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 | Male | Engorged Female
---|---|---
![Female American Dog Tick](image1) | ![Male American Dog Tick](image2) | ![Engorged Female American Dog Tick](image3)

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Ticks do NOT fall from trees
Transmission cycle

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Status in Kansas
## Results

<table>
<thead>
<tr>
<th>Pathogen(s)</th>
<th>2014 (222 ticks)</th>
<th>2015 (356 ticks)</th>
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<tbody>
<tr>
<td><em>A. marginale</em></td>
<td>33% (73 ticks)</td>
<td>28% (99 ticks)</td>
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<tr>
<td><em>F. tularensis</em></td>
<td>18% (40 ticks)</td>
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<tr>
<td><em>R. rickettsii</em></td>
<td>6% (14 ticks)</td>
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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.