

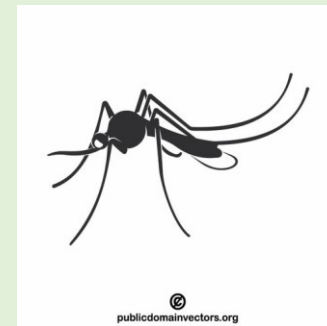
Mosquito & Tick Management: Pesticide Reduction for Pollinator Protection 2025

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Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnie, Administrator, 1890 Extension Program, Virginia State University, Petersburg.



Why is learning about mosquitoes Important?



- ✓ Respect ecological niche of all living organisms
- ✓ Address fears about living around mosquitoes
- ✓ Understand risks/benefits of mosquito control and dangers of using non-selective pesticides indiscriminately
- ✓ Avoid false sense of security with pesticide usage
- ✓ Protect native pollinators and beneficial insects
- ✓ Learn personal protection tactics
- ✓ For a Good Quality of Life: Enjoy the outdoors!

So, What Good Are Mosquitoes?

A lotta good!



Ary Farajollahi, Bugwood.org



- They're **pollinators** (esp. males)
- They're **food**:
 - Birds, bats, fishes, frogs, lizards, spiders eat adult mosquitoes
 - Turtles, other amphibians, and dragonfly larvae eat mosquito eggs and larvae.

And more!

- **Mosquito larvae eat** algae, parasites, fungi, and other detritus
- **Larvae poop** in the water is great for plants!

From: Britannica.com and EndMosquitoes.com.

Mosquito Facts

- **Worldwide:** about 3,500 species
- **Virginia:** 58 known species; variety of habitats.
- Largely aquatic--most development is in or near still water.
- Only adult females feed on (“bite”) humans and other vertebrates for protein needed for eggs.
- Cold-blooded; do not generally bite if below 50° F.
- Females can live 2-3 months; hibernating adults can live 6-8 months.



Culex pipiens

Ary Farajollahi, Bugwood.org



Aedes albopictus

Susan Ellis, Bugwood.org.



Aedes aegypti

CDC Public Health Image Library)

House (*Culex pipiens*) Mosquitoes



Ary Farajollahi, Bugwood.org

Adult *Culex* mosquitoes are small and brown; bite during dusk and dawn.

Prefer birds but will bite people and other mammals. Range is ½ to 2 miles.

Not as aggressive as other mosquitoes, (you may not notice one biting you). A good reason to wear insect repellent!

***Culex* mosquitoes lay eggs in stagnant water (e.g., storm drains, clogged rain gutters, and other sites with standing water).**

These mosquitoes may spread West Nile virus and St. Louis Encephalitis.

From: alexandriava.gov/MosquitoControl



Johnragai-Moment Catcher CC BY 2.0.

Aedes Mosquitoes

Two types in our area:

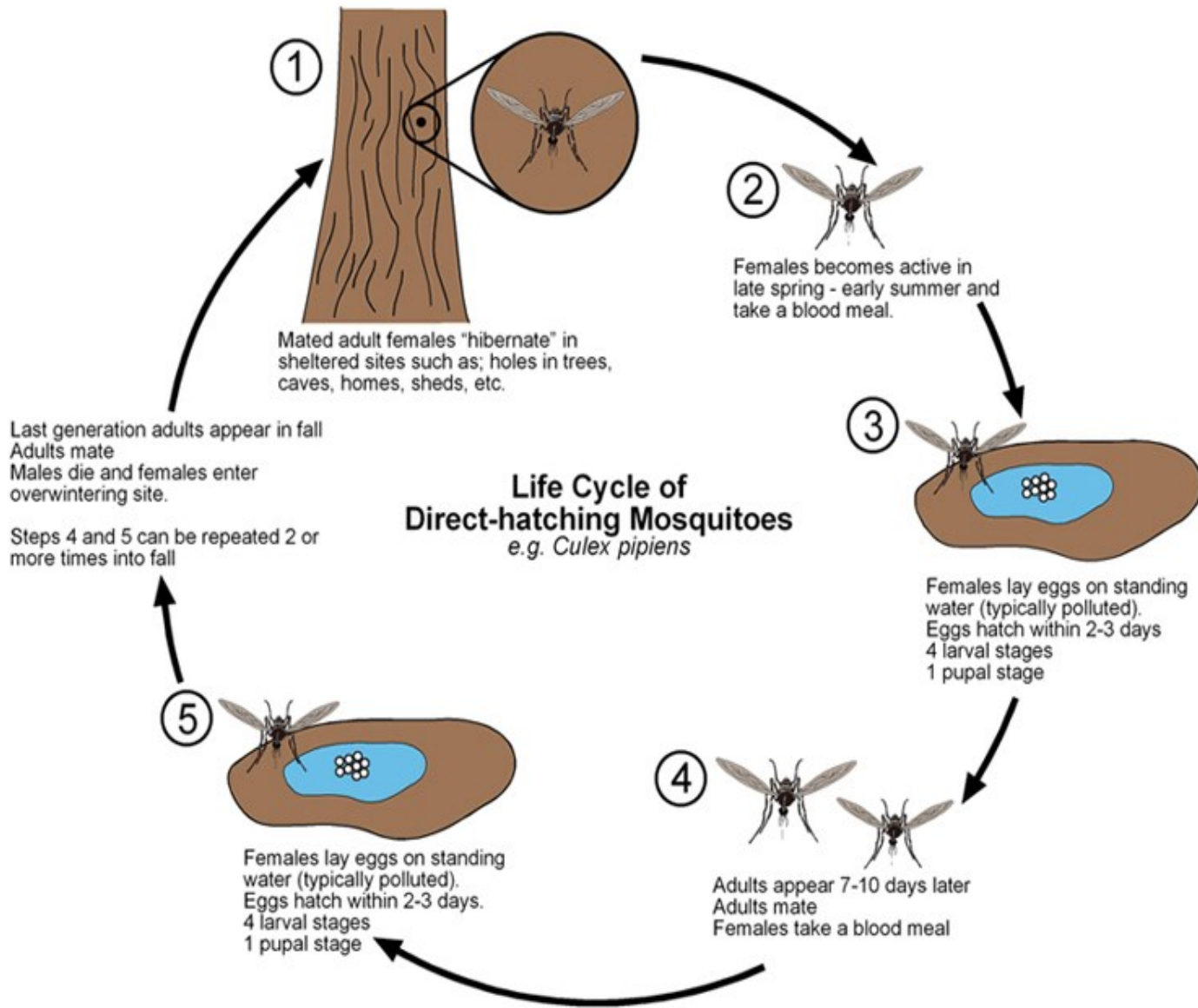
- *Aedes aegypti* (Yellow Fever mosquito)
- *Aedes albopictus* (Asian tiger mosquito)

- Larger than *Culex* mosquitoes
- Fly and bite only during daylight hours
- Prefer to breed in cleaner water:
 - small and large man-made containers
 - tree holes and natural rock pools
- Travel up to 600 feet
- Can carry a variety of diseases

<https://www.cdph.ca.gov/Programs/CID/DCDC/pages/Aedes-aegypti-and-Aedes-albopictus-mosquitoes.aspx>

and

https://www.cdc.gov/mosquitoes/about/life-cycle-of-aedes-mosquitoes.html?CDC_AAref_Val=https://www.cdc.gov/mosquitoes/about/life-cycles/aedes.html



Egg raft from Kansas State Entomology, Kansas State University



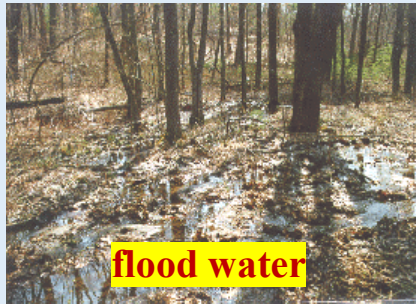
Larvae of *Culex* mosquitoes (Image: James Gathany, CDC)



Mosquito pupa by ProjectManhattan Creative Commons Attribution-Share Alike 3.0 Unported license

Diagram from Purdue Extension, Entomology, Purdue University

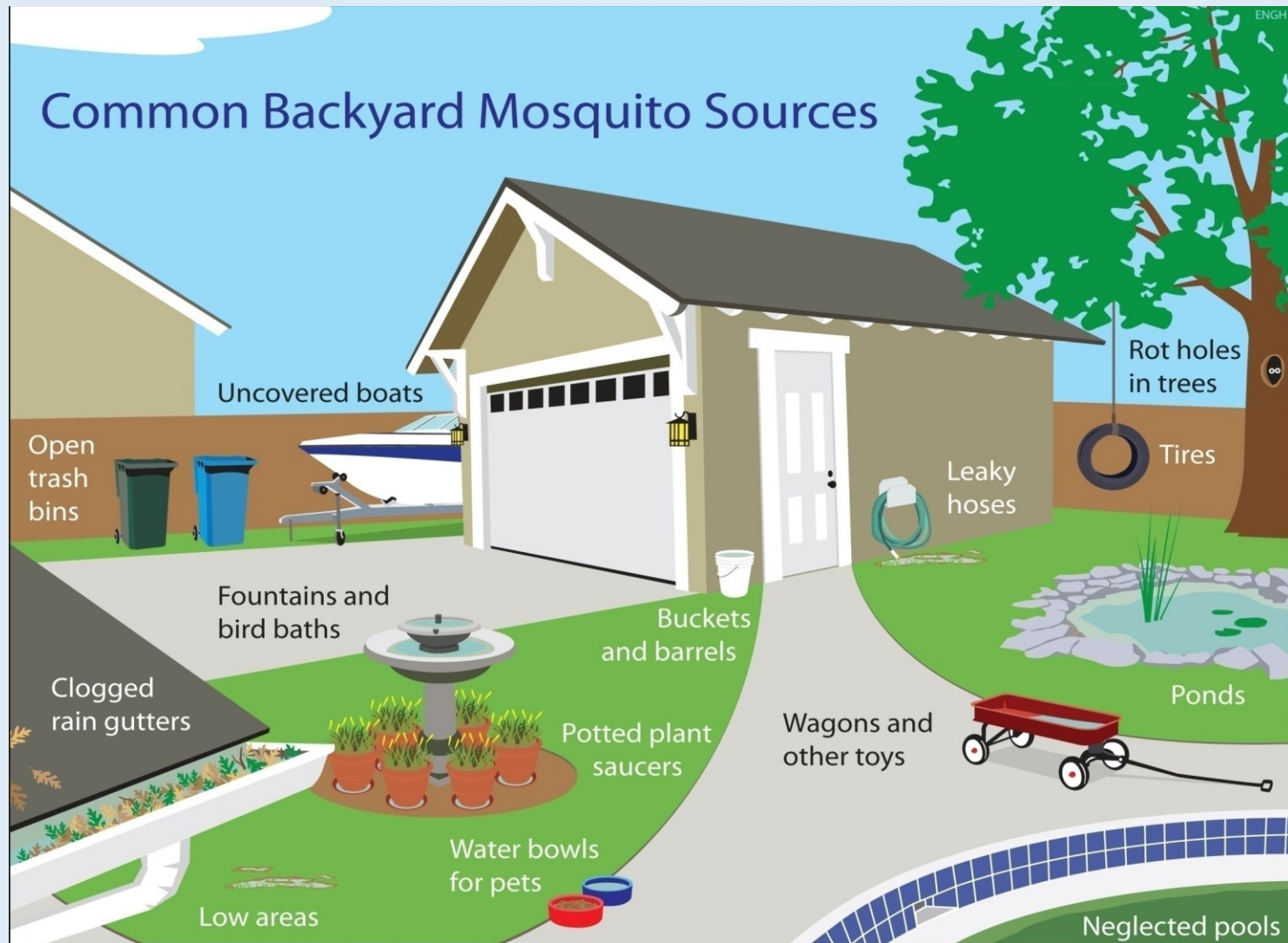
Culex Mosquito Breeding Habitats



- Temporary bodies of water
- Seasonal/occasional
- Fresh or polluted
- Natural or manmade
- Lacking in predators

From: Virginia Department of Health presentation by Dr. David N. Gaines, Public Health Entomologist, VDHVDH--Office of Epidemiology
vdh.virginia.gov/content/uploads/sites/12/2016/02/Mosq_biol_surv__cntrl_1.pdf

Common Backyard Mosquito Sources



Texas A&M AgriLife Extension Service graphic
entomology.tamu.edu/2016/04/21/agrilife-extension-experts-inform-texans-on-protecting-from-zika-other-mosquito-borne-diseases/mosquitosourcesyard/c

Where urban mosquitoes breed



Corrugated drainpipe



Well



Downspout extension

**More
Artificial
Containers**

Images courtesy of the Fairfax County Health Department, EXCEPT: Gutter photo credit: <http://801website.com/nicaliber/home-inspection/clogged-rain-gutters-in-saint-george/>; Ground drain photo credit: qd.gov.au/health/conditions/all/prevention/mosquito-borne/control/breeding-sites#gallery-0-5

Mosquito Controls

Environmental and Cultural

- Remove sites where mosquitoes breed (still water) or change water every few days.

This is THE most successful way to manage mosquito populations around your homes and neighborhoods.

- Eliminate or reduce areas where mosquitoes rest (e.g., English ivy, Amur Honeysuckle)
- Use screens to keep mosquitoes out

Biological

- Predators
- Bti (e.g., Mosquito Dunks®)

Chemical

- Oils
- Insecticides

Most effective controls are directed at immature stages

Animal Biological Larval Controls

Fish (e.g., Mosquito fish (*Gambusia sp.*)):

You can buy minnow-sized fish for backyard ponds/water features that harbor larval mosquitoes. **DO NO RELEASE THESE FISH TO THE WILD.**



Western Mosquitofish

by NYS Department of Environmental Conservation (CC BY-NC-ND 2.0)
[flickr.com/search/?text=western%20mosquitofish](https://www.flickr.com/search/?text=western%20mosquitofish)

Animals that are naturally attracted to ponds:

Dragonfly larvae

Frogs/Toads

Water Striders and Ground Beetles

Frog-Biting Midges (*Corethrella appendiculata*)



Waterstriders.

David Cappaert, Bugwood.org

Biological Larvicides

Bti (*Bacillus thuringiensis israelensis*) and **Vectolex** (*Bacillus sphaericus*):
only kill early-stage mosquito larvae, NOT pupae or adults!



Photo by Kasha Helget

(BTI) Mosquito Dunks®, bits, and granules

Use in standing water; will also bounce down through vegetation to aquatic habitat; kills within hours, lasts for 30 days or more.

Highly selective for mosquito and certain fly species.

Safe for pets, birds, bees, other wildlife.

DIY MOSQUITO TRAPS

That can significantly reduce mosquitoes in your yard!

Mosquito Dunk® larva traps actually ATTRACT female mosquitoes to lay eggs. MGNV has a simple one with a **bucket, straw, water, and a Mosquito Dunk®** (based on N. VA Bird Alliance larva trap version, with more details).

As easy as 1-2-3!

1. Add straw or dried leaves to a bucket; fill about halfway with water and let sit for **three days** to ferment. Chicken wire on top keeps out other critters.
 2. Add a Mosquito Dunk® and place in your yard away from people and pets so female mosquitoes don't bite them.
 3. Monitor and refresh water levels and replace Dunk about once a month.
- As always, eliminate other sources of standing water.



For best results, communities should band together to use the traps.

Self-Protection Clothing and Gear

Clothing: Long sleeves, long pants, socks, shoes, hats, and neck covering.

Exclusionary products: Nets and screens for rooms, beds, clothing

Skin repellents: DEET: 25-30%, Picaridin: 20%, Oil of Eucalyptus, IR-3535 (Merck 3535) e.g., “Skin-So-Soft” products



Long pants for mosquito protection

Photo by Leslie Cameron



5488789

Photo by: Whitney Cranshaw, Colorado State University, Bugwood.org

Anti-mosquito clothing
aliexpress.com/1/32922729598.html



Mosquito bedding
nodecamerab7imgbin.com/png/xkujce4/mosquito-nets-amp-insect-screens-insecticide-permethrin-png



Adult mosquito control

Should be based on:

- Mosquito surveillance data
- Limited to distant, sheltered, or large breeding habitats



Spray Planes

USFS Northeastern Area, State & Private Forestry Archives, Bugwood.org

**Aerial Spraying Should Be Done Rarely,
in a Public Health Emergency, and
as a Last Resort!**

Mosquito Adulticide Types and Cautions

Pyrethroids – Some have low toxicity to mammals and birds, but are toxic to fish, aquatic arthropods, and non-target insects.

- **Permethrin**
- **Resmethrin** (Scourge)
- **Sumithrin** (Anvil)

Organophosphates – Low to highly toxic to mammals, birds and fish, and **very highly toxic** to honeybees.

- **Malathion:** Low to moderate toxicity to mammals
- **Naled** (Dibrom): Moderate to high toxicity to mammals

All these highly lethal pesticides are also described as “Broad Spectrum or “non-selective.”

Resource: npic.orst.edu/pest/mosquito/mosqcides.html



Howard F. Schwartz, Colorado State University,
Bugwood.org

Organic and “natural” pesticides derived from flowers and other plants may still **irritate** people and be **toxic** to unintended animals/birds/reptiles/amphibians, **even in correct dosages.**

Adulticide sprays are the least effective mosquito controls.

Why?



wiredforlego

(1) Sprayed air kills mosquitoes for 1-2 days at most. After that, other mosquitoes may fly through the area unaffected.

(2) The spray kills ALL insects feeding on vegetation where it lands, including beneficial pollinators and fish (if sprayed over water).



Karan A. Rawlins, University of Georgia,
Bugwood.org

(3) Sprays kill predators that naturally help control mosquito populations.



(4) Rapid mosquito reproduction replaces dead mosquitoes.

(5) Mosquitoes may become resistant to pesticides and pass resistance to progeny.

Karan A. Rawlins, University of Georgia,
Bugwood.org

Hire a pesticide applicator? **Only when Absolutely Necessary**

Factors in choosing an applicator:

Are they a **VDACS** licensed pest management company ?

Do they use IPM (integrated pest management) or just adulticides? Is staff training in IPM mosquito control?

Compare several proposals. Look for reputation for quality of service over price.

VA requires **Pesticide Discharges General Permit (VAG87)** to spray over water.

Contact the **Virginia Department of Agriculture and Consumer Services (VDACS) Office of Pesticide Services**, at 804.371.6560 for concerns about pesticide misuse.

This office takes reports of pesticide application misuse very seriously.

Pollinator Protection and Pesticides

Pesticide applicators should **never apply pesticides:**

- When pollinators are active
- On food crops
- On flowering plants that pollinators visit
- On windy days, in the hottest part of the day, or before rain.

Instead of Spraying:

- Remove standing water or use selective biological larvicides.
- Remove or cut mosquito-friendly plants (dense ground cover like Eng. ivy).
- Encourage natural predators (birds, other insects that eat mosquitoes). Best way is to install native plants that attract these insects.
- Use fans to move the air (mosquitoes are weak flyers).

ONLY as last resort, use “ultra low volume” sprays during cool parts of the day and when pollinators are not active.

Mosquito controls that DO NOT WORK:



- Bug Zappers
- Spraying Listerine, wearing dryer sheets, VapoRub, vanilla, etc.
- Wristbands, ultrasonic devices, clip-on repellents
- Citronella and other plants, but if it works for you . . .
- Propane-driven CO2 mosquito traps
- Bats and Purple Martins do not prefer mosquitoes.
- While garlic won't keep them away, some foods & other products may make you MORE attractive to mosquitoes (e.g., beer, spicy foods, scented soaps, lotions).



All images from: clipart.email/

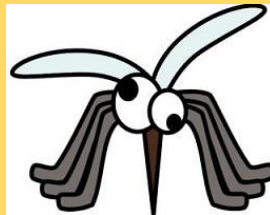


Remember!

- The average range of an adult mosquito is between 600 ft. and 1-2 miles. Work with neighbors to remove breeding and sheltering sites.
- The most popular spray chemical, **Permethrin, is non-selective** (it kills beneficial insects, too).
- Permethrin can remain in the environment for some period of time, increasing exposure to beneficial insects.
- Mosquitoes do not like to breed in moving water. Use a bubbler if you can't change water every few days.

How to Avoid Adult Mosquitoes

- **Ensure** door, window, and rain barrel **screens are intact.**
- **Avoid being outside during dawn and dusk, AND/OR**
- **Wear long sleeves & pants** when outdoors, **AND/OR**
- **Use an effective repellent on exposed skin**
 - DEET, Picaridin, IR-3535, or Oil of Lemon Eucalyptus.
 - Follow label directions!
- **Mosquitoes are weak fliers. Use fans to move air around outdoor social areas.**



clker.com/clipart-mozzy.html
(Pub. domain)

Ticks of Virginia

- Identify the most common ticks
- Know how to **Avoid**, **Repel**, and **Remove** them
- Recognize signs of tick-borne diseases
- Care for yourself, your pets, and your yards



What Good Are Ticks?



Public Domain

They're **food** for:

- Reptiles, birds, and small mammals, and
- Parasites (e.g., nematodes, tick wasps).

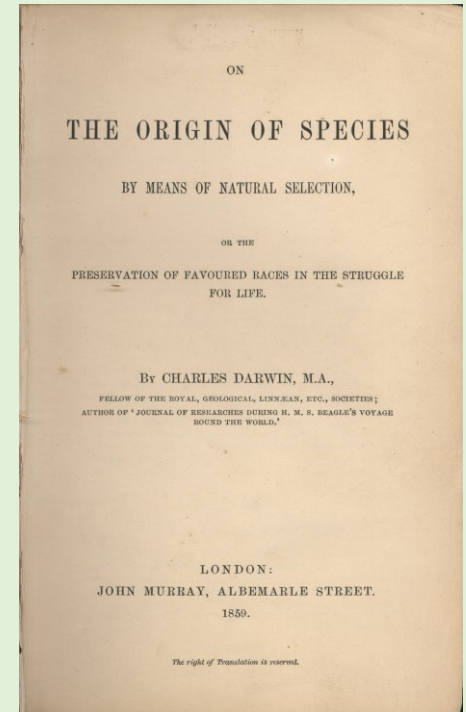
They're important to **ecosystems**:

- More ticks = more mammals that carry them
- Fewer ticks = too many predators.

They have a big role in **Evolution**, too

- Animals weakened by vector-borne disease may die or have fewer offspring.
- Others stay healthy and pass better genetic traits to their offspring.

Survival of the Fittest



Public Domain

Basic Tick ID

Need to look at:

- Tick size
- Is there ornamentation?
- Size of mouth parts
- Are there festoons?

Essentials:

- magnifying glass
- ruler
- comparison pictures

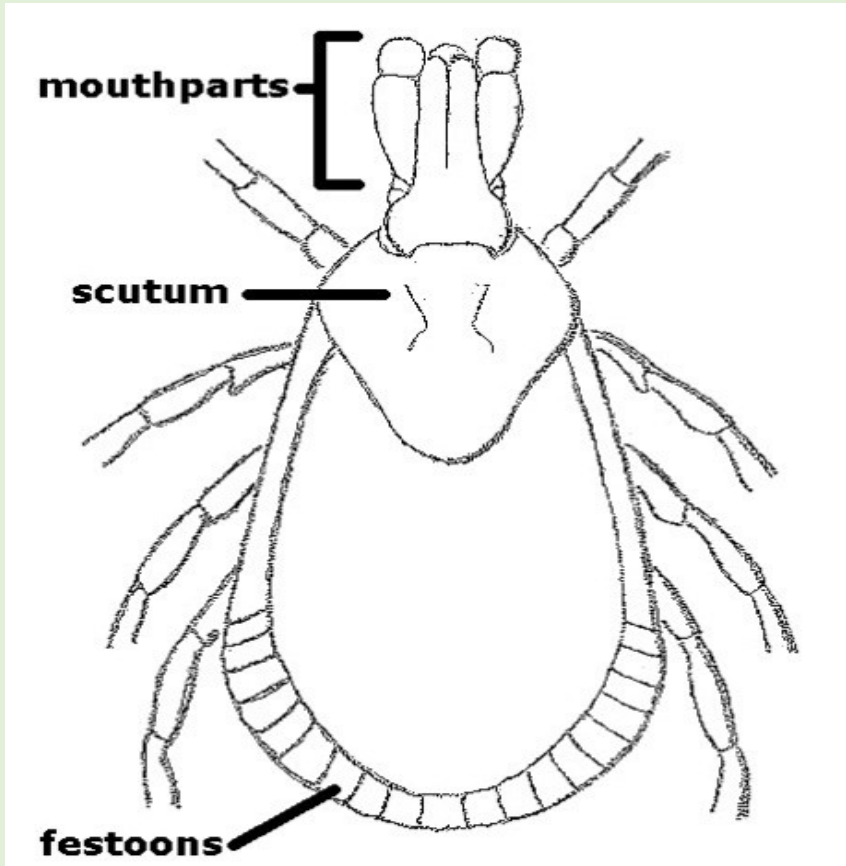
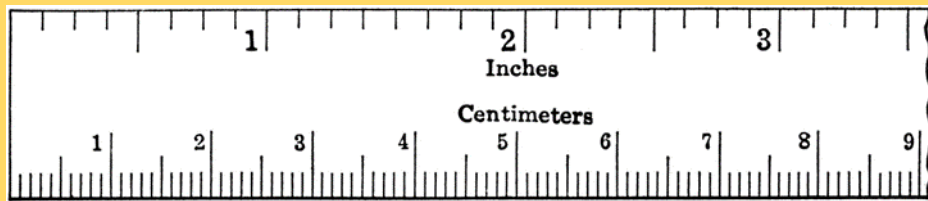


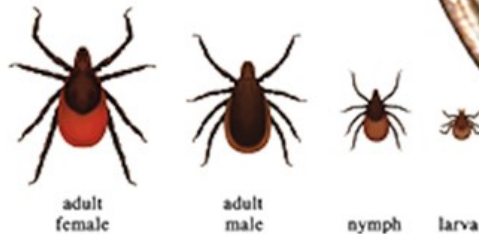
Image: Illinois Dept. of Public Health
dph.illinois.gov/topics-services/environmental-health-protection/structural-pest-control/common-ticks/identification



Size of Adult Female

Black legged
3-4 mm

Blacklegged Tick (*Ixodes scapularis*)



Lone Star Tick (*Amblyomma americanum*)

Lone Star
4-6 mm



Dog Tick (*Dermacentor variabilis*)

Dog Tick
5-15 mm



Adult ticks may be the size of a sesame seed, nymphs--the size of a poppy seed, and larva--the size of pepper. But they may be even smaller!

Virginia Department of Health tick ID

Most Common Ticks of N. Virginia

Long-term residents

American Dog Tick

Lone Star Tick

Deer (Blacklegged) Tick

Newcomers

Asian Longhorned Tick
(mostly bite sheep/cattle)

Gulf Coast Tick



**Most are active
March through
September.**

**Some adults
may be active in
winter:**

- Deer tick
- Asian Longhorned tick



American Dog tick larva, nymph, adult male, adult female

University of Rhode Island Tick Encounter Center tickencounter.org/tick_identification/dog_tick



Lone Star Tick larva, nymph, adult male, adult female

University of Rhode Island Tick Encounter Center tickencounter.org/tick_identification/lone_star_tick



Deer Tick larva, nymph, adult male, adult female

University of Rhode Island Tick Encounter Center tickencounter.org/tickidentification/deertick



Asian Longhorned Tick adult female (left), nymph (center), and larva (right).

Photo credit: Manigandan Lejeune, Animal Health Diagnostic Center

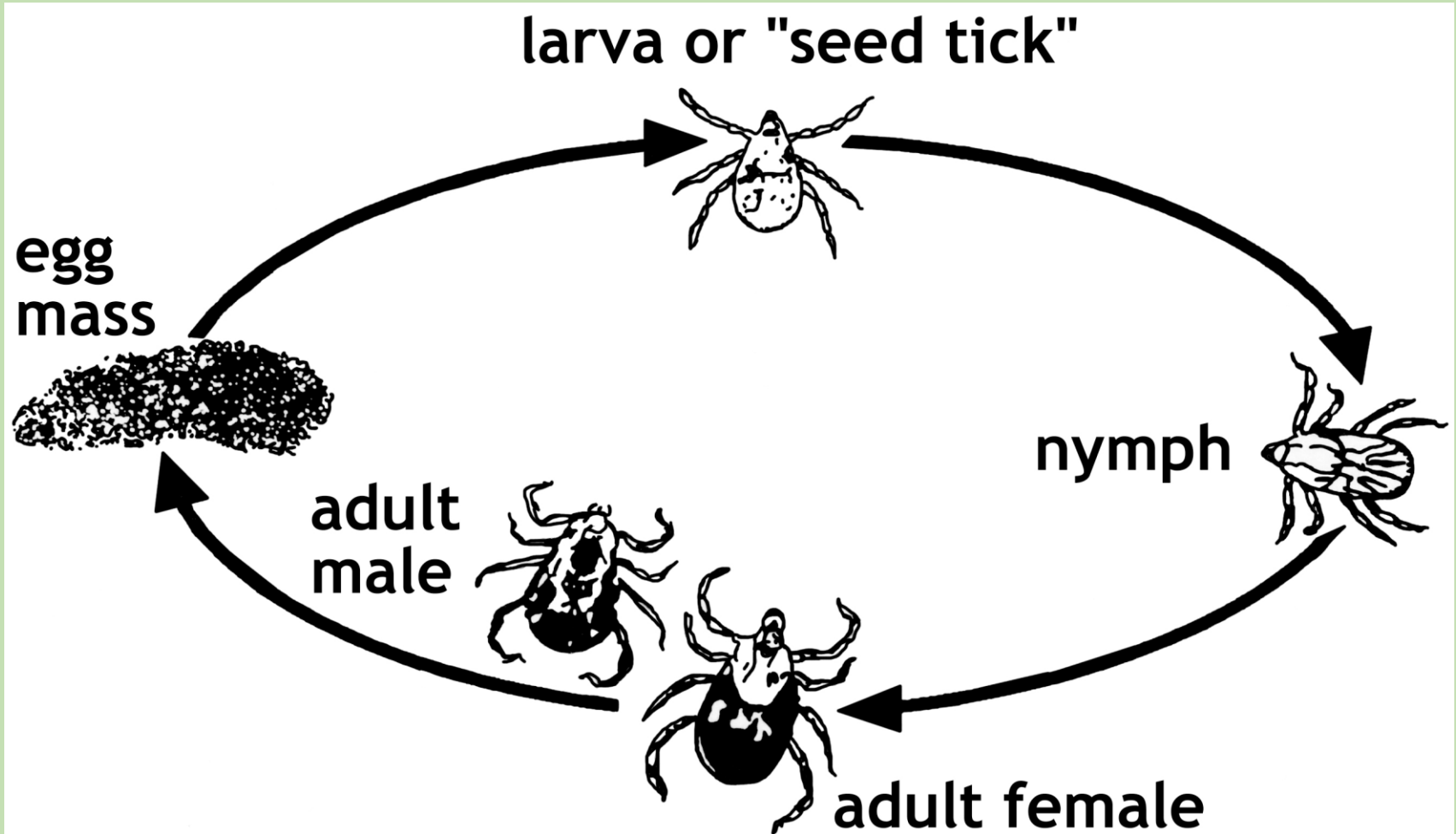


Gulf Coast Tick larva, nymph, adult male, adult female

University of Rhode Island Tick Encounter Center tickencounter.org/tick_identification/gulf_coast_tick

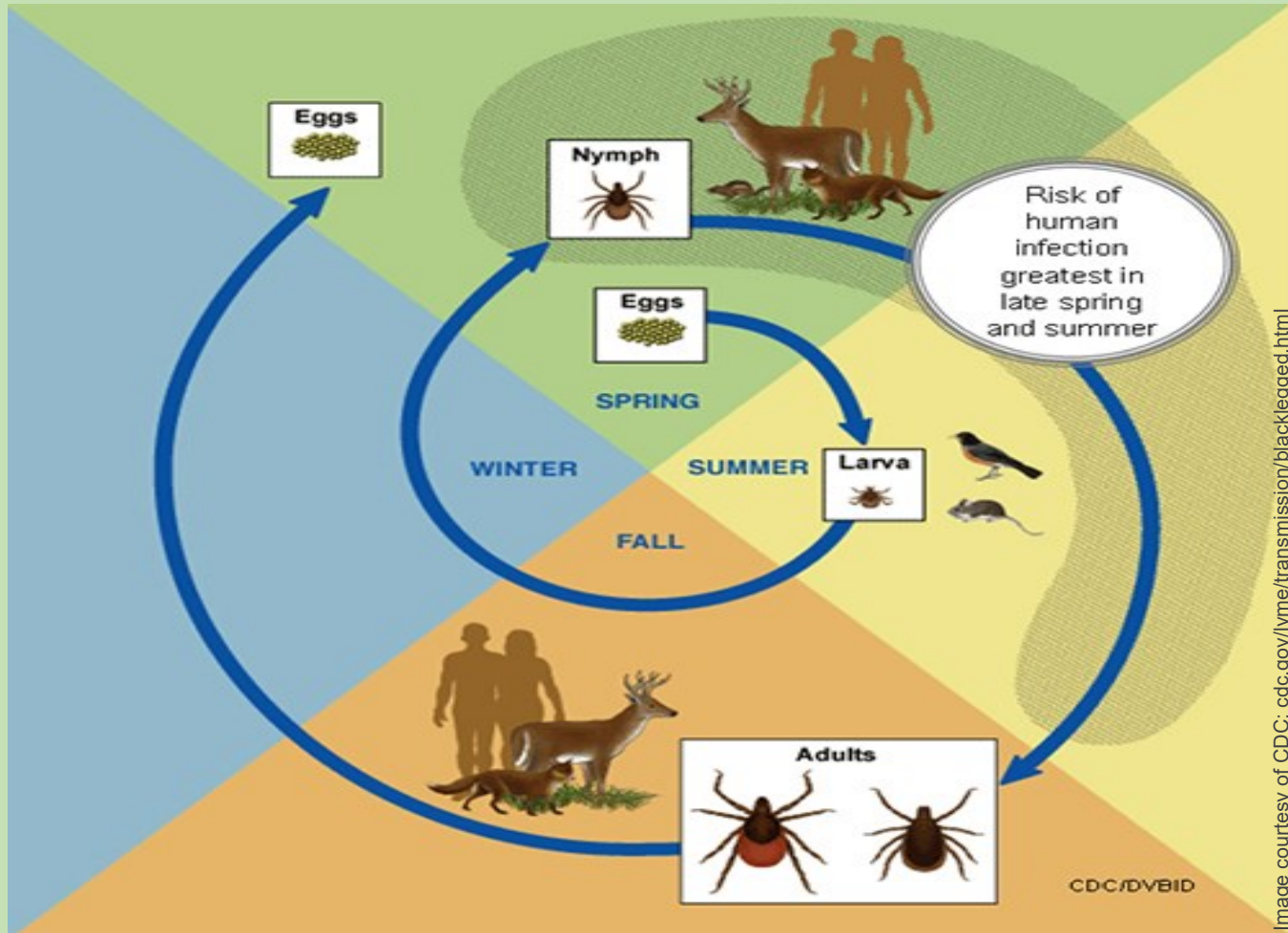
TICK LIFE CYCLE

ID of life stages



University of Georgia Extension
extension.uga.edu/publications/detail.html?number=C937&title=Protect%20Yourself%20from%20Ticks

Blacklegged Tick Life Cycle



Every life cycle stage past an egg needs a blood meal.



American Dog tick “questing.”

How Ticks Feed and Spread Disease

- Ticks transmit pathogens that cause disease through the process of feeding.
- It can take minutes or hours for a tick to attach to its host and transmit disease, and days to feed. Check frequently to prevent attachment.
- Ticks can ingest pathogens from a host and can spread those pathogens to the next host.
Not every tick carries disease so not every attachment transmits disease.

From: Centers for Disease Control and Prevention.

Ticks are most active in VA March – Sept.
May, June, July is time of most disease transmission

What to Do? **Avoid**



Vdh..virginia.gov

- Keep grass and underbrush cut and thinned in your yard.
- Walk in center of trail or walkway; don't brush against weeds, shrubs, dense vegetation, or tall grass where ticks wait to crawl onto animals or people.
- Wear light colored clothing (better to see ticks).
- Tuck pants into socks so ticks stay on the outside of pants.
- Check kids and pets for ticks every 4 hours—and yourself, too!
- **Put clothes in hot dryer to kill any ticks.**

What to Do? **Repel**

Wear repellent that contain:

- **DEET** 25-30% or **Picaridin** 20% (effective vs. many ticks)
- Repellent w/**Nootkatone** ingredient (kills ticks but still hard to find)



Wear clothes, boots, and shoes **treated with permethrin** (follow all label precautions) or purchase pre-treated clothes (**most effective vs. all ticks**)

Ask your veterinarian for tick controls for your pets



DEET Advice

Reports of DEET toxicity are rare but....

- apply sparingly to exposed skin or clothing
- Use concentrations of 30% or less
- should not use on infants
- Do not apply on palms of hands or near eyes, mouth, cuts and wounds
- Wash off immediately after returning indoors

Permanone™ (Permethrin)

- For Clothes and shoes ONLY – **Do NOT use on skin**
- Kills rather than repels
- Sprayed clothes should dry two hours before wearing
- Lasts about 2 weeks, including through laundering
- Poorly absorbed, rapidly inactivated



Image: repel.com/products/personal-repellents/clothing-gear/clothing-gear.aspx

Read Instructions!



Image: sawyer.com/products/permethrin-insect-repellent-treatment/

Landscape Treatment for Ticks

Pesticide sprays have limited effectiveness vs. ticks and are non-selective

Remove or isolate brush, provide air circulation to reduce humidity (which ticks prefer), keep lawns mowed, clean up leaves from lawn areas

Install mulch or gravel barrier between lawns & woody/vegetated areas, and near patios & play equipment

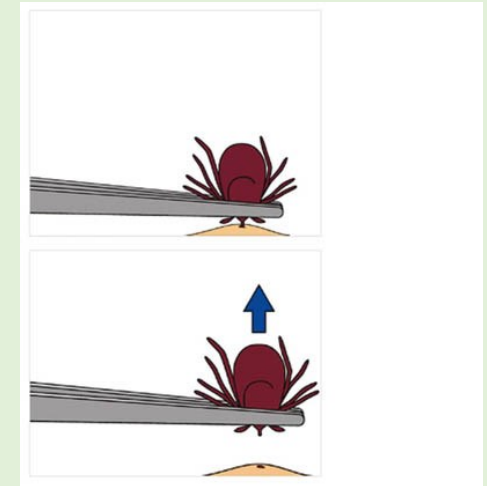
Maybe exclude wild animal (e.g., deer fences), BUT smaller mammals carry ticks, too.



Image: patch.com/wisconsin/whitefishbay/school-district-will-talk-about-adopting-uniform-pest9c3669b025

Got Ticks?

- First, search head-to-toe at least daily when in vegetated areas; ask someone else to search scalp and back.
- Tick found: With tweezers, grasp the tick mouth parts close to the skin and gently pull in a steady upward motion.
- Try not to touch tick with bare hands.
- Don't crush the tick or use alcohol or fire on the tick.
- Best to remove tick within 24 hours.



Center for Disease Control and Prevention:
www.cdc.gov/ticks/removing_a_tick.html



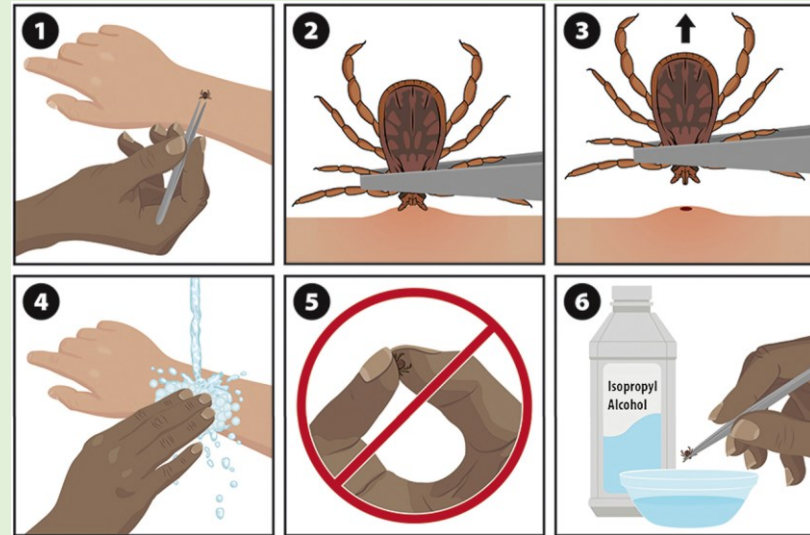
University of Maine Cooperative Extension:
extension.umaine.edu/ticks/removal/

Then What?

(1) After removing the tick, **thoroughly clean the bite area/your hands** with rubbing alcohol, an iodine scrub, or soap and water.

(2) **To kill:** submerge live tick in alcohol and place in sealed bag or container, wrap it tightly in tape, or flush down toilet. **Don't crush it with your fingers.**

(3) **To ID:** Use a Tick ID app or take to VCE/Health office (addresses on last slide). Place tick in ziplock bag with rubbing alcohol to cover, and provide: (1) contact info, (2) date/location where tick attached, and (3) approx. length of attachment.



<https://wwwnc.cdc.gov/travel/yellowbook/2024/environmental-hazards-risks/mosquitoes-ticks-and-other-arthropods>

Pets can get tick-borne diseases, too



- Check your pet for ticks after it has been outside.
- There are collars, sprays, powders, etc. to stop ticks from biting your pet.
- **Always** ask your veterinarian how to protect your pet from tick bites.
- Ticks can live on a pet's (and human's) bedding indoors. Look for ticks and when cleaning bedding, put in hot dryer for at least 20 minutes to kill them.

Image: TLC Pet Food

tlcpetfood.com/the-tlc-scoop/tick-talk-protecting-your-dog-from-ticks/

Resources to Identify a Tick

In Virginia:

- **Virginia Department of Health: “Ticks and Tick-borne Diseases of Virginia”**

<https://www.vdh.virginia.gov/content/uploads/sites/12/2019/08/Tick-borne-Disease-in-Virginia-Flyer-8.5-x-11-format-for-website-.pdf> Has good 4-pager with basic tick ID/disease info.

- **Types of Ticks In Virginia**

<https://www.ticksinvirginia.com/education/types-of-ticks-in-virginia>

Nationally:

- **TickSafety.com**

<https://ticksafety.com/tick-identification/how-to-id-a-tick/>

- **TickCheck.com**

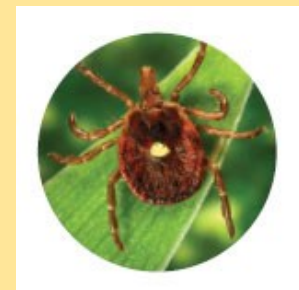
<https://www.tickcheck.com/info/tick-identification#TickSpecies>

Why Specific Tick ID is Valuable

- **If you develop a rash or fever or other unusual symptoms** within several weeks of removing a tick, tell the doctor when and where you most likely were bitten.

This is why knowing the particular tick may be most beneficial.

- Date/location where tick attached, and approx. length of attachment may be critical to diagnosis.
- Even if you're not sure about a tick bite, tell your doctor if you may have been in area where ticks may be.
- It may be necessary to be re-tested a few times to get a positive result for tick-borne disease.



Lone Star Tick
Center for Diseases and Prevention
cdc.gov/ticks/tickbornediseases/tickID.html

Chart of Tick Species and Tick-borne Diseases

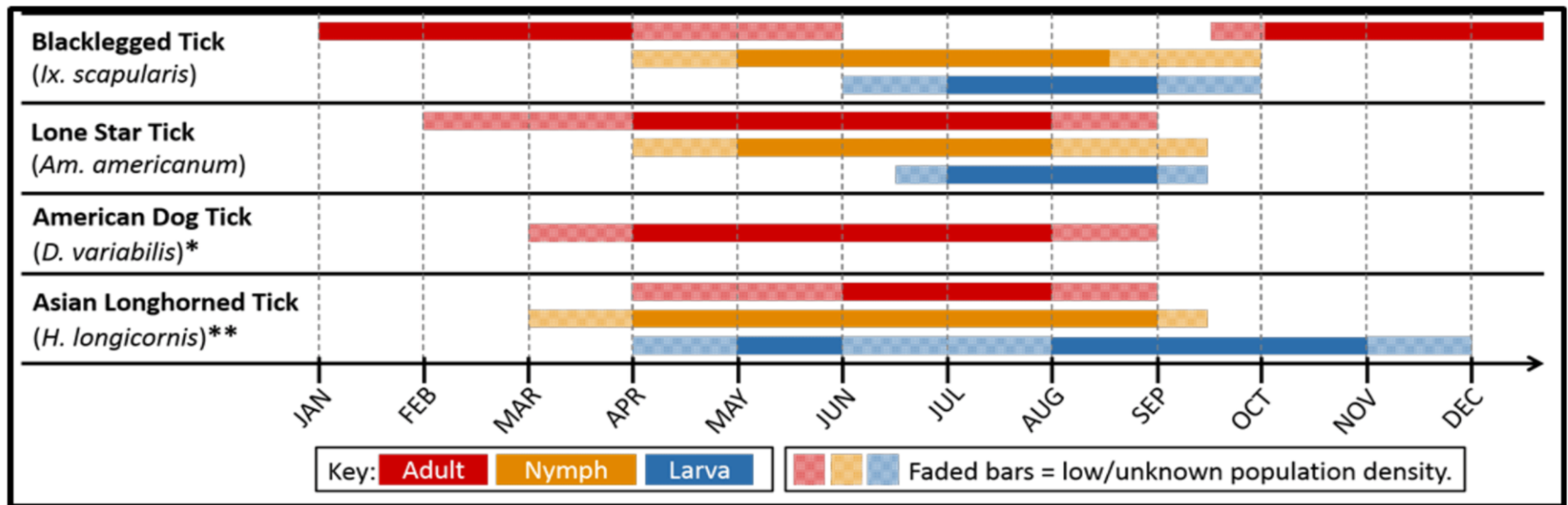
Illness or Condition	Vector Tick Species	Tick Stage(s) Transmitting Disease	Minimum Feeding Time for Disease Transmission
Acquired Red Meat Allergy	Lone Star Tick	Larva, Nymph, Adult	Unknown
Anaplasmosis	Blacklegged Tick	Nymph, Adult	24 Hours
Babesiosis	Blacklegged Tick	Nymph, Adult	36 hours
<i>Borrelia miyamotoi</i> Disease	Blacklegged Tick	Larva, Nymph, Adult	24 Hours
Ehrlichiosis	Lone Star Tick	Nymph, Adult	24 Hours
Heartland Virus	Lone Star Tick	Nymph, Adult	Unknown
Lyme Disease	Blacklegged Tick	Nymph, Adult	36 Hours
Powassan Virus	Blacklegged Tick	Nymph, Adult	15 minutes
<i>Rickettsia parkeri</i> Disease	Gulf Coast Tick	Adult	Unknown
	Lone Star Tick	Larva, Nymph, Adult	
Rocky Mountain Spotted Fever	American Dog Tick	Adult	2-20 hours
	Brown Dog Tick	Nymph, Adult	
	Lone Star Tick	Larva, Nymph, Adult	
Southern Tick Associated Rash Illness (STARI)	Lone Star Tick	Nymph, Adult, ?	Unknown
Tularemia	American Dog Tick	Adult	Unknown
	Lone Star Tick	Nymph, Adult	

From VA Dept. of Health website: “Ticks and Tick-borne Diseases of Virginia”

<https://www.vdh.virginia.gov/content/uploads/sites/12/2019/08/Tick-borne-Disease-in-Virginia-Flyer-8.5-x-11-format-for-website-.pdf>



Times of Year When Tick Stages in Virginia are Active



***Only the adult life stage of the American Dog Tick is known to bite humans.**

****Seasonality data across all life stages for the Asian Longhorned Tick is currently incomplete.**

From VA Dept. of Health website: “Ticks and Tick-borne Diseases of Virginia” <https://www.vdh.virginia.gov/content/uploads/sites/12/2019/08/Tick-borne-Disease-in-Virginia-Flyer-8.5-x-11-format-for-website-.pdf>

SUMMARY: How to Prevent Tick Bites

People

- Avoid contact with grasses, leaves, & shrubs where ticks wait
- Use repellent; wear appropriate clothing
- Check for and remove ticks; use hot dryer for clothes

Pets

- Use appropriate repellent (talk to veterinarian)
- Check pets thoroughly after being outside
- Check bedding (put in hot dryer if necessary)

Yard

- Remove or isolate brush, clean up leaf litter
- Install mulch or hardscape barrier between wooded areas and lawns, patios, or play areas
- Discourage wildlife that may carry ticks

Resource Info for Ticks/Mosquitoes

- **Northern Virginia Bird Alliance:** *“To Spray, or Not to Spray”*
<https://www.nvbirdalliance.org/news/to-spray-or-not-to-spray>
- **Virginia Department of Health (VDH):** *“Bugs’ & Human Health”*
<https://www.vdh.virginia.gov/environmental-epidemiology/bugs-human-health/>
“Ticks and Tick-borne Diseases of Virginia”
<https://www.vdh.virginia.gov/content/uploads/sites/12/2019/08/Tick-borne-Disease-in-Virginia-Flyer-8.5-x-11-format-for-website-.pdf> Good 4-pager with basic tick ID/disease info.
- **Virginia Cooperative Extension (VCE):**
“Mosquitoes and Their Control”
https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/ENTO/ENTO-202/ENTO-470.pdf
“Tick-borne Diseases in Virginia”
https://ext.vt.edu/content/dam/pubs_ext_vt_edu/ENTO/ento-504/ENTO-504.pdf
- **Virginia Department of Agriculture and Consumer Services (VDACS):** *(To report pesticide misuse)*
<https://www.vdacs.virginia.gov/pesticides.shtml>

For ID help in Arl/Alex--VCE Horticultural Help Desk:

Fairlington Community Center, 3308 S. Stafford St., Arlington VA 22206
Hours: 9am to Noon Weekdays; 703-228-6414; mgarlalex@gmail.com;

You may bring in a DEAD insect, preserved in alcohol for ID. But CALL FIRST to ensure someone is present to identify it (703-228-6414) and bring it the same day as capture, if possible. Do not subject sample to extreme temperatures.
NOTE: Both the VCE and VA Tech's Insect ID labs can ONLY identify a tick and its development or life cycle stage. Neither can assess or test for pathogens.

ID help in Fairfax County--Div. of Environmental Health:

First, remove the attached tick, and then click on:

<https://www.fairfaxcounty.gov/health/fightthebite/tick-identification>. There you may choose to: submit a photo of the tick online, or follow instructions to either bring it in or mail it to the Fairfax County Health Dept. Admin Office in Fairfax, VA.

For additional information on tick testing and labs that test for pathogens, here is a [Yahoo search](#) to get you started.

For a copy of this PPT and more mosquito/tick info:
See: [armn.org/Learn About/Mosquitoes & Ticks](http://armn.org/LearnAbout/Mosquitoes&Ticks)