

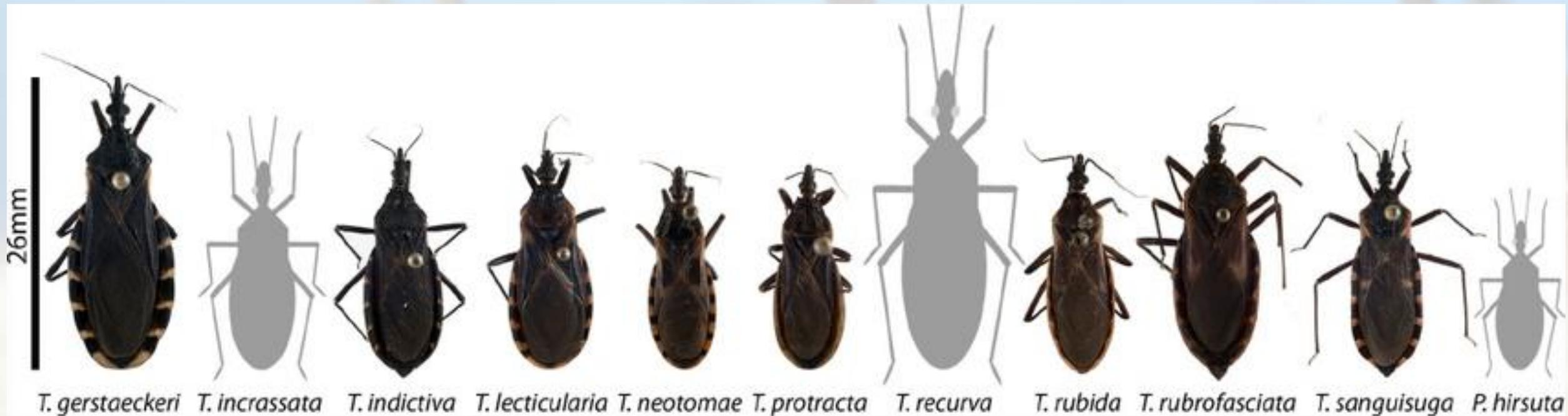


Vector Prevention and Control

Zoonosis Control Branch

Chagas disease

- Vector – Triatomine bugs (also known as Reduviid, kissing, conenose and assassin bugs)
 - 11 different species have been detected in the southern United States



Vector distribution



Triatomine Behavior

- Triatomine vectors maintain a sylvatic life-cycle between multiple mammalian wildlife and domestic hosts -
 - Various rodents, opossums, raccoons and armadillos
 - Domestic dogs and cats
- Occurrence of the vector coincides with wildlife blood meal sources



Triatomine Behavior

- Active season – mid-spring to mid-fall
- Behavior is nocturnal – will hide in dark places during daytime
- Feeding commonly occurs within the home not outside -
 - Individuals often enter the home on fire wood or breaks in the home structure
 - Infestations can occur - once enough individuals enter and become established
- Bite avoidance - bug exclusion practices



Triatomine Exclusion - outdoors

- Bug-proof as well as rodent / bird-proof your home
 - Rodents / birds and their nests are sources and attractants
- Check for structural problems – seal all entryways
 - Foundation cracks, gaps in window frames, breaks in window screens, insect proof all dog and cat entrances, shut fireplace flues, and use weather stripping, silicone sealants or screening to block areas of ingress on windows, doors and spaces entering the house, including those in attics and crawl spaces
- Check pet houses / kennels for presence of bugs and pets for evidence of bites
 - Have pets sleep indoors



Triatomine Exclusion - outdoors

- Remove all external harborage, clutter and debris
 - Remove piles of lumber and firewood away from the house, remove and maintain vegetation within close proximity, and move or break down rock, wood, bark or brush piles
- Look for rodent or other wildlife nests or burrows on property
 - After trapping and removing the inhabitants, destroy the nests and burrows while simultaneously treating with pesticides
 - Note – consult a licensed pest control operator when using pesticides.
 - Roach / bait formulations are ineffective



Triatomine Exclusion - outdoors

- Other areas of harborage –
 - Underneath porches
 - Between rocks, or under and in cracks in cement
 - Chicken coops or houses
 - Remove prickly pear and cholla cacti near the home – deters pack rats, armadillos and opossums
- Minimize outdoor / indoor lighting near windows and doorways
 - Replace outside lighting with yellow lights which are less attractive



Triatomine Exclusion - indoors

- Remove clutter in the attic, garage, barns and sheds
- Thoroughly inspect inside the home –
 - Bedroom – bedsheets, blankets, under mattresses, in cracks and crevices, under objects / furniture
 - Pet sleeping or housing area
 - Minimize access to the bed by moving bed frames and bedding away from walls and furniture
- Draw curtains in lighted rooms during spring and summer
 - When adult triatomine dispersal flights occur



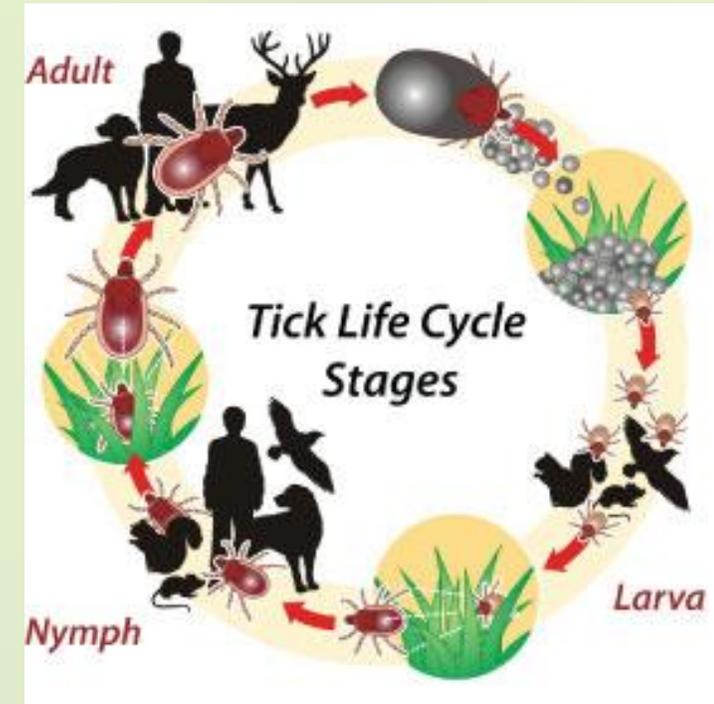
Tick-borne Diseases

- Vectors in Texas include –
 - *Ixodes scapularis*
 - *Dermacentor* spp.
 - *Rhipicephalus sanguineus* (Dog tick)
 - *Amblyomma* spp.



Tick-borne Diseases

- Tick life-cycle – Three stages
 - Larvae
 - Nymph
 - Adult
- Nymphs are the most risk for transmitting disease
 - Least host specific and difficult to see once attached
- Adults will also commonly bite humans
- In Texas all three life stages of varying species can be active year-round



Tick Behavior

- Ticks will quest on vegetation in search of a blood meal
- Tick habitat – natural areas with grasses, shrubs, logs, leaves
 - Quest on herbage along trails, fallen logs and even wooded benches
 - Also can be found in and on picnic and recreation areas
- Around the home –
 - Keep grass levels short
 - Minimize excess vegetation and herbage
 - Exclude, discourage or remove wildlife
 - Wildlife are a food source for ticks
 - Gravid females can drop from wildlife and lay eggs



Tick Bite Prevention

- Before going into tick habitat
 - Wearing long-sleeve light colored tops and pants can assist in seeing ticks if they attach
 - Apply repellent (at least 20-30% DEET or picaridin) on skin and clothing
 - Treat clothing, socks and shoes / boots with permethrin-based repellent
 - Permethrin will kill ticks that attach
 - Take a pair of tweezers or another removal tool with you



Tick Bite Prevention

- While in tick habitat
 - Stick to the trail and stay in the middle
 - Avoid brushing up against grasses and shrubs along the side of the path
 - Check yourself carefully and often
 - If you find any ticks on you, remove them immediately
 - Check yourself after sitting on wooded benches, logs and picnic tables
 - Have someone else check you areas you
Are unable to see



Tick Bite Prevention

- After leaving tick habitat
 - Shower as soon as possible
 - Put your clothes in the dryer on high heat for an hour
 - Washing clothes alone may not kill attached ticks
 - Check for ticks on your body and bedding for 3 days
 - Remember larvae are as small as a seed and ticks can attach anywhere on your body
 - Check your armpits, hairline, behind ears and knees, belly-button and groin
 - Have someone else check the areas you cannot easily see
- Check children and pets thoroughly
- Always use tick control medicine for your pets year-round



Tick Removal

- How to remove a tick –
 - If you find a tick on you – remove it as soon as possible
 - Remove it manually with tweezers –
 - Clean the area around the tick
 - Grasp the tick's mouthparts with the tweezers
 - Gently pull the tick away from the skin
 - Remove any mouthparts as you would a splinter
 - Clean the wound with antiseptic and wash your hands
 - Keep the tick for identification if you are concerned
 - Testing the tick for infectious agents is not accurate
 - A Positive tick does not indicate disease transmission



Tick-borne Illness

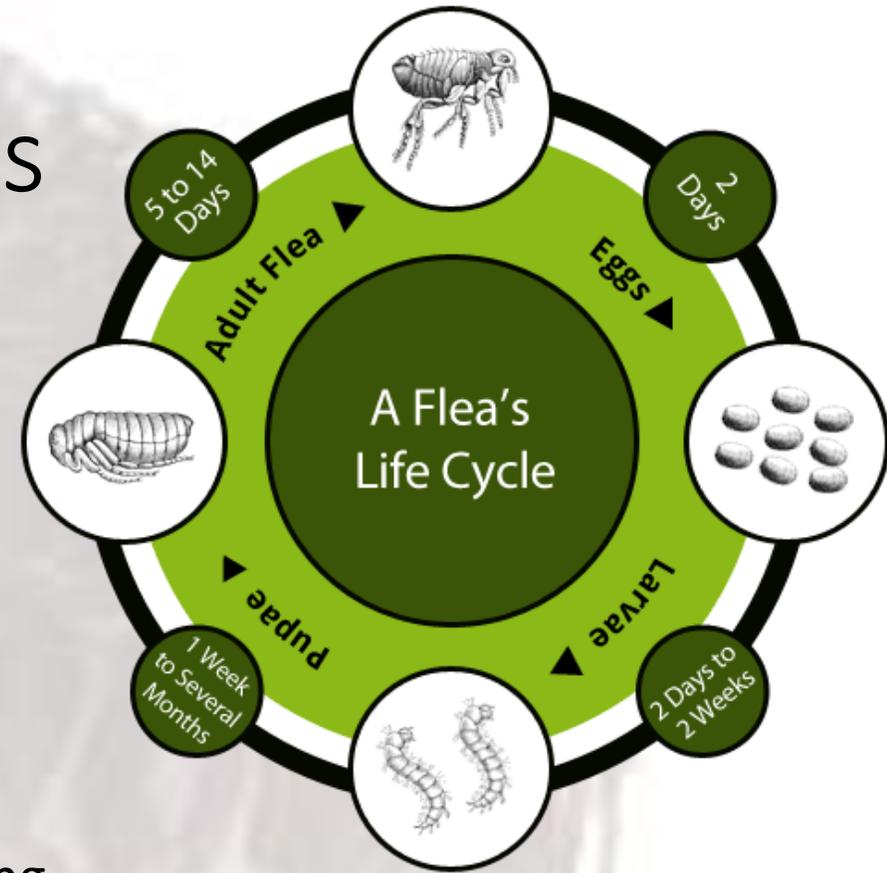
- When to see your PCP –
 - If the tick bite becomes infected
 - Reactions to saliva include painful red swelling and can last for a few days
 - These reactions are not indicative of disease transmission
 - Symptoms develop within 30 days after a tick bite
 - Fever
 - Headaches
 - Body or muscle aches
 - Joint pain
 - Fatigue
 - Rash
 - Stiff neck
 - Facial paralysis



Flea-borne Illness

- Flea life-cycle –

- Eggs are laid in leaf litter, under porches, in dark areas
- Hatch when they detect a host or are disturbed
- Larvae feed on detritus until molt into adults
- Adults attracted to host CO₂
 - Repeated biters
 - Often bite humans around the ankles or if in bedding
 - Attach to and live in the hair of pets
- Disease transmission –
 - Fleas become infected when they feed on wildlife
 - Transmit to humans and pets when they repeatedly feed



Flea Prevention

- Animals that carry fleas of concern
 - Rodents, opossums, raccoons, skunks, small mammals and stray cats or dogs
 - Fleas – rat (*Xenopsylla cheopis*) and cat fleas (*Ctenodaphalides felis*) most commonly associated with disease transmission
- Minimize, discourage or remove wildlife around the home
- Do not feed pets outside or leave food / water outside
- Keep pets indoors overnight



Flea Prevention

- Trim and remove excess vegetation around buildings, the home, garage and throughout the yard
 - To prevent wildlife from entering the yard and accessing home
- Tightly cover garbage containers
- Eliminate food sources for wildlife –
 - Trash cans, fallen fruit, pet food, water dishes, bird feeders
- Remove places where wildlife can find shelter
 - Clear yard of undergrowth or accumulated debris
 - Examine buildings for areas of ingress
 - Repair entry-points or use exclusion methods (mesh)



Flea Prevention

- Treat pets with flea / tick prevention medicine
- If a pet get fleas –
 - Wash them thoroughly with flea treatment
 - Repeat several times until fleas are gone
 - Wash all pet linen and bedding
 - Dispose of soiled pet bedding
 - Heavy flea infestations can lead to eggs being lain in the home
- Home infestation
 - Consult a pest control technician about flea control



Flea-borne Illness

- If you get bitten by fleas
 - Avoid scratching the bite area
 - Transmission of illness occurs when flea feces are scratched into the wound
 - Do not rub eyes, nose or mouth
 - Mucous membranes are also an entry point for bacteria
 - Dried feces can also be inhaled



Flea-borne illness

- If you get bitten –
 - Most flea-borne illnesses are mild and go undetected
 - Symptoms can occur 6-14 days after flea bite
 - Fever
 - Headache
 - Chills
 - Muscle ache
 - Rash
 - Seek treatment as soon as possible if symptoms develop
 - Most reported cases require hospitalization

