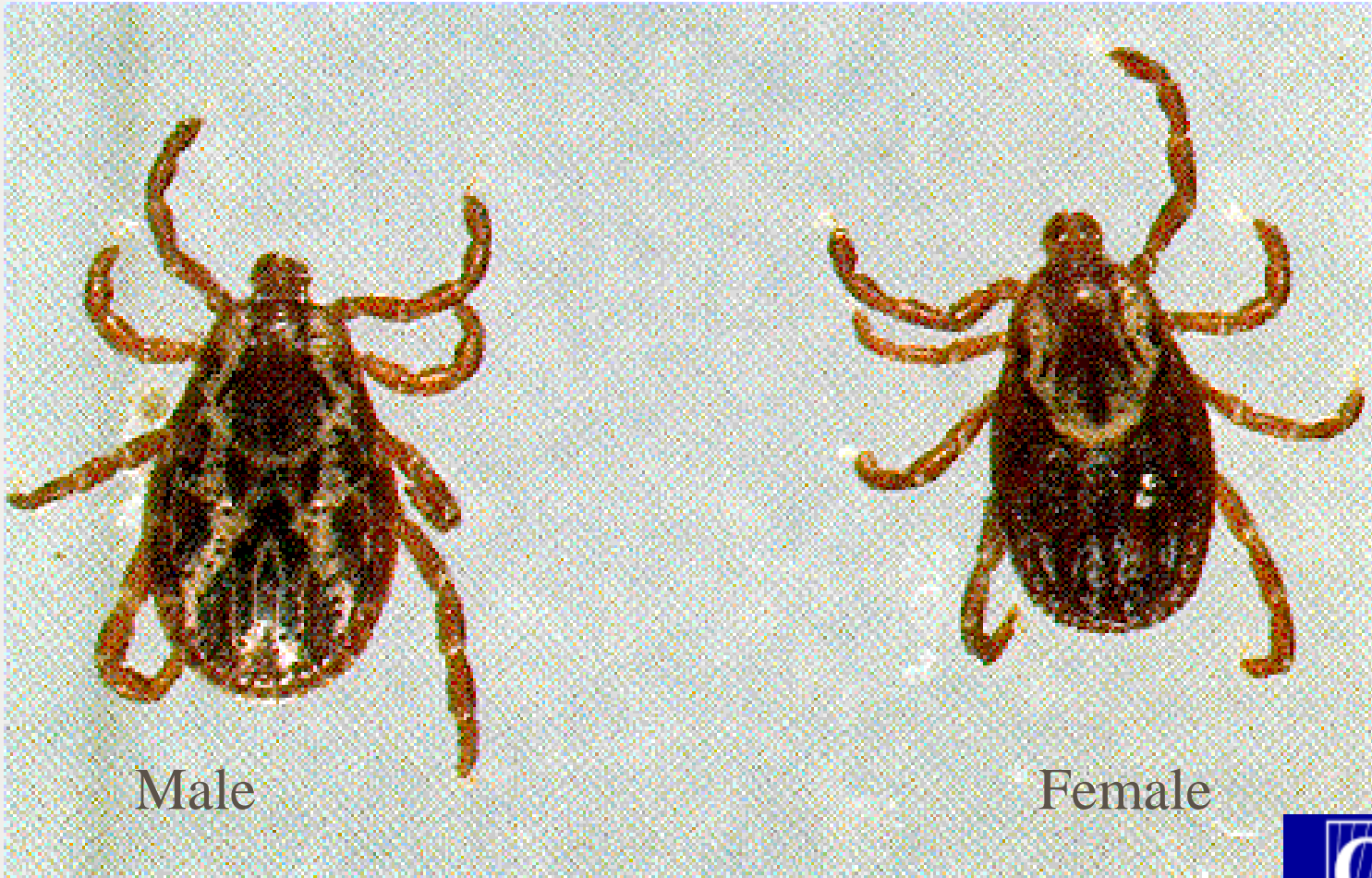
White-Tailed Deer

Odocoileus virginianus





American Dog Ticks (*Dermacentor variabilis*)



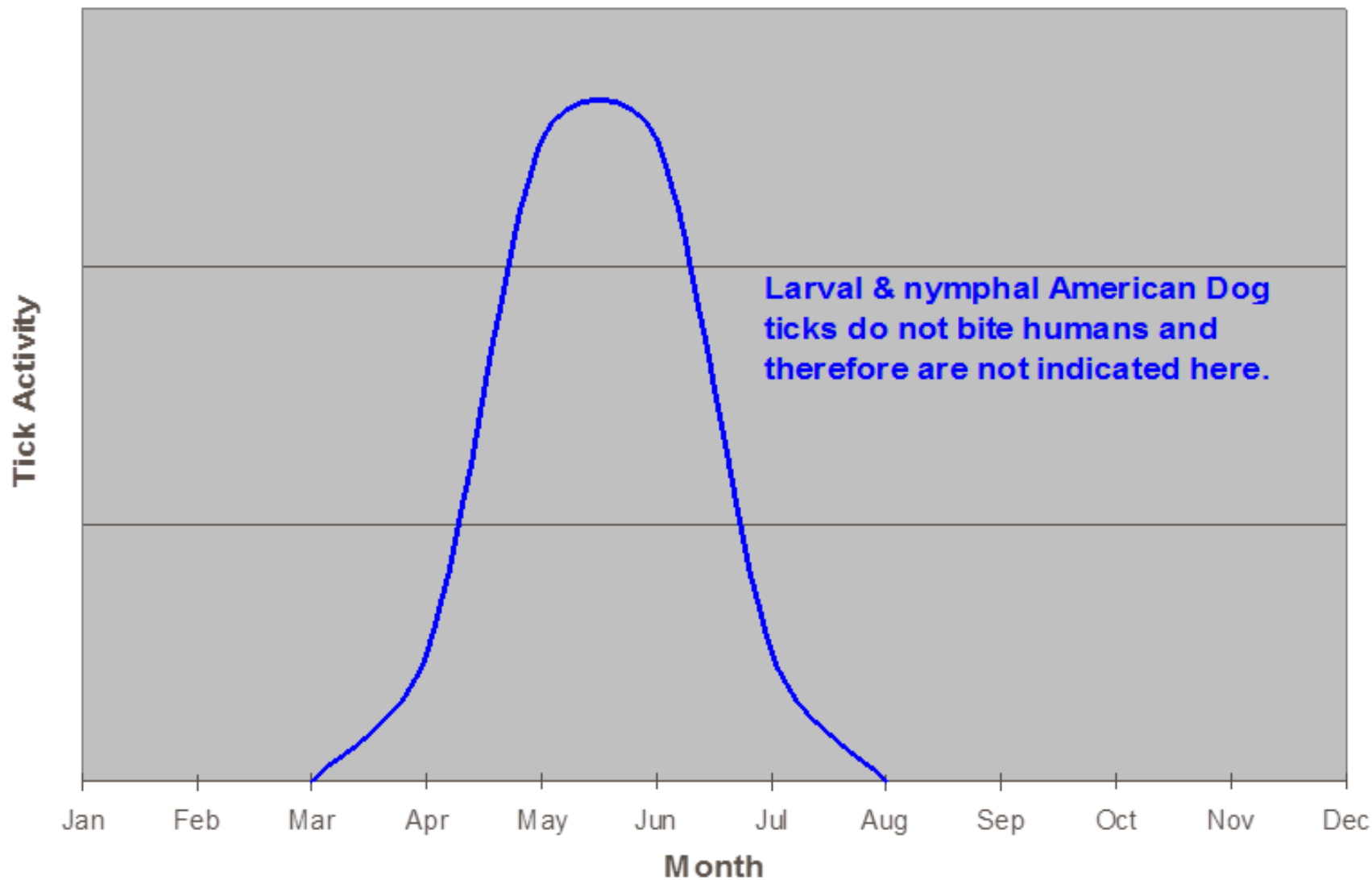
Male

Female





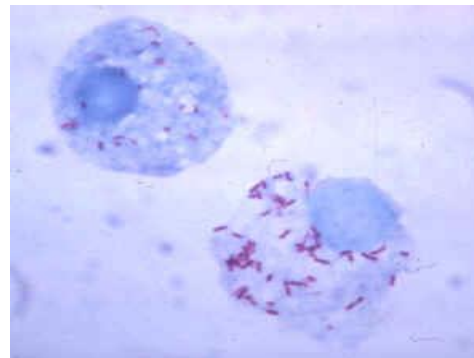
Activity of American Dog Tick (*Dermacentor variabilis*)





Tick-Borne Pathogens Associated with American Dog Ticks

- Rocky Mountain Spotted Fever
 - *Rickettsia rickettsii*





Meadow Vole

Microtus pennsylvanicus



www.enature.com

Red Fox

Vulpes vulpes



<http://www.arlington-tx.gov>



Lone Star Ticks (*Amblyomma americanum*)

Larva



Nymph



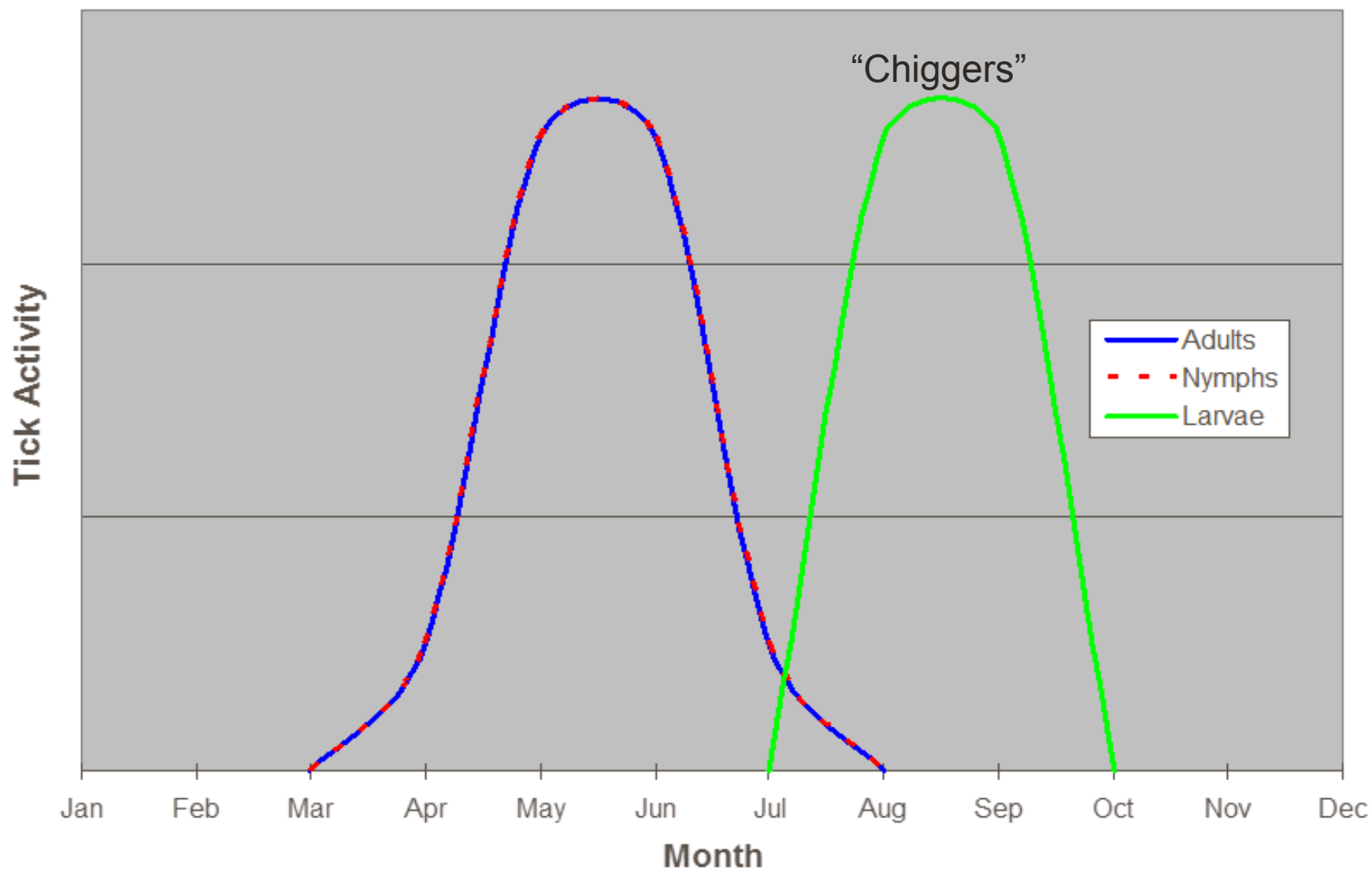
Male



Female



Activity of Lone Star Tick (*Amblyomma americanum*)





Larval Chigger vs. Larval Tick

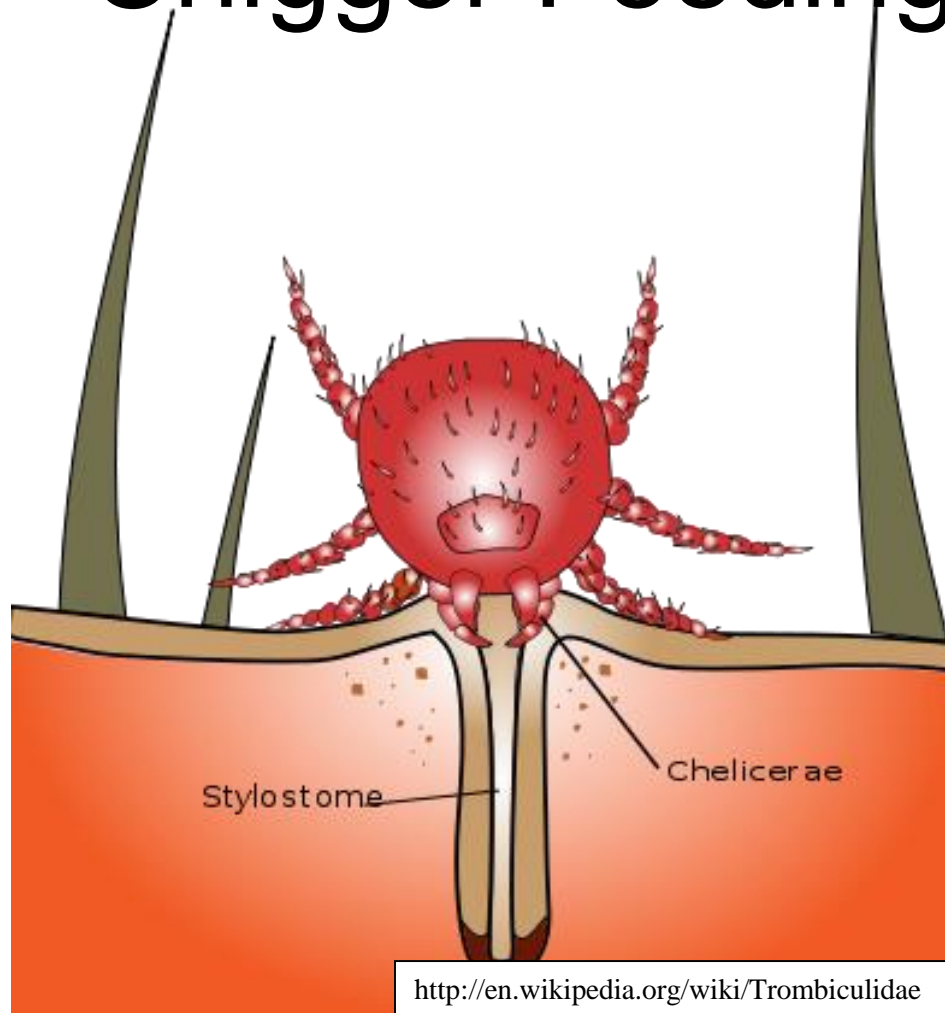


<http://science.howstuffworks.com/zoology/insects-arachnids/chigger2.htm>

<http://www.aldf.com/Lonestarposter.shtml>



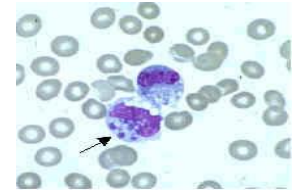
Chigger Feeding





Tick-Borne Pathogens Associated with Lone Star Ticks

- Human Monocytic Ehrlichiosis (HME)
 - *Ehrlichia chaffeensis*
- Alpha-Gal Meat Allergy





White-Tailed Deer

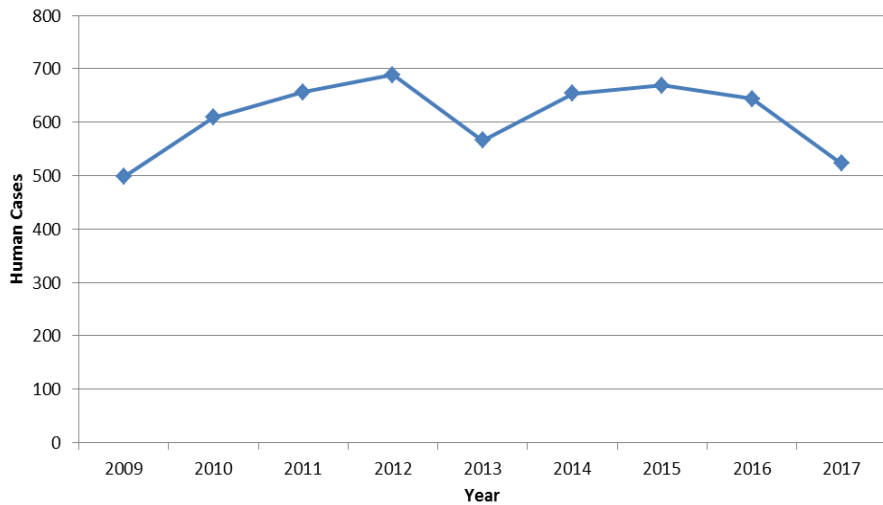
Odocoileus virginianus



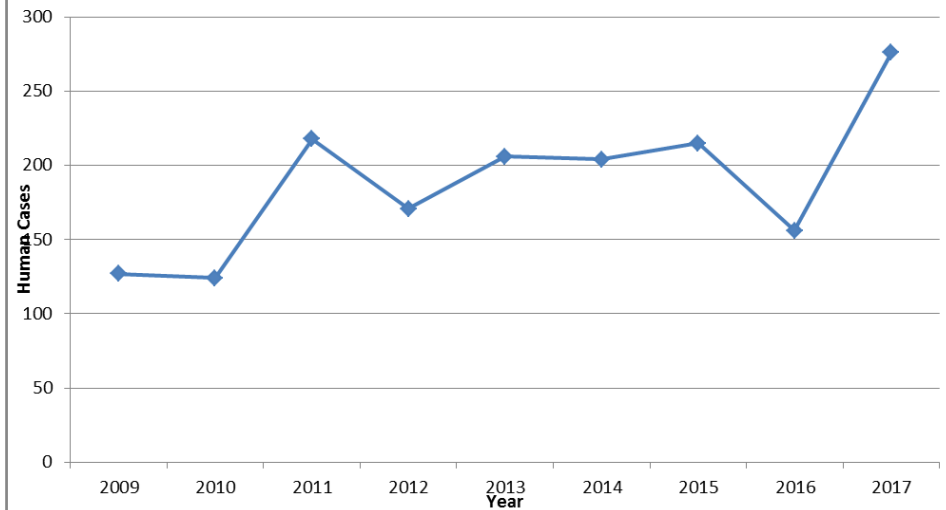


Incidence of Tick-Borne Diseases

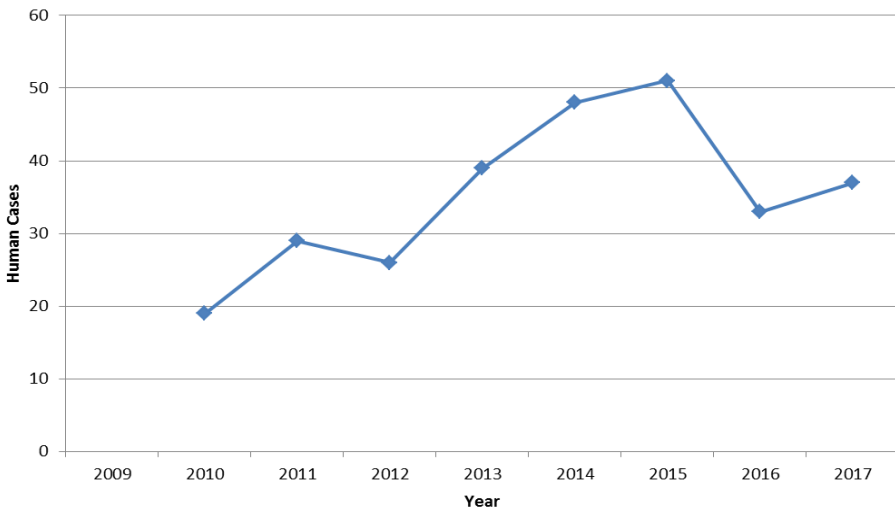
Lyme Disease Cases



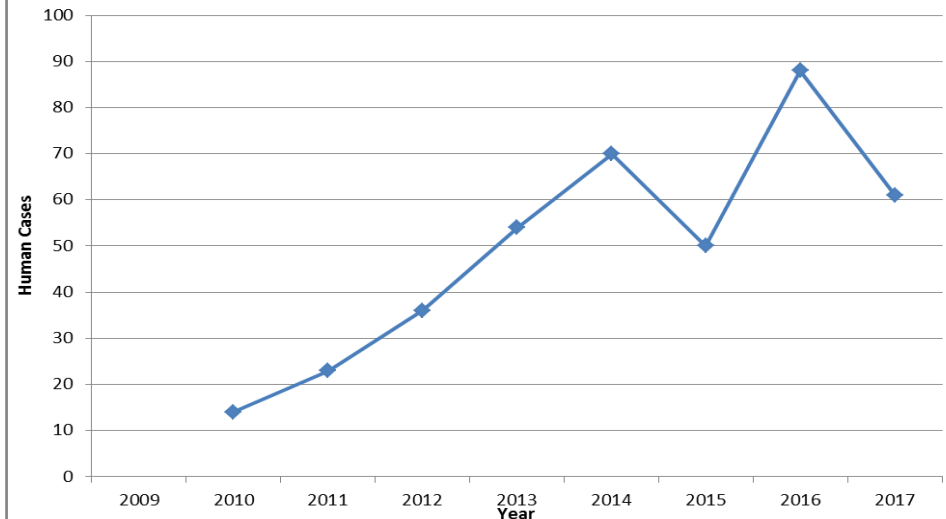
Babesiosis Cases



Anaplasmosis Cases



Ehrlichiosis Cases





Tick Habitat

- Blacklegged (Deer) Tick
 - Woodlands
- American Dog Tick
 - Fields
- Lone Star Tick
 - Woodlands, Secondary Growth, Disturbed Areas





Prevention of Tick Bites

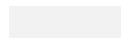
- Avoid tick habitats if possible
 - Avoid sitting directly on the ground
 - Walk in the center of footpaths
- Check frequently for ticks
 - Remove ticks promptly from clothing or body
- Wear/tuck shirts, long pants, and socks
- Consider using a tick repellent
- Use a clothes dryer to kill ticks
 - 10 minutes
 - Don't wash first

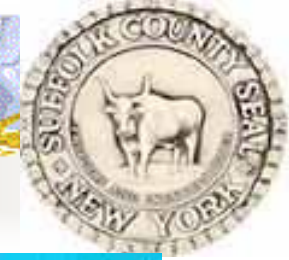


Tick and Mosquito Repellents recommended by CDC

- Permethrin – Clothing Only
- DEET
- Picaridin
- Oil of lemon eucalyptus (OLE or PMD)
- IR3535
- Follow label directions

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



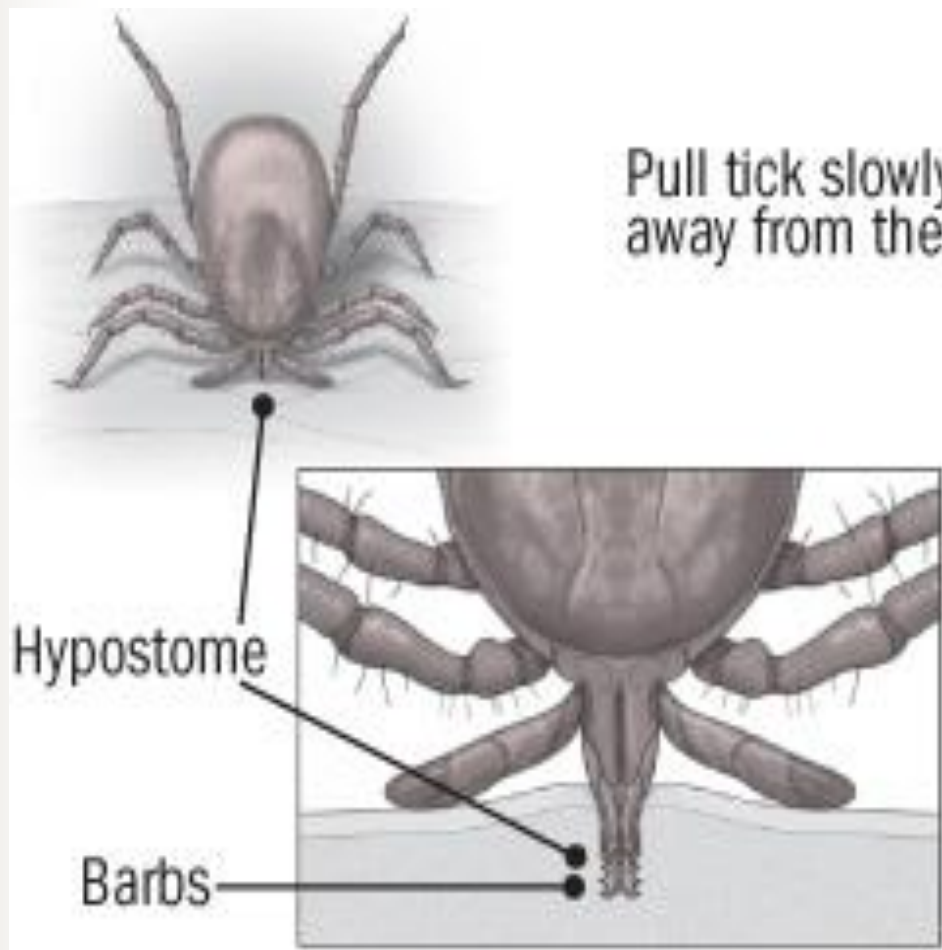


Tick Mouthparts

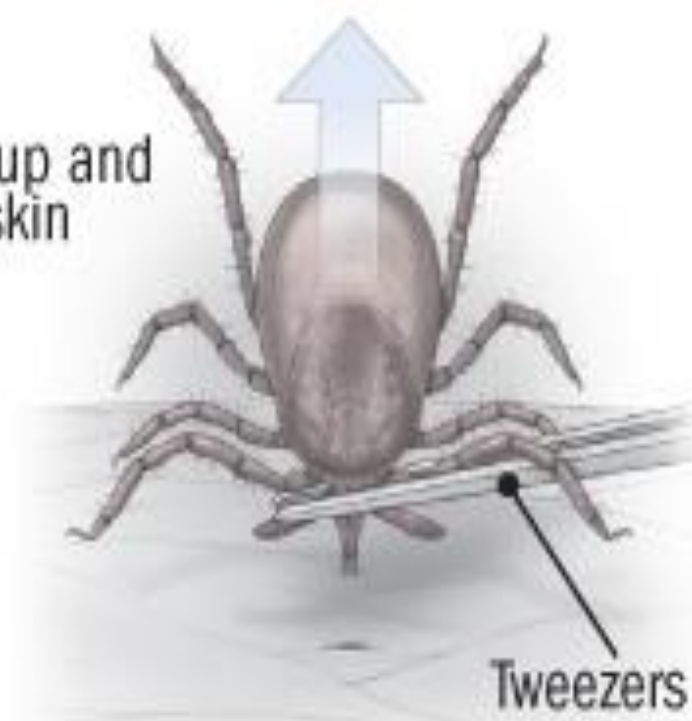


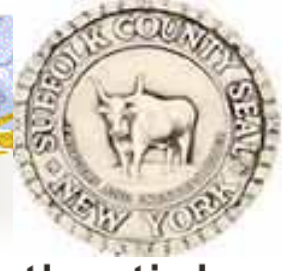


Proper Tick Removal

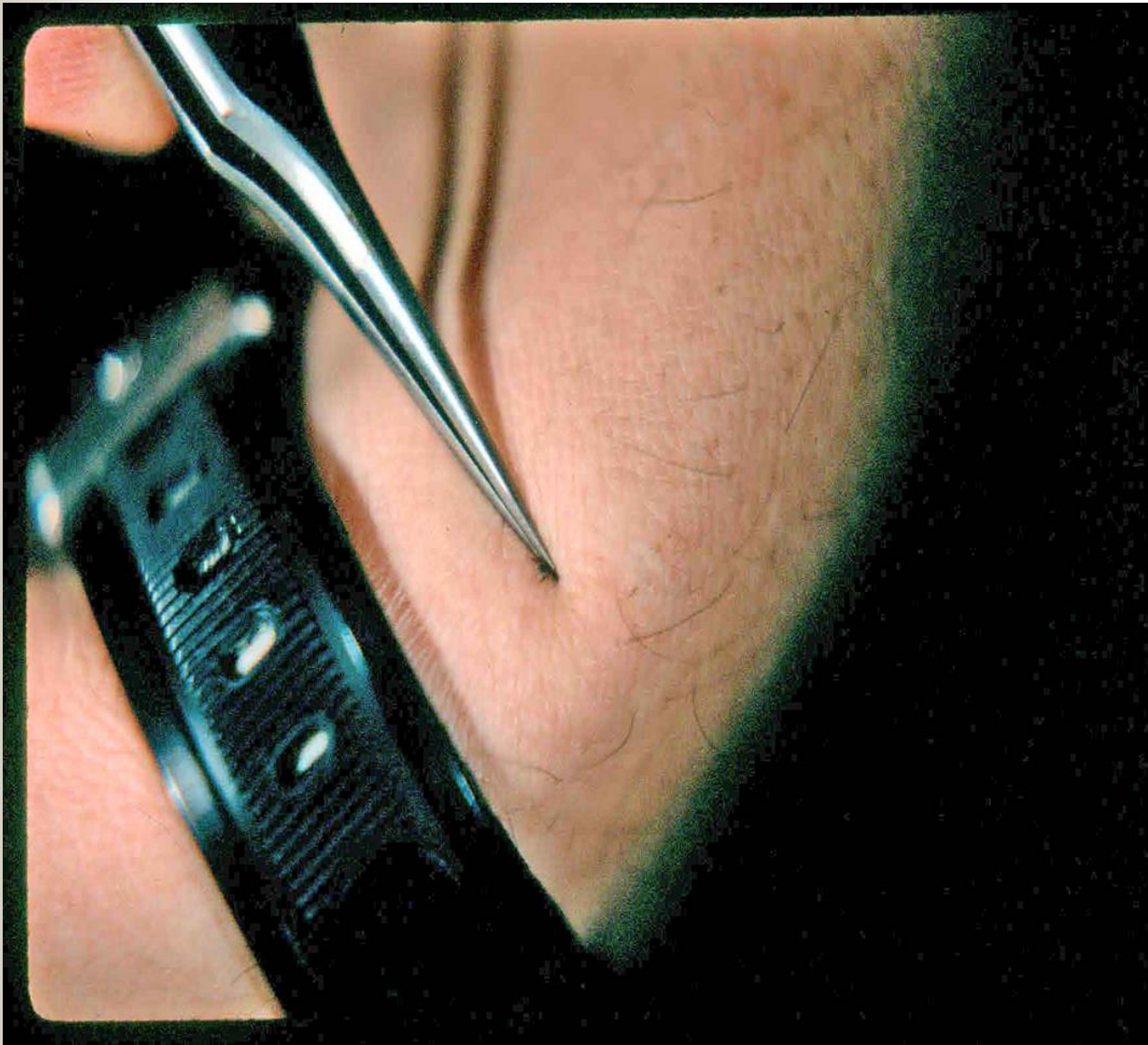


Pull tick slowly up and away from the skin





Tick Removal



Remove the tick
as soon as
possible

Don't squeeze
the tick

Place tick in
rubbing alcohol
or tape it to a
3x5 card

Label with date
and location of
bite



Further Information

- SBSH Tick-Borne Disease Resource Center
 - Medical Questions (10am-2pm), Tick Kits
 - (631) 726-TICK (8425)
- Suffolk County Department of Health Services
 - (631) 787-2200
 - Tick.Prevention@suffolkcountyny.gov
 - Suffolk County Website
- CDC and NYSDOH Websites



MAN AGAINST NATURE