# Flies, Ticks, and Anaplasmosis in Kansas

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# Geographic distribution

- Tropical and subtropical areas throughout the world
- Enzootic
  - Southern Atlantic states, Gulf coast states, Midwestern and Western States
- Reported from all the states in US
- Mexico, Central and S. America and the Caribbean
- 5 occurrences in Canada (contained)

# Transmission

- Mechanical transmission
  - Biting flies in the genera Stomoxys, Tabanus spp.
  - Biting flies are major transmitters where ticks are absent
  - Blood contaminated fomites
- Transplacental transmission
- Biological transmission
  - Ticks

# Stable flies (*Stomoxys calcitrans*)

- 5-7mm long
- Synanthropic
- Obligate blood feeders

# Stable flies (*Stomoxys calcitrans*)

- Feed on lower legs of cattle
- Sanitation helps control
- Disperse 30km

# Tabanus spp. (Horse flies, deer flies)

- 20-30mm long
- Aquatic, semi aquatic
- Pool feeders
- Bites neck, sides
- Difficult to control

# Other flies

- Non-biting flies do not transmit *A. marginale*
  - Houseflies
  - Face flies
- Horn flies
  - Bite but do not go from animal to animal

# Fly control

- Keep animals clean
- Clear-out manure and spilled feed as frequently as possible
- Remove standing water and improve drainage
- Larvicidal applications at appropriate times and locations

# Wildlife hosts (reservoirs?)

- American bison
- Mule deer
- Black-tailed deer
- Elk
- Pronghorns
- Bighorn sheep
- White-tailed deer

# Ticks

- Up to 20 spp. of hard ticks incriminated as vectors worldwide
- Dermacentor ticks
  - American dog tick (D. variabilis)
  - Rocky Mountain Wood Tick (D. andersoni)
  - Pacific Coast tick (D. occidentalis)
  - Winter/Moose tick (D. albipictus)

**Lone star ticks NOT a vector**

# American Dog Tick (*Dermacentor variabilis*)

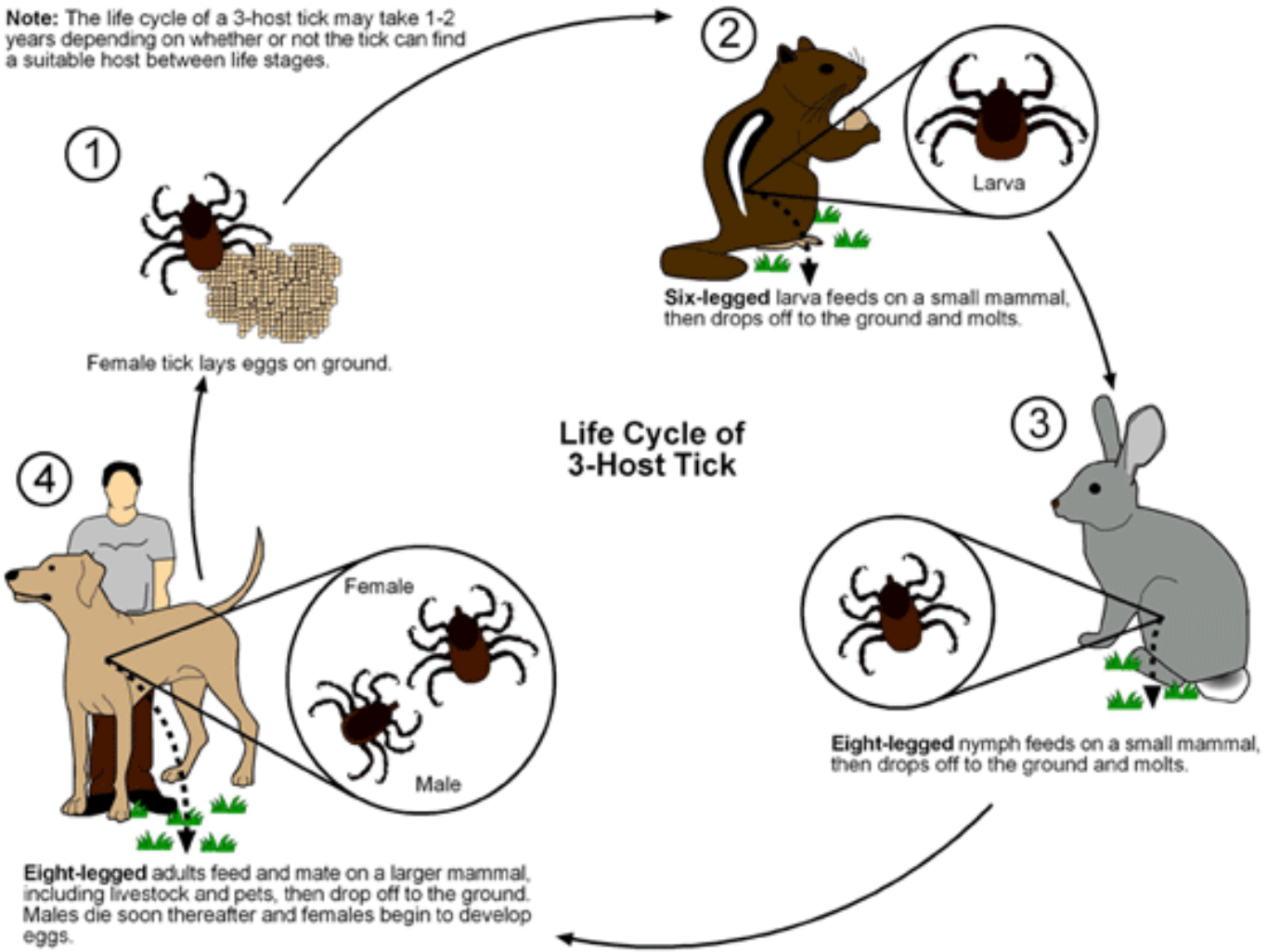
Female

©Tom Murray

Male

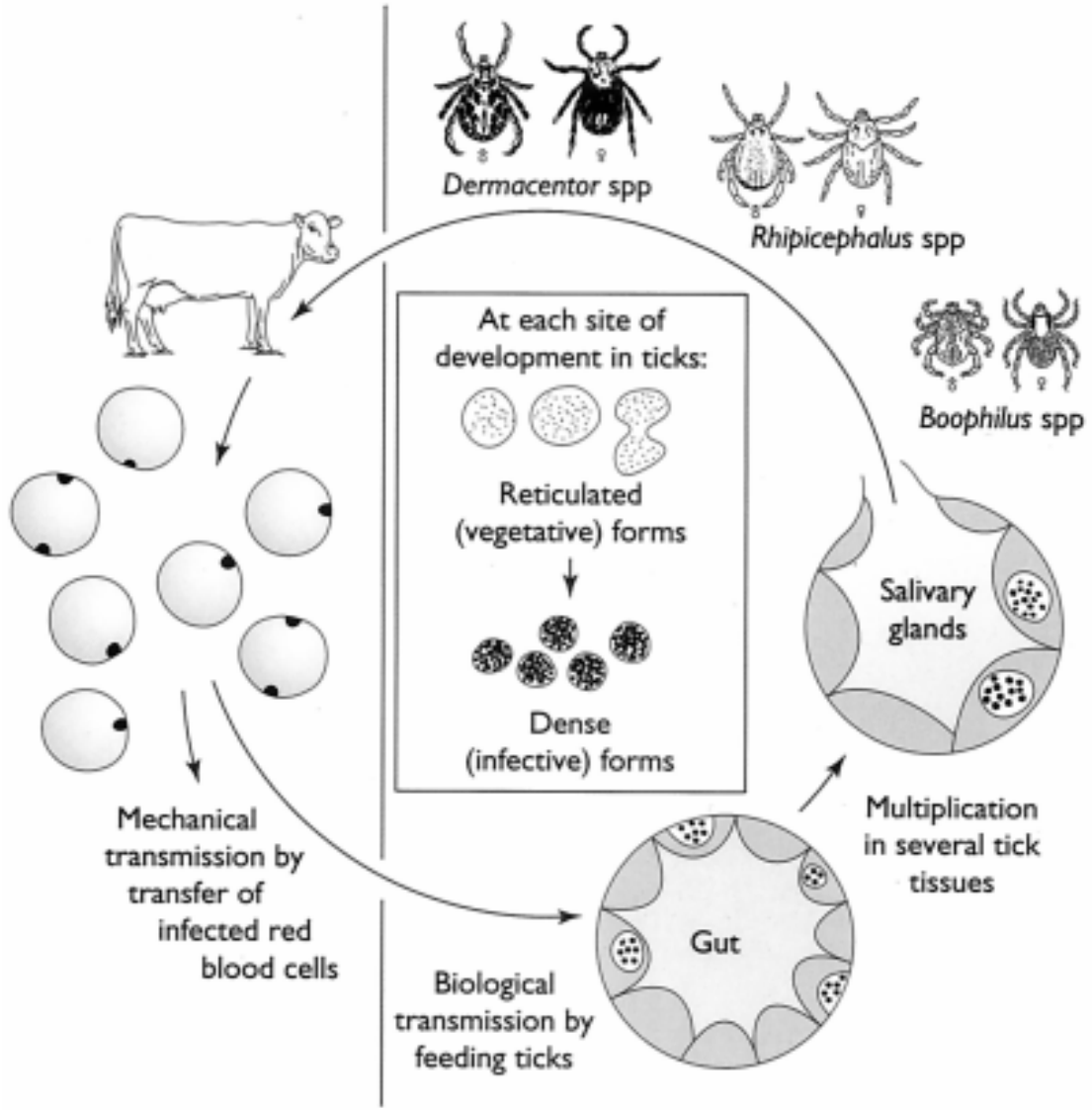
Engorged Female

# Tick life cycle




**Ticks do NOT fall from trees**

# Transmission cycle



# Status in Kansas

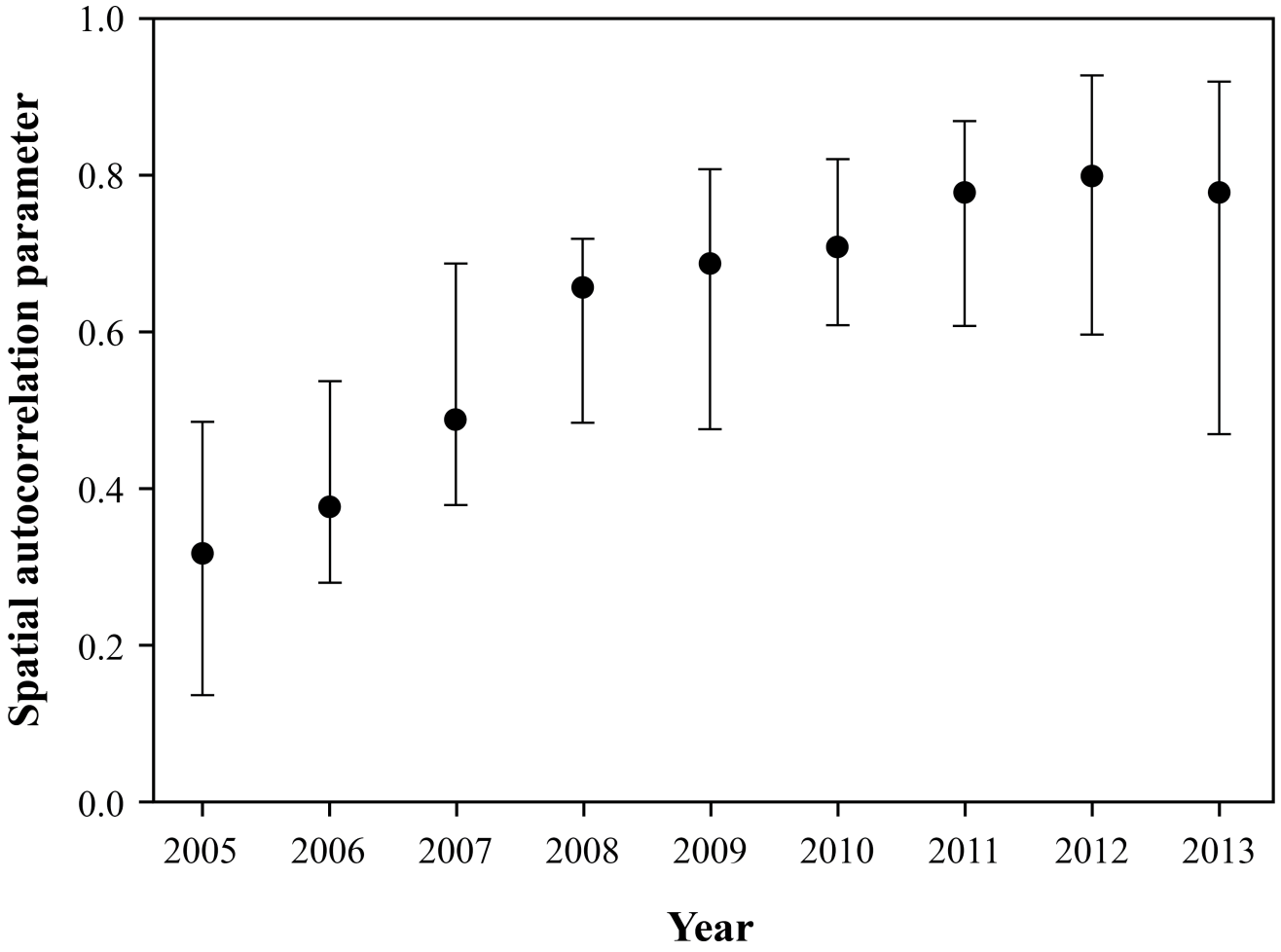
# Results

| Pathogen(s) | 2014 (222 ticks) | 2015 (356 ticks) |
|---|---|---|
| *A. marginale* | 33% (73 ticks) | 28% (99 ticks) |
| *F. tularensis* | 18% (40 ticks) | -- |
| *R. rickettsii* | 6% (14 ticks) | -- |

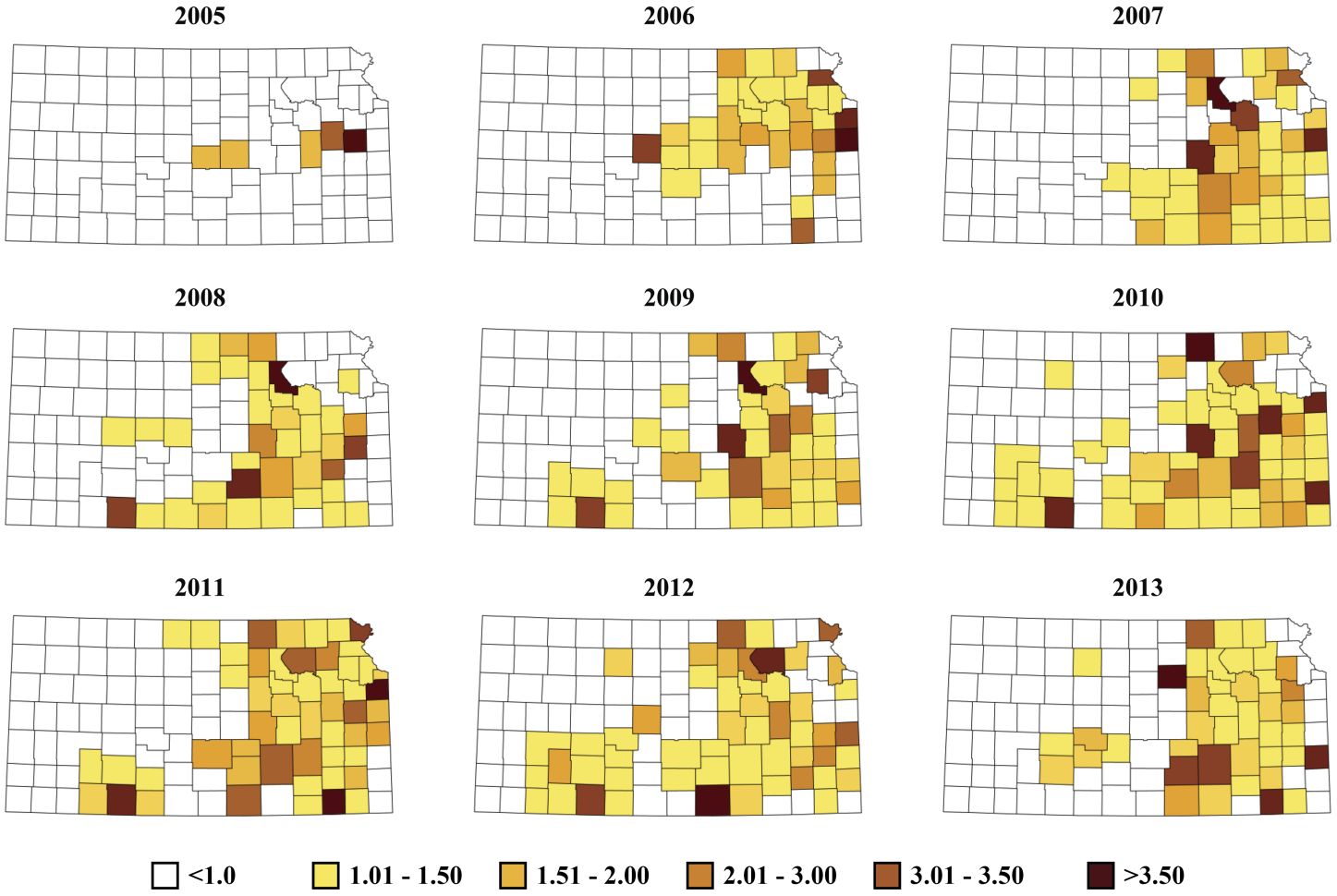
# Status in Kansas

- Has the disease increased over time, and spread to new places?
- Are there any disease clusters in Kansas?

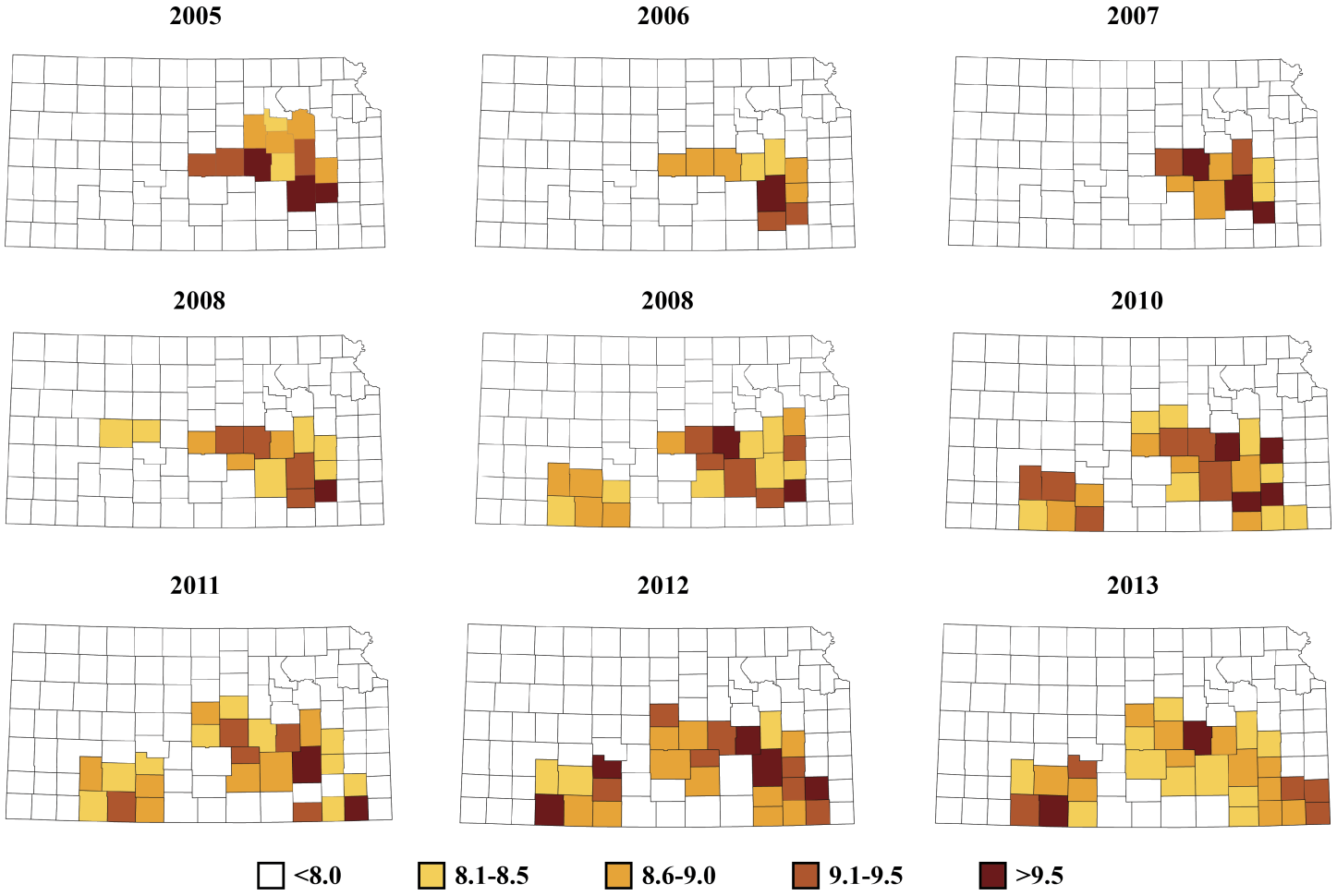
# Status in Kansas



# Status in Kansas



# Disease clusters



# Conclusions

- Horse flies, stable flies and ticks all contribute to anaplasmosis in Kansas
- More anaplasmosis cases have been diagnosed in the state from new geographic areas
- Fly and tick control strategies will likely help minimize losses