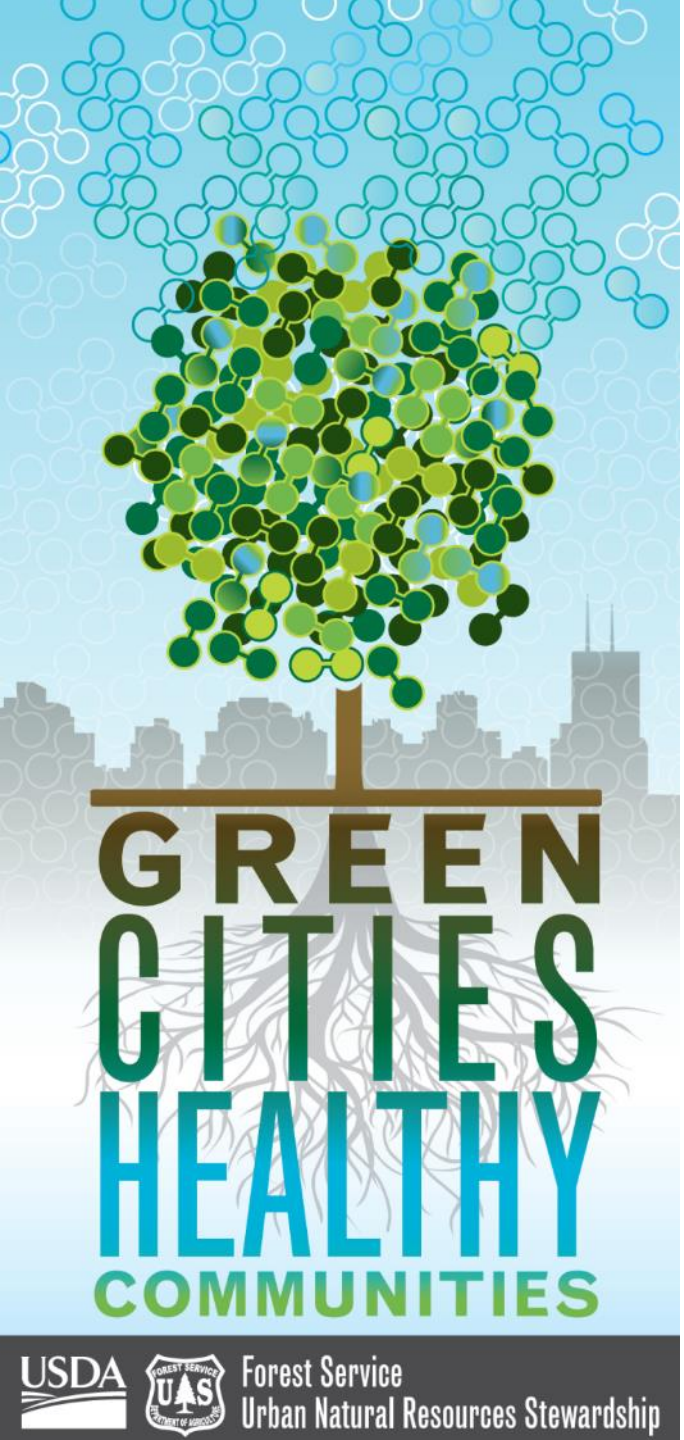


USDA Forest Service

URBAN FOREST CONNECTIONS

webinar series

Second Wednesdays | 1:00 – 2:15 pm ET

www.fs.fed.us/research/urban-webinars

This meeting is being recorded. If you do not wish to be recorded, please disconnect now.

USDA is an equal opportunity provider and employer.

NUCFAC Highlights: Climate change impacts and adaptive strategies

Lance Davisson

Chair

National Urban and Community Forestry Advisory Council

Graeme Lockaby

Associate Dean, School of Forestry and Wildlife Sciences

Auburn University

Wayne Zipperer

Research Forester

USDA Forest Service

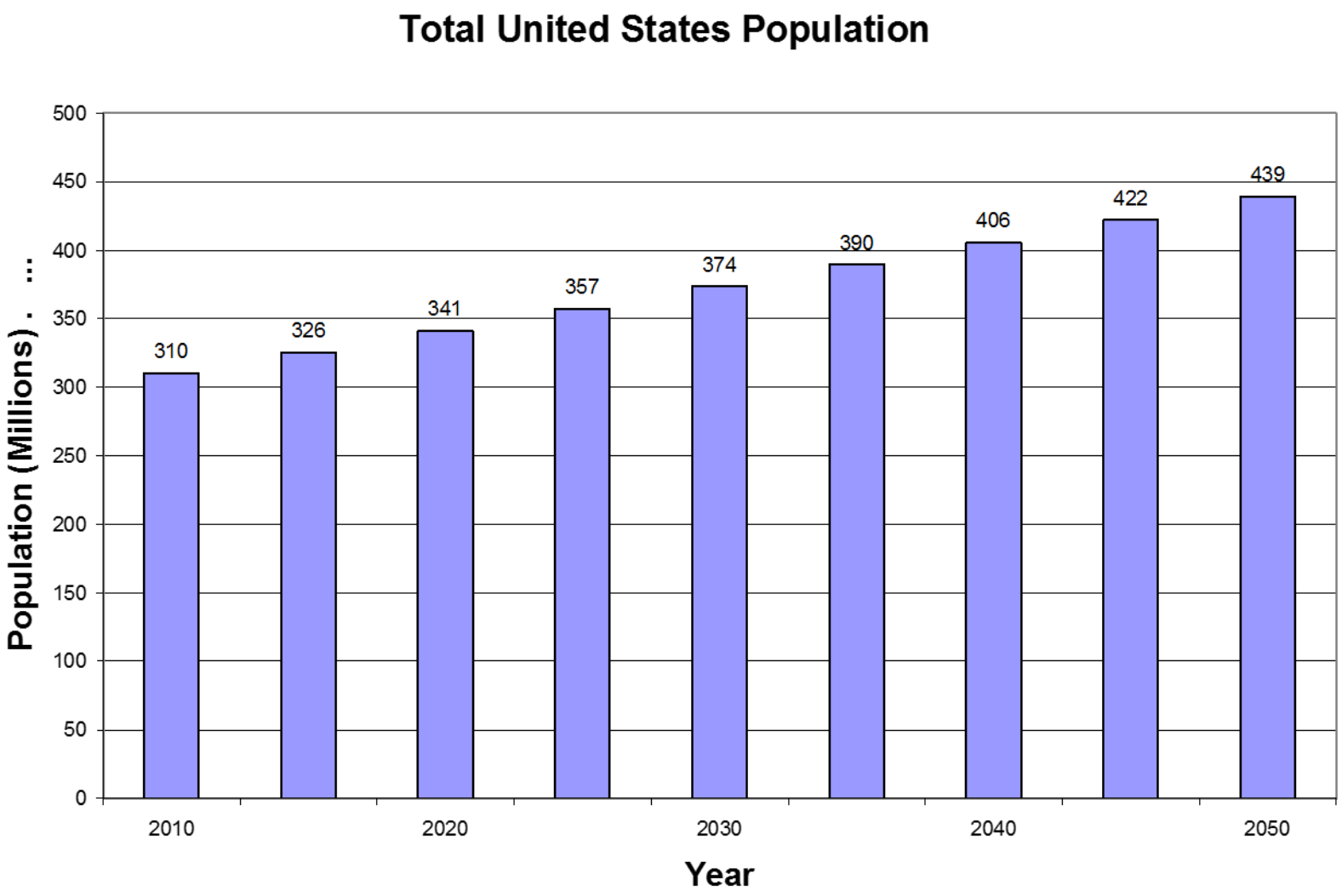
Andy Whitman

Director, Sustainable Economies Program

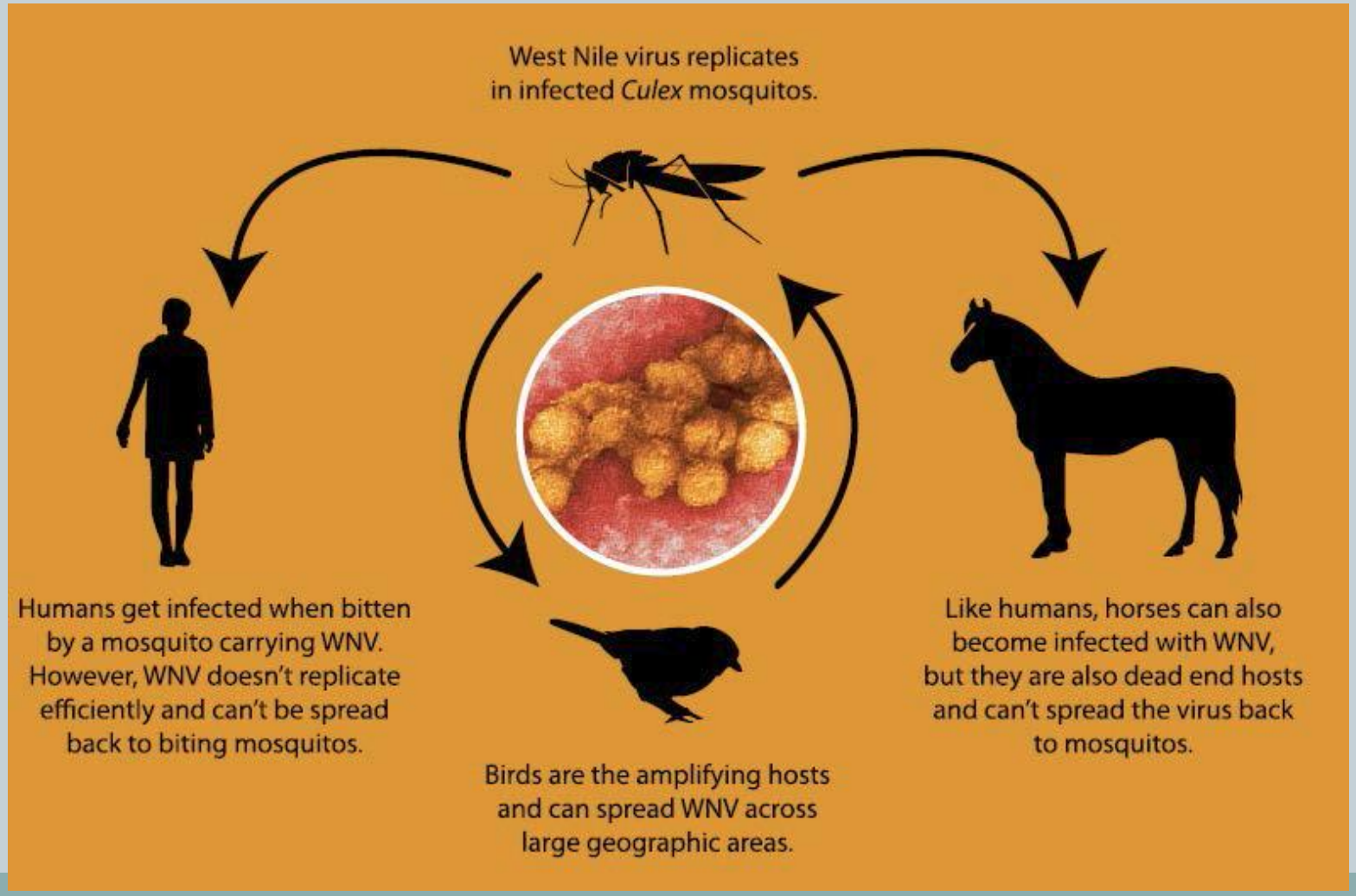
Manomet

Influence of Forest to Urban Conversions on Incidence of West Nile Virus near Atlanta, GA

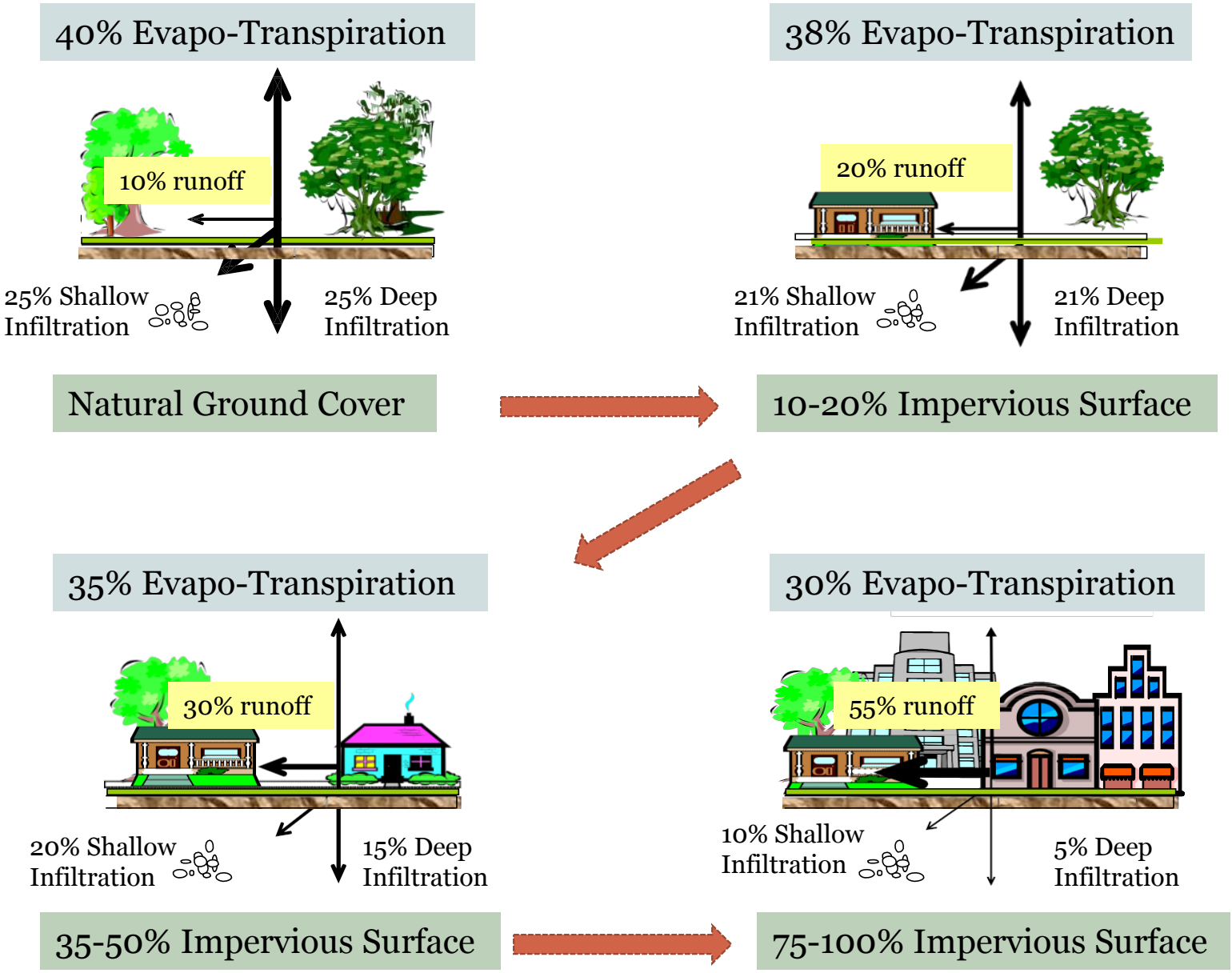
B.G. LOCKABY & W.C. ZIPPERER


Total United States Population
Population (Millions) . ...
500
450
400
350
300
250
200
150
100
50
0
310
326
341
357
374
390
406
422
439
2010
2020
2030
2040
2050
Year

West Nile Virus



Greene and Reid, AAM 2013



http://www.coastal.ca.gov/nps/watercyclefacts.pdf

West Nile Virus – Related Factors

- Habitat factors
  - Forest characteristics
  - Urban hydrology
  - Corvid habitat (reservoir)
  - Socioeconomics

- The Vector
  - Culex sp. mosquitoes
    - Mosquito habitat
    - Nutrients in water

Effects of Forest to Urban Conversion on WNV in Atlanta

- WNV data from GA Dept. of Public Health
- 522 sampling locations across 58 sites
- Vegetation sampling (forest structure, species)
- Socioeconomic – census and field
- Climate (meteorological) modelling
- Land use/Land cover analysis
- Funded by USDA

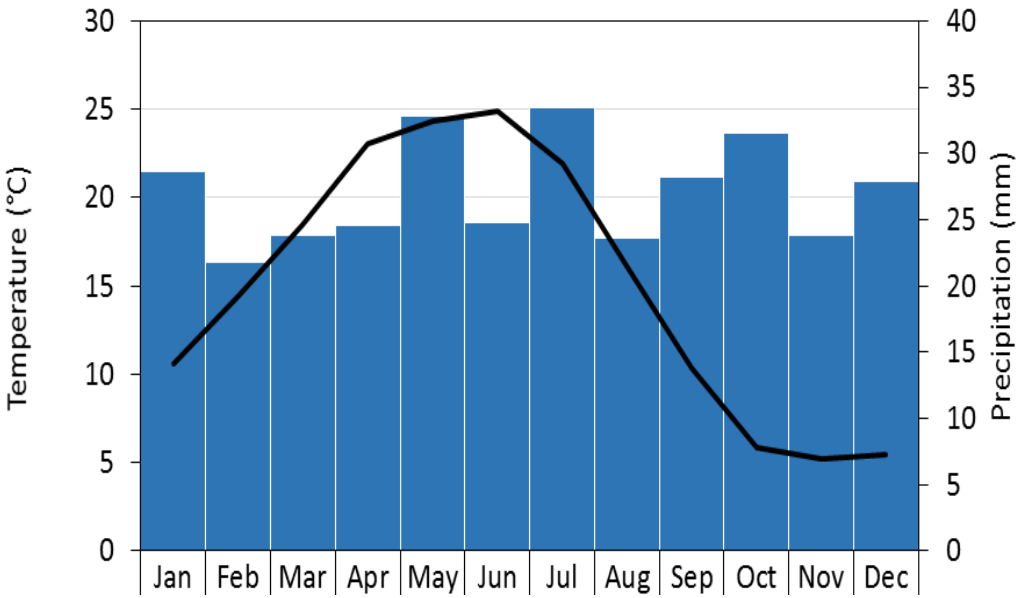
Mosquito breeding sites, corvids, and poverty

Vector Index (VI) = average WNV positive mosquitoes collected per trap night

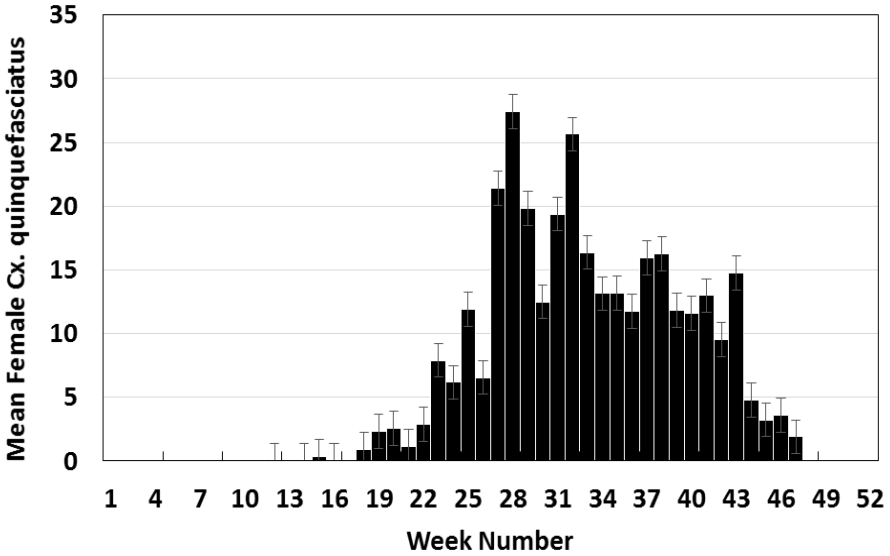
Study sites used in Fulton, DeKalb and Cobb Counties in Georgia

-The red rectangle represents the approximate study area.
-The black dots on the inset represent 58 study sites with 1km buffer.

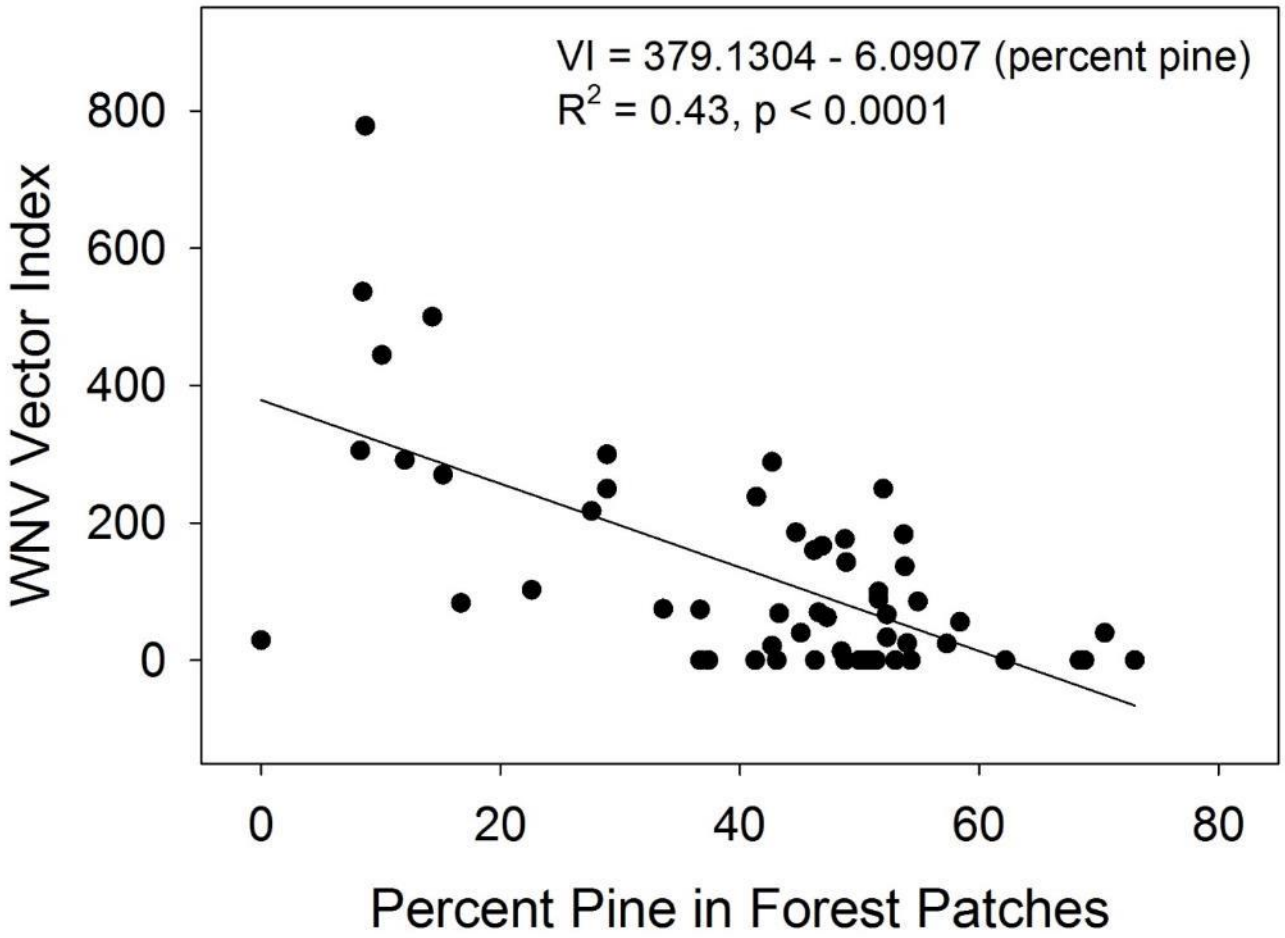
Average weekly climate data



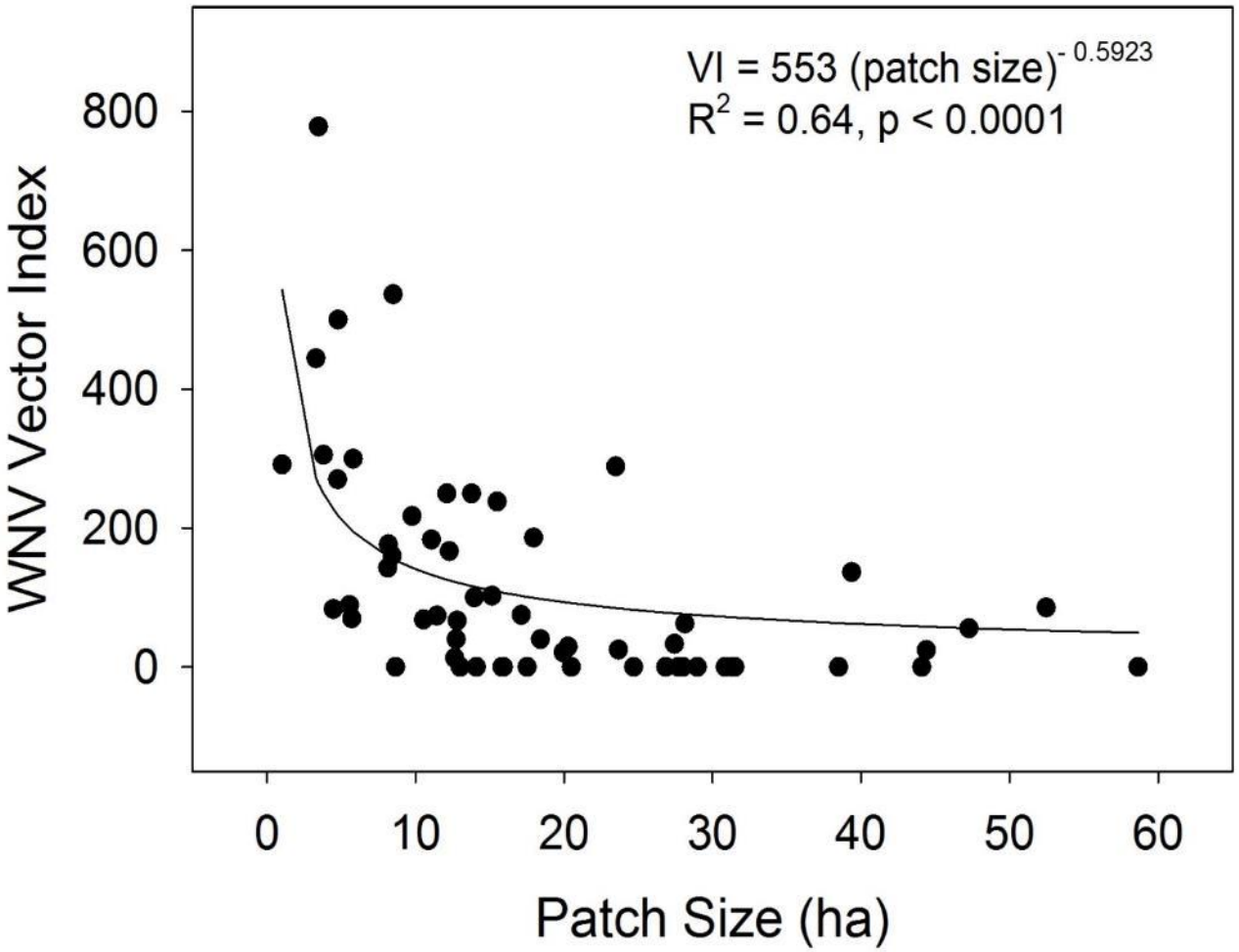
Average weekly mosquito abundance data over the period 2002 to 2009 for the central north of GA



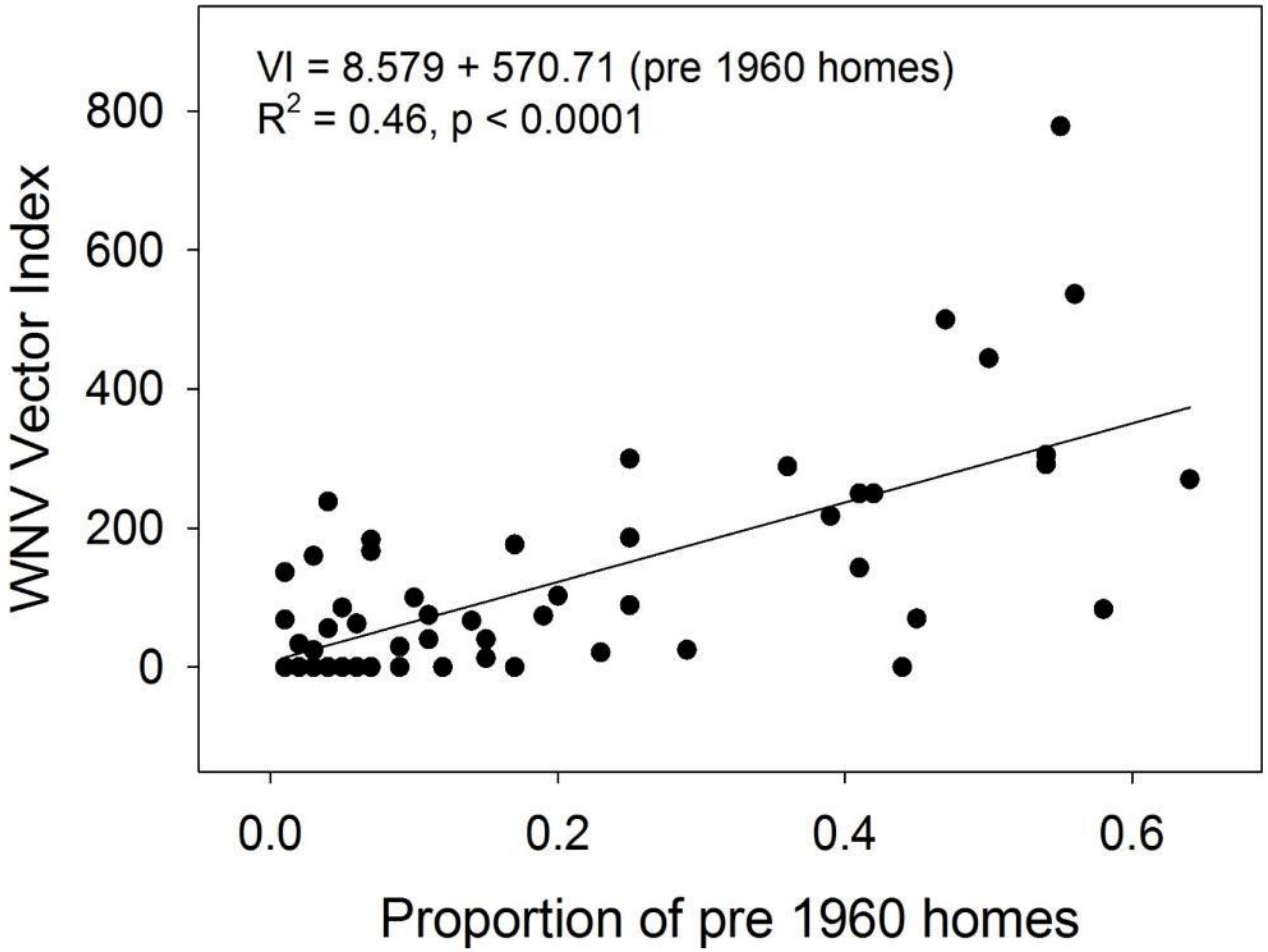
Correlation between % pine species in patches and West Nile Virus



Relationship between average urban forest patch size and West Nile Virus



Relationship between pre 1960 homes and West Nile Virus



Climate scenario favorable for WNV = warm winter, wet early spring, dry late spring and summer

Conclusions

- Larger forest patches and higher pine composition of patches are associated with lower VI.
- As % impervious surface rises, the vector index follow.
- Older neighborhoods and low income households are associated with higher vector indices.

Conclusions continued

- Lagged 4 week moving averages of soil moisture were effective predictors of VI and, as average soil moisture increases, VI rose accordingly.
- There is a strong need for greater detail in the metrics measured, particularly socioeconomics.
- Results reinforce the critical need for well coordinated, interdisciplinary studies.

Project Learning Tree

- To help educate others about West Nile virus, Project Learning Tree has teamed up with Auburn University to develop an activity for middle and high school students. The activity can be used in general science, biology, ecology, environmental science, and health classes. It was posted on the PLT website distributed through the summer branch newsletter to over 20,000 people.

Summary

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THE MOST I'VE USED A SHOVEL ALL SEASON!
OLD MAN WINTER
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