

Invasive Species Impacting Native Disease Dynamics: A LAC Encephalitis Virus Case Study – Camille Harris

- a) Vectors are part of a community
- b) USGS - http://health.usgs.gov/vector_zoonotic/
- c) Study – Forest Disturbance, Mosquito Vector Ecology, and LACv Dynamics in SW Virginia
 - 1) Forest Disturbance and LAC vectors
 - (i) Each location had 7 different logging treatments
 - (ii) Work focused on 3 of the treatments
 - (a) Unlogged sites – fragmented controls
 - (b) Clear cut – removes 95%+ of canopy cover
 - (c) Shelter wood –
 - (i) Most disturbed
 - (ii) Youngest stand age
 - (iii) Added an undisturbed contiguous control site
 - 2) Methods
 - (i) Set traps in each area
 - (ii) Looked at forest community
 - (iii) Vectors
 - (a) *Aedes triseriatus*
 - (b) *Aedes albopictus*
 - (c) *Aedes japonicus*
 - (d) *Culex pipiens/restuans*
 - (e) *Aedes Canadensis*
 - (f) *Aedes vexans*
 - (iv) Linear mixed effect models
 - (v) 3-year study
 - 3) Results
 - (i) Disturbance
 - (a) *Aedes japonicus* declined
 - (b) *Aedes triseriatus* declined
 - (c) *Aedes albopictus* increased
 - (d) *Aedes canadensis* increased
 - (e) *Culex* – no preference
 - (f) *Aedes vexans* liked clear cut sites
 - (ii) Effect on LACv detection
 - (a) LACv detected in accessory vectors only
 - (i) 2 *Culex*
 - (ii) 1 *Aedes vexans*
 - (iii) 3 *Aedes japonicus*??
 - (iv) *Aedes albopictus*??
 - (v) *Aedes triseriatus* – no detection
 - (b) Evidence of competency of other vectors
 - (i) Found in eggs of *Aedes albopictus*
 - (ii) Nutritionally stressed larvae make better adult vectors

(iii) Conclusions

- (a) Most vertical transmission occurs in undisturbed forested areas
- (b) Evidence of LACv found in chipmunks on all sites
- (c) It's complicated