

## Search for a Predictive Model of EEE Activity in Virginia Beach, VA - Dreda Symonds

- A. Challenge
  - 1. How can mosquito control better prepare to make good decisions for a bad EEE season?
    - a) Allocating resources
    - b) Changing procedures
  - 2. When do you do what needs to be done
    - a) Communication with public
    - b) How much to say and when
- B. Goal - predicting EEE
  - 1. Measurable characteristics
    - a) Weather
    - b) Mosquito numbers
    - c) Sentinel chicken seroconversions
      - (1) Timing
      - (2) Clustering
      - (3) Numbers
    - d) Mosquito testing
  - 2. What to use and when
- C. Vectors
  - 1. Enzootic vector - *Cs melanura*
    - a) Hardwood swamps
    - b) Bird feeder
  - 2. Epizootic vector - varies, probably primarily *Cq perturbans*
- D. Data history
  - 1. Routine sampling for EEE started in 1999
  - 2. Data for study dates from 2003-2014
  - 3. Some changes have occurred in procedures
    - a) Use to send mosquitoes for RT-PCR testing
    - b) Now use VectorTest
- E. What is an active EEE year?
  - 1. Measured by number of events
    - a) Sentinel chicken seroconversions
    - b) Positive mosquito control
    - c) Positive horses
  - 2. First EEE event date and the epiweek it occurred
    - a) Median events - 5
    - b) Epiweek range
      - (1) Active season starts week 26-28
      - (2) Less active starts week 32
  - 3. What about rainfall and temperature?
    - a) Deviation from normal
    - b) Bad seasons look nothing alike weather-wise
    - c) Less active season also do not look alike
  - 4. Primary vector trap catches - historic data
    - a) Look at data from May & June - early in mosquito season
    - b) Magic number was 11 mosquitoes per trap night consistently in bad EEE years
      - (a) Average was 53% in high activity years
      - (b) Average was 25% in low activity years
    - c) Even more obvious in July and August
    - d) Lower numbers seen in September and Oct in high activity years

5. Chicken seroconversions
  - a) Early season seroconversions
  - b) Very few late season conversions
- F. Characteristics of an active season
  1. First EEE+ occurs before week 31 (in Virginia Beach, VA)
  2. Trap catches primarily over 11 *Cs melanura* per trap night per week in May and June
    - a) *Cs melanura* numbers lower late in the season I years with higher activities
    - b) Higher activity in chicken seroconversions early in the season
  3. EEE events during July - bad season
  4. Weather shows no correlation
- G. Doesn't seem to work as well for WNV
  1. Number of vectors doesn't seem to matter
  2. Early positive events seem to predict higher activity
  3. TN - *Cx restuans/pipiens* crossover data