

***Ixodes affinis*, an Enzootic Vector of *Borrelia burgdorferi* ss, Newly Discovered and Common in Eastern North Carolina - Bruce Harrison**

- 1) Tick collecting
 - a) Started Oct 2008
 - b) 31,108 total specimens
 - i) 24,882 *Amblyomma americanum*
 - ii) 1,050 *Dermacentor variabilis*
 - iii) 3,108 *Ixodes scapularis*
 - iv) 853 *Ixodes affinis*
 - v) 1215 other
 - c) Collection methods
 - i) Dragging
 - ii) Tick attachment
 - d) Numbers skewed towards coastal NC
 - e) Very few ticks found in the mountain region
- 2) Black-legged ticks
 - a) 8 *Ixodes* species found that are similar to *Ixodes scapularis*
 - b) 6 are found occasionally on humans
 - c) Lyme disease
 - i) *Ixodes scapularis*
 - ii) Up to 40% of nymphs infected with *Borrelia burgdorferi* ss in the north
- 3) "AH HA" moment
 - a) *Ixodes affinis*
 - i) Not found in NC
 - ii) Published account of one specimen found in 1987 from a deer
 - b) Collected on a CDC light trap
 - i) Gates County
 - ii) April 2008
 - iii) Not identified until 2009
 - c) Originally a Central-South American species
 - i) First found in FL in 1953
 - ii) Spread to GA and SC
 - iii) Found in NC in 2008
 - d) Biology/seasonality (phenology)
 - i) Adults active March-November
 - (1) Active during the summer
 - (a) Peak time is April through August
 - (b) Largest numbers were in July
 - (2) *Ixodes scapularis* is a winter tick - not found in the summer
 - ii) No published documentation that they bite humans
 - iii) Found in the Coast and Coastal Plain regions
 - (1) Primary host - cotton mouse & eastern wood rat
 - (2) Also found on
 - (a) Marsh rice rat
 - (b) Hispid cotton rat
 - (3) Coastal species

- e) Habitat
 - i) Moist shaded woods
 - ii) Near water
 - iii) Not found in open sunlit areas
- f) Hosts
 - i) Mammals and birds
 - ii) Found on large mammals, but not humans
- g) Identification -
 - i) Easy to confuse with *Ixodes scapularis*
 - ii) Do have distinctive characteristics, but they are subtle
- h) Harrison et al, J Vector Ecology, 2010
- 4) What Bruce thinks
 - a) In the NE US
 - i) *Ixodes scapularis* immatures feed on white-footed mice and pick up *Borrelia burgdorferi* ss
 - (1) This mouse does not occur along the coastal south
 - (2) We still have Lyme Disease reported in the south
 - ii) Adults are found on deer
 - b) Apperson et al, 1993
 - i) Switch in immature feeding behavior in the south
 - ii) *Ixodes scapularis* larvae & nymphs feed on lizards and skinks in the southern US
 - c) Tested ticks
 - i) 383 specimens *Ixodes scapularis* -
 - (1) <1% positive for *Borrelia burgdorferi* ss
 - (2) 99% were negative
 - ii) 186 specimens of *Ixodes affinis* - only 39% were negative for a *Borrelia* spp
 - d) What hosts are available?
 - i) Change in numbers of rodent and reptile species available as hosts geographically
 - (1) More rodents as you go further north
 - (2) More reptiles further south
 - ii) Similar changes seen from east to west
 - iii) Changes in deer populations as well
- 5) Take home message - look at the big picture