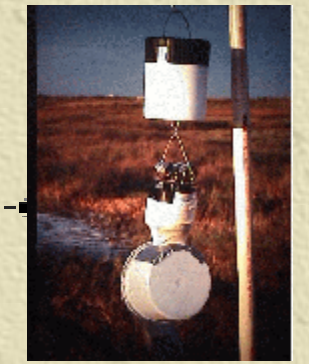
Comparison of methods for assessment of *Culex tarsalis* population trends



Steve Schutz

Ann Donohue

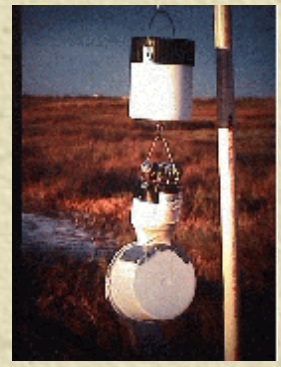
Charles Beesley

Contra Costa Mosquito & Vector Control District

Methods for assessing mosquito populations

Data commonly collected by MADs

- Service calls*
- Landing counts
- New Jersey light traps*
- CO2 traps*
- Larval dip counts*



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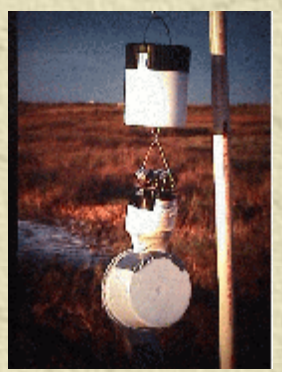
Methods used at CCMVCD

1995-2001

- 15-18 New Jersey light traps (operated year-round; sampled weekly; fixed locations)
- 15 EVS traps (operated weekly May thru October, biweekly November thru April; fixed locations)
- Minimum 12 larval samples per month, per zone (108 per month, March thru November, variable locations)
- Service calls (recorded year-round)



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Objectives

5-year comparison: 1995-99

- How do sampling methods correlate with each other?
- How do they correlate with temperature, rainfall?
- Are they giving us equivalent/useful information?
- Can we accurately data convert from one method to another?

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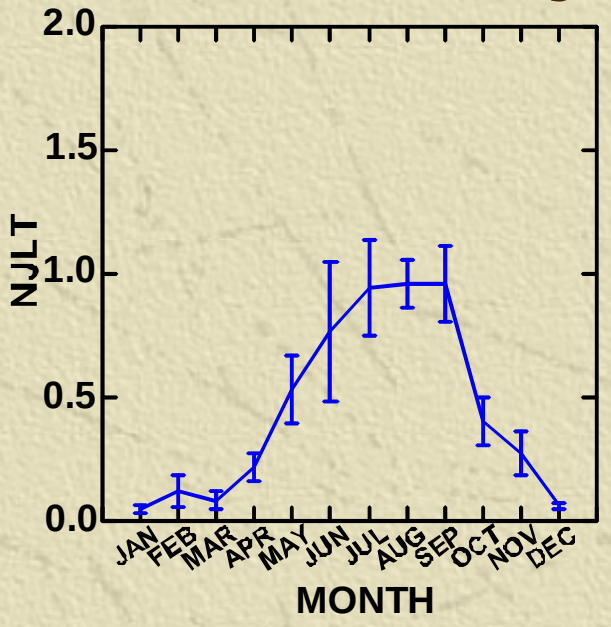
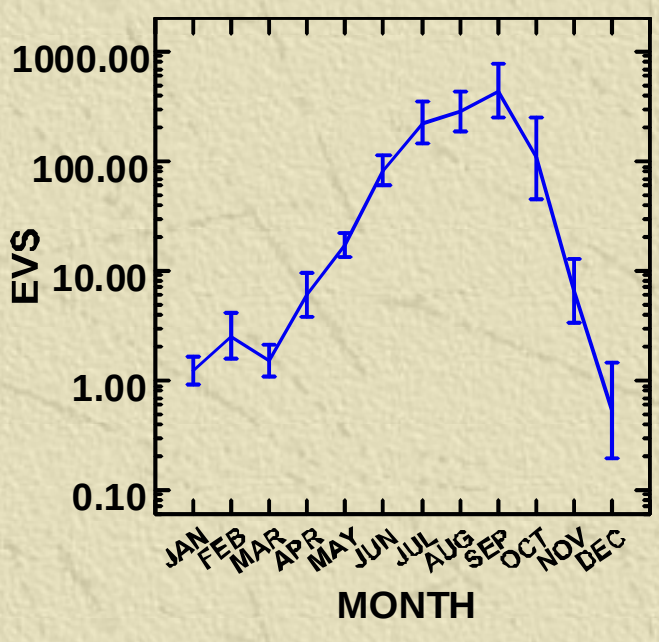
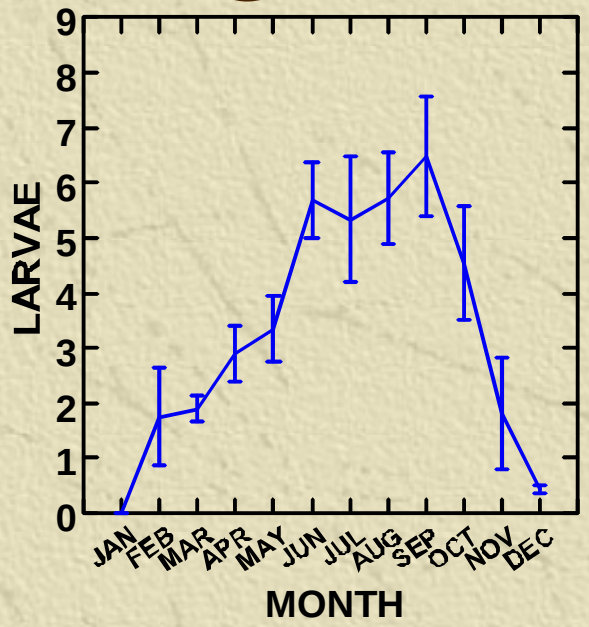
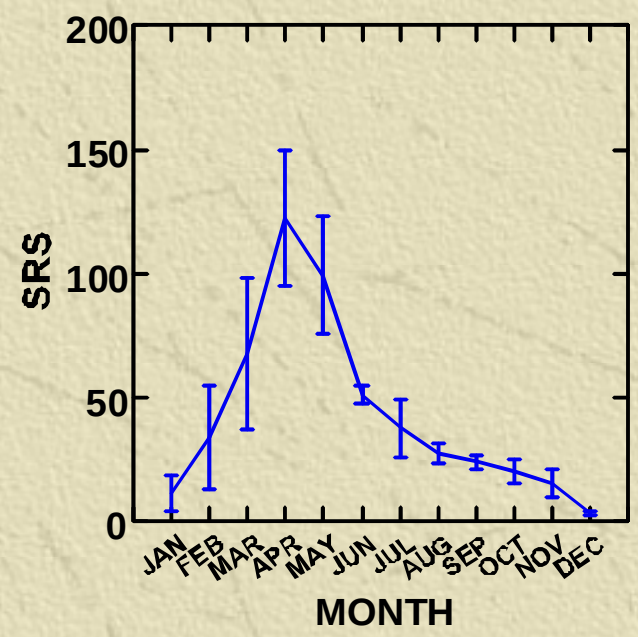
Seasonality-monthly 5-yr average









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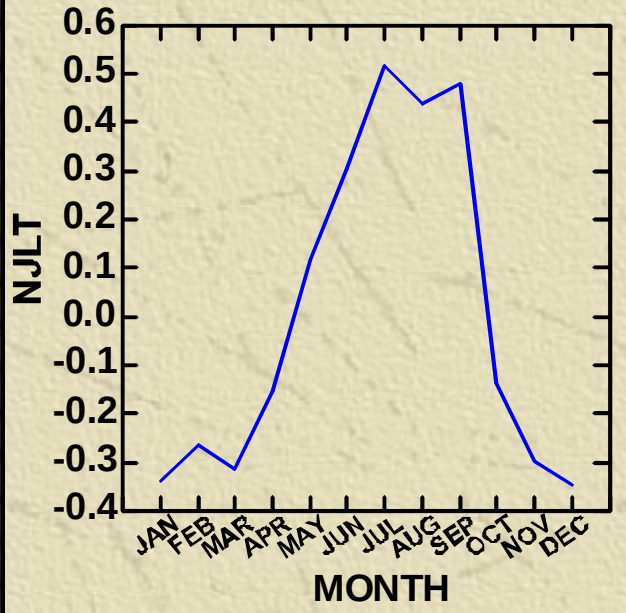
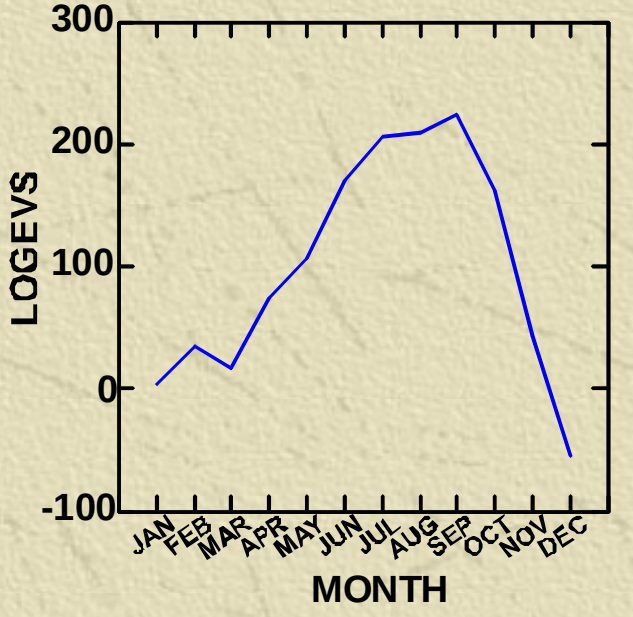
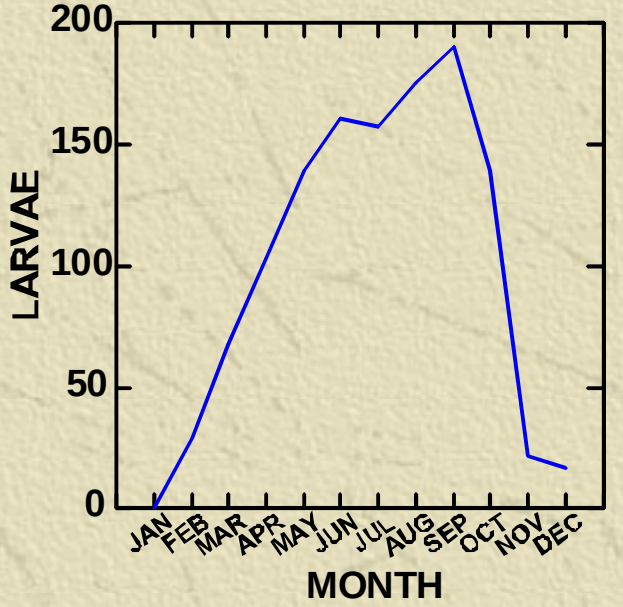
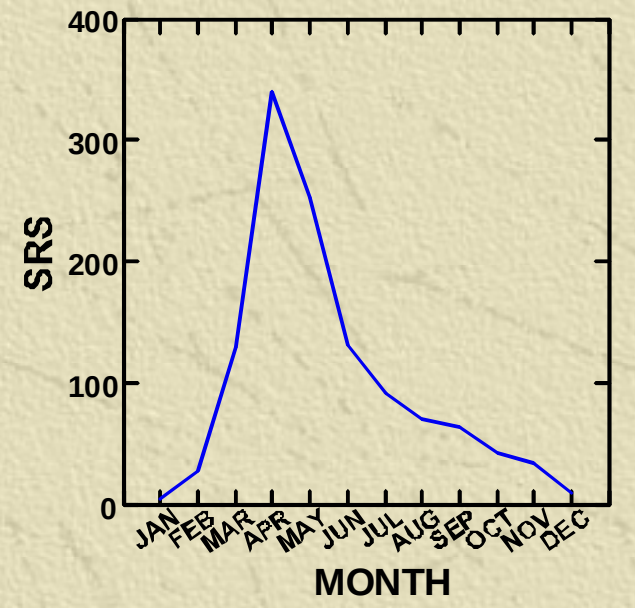
Seasonality-annual variation removed









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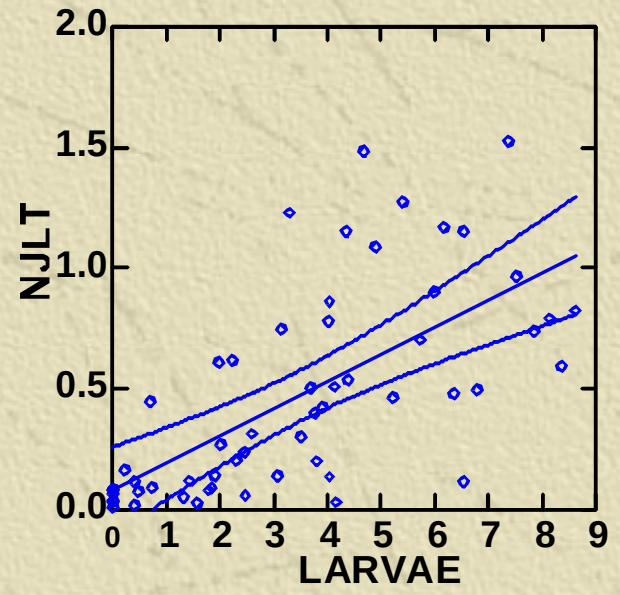
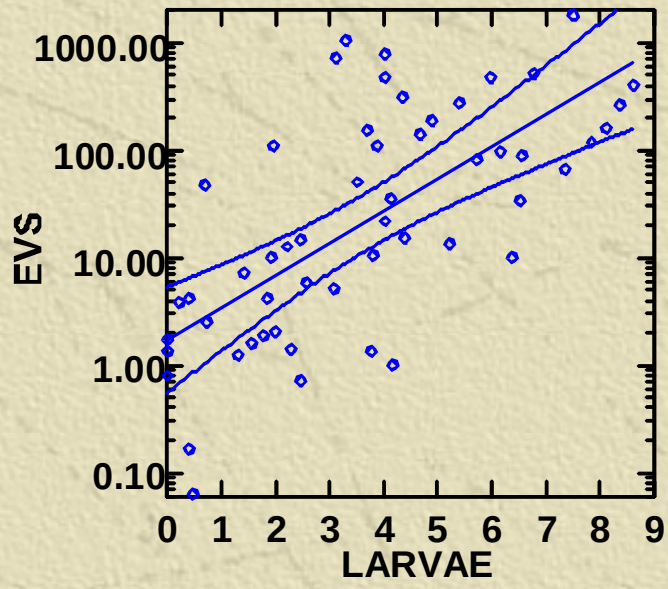
Correlation among sampling methods

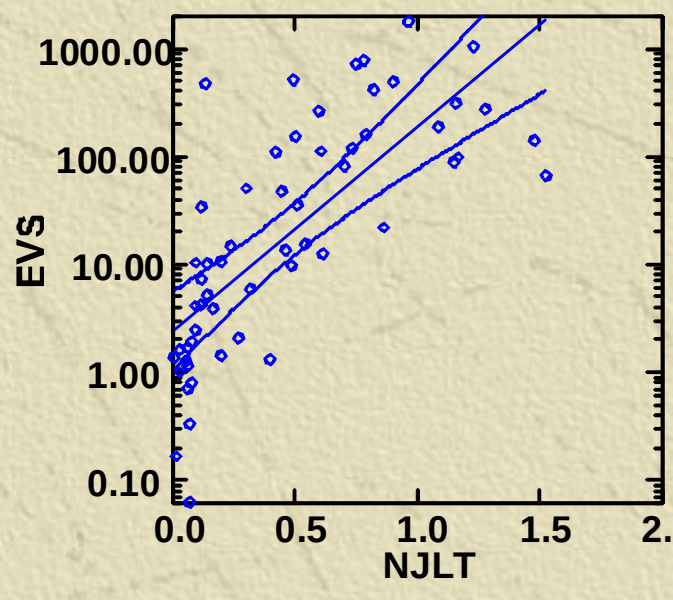
R^2=0.446, p<0.001



R^2=0.469, p<0.001



R^2=0.551, p<0.001



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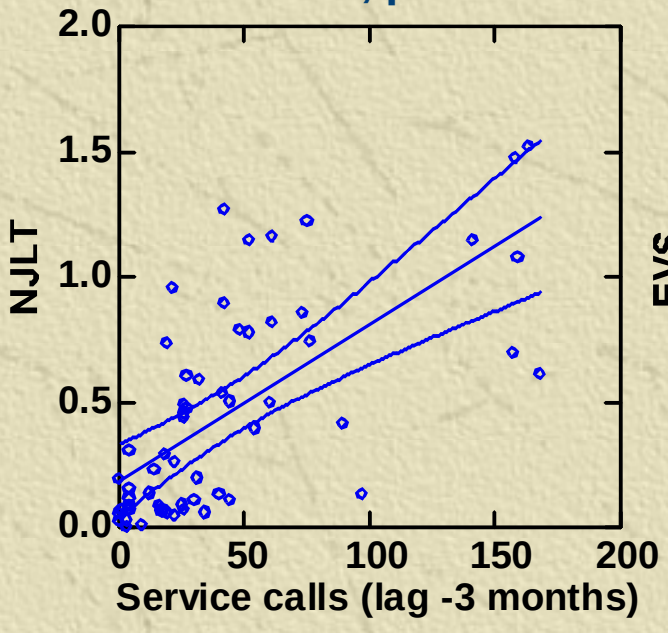
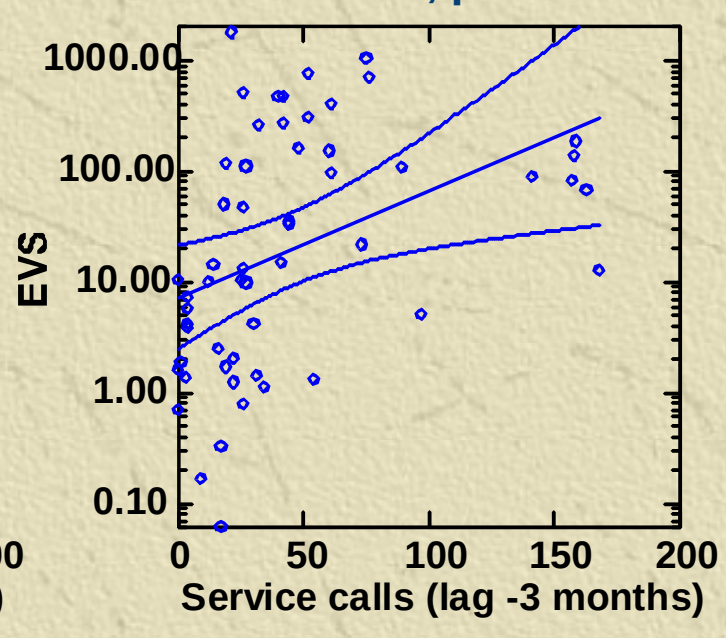
Correlation with service calls (lag = -3 mo.)

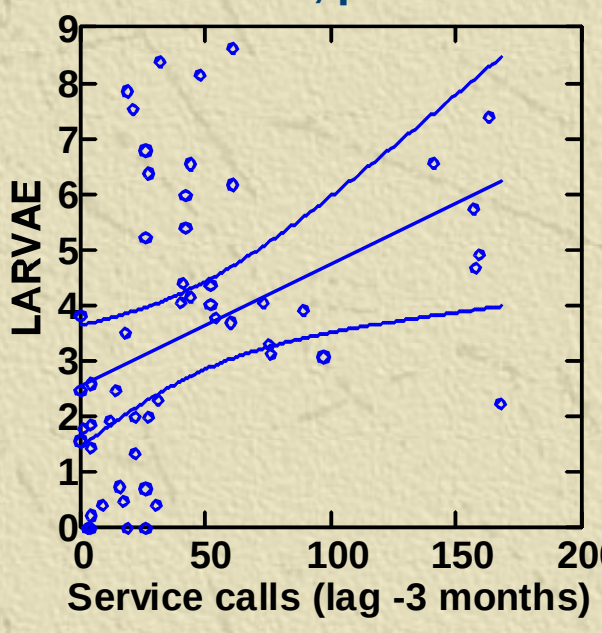
R^2=0.457, p<0.001

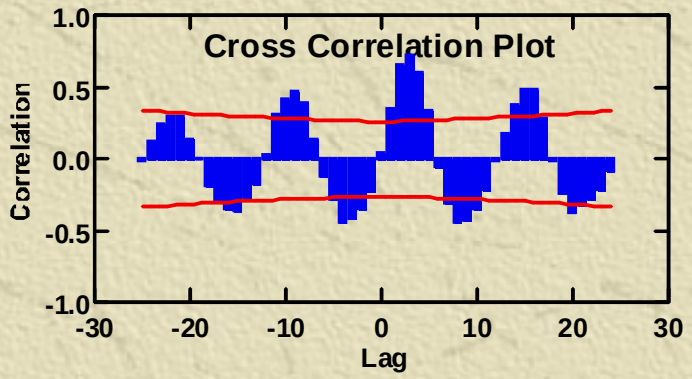


R^2=0.166, p<0.01



R^2=0.165, p<0.01





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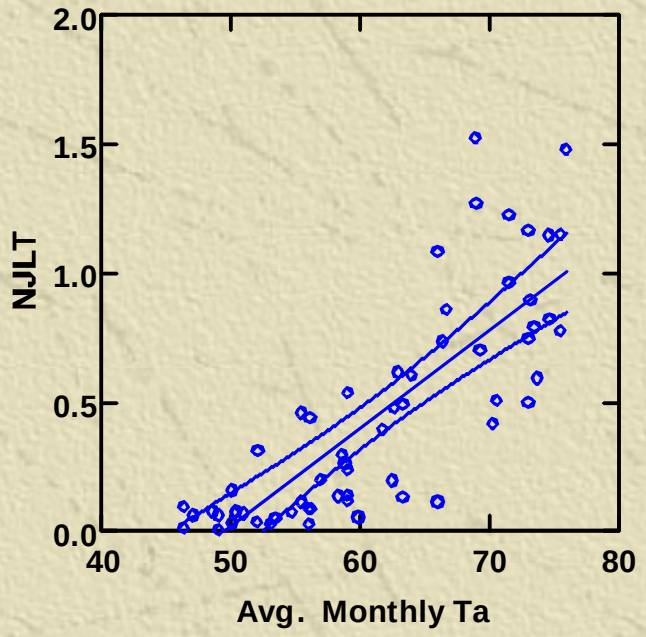
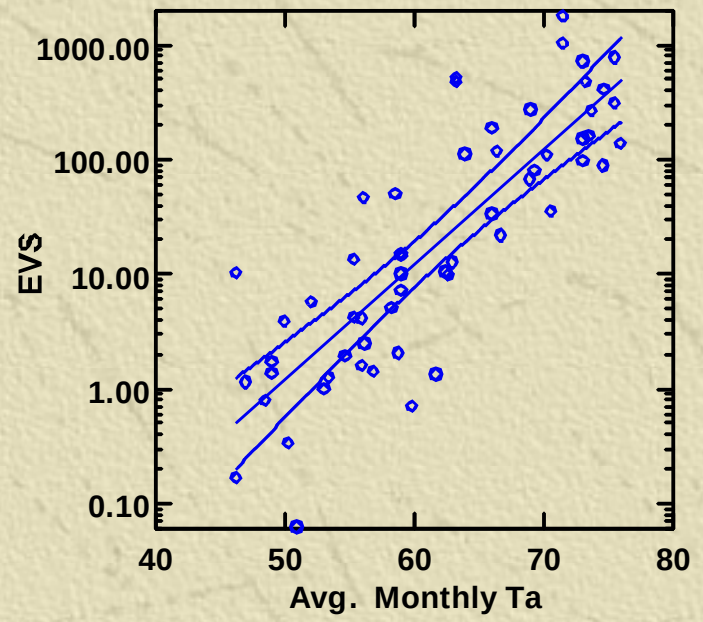
Correlation with temperature

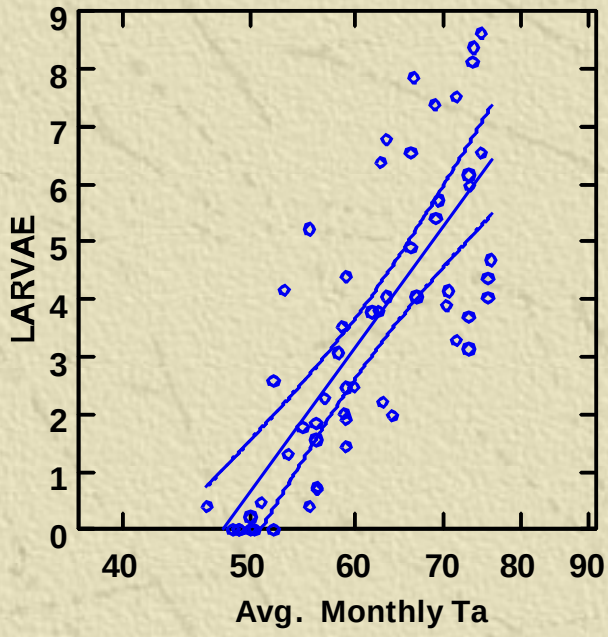
R^2=0.661, p<0.001



R^2=0.704, p<0.001



R^2=0.605, p<0.001



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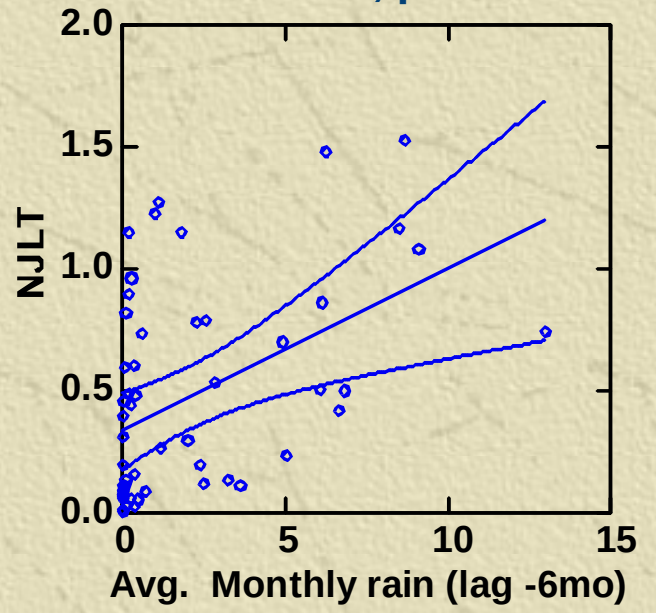
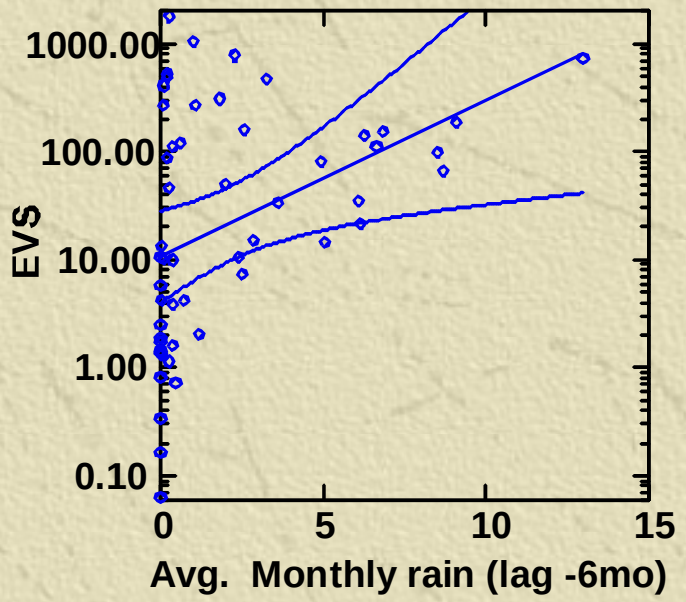
Correlation with rainfall (lag = -6mo.)

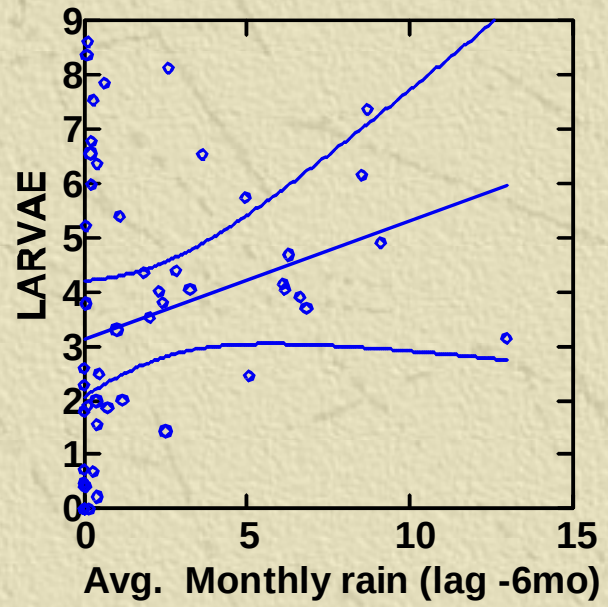
R^2=0.220, p<0.001

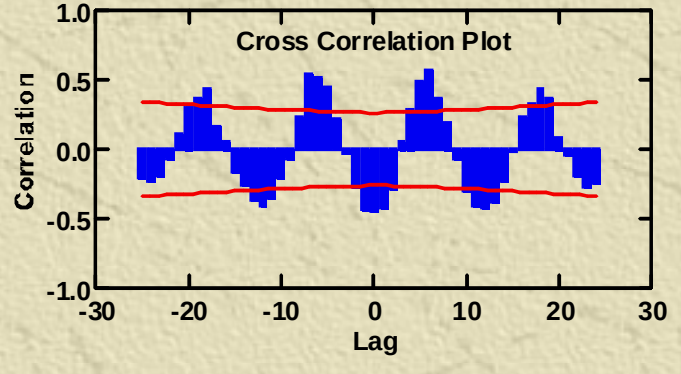


R^2=0.167, p<0.01



R^2=0.069, p=0.061 ns





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Conclusions

- NJLT, (log)EVS and larval dip counts are strongly correlated and show similar seasonal trends
- Service requests not directly indicative of *Cx tarsalis* population but appear to be predictive of NJLT counts
- NJLT, (log)EVS and larval dip counts strongly correlated with temperature
- Rainfall weakly predictive of NJLT and EVS counts
- NJLT and EVS provide similar information on area-wide population trends despite differences in raw numbers captured
- Conversion problematic at high or low densities due to increasing error

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