

TEXAS A&M AGRILIFE EXTENSION

External Parasite Control in Livestock

→ **Sonja L. Swiger, PhD**

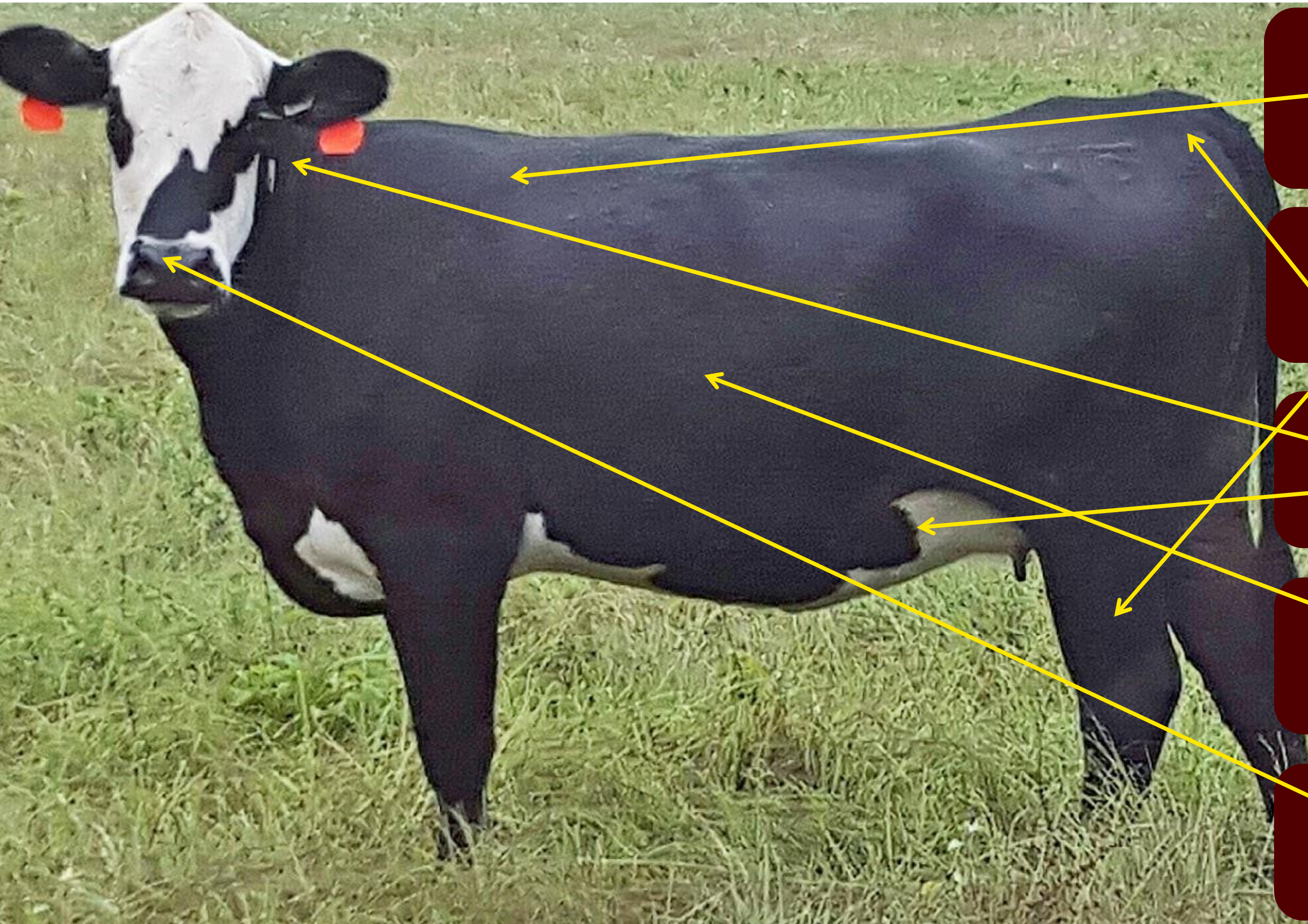
Professor

Livestock/Veterinary/Medical Extension Entomologist

Stephenville, TX



Sites Attacked by Flies



Horn Flies

Stable Flies

Ticks

Mosquitoes

House Flies

Horn Flies





Impact of Horn Flies

\$1.75 Billion

Economic Impact on Beef Cattle Industry

(Kunz et al. 1991)

Horn fly impact



- #1 ectoparasite pest affecting beef cattle
- Populations peak in Late summer, early fall in Texas
- Both sexes feed multiple times daily
- Painful Bites
- Feed 30-40 times / day

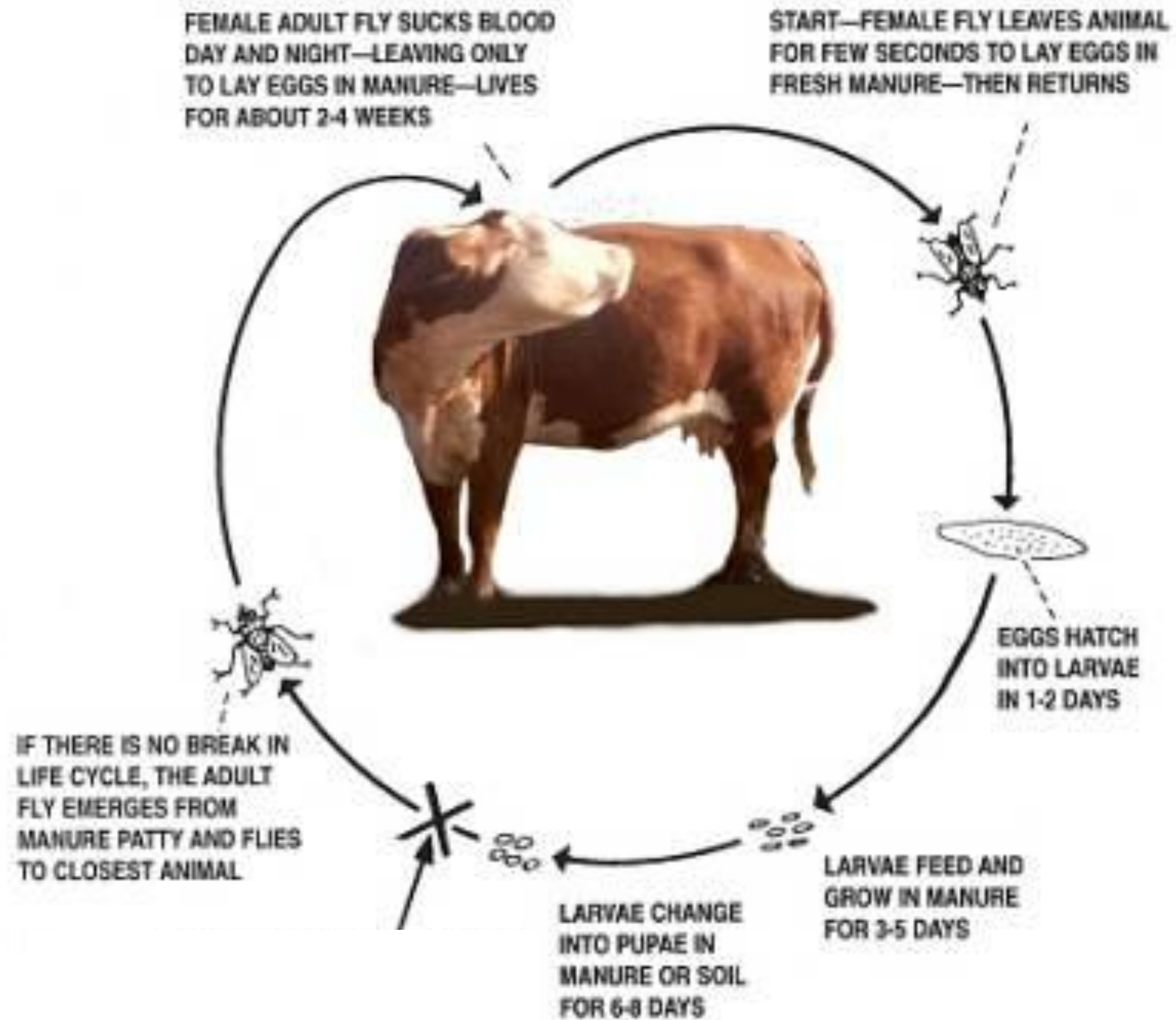


**Economic Threshold =
200-250 flies/cow –
leads to 15% to 50%
less weight gain**

Geographically debatable

Horn Fly Life Cycle

- Adults live up to 3 weeks



- Eggs laid in fresh cow manure

- Develop within 10-20 days from egg to adult

Control Measures



Biological →

Using what nature provides

Cultural/Mechanical →

Labor intensive

Chemical →

Use of insecticides

TEXAS A&M AGRILIFE

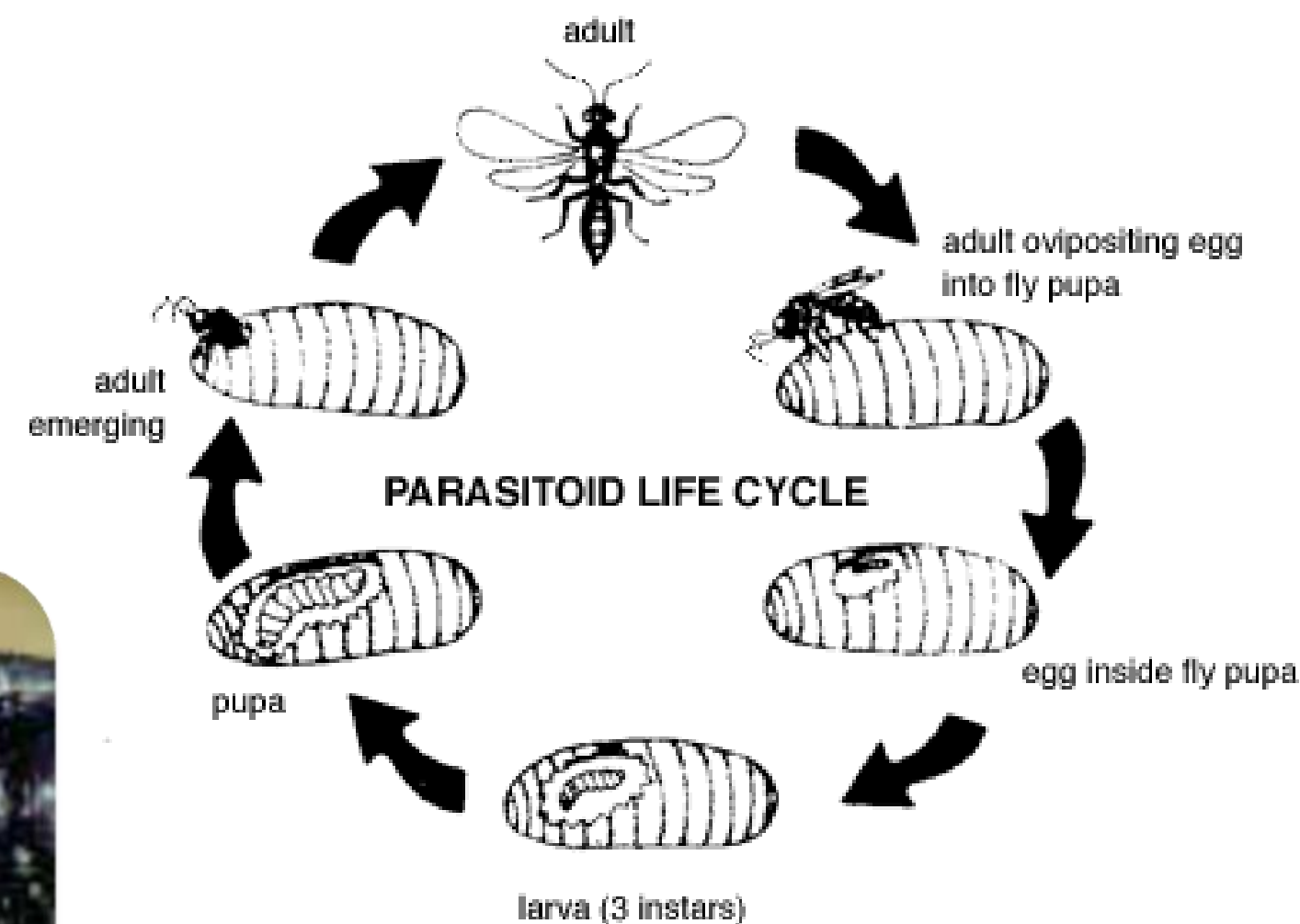
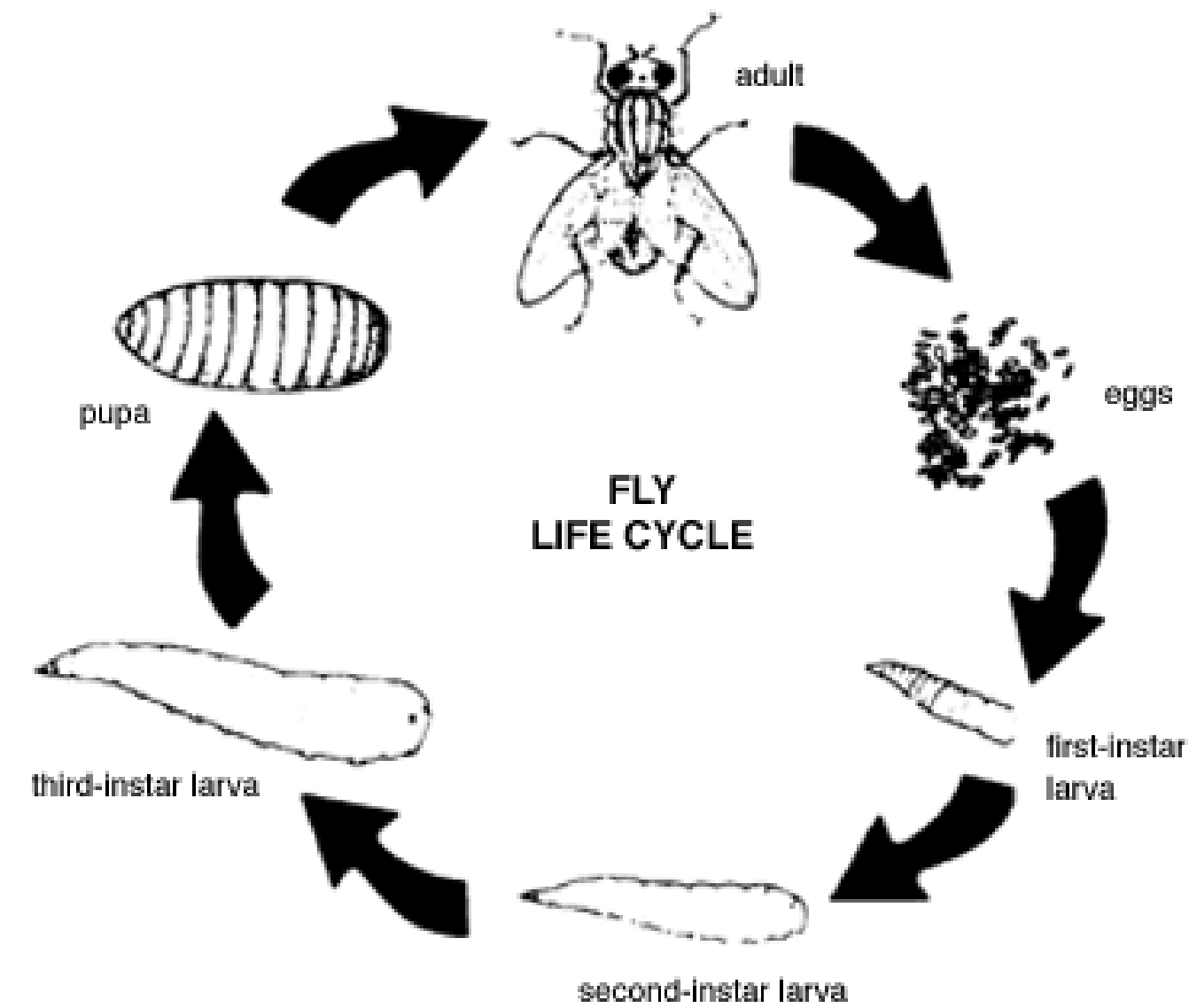
Biological



Biological Control

Using what nature has provided to suppress pests





Parasitoids

- Kill their hosts
- Adults free-living; immatures parasitic
- Do not sting humans
- Many native to Texas; available commercially
- Effective on horn, house and stable flies



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Cultural/Mechanical





Pasture Rotation – periodically; break up manure



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Chemical





Feed Thrus

- Insecticide within the feed
- Passes through digestive sys. to manure
- Prevents larval pupation
- Works best on horn and house flies but some stable flies

- Products
 - Rabon® Oral larvicide – OP tetrachlorvinphos
 - Altosid® IGR – Methoprene
 - ClariFly® Larvicide - diflubenzuron
 - JustiFLY Feedthrough - diflubenzuron



Manure sprays

- Wettable powders/granules
- Mix in a tank and spray directly onto larval habitats
- Products
 - Neporex (cyromazine)
 - Exhalt WDG (novaluron)





Pour-Ons

- Apply to backline
- Skin absorption
- Circulates through system
- Topical interaction as well
- Work against all flies

-
- ☞ Cydectin
 - ☞ Eprinex
 - ☞ Ivermax
 - ☞ Noromectin
 - ☞ Dectomax
 - ☞ Ivomec

Pyrethroids

- Boss (permethrin)
- Brute (permethrin)
- CyLence Pour On (cyfluthrin)
- Durasect (permethrin)
- Permethrin CDS (permethrin)
- Permethrin 1% (permethrin)
- ProZap Backrubber and Pour On (permethrin)
- ProZap Insectrin CS (permethrin)
- Saber (lambda-cyhalothrin)
- StandGuard (gamma-cyhalothrin)
- Synergized Delice (permethrin)
- Ultra Boss (permethrin)
- Ultra Saber (lambda-cyhalothrin)

Combo Products

- Inhibidor (diflubenzuron & permethrin)
- Clean Up II (diflubenzuron & permethrin)



Back Rubs & Dust Bags

- Cattle self application
- Applied to back and face
- Very convenient – all flies
- Best near drinkers (daily use)

Organophosphates

- Co-Ral Fly and tick Spray (coumaphos)
- Prolate/Lintox-HD (phosmet)
- Ravap (tetrachlorvinphos & dichlorvos)

Pyrethroids

- Atroban 11% EC (permethrin)
- Brute (permethrin)
- GardStar 40% EC (permethrin)
- Permethrin II (permethrin)
- Permethrin 1% (permethrin)
- Permethrin CDS (permethrin)
- ProZap Backrubber and Pour On (permethrin)
- ProZap Insectrin CS (permethrin)
- Pyranha Stock Guard Fly Spray (permethrin)
- Synergized Delice (permethrin)
- Ultra Boss (permethrin)

Sprays

- Apply during seasonal round-ups
- Treat with truck bed sprayers
- Many are not long lasting
- All flies

Organophosphates

- Co-Ral Fly and tick Spray (coumaphos)
- Prolate/Lintox-HD (phosmet)
- Rabon 50 WP (tetrachlorvinphos)
- Ravap EC (tetrachlorvinphos & dichlorvos)

Pyrethroids

Atroban 11% EC (permethrin)

- Brute (permethrin)
- Country Vet Instant Knock Down CV-80D Farm & Dairy (pyrethrins)
- CyLence SC Ultra (cyfluthrin)
- Fly Rid Plus (permethrin)
- GardStar 40% EC (permethrin)
- Permethrin II (permethrin)
- Permethrin 10% (permethrin)
- Permethrin CDS (permethrin)
- ProZap Insectrin CS (permethrin)
- ProZap VIP Insect Spray (pyrethrins)
- Screwworm Aerosol Multi Purpose Spray (permethrin)
- Synergized Delice (permethrin)
- Synergized 1% (permethrin)
- Tengard SFR (permethrin)

Combo product

- ClearZone Double Impact (permethrin & pyrethrin)





➤ Best Results with 2 tags / animal

Ear Tags

Organophosphates

- Corathon (coumaphos & diazinon)
- Dominator (pirimiphos)
- Optimizer (diazinon)
- Maxx40 (diazinon)
- Patriot (diazinon)
- Warrior (diazinon & chlorpyrifos)

Pyrethroids

- CyLence Ultra (beta-cyfluthrin)
- Gardstar Plus (permethrin)
- Python (zeta-cypermethrin)
- Python Magnum (zeta-cypermethrin)
- Saber Extra (lambda-cyhalothrin)

Avermectins

- XP820 (abamectin)

Combo Products

- TriZap (abamectin & zeta-cypermethrin)
- Double Barrel VP (pirimiphos & lambda-cyhalothrin)



VetGun & Aim VetCaps

- Gelatin capsules – Lambda cyhalothrin & abamectin
- Similar to a paint ball gun
- Uses replaceable CO2 cartridges
- Pour on
- 3-6 wks control (4 wk average)
- 1 cap / animal over 600 lbs

- \$250-\$300
- \$2/VetCap



Stable Flies



Impact of Stable Flies

\$2.2 Million

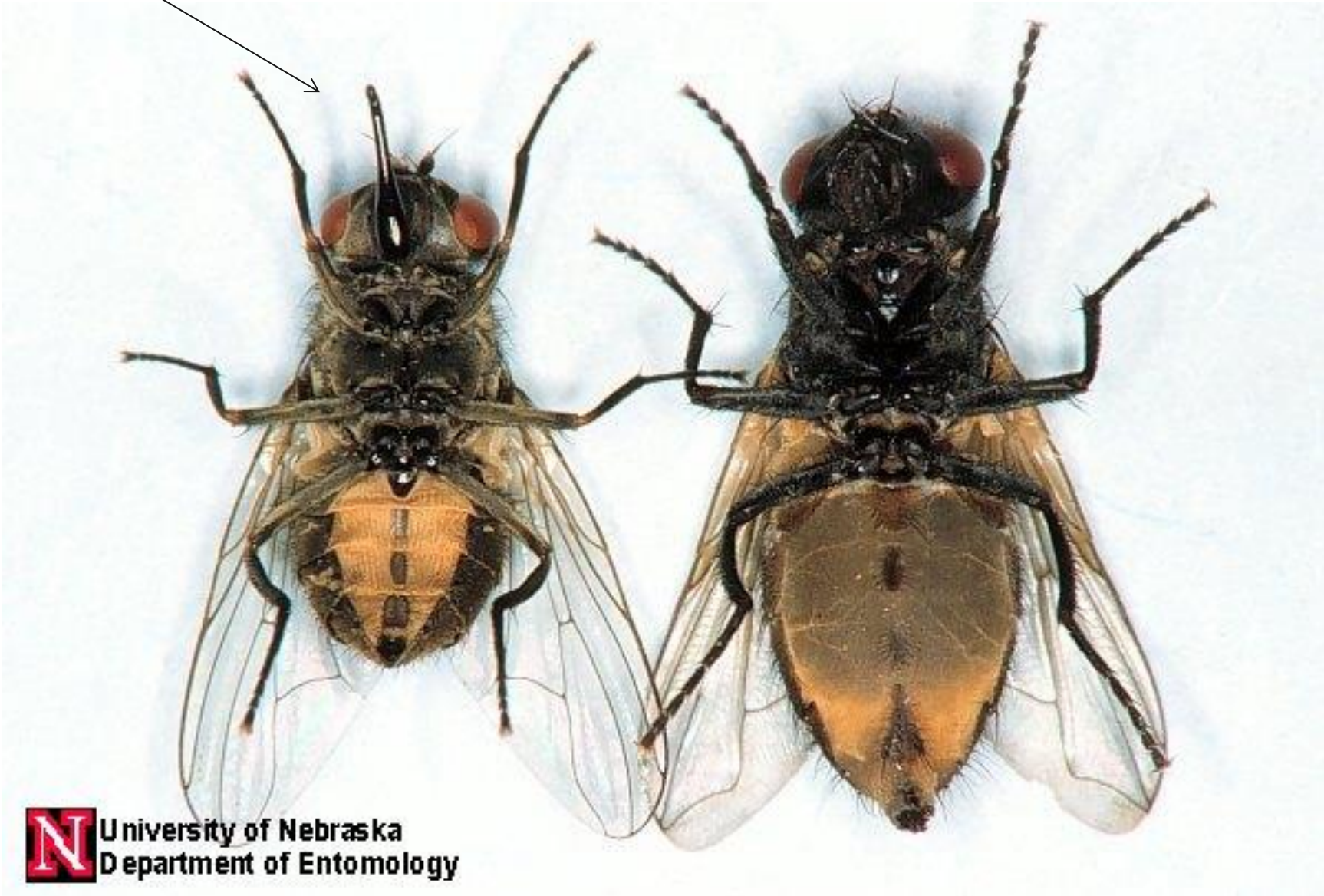
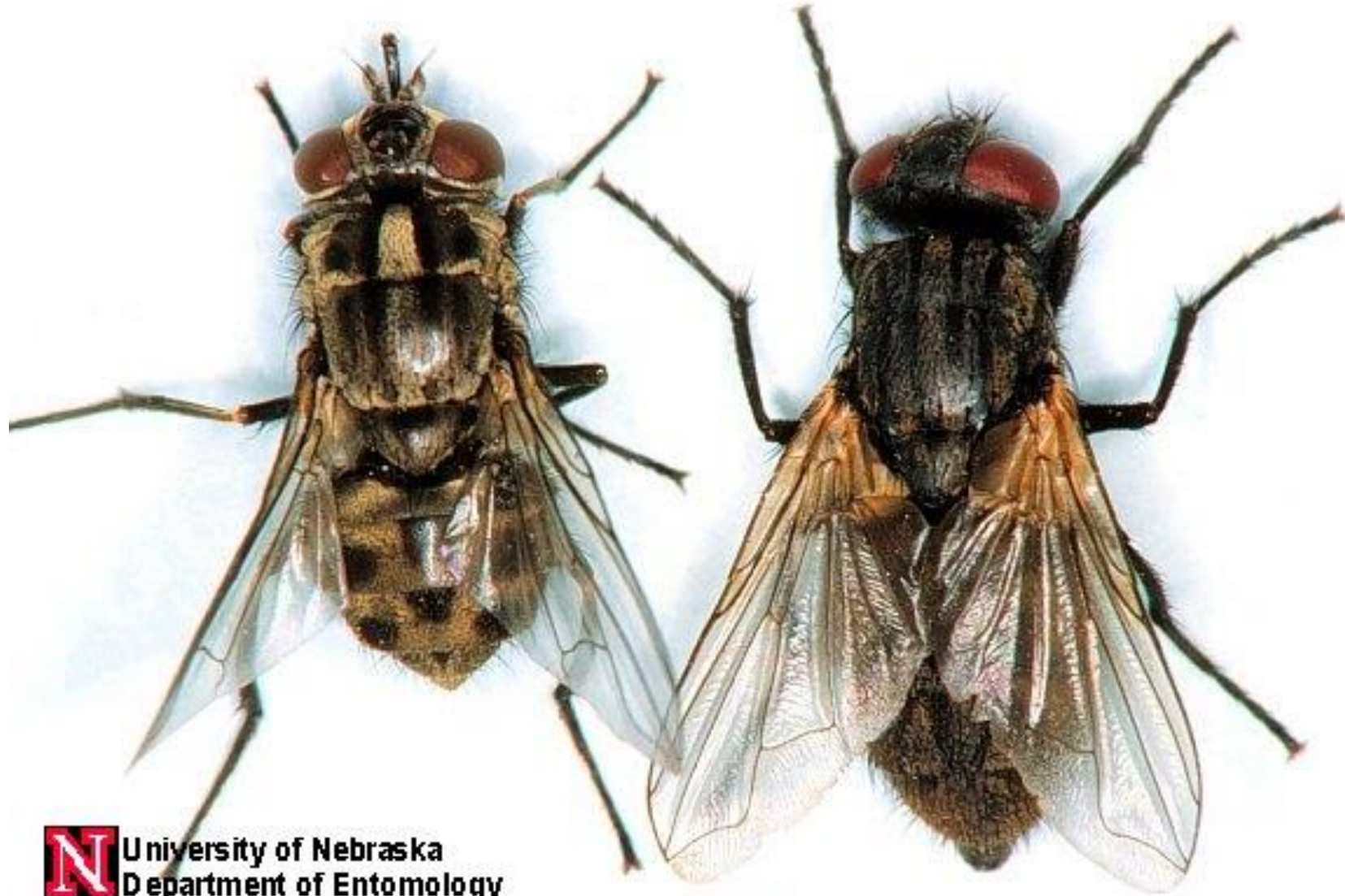
Economic Impact on Cattle Industry

(Taylor et al. 2012)



Stable Flies

- Protruding mouthparts
- Similar in appearance to house flies



Stable Flies

- Biting fly
- Attack legs primarily
- Do not reside on cow
- One blood meal / day
- Economic Threshold = 2-4/leg



Stable Flies

- In confined areas
- Now in pastures
- Breeds in hay/straw/grass mixed with manure, silage, fermenting animal feed, pet feces
- Strong fliers, may travel many miles
- Difficult to control



Non-chemical Stable Fly Control



Sanitary controls
Hay bales – ideal breeding sites

Traps



Olson Biting Fly Trap

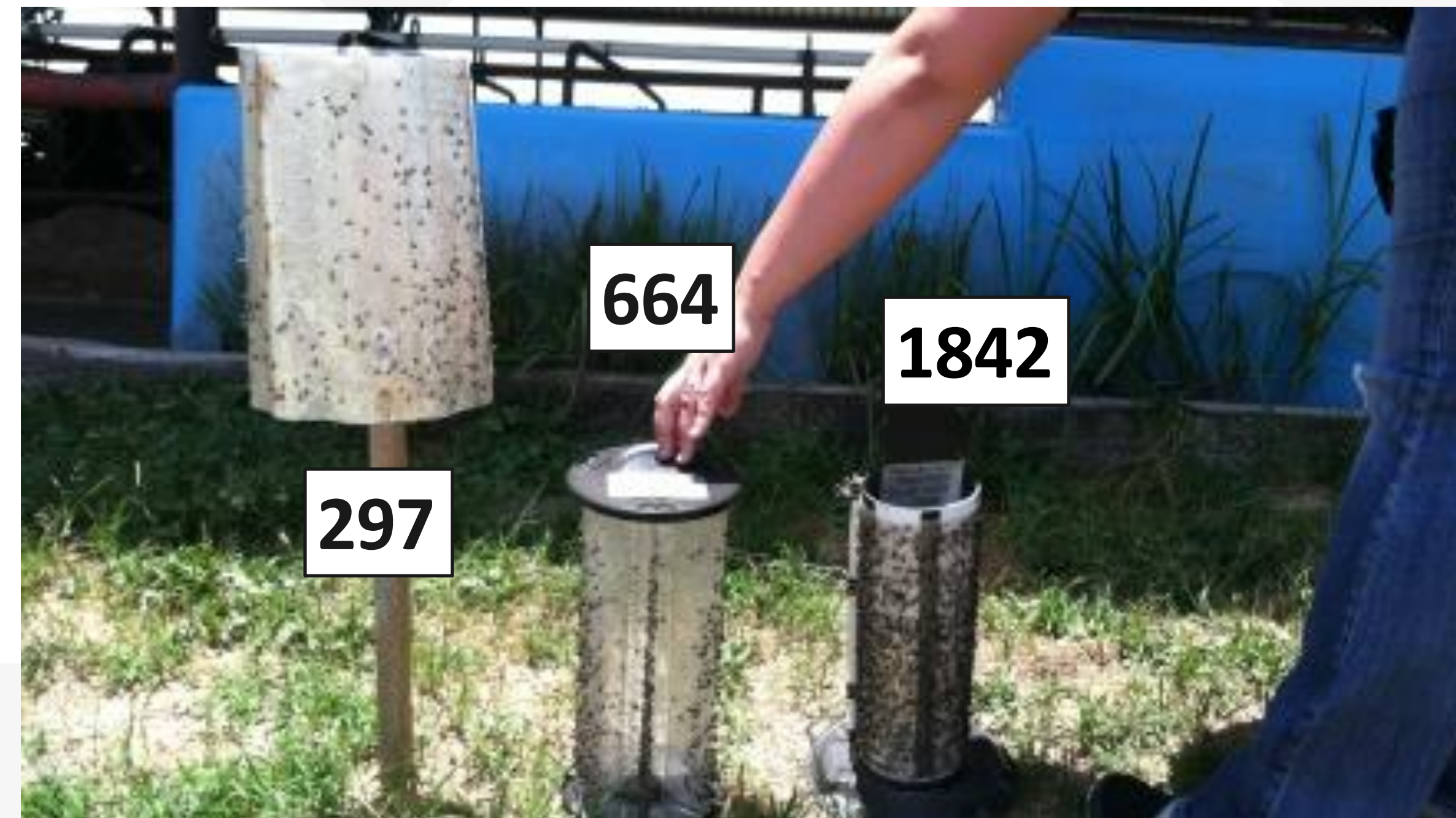


Starbar Bite Free Trap



KnightStick

- Olson Biting fly trap –
 - \$25.58 shipping on Amazon
 - Extra sleeves 10 for \$25.20 shipping
- Starbar Bite Free Stable Fly Trap –
 - \$9-10 – throwaway one time use
 - pick up locally or order online
- Bugjammer Knight Stick Biting Fly trap –
 - \$47.95 with 3 wraps and free shipping
 - \$73.95 for 2 and \$141.95 for 4.
 - Wraps are \$62.95 for 15, \$115.95 for 30.



Horse Flies





Impact of Horse Flies

\$296 Million

Economic Impact on Beef Cattle Industry

(Kunz et al. 1991)

Horse Flies & Deer Flies

- Large flies
- Blood pool feeders
- Painful bite
- Vector diseases
 - Equine Infectious Anemia Virus
 - Trypanosome species
 - Loa loa – filarial worm
 - Anthrax



\$325 + s&h

Horse Fly Control

- Sanitation, Avoidance, & Traps
- Clean natural water
- Avoid dusk and dawn outdoors
 - Bring into a barn if possible

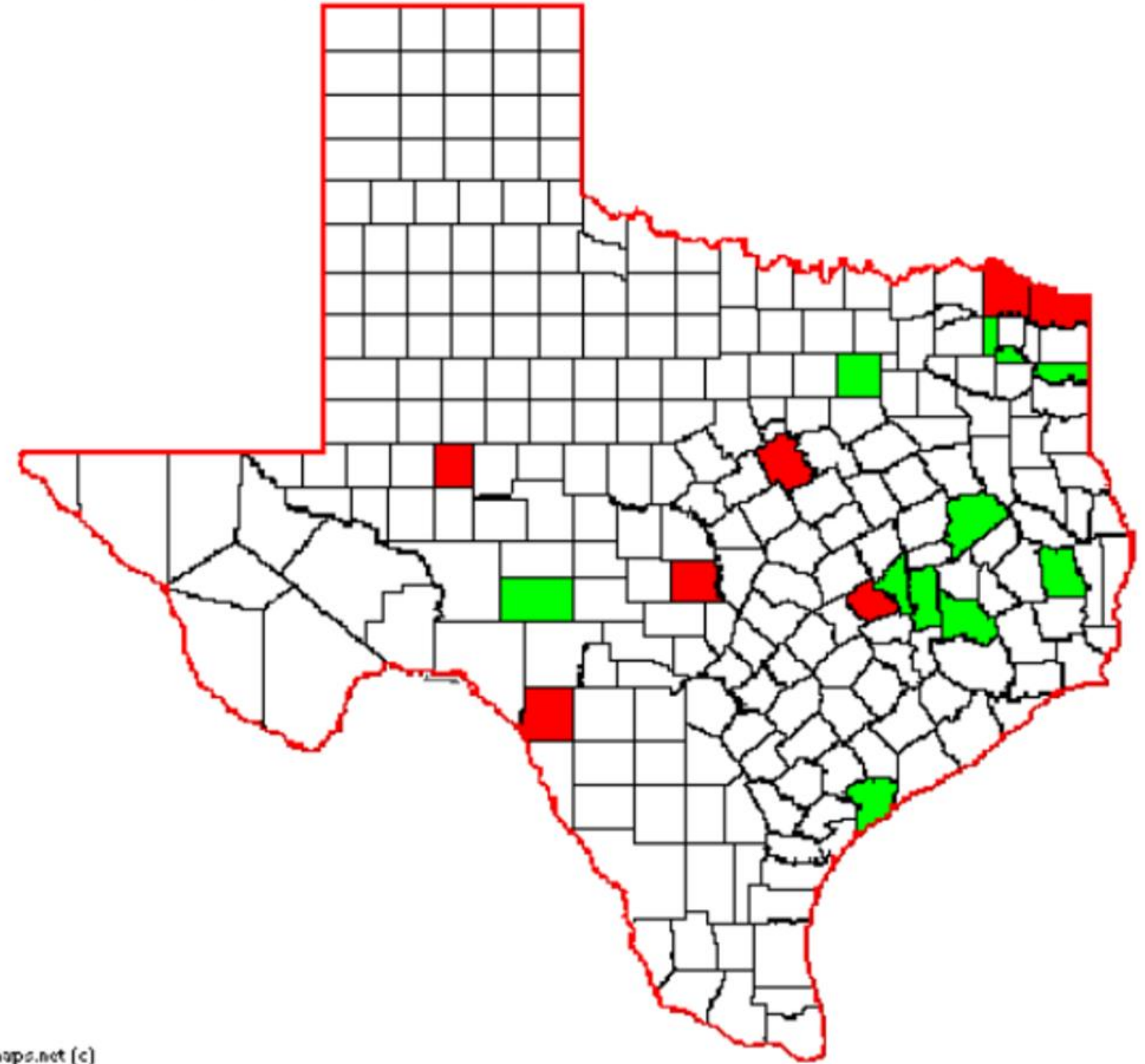
- Traps
 - Horse Pal
 - Horsefly Trap
 - H Trap



\$369.99 + s&h



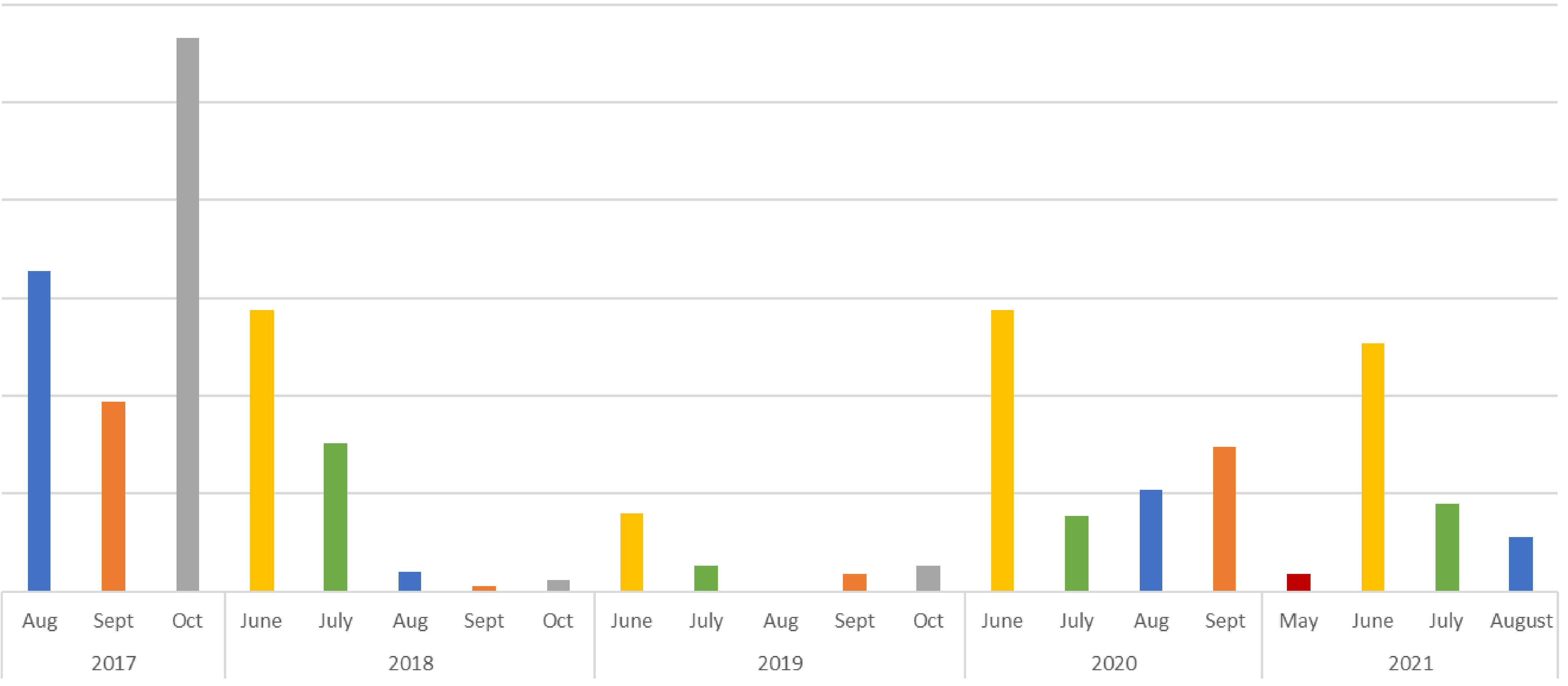
Horse fly trapping locations



Source: diymaps.net (c)



Tabanids collected over a 5-year period from six counties



Mosquitoes





Impact of Mosquitoes

\$78 Million

Economic Impact on Beef Cattle Industry

(Kunz et al. 1991)

Aquatic breeders

4-14 days from
egg to adult

Most active at
dusk and dawn

Most important urban
species breed in close
association to humans

Day biters
Night biters

Floodwater Mosquitoes

- Genera: *Aedes* and *Psorophora*
- Important pest species
 - Can make areas uninhabitable
- Can have very large populations,
- Adults are strong fliers
- Bite humans, livestock, pets
- Can survive in egg stage for several years until flooded (diapause)
- Eggs hatch when flooded following heavy rains or high tide



Container Breeders

Breeding site elimination

- Best place to start is OWN backyard
- Begin with
 - “dump it,
 - clean it,
 - drain it
 - or fill it”



Culex quinquefasciatus

Southern house mosquito

- Primary vector of WNV, SLE, likely canine heartworm
- Preferred host birds, feeds readily on humans and dogs – transmission role
- Readily enter homes to feed
- Prolific breeder in water with high organic content
 - Ditches, oxidation ponds, catch basins
 - Man-made containers
- Drought-induced amplification



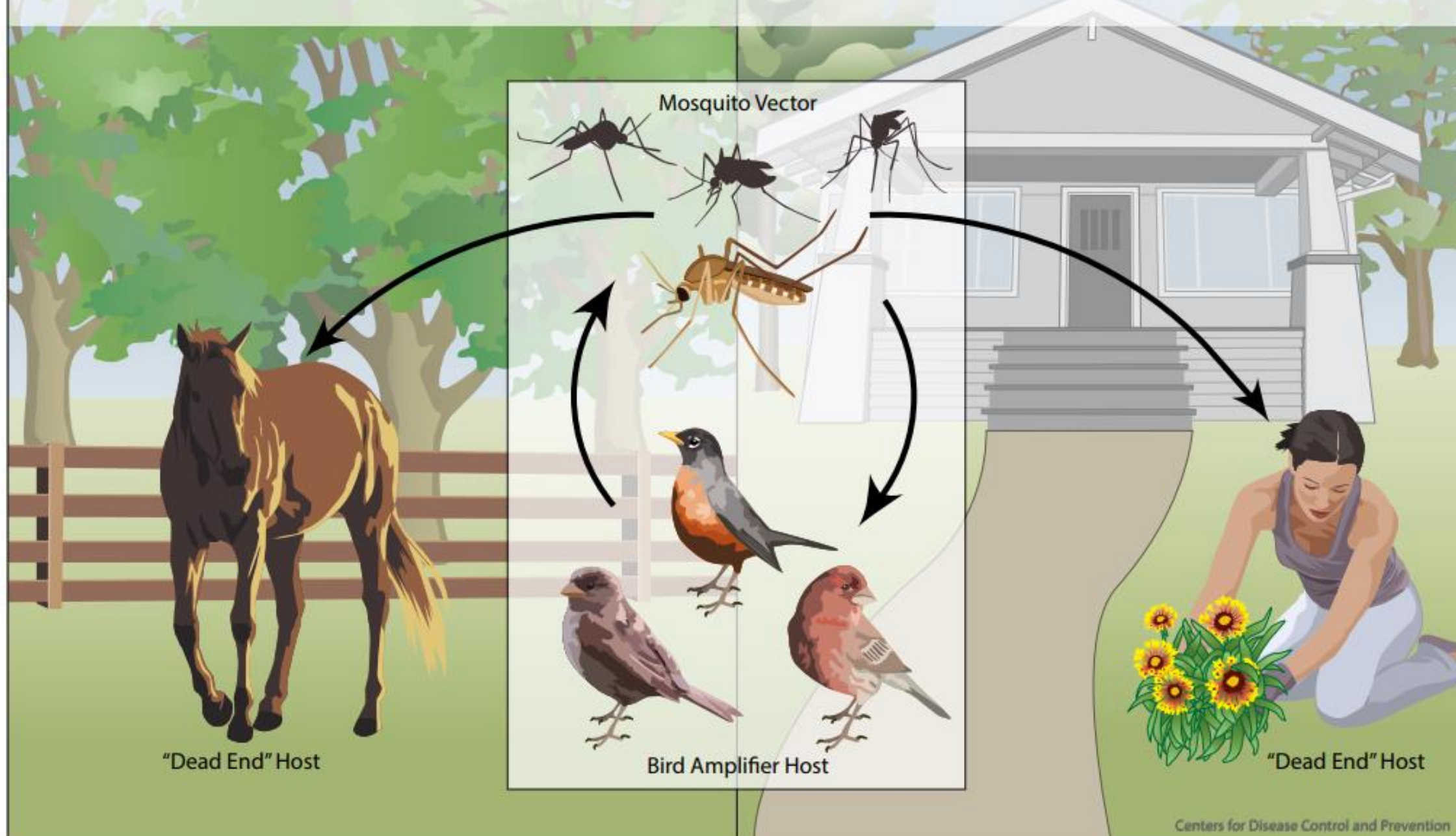
West Nile Virus Symptoms

- No symptoms in most people →
- Febrile illness (fever) in some people
- Serious symptoms in a few people

West Nile Virus Transmission Cycle

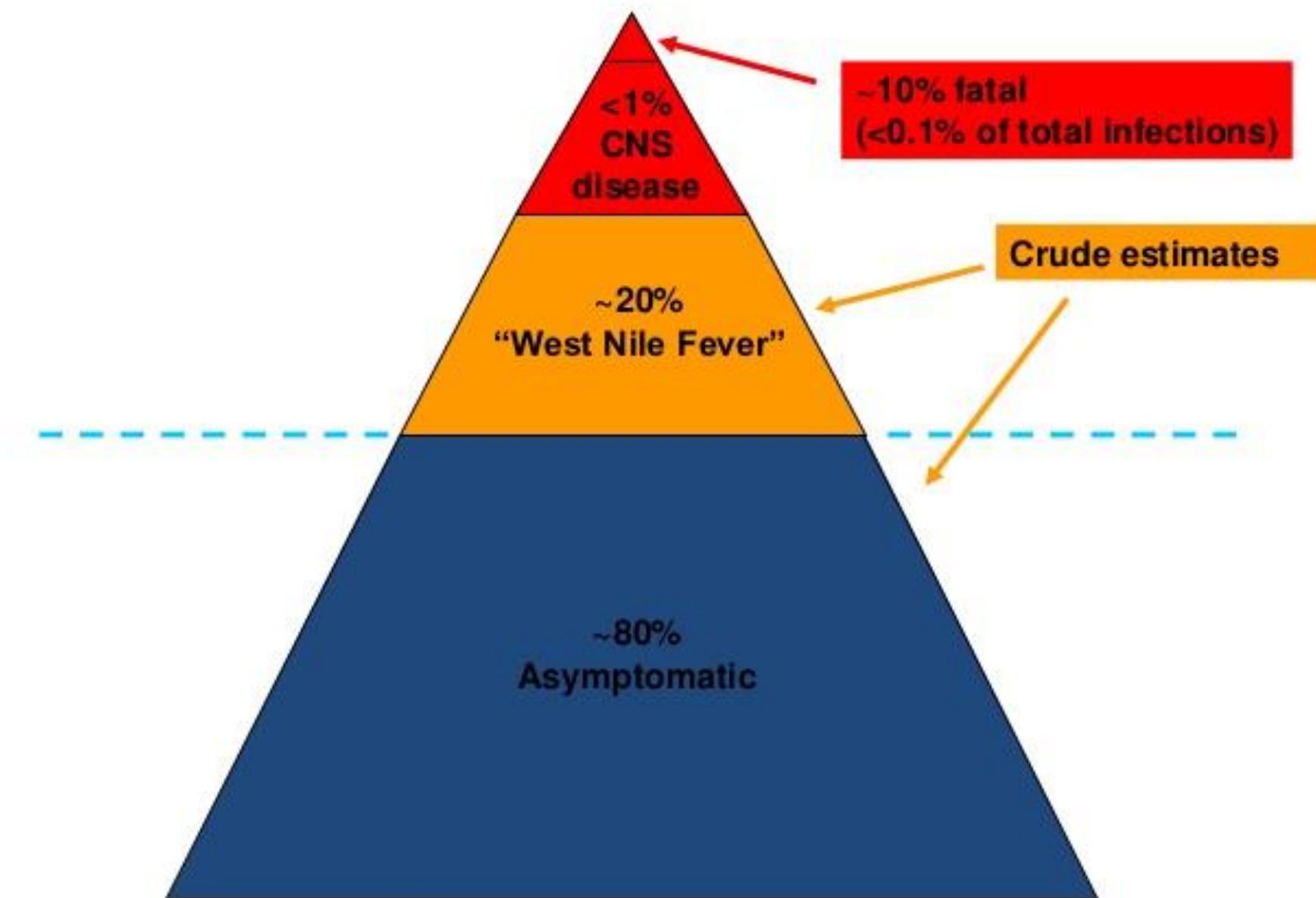
In nature, West Nile virus cycles between mosquitoes (especially *Culex* species) and birds. Some infected birds, can develop high levels of the virus in their bloodstream and mosquitoes can become infected by biting these infected birds. After about a week, infected mosquitoes can pass the virus to more birds when they bite.

Mosquitoes with West Nile virus also bite and infect people, horses and other mammals. However, humans, horses and other mammals are 'dead end' hosts. This means that they do not develop high levels of virus in their bloodstream, and cannot pass the virus on to other biting mosquitoes.



- high fever
- headache
- neck stiffness
- stupor
- disorientation
- coma
- tremors
- convulsions
- Muscle weakness
- vision loss
- numbness
- paralysis

WNV Human Infection "Iceberg"



Biological Controls

- Release Gambusia – mosquito fish into BS
- Larger predatory mosquito larvae – *Toxorhynchites*
- Aquatic insects



Larvae and Pupa Management

Larvicides for homeowners

Little effect on environment

Lower impact than adulticides

Bti:
Environmentally safe

Safe for non-target insects & mammals

Kills mosquito & biting fly larvae



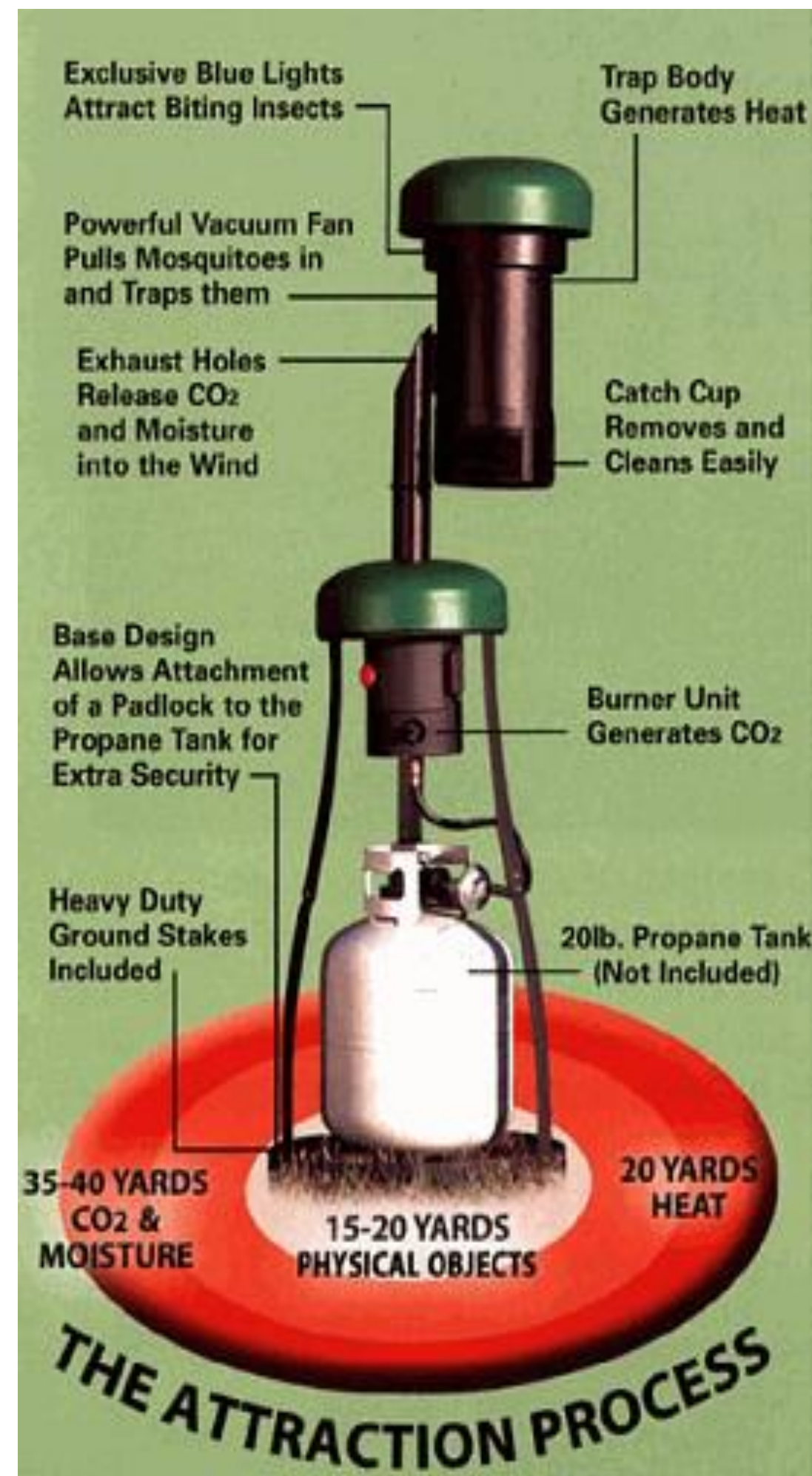
Adulticides

- Insecticides targeted at adult mosquitoes
- Needed to kill adult mosquitoes
- Can be deployed quickly and produce immediate results
- Reduce the risk of disease transmission
- Are necessary for an adequate vector management program



Mosquito Traps

LenTech Mosquito Trap



Mega-Catch



Mosquito Magnet Trap





Ticks



Impact of Ticks

\$162 Million

Economic Impact on Beef Cattle Industry

(Kunz et al. 1991)

Ticks can have multiple hosts

Categorized by feeding preference

1-host ticks

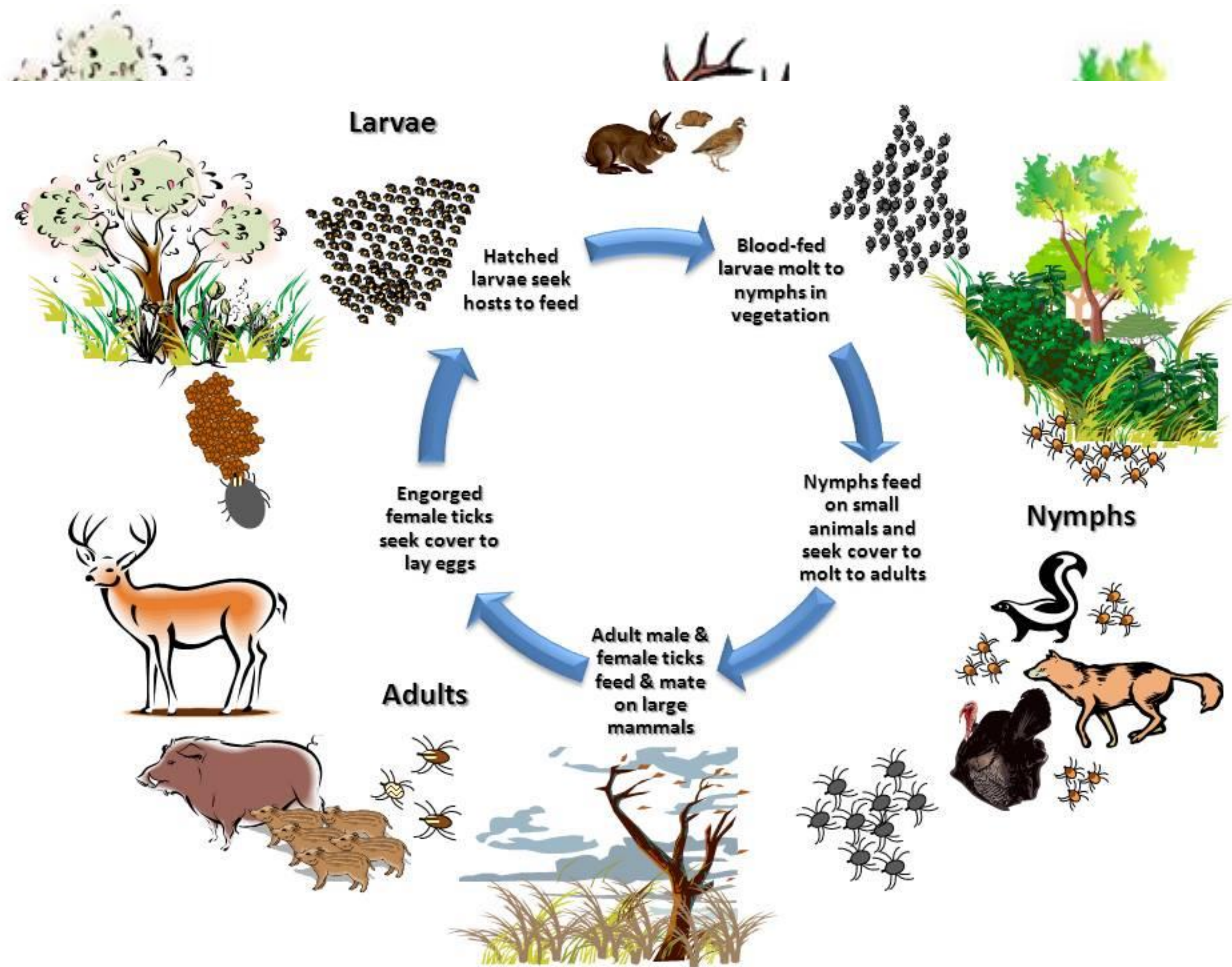
- Complete life cycle on a single host (i.e., one animal)

2-host ticks

- Larvae and nymphs feed on one host, adults on a second

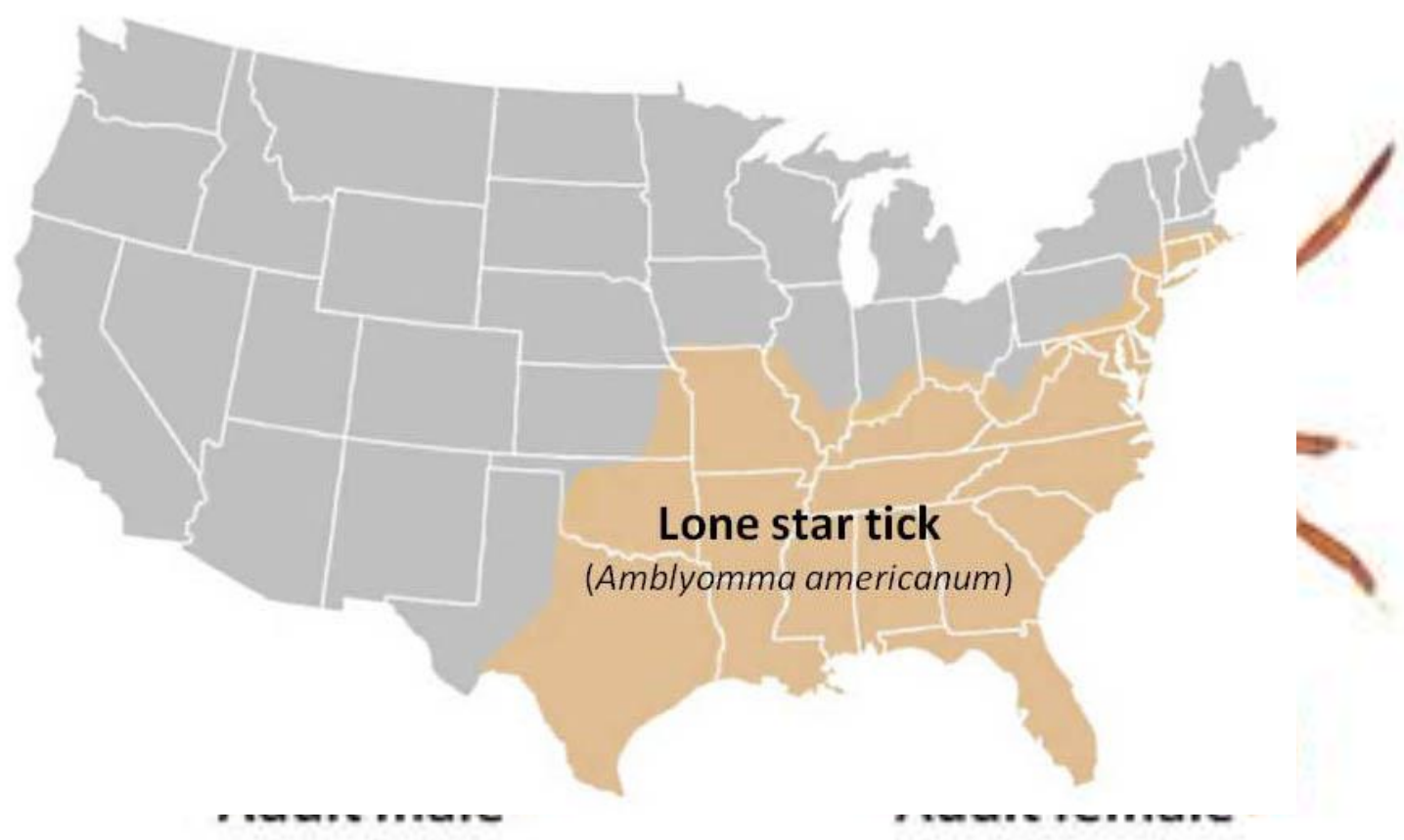
3-host ticks

- Each life stage feeds on a different host
- Most hard ticks are 3-host ticks

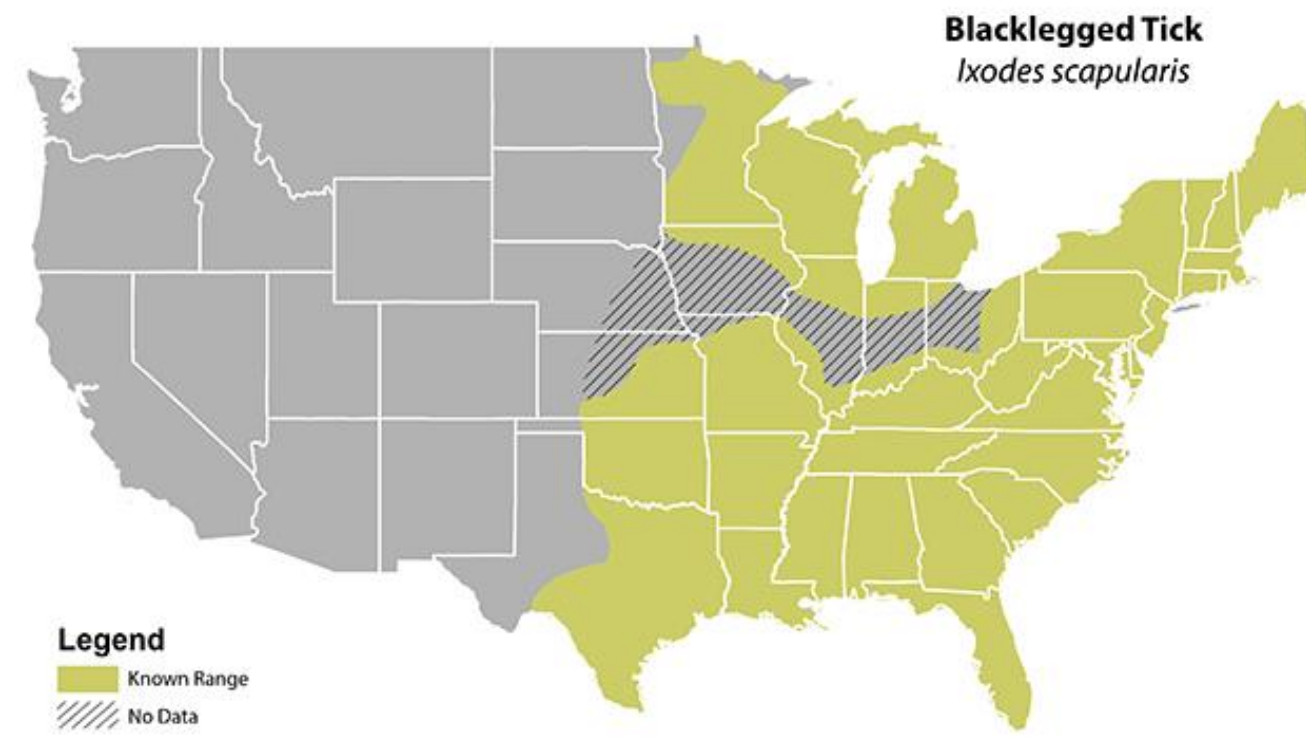


Typical three-host tick life cycle

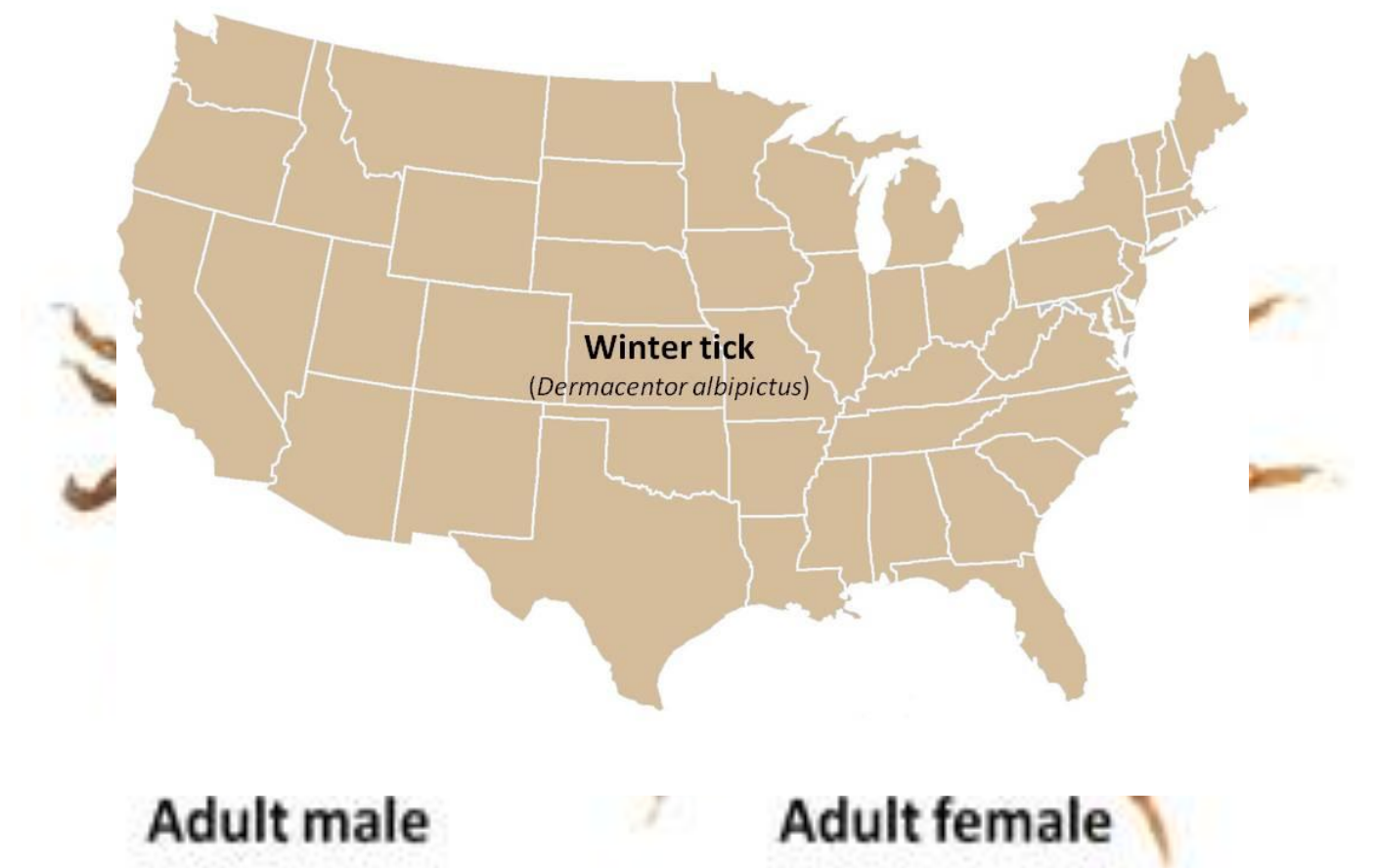
Non-regulatory Ticks Commonly found on Texas cattle



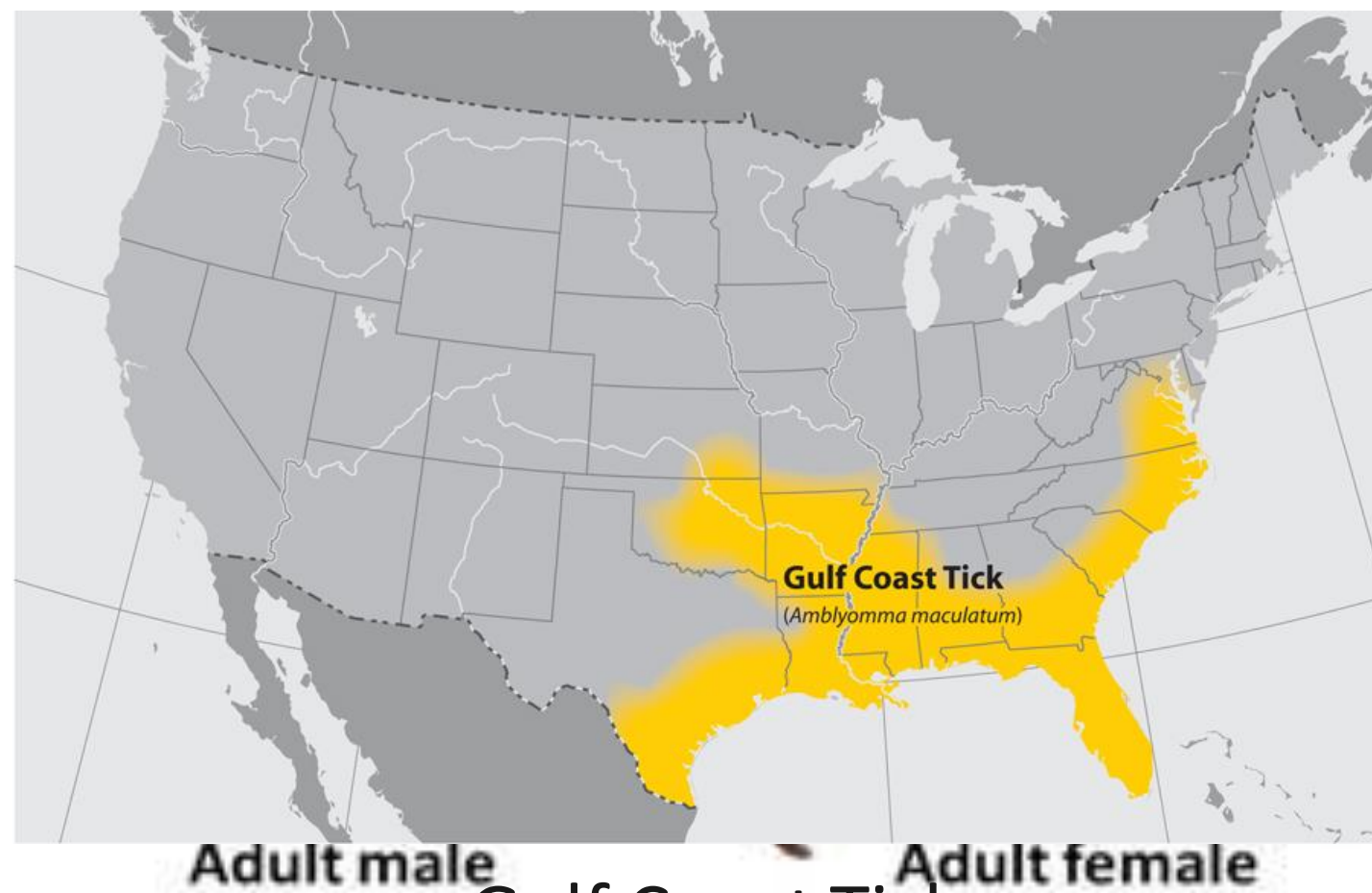
Lone Star Tick
Amblyomma americanum



Black-legged Tick
Ixodes scapularis



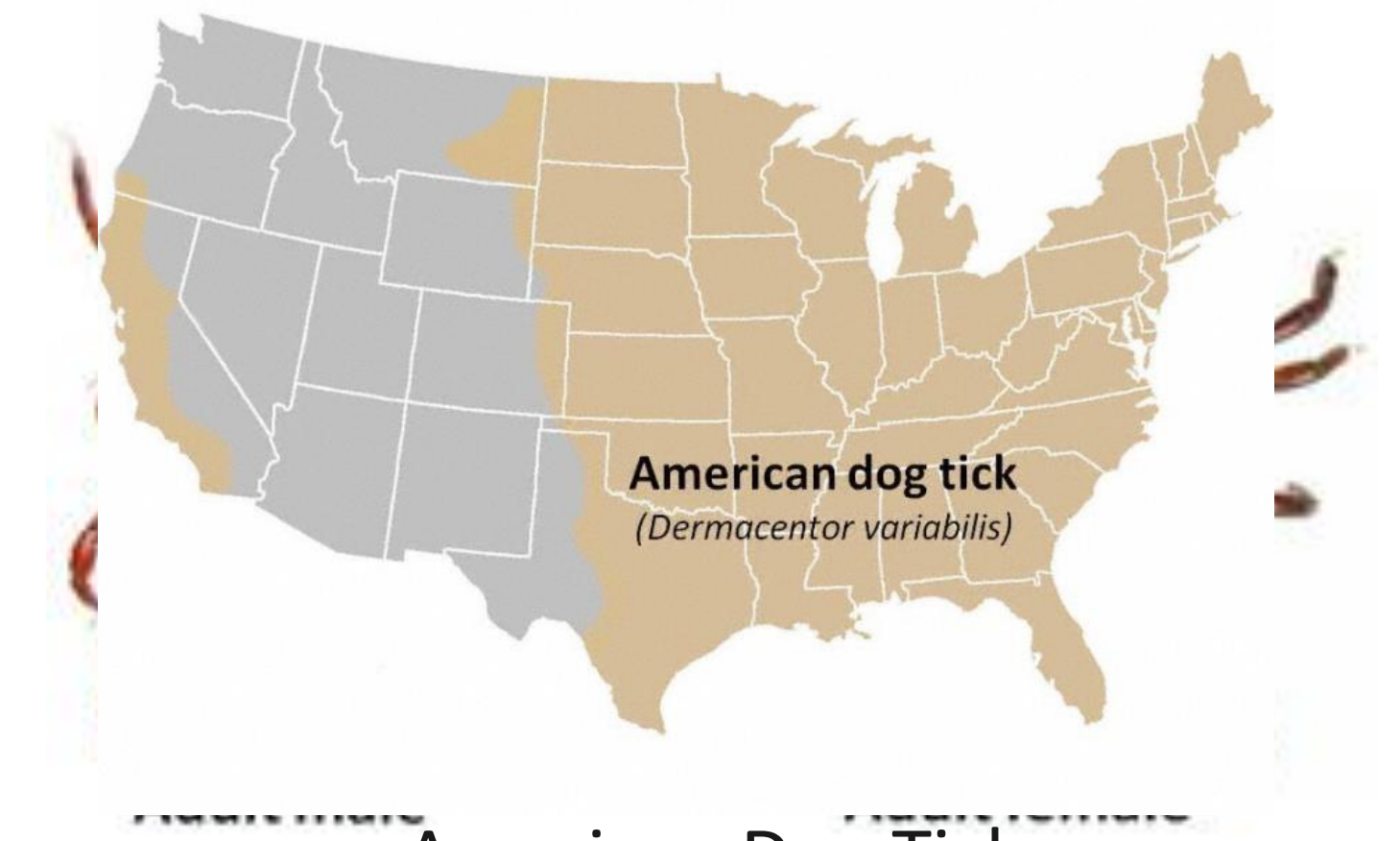
Winter Tick
Dermacentor albipictus



Gulf Coast Tick
Amblyomma maculatum



Brown Dog Tick
Rhipicephalus sanguineus



American Dog Tick
Dermacentor variabilis



An infestation of Asian Longhorn Ticks. Photo by Joe Deal, North Carolina State University

New Tick of Concern



Asian Longhorned Tick

- Is an exotic tick
- 3-host hard tick
- Original location – NE Asia, then moved to Australia and New Zealand
- A small tick that survives hard winters

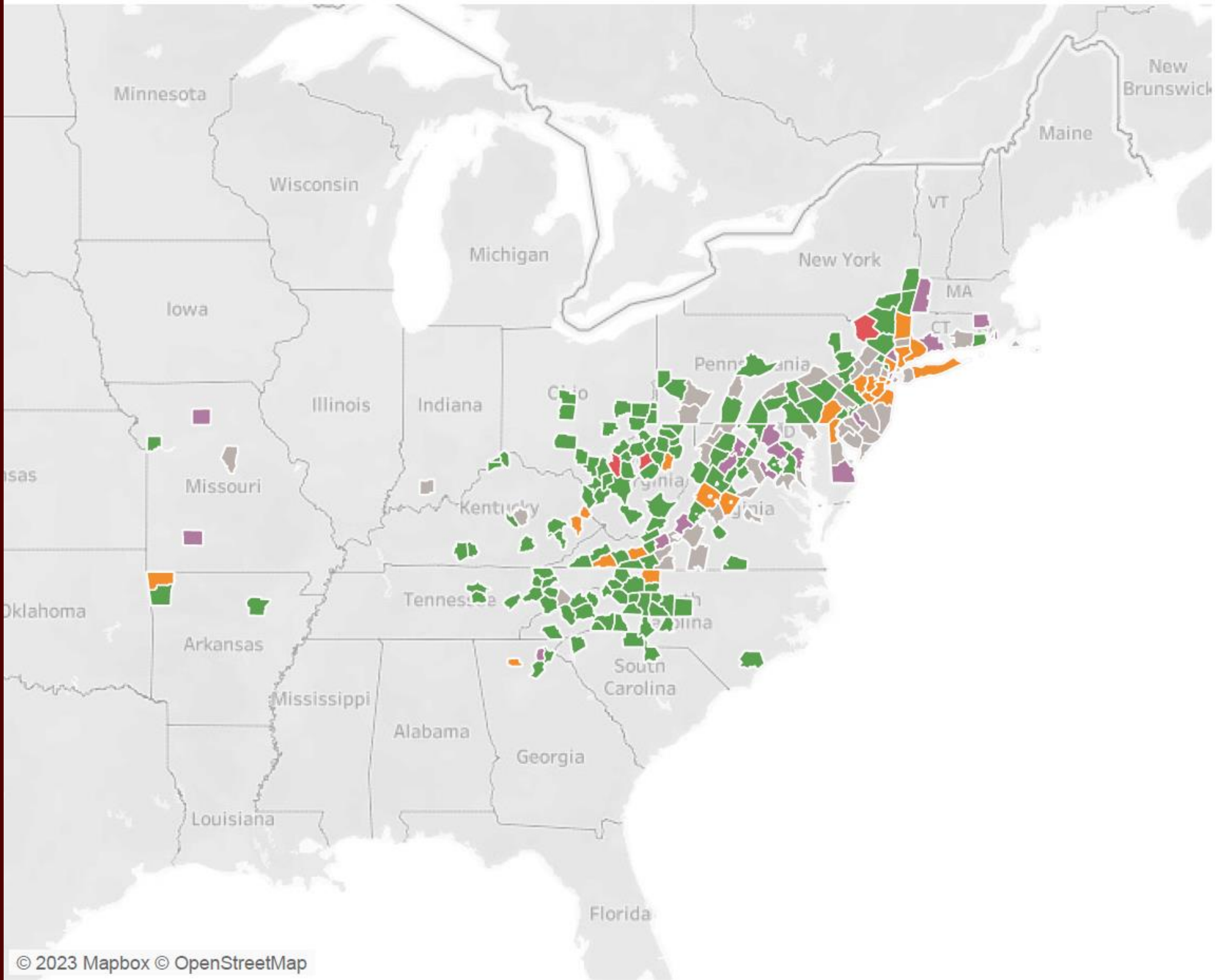


Asian longhorned ticks can congregate in high numbers on companion animals and livestock.

ALT and Livestock

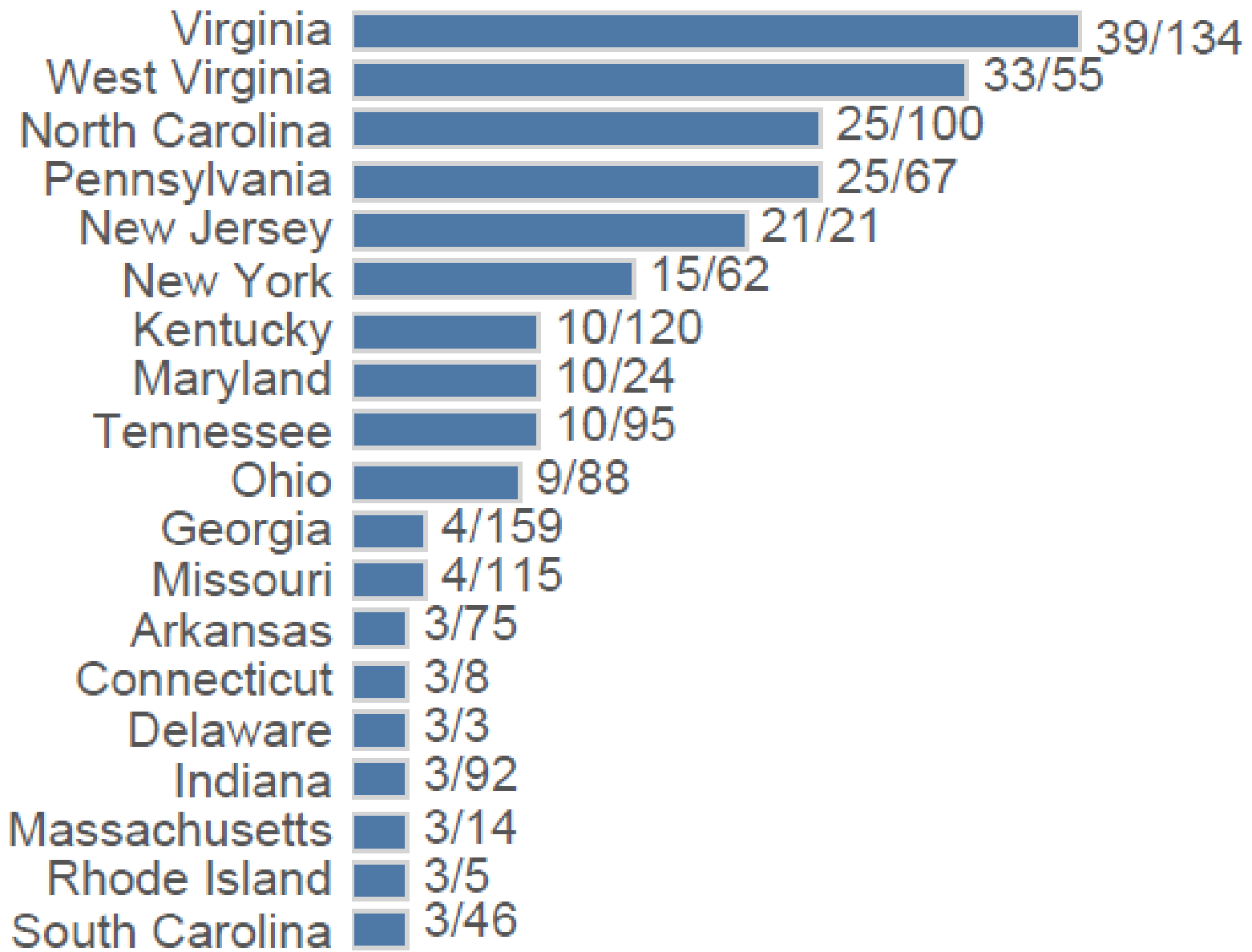
- Primarily a pest of concern for cattle, goats and sheep
- Females can reproduce without mating with a male, which makes male ticks rare
- Females can lay up to 2,000 eggs
- Large populations can cause animal death
- Carriers of several disease pathogens
 - Anaplasmosis, babesiosis, ehrlichiosis, theileriosis, and rickettsiosis and several viruses

Current location of ALT in US – Sept 2023



© 2023 Mapbox © OpenStreetMap

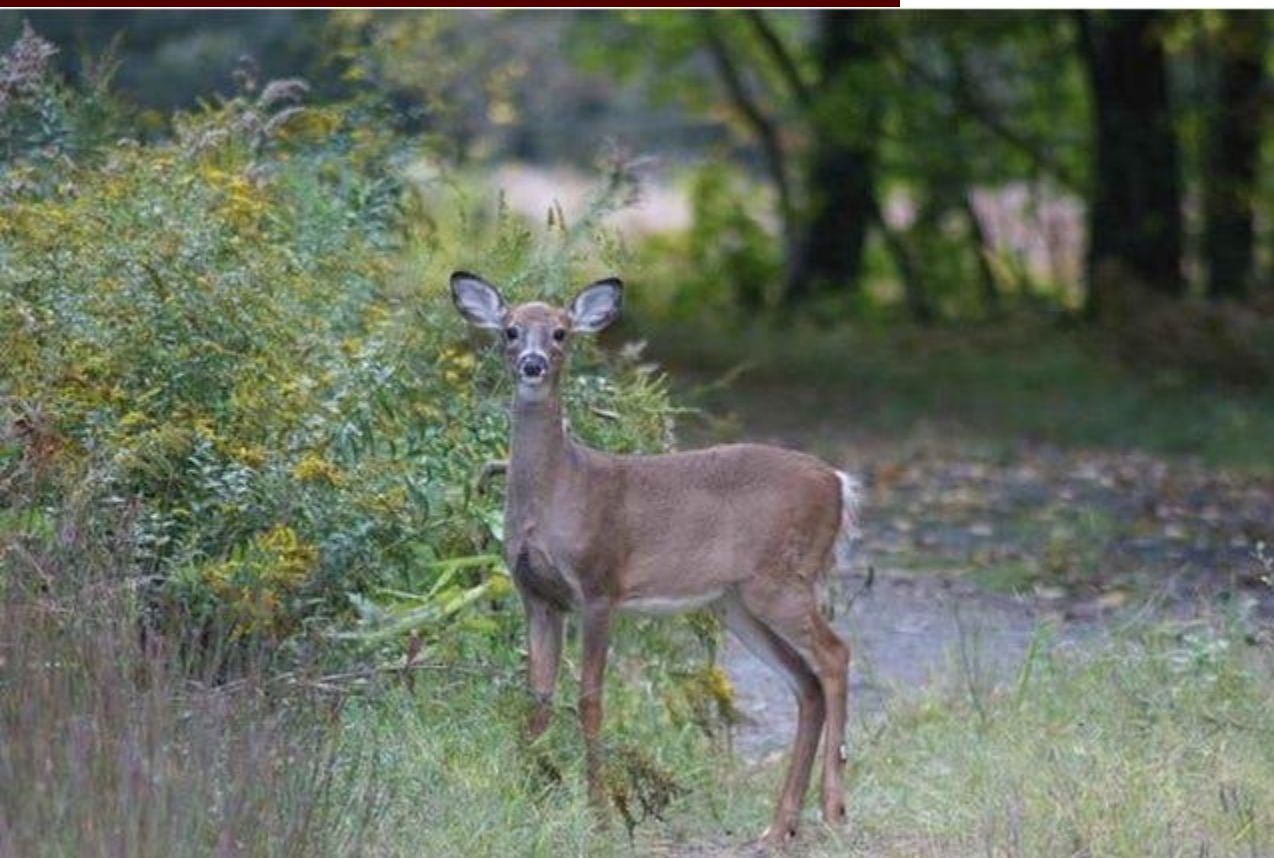
States with confirmed local Asian longhorned tick populations with number of counties in each state. (# of confirmed counties / total # of counties)





Environment	273
White Tailed Deer	165
Dog	69
Human	67
Cow	34
Raccoon	26
Virginia opossum	24
Elk	16
Gray Catbird	9
Cat	8
Red Fox	8
Red-Tailed Hawk	8
Eastern Cottontail Rabbit	5
Chicken	4
Coyote	4
Gray Fox	4
Horse	4
Groundhog	3
Sheep	3
Barred Owl	2
Black Bear	2
Great Horned Owl	2
Northern Cardinal	2
Peromyscus Leucopus	2
Striped Skunk	2
Blue Jay	1
Brown Booby	1
Canada Goose	1
Carolina Wren	1
Eastern Chipmunk	1
Goat	1
Gray Squirrel	1
House Wren	1
Peromyscus	1
Pig	1

ALT Hosts



Fed 2-days



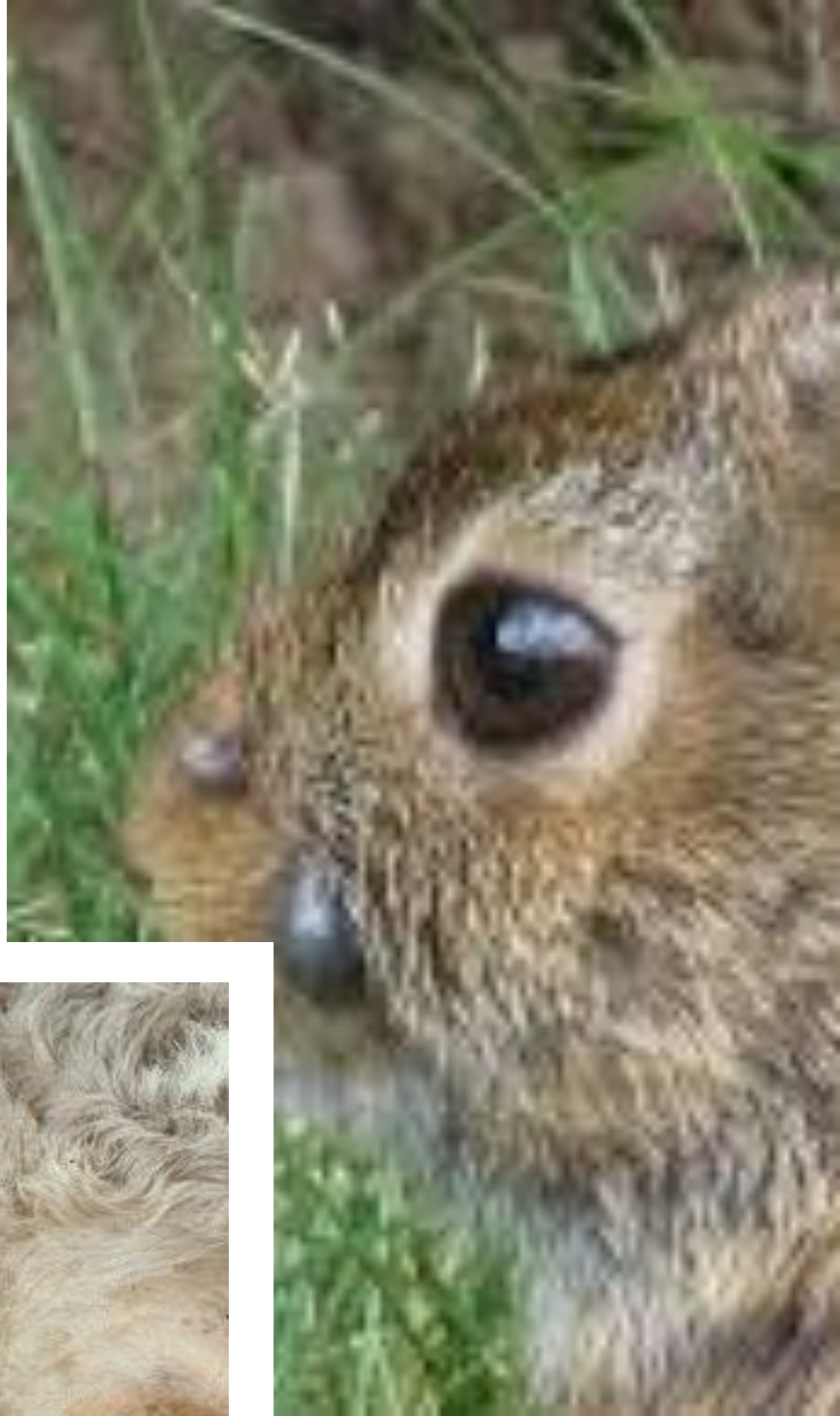
Fed 7-days



Fed 14-days



Tick Management



Tick Management

Tick checks of livestock

Wildlife management

- Stabilize the situation – fencing
- Animal-directed efforts can provide a long-term effect

Controlled Burns

- 4 year study in wooded rec. area in Georgia showed reduction of *A. americanum* – abundance reduced
- Other studies have shown little or no reduction, temporary reduction or an increase in white-tailed deer usage



Acaricides/insecticides on Livestock

Whole body animal sprays – Ex.
Prolate/Lintox (phosmet),
Permethrin, Co-Ral (coumaphos)

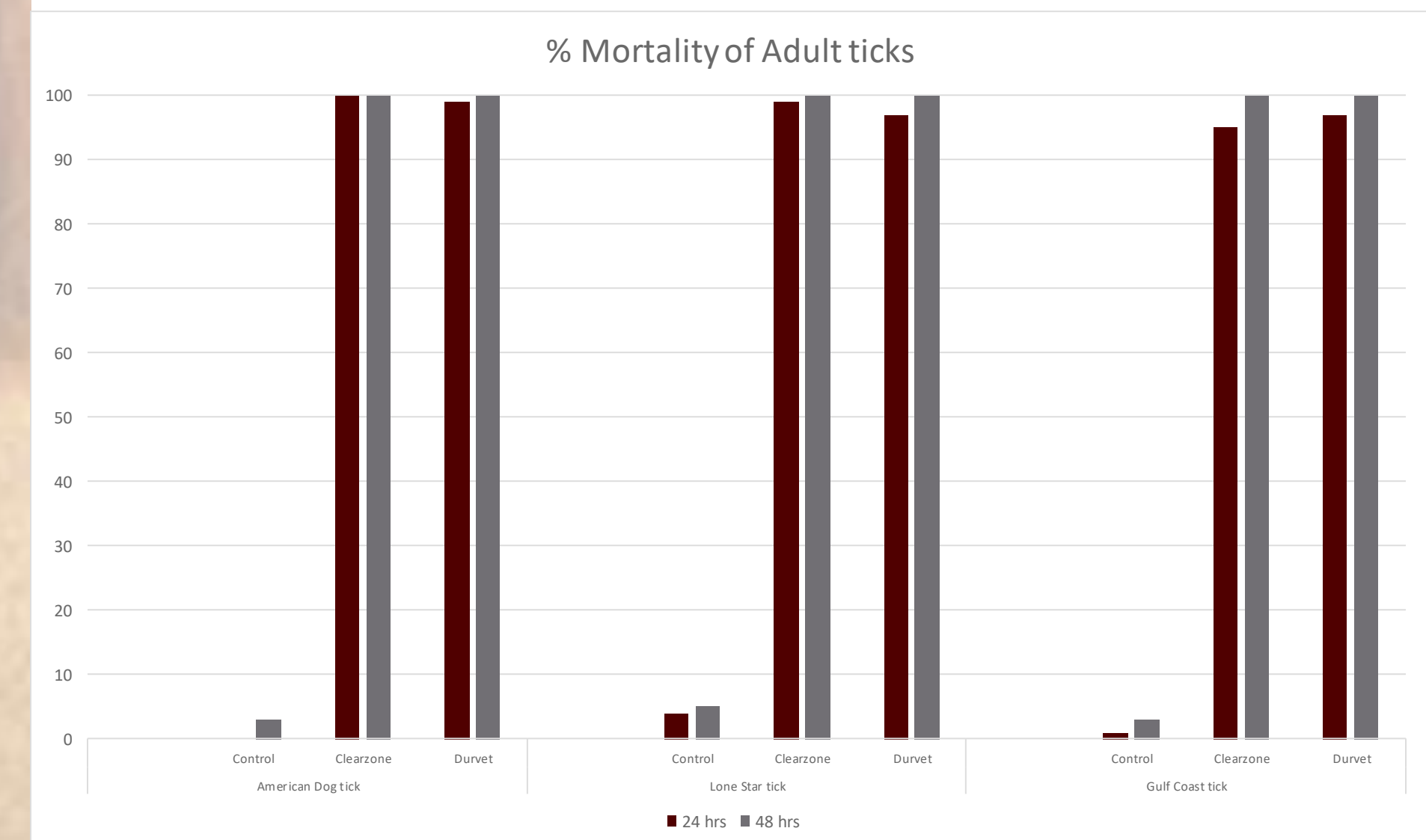
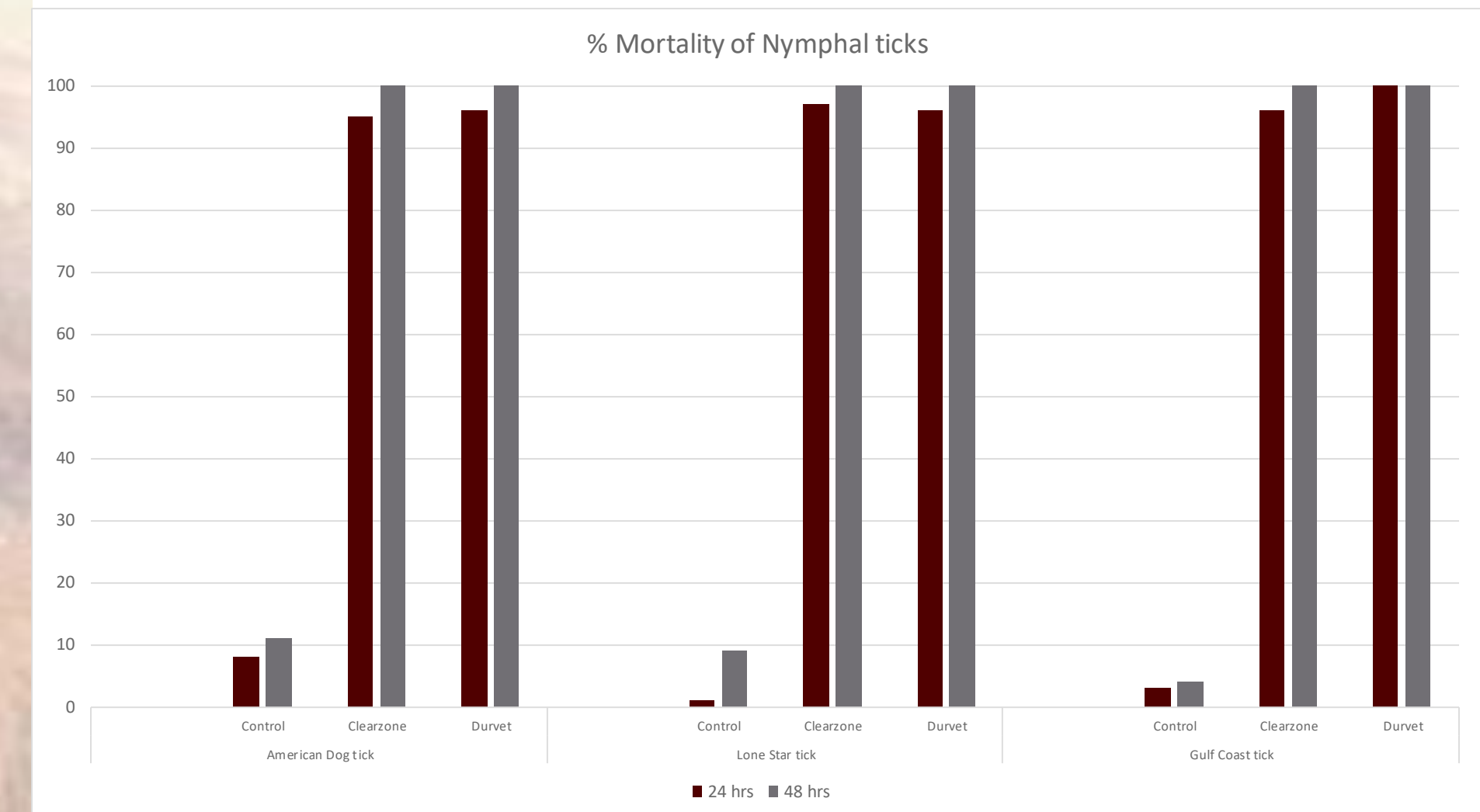
- Co-Ral provides longer residual than permethrin
 - Used in the Cattle Fever Tick Eradication Program

Insecticide impregnated ear tags

- Provides good control of ear ticks (Gulf Coast and spinose ear) – one in each ear
- Some insecticidal ear tags (2 per animal) will reduce lone star tick abundance on the animal

Aerosol Sprays

- ClearZone
- Screwworm Fly Spray





House Flies

House Flies

- 4-7 mm, gray fly with 4 stripes
- Filth breeder
- Do not bite
- Annoy cattle and humans
- Reduce milk production
- Minimum development time 7-10 days (7-21 days)
- Harbors over 200 different pathogens



Sticky House Fly Traps

- Revenge Sticky Fly Tape
 - 1300' tape refill with mounting hardware
 - Unwind fresh length when full of flies
- EZ Trap
 - Rain-proof
 - 3 X more trapping surface
- Revenge Jumbo Fly Catcher
 - 8" x 8"
 - Indoor use, hang anywhere at any length
 - Last 12 weeks



Premise Products – Pheromone Traps

- Fly Terminator Pro - \$26-30
- Captivator – \$16-20
- Trap N Toss - \$6-9
- Fly Relief - \$5-6
- Others...



Bait Products

Golden Malrin - \$50-\$65 / 10 lbs



methomyl

Maxforce granular - \$43-\$50 / 5 lbs



imidacloprid

QuickBayt - \$42-\$50 / 5 lbs



imidacloprid

QuikStrike - \$40-\$50 / 5 lbs



dinotefuran

DuraStrike - \$369 / 28 lbs



indoxacarb

Cyanarox - \$65-\$74 / 4 lbs



cyantraniliprole

Aerosol Spray & Wetable Granules

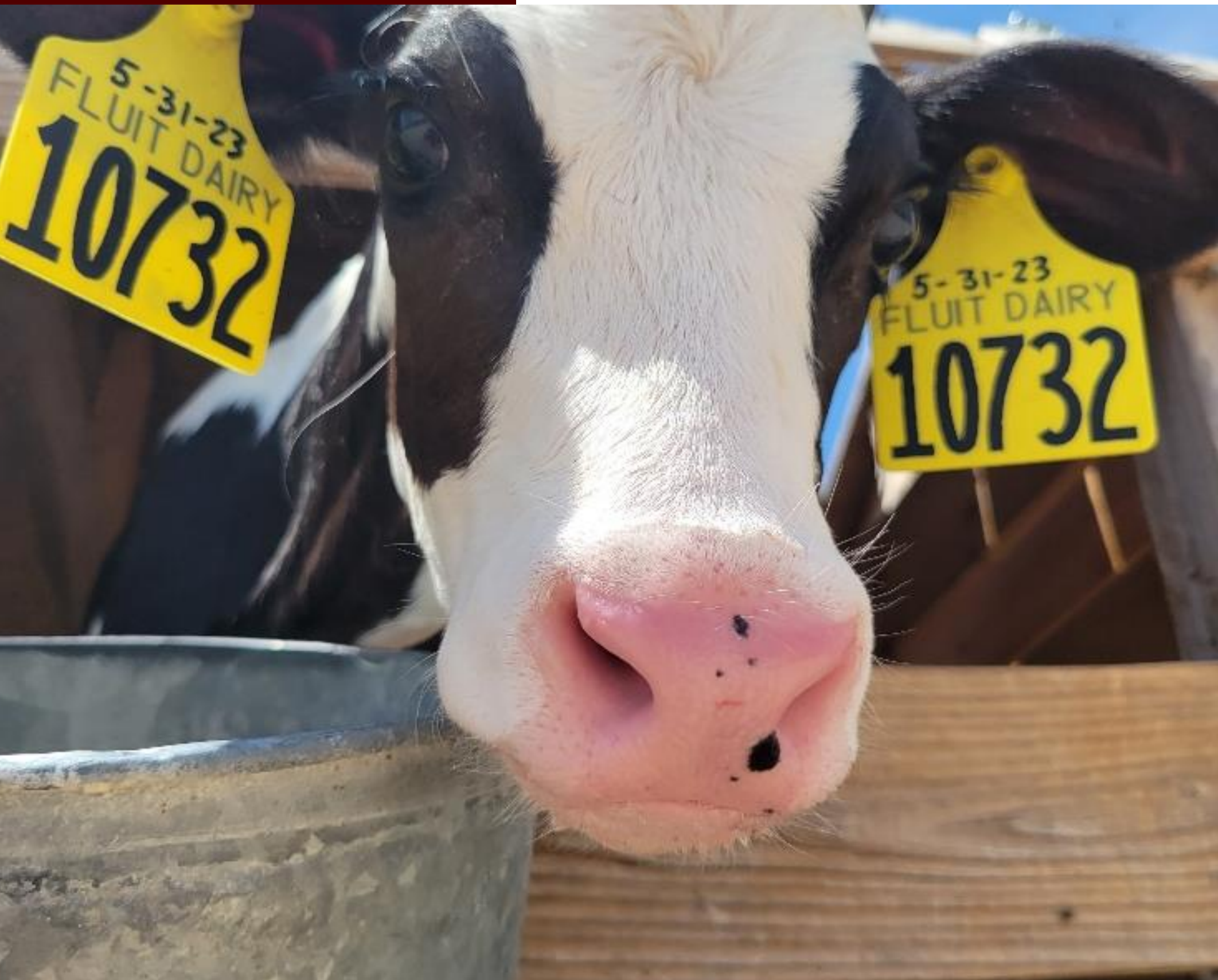
BASF Alpine
Pressurized Fly
bait - \$27
dinotefuran



Agita 10WG -
\$87.77 / 2.2 lbs
thiamethoxam



Premise Sprays – not to be used on animals



Organophosphates

- Durashield CS (chlorpyrifos)
- Rabon 50 WP (tetrachlorvinphos)
- Ravap EC (tetrachlorvinphos & dichlorvos)
- Vapona Concentrate Insecticide (dichlorvos)

Combo Products

- Super II Dairy & Farm Spray (dichlorvos & pyrethrin)
- Temprid FX (beta-cyfluthrin & imidacloprid)

Spinosyns

- Elector PSP premise spray (spinosad)

Pyrethroids (3A)

- Annihilator Polyzone (deltamethrin)
- Atroban 11% EC (permethrin)
- Brute (permethrin)
- Clear Zone Double Impact Farm Fly Spray (permethrin & pyrethrins)
- Country Vet Instant Knock Down CV-80D Farm & Dairy (pyrethrins)
- Dairy Bomb 55Z (pyrethrins)
- Fly Rid Plus (permethrin)
- GardStar 40% EC (permethrin)
- Grenade ER (lambda-cyhalothrin)
- Permethrin II (permethrin)
- Permethrin 10% (permethrin)
- ProZap Insectrin CS (permethrin)
- ProZap VIP Insect Spray (pyrethrins)
- PT Clear Zone III (pyrethrins)
- Screwworm Aerosol Multi Purpose Spray (permethrin)
- Synergized Delice (permethrin)
- Synergized 1% (permethrin)
- Tempo SC Ultra (beta-cyfluthrin)
- Tempo Ultra WP (beta-cyfluthrin)
- Tengard SFR (permethrin)

Thank you!



Livestock Veterinary Entomology

Evaluation and understanding of insects that bite and feed on livestock and companion animals

[Home](#) [Insects/Pests](#) [Pesticides](#) [Presentations/Publications](#) [Resources](#) [Newsletters](#)

Tick Insecticides

Ticks are capable of transmitting several disease pathogens, second behind mosquitoes. Ticks take large blood meals several times during growth and most are from many different hosts making them good transmitters of disease pathogens. Ticks can produce chemicals during feeding that prevent a host from knowing they are there. Many products are labeled for tick control and prevention.



USEFUL LINKS

New information on mosquitoes



Check out this Tick App

The TickApp
for
Texas & the Southern Region



Love to talk about
all kinds of Insects.

—————→ **Phone Number**
254.968.4144

—————→ **Email Address**
slswiger@ag.tamu.edu

—————→ **Website**
<http://livestockvetento.tamu.edu>