

***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