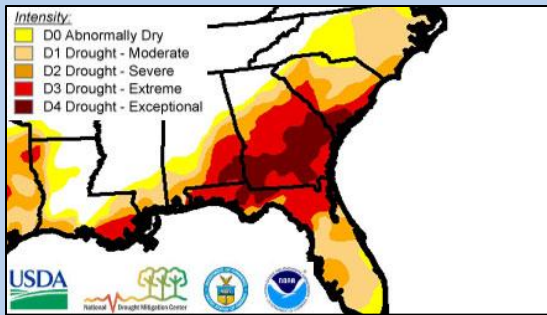


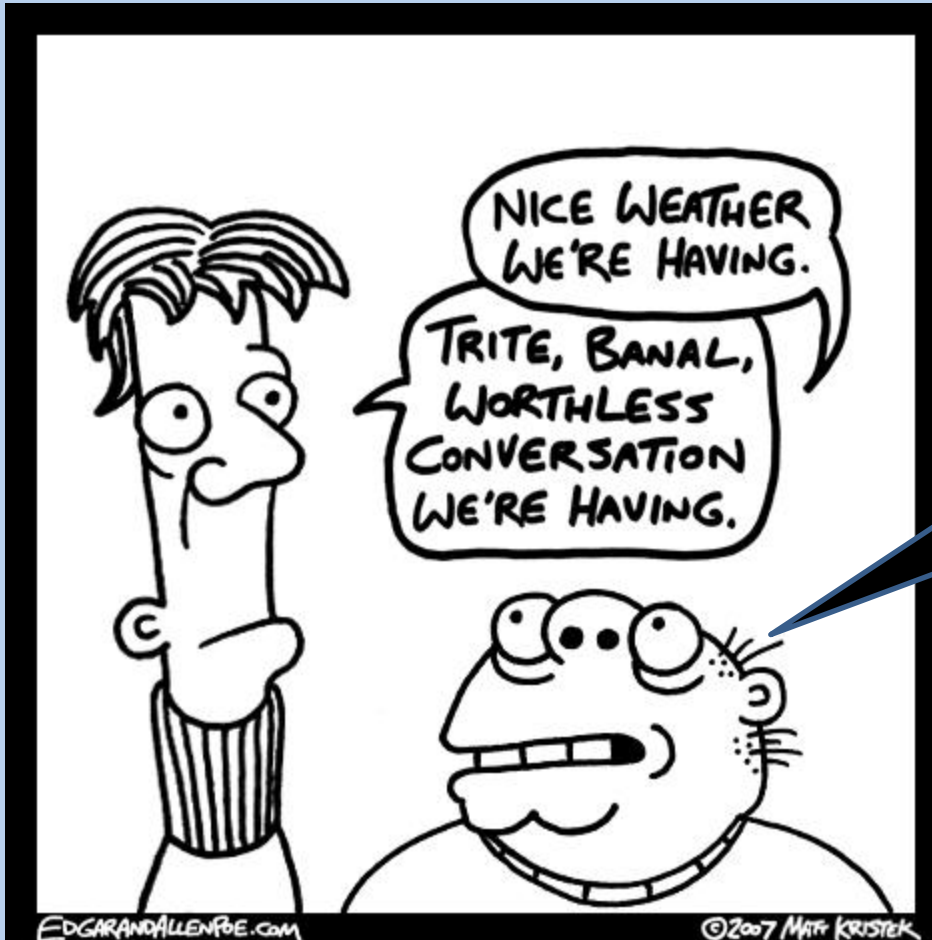
Effects of Drought on Mosquito Populations in Southern Georgia



Mark S. Blackmore

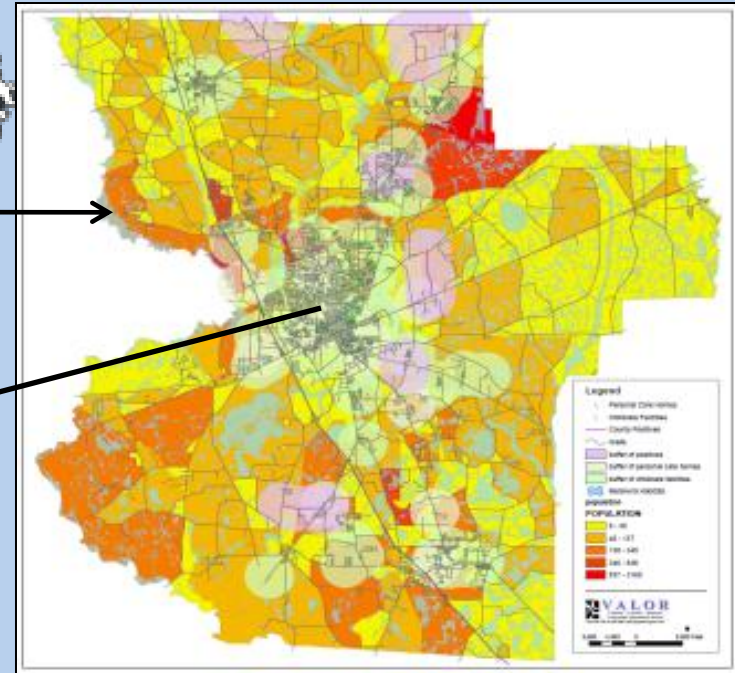
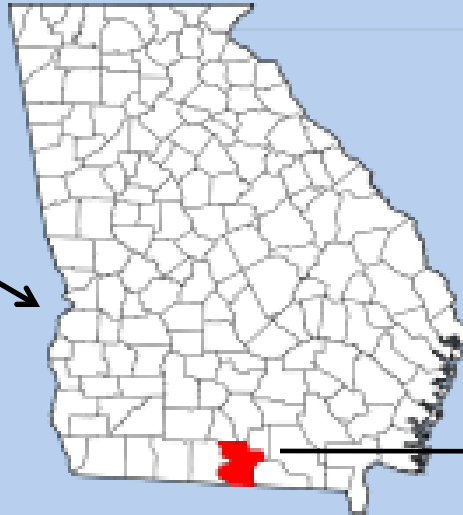
Lauren Smith

Department of Biology
Valdosta State University



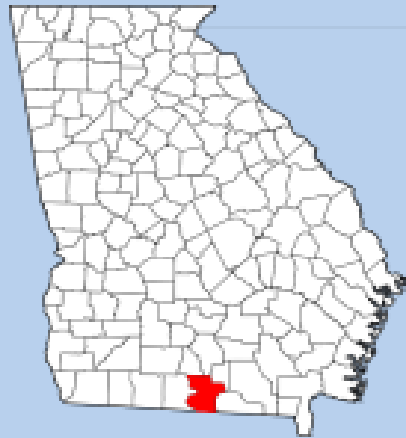
Have you ever
seen the
mosquitoes this
bad?

Lowndes County, Georgia



Mosquitoes (Diptera: Culicidae)

- Approximately 3500 species worldwide
- ~58 in Georgia
- 34 species (so far) in Lowndes County



Mosquito Fauna of Lowndes County*

Ae. albopictus

Ae. vexans

An. crucians s.l.

An. punctipennis

An. quadrimaculatus

Cq. perturbans

Cs. inornata

Cs. melanura



Cx. coronator

Cx. erraticus

Cx. nigripalpus

Cx. quinquefasciatus

Cx. restuans

Cx. salinarius

Cx. territans

Oc. atlanticus

Oc. canadensis



Florida Medical Entomology Laboratory
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Oc. fulvus pallens

Oc. infirmatus

Oc. triseriatus

Oc. mitchellae

Oc. sticticus

Oc. taeniorhynchus

Oc. thibaulti

Oc. sollicitans

Or. signifera



Ps. ciliata

Ps. columbiae

Ps. ferox

Ps. howardii

Ps. cyanescens

Ur. sapphirina

Ur. lowii

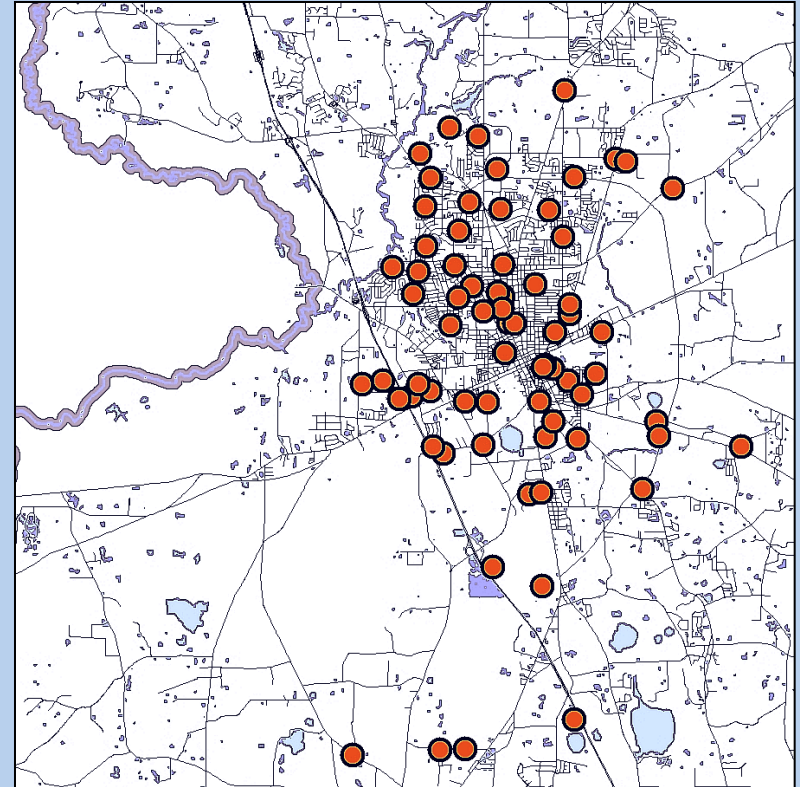
Tx. rutilus



* Species collected 2002-2012 ($n=34$)

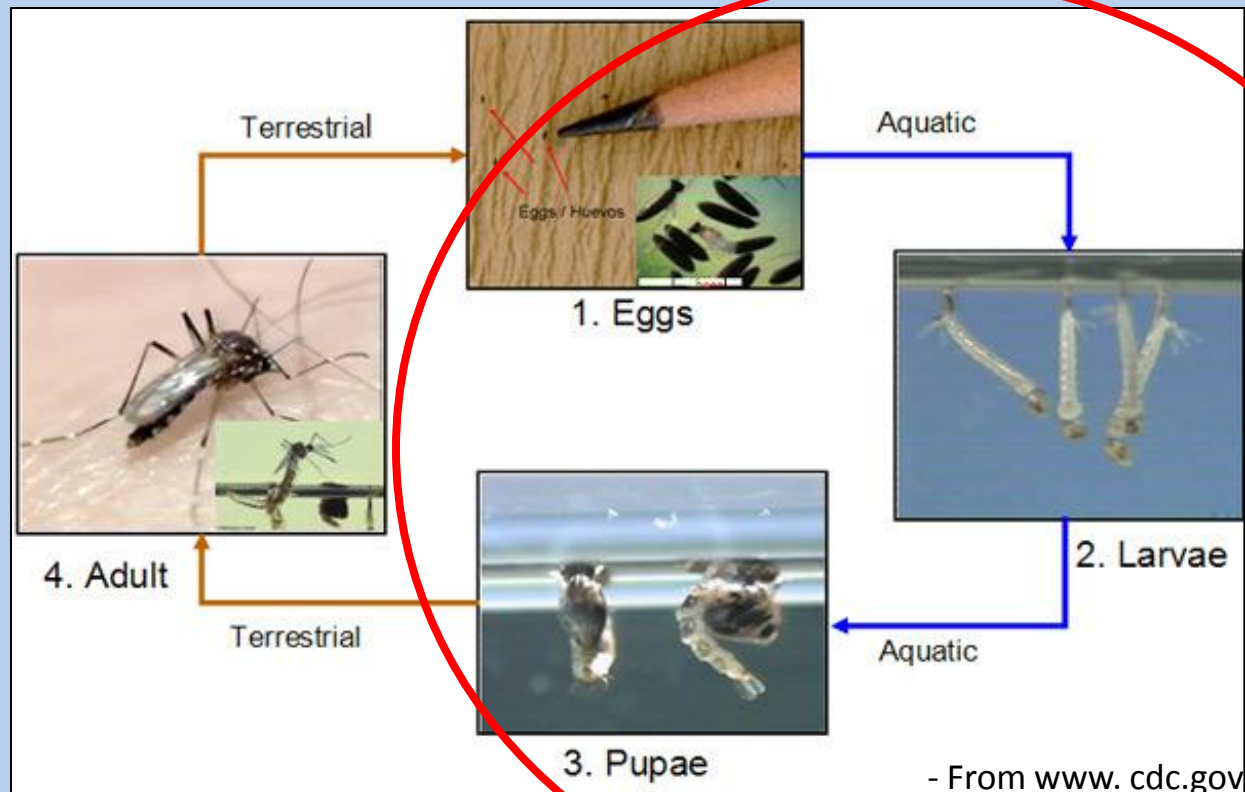
Widely Distributed Species

- *Culiseta melanura* 81%
- *Ochlerotatus infirmatus* 73%
- *Culex quinquefasciatus* 67%
- *Culex nigripalpus* 64%
- *Aedes vexans* 60%
- *Anopheles crucians* s. l. 58%
- *Aedes albopictus* 55%



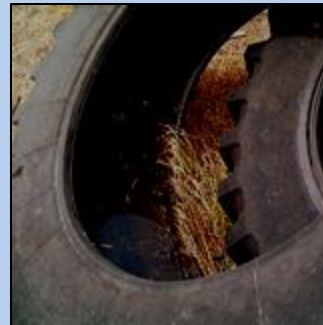
Life Cycle

- *All require aquatic habitat*



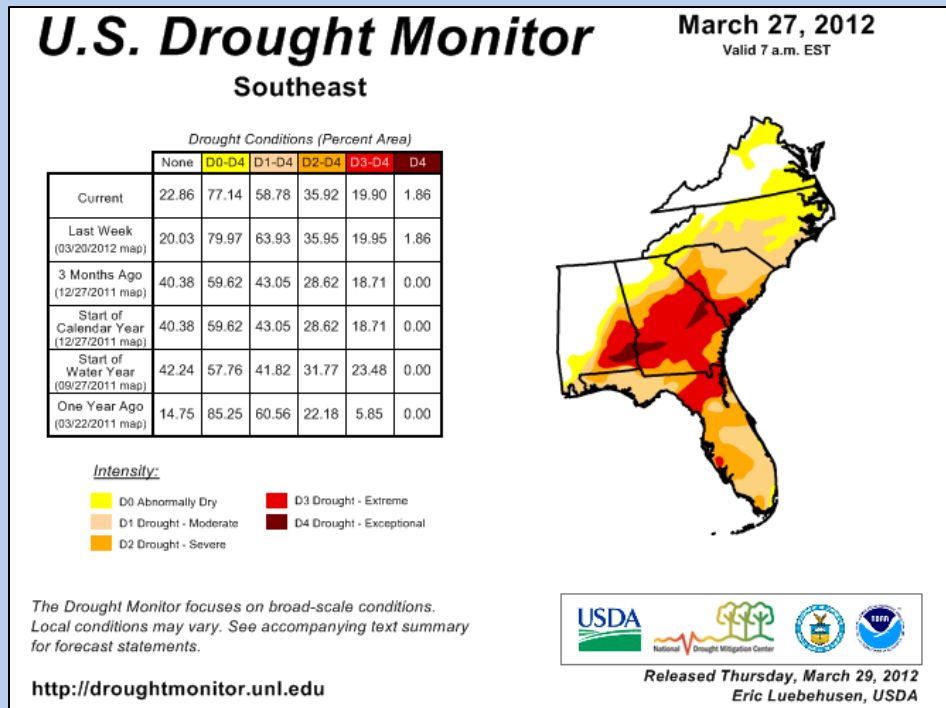
Larval habitats include...

- Permanent ponds
- Ephemeral pools & flood water habitats
- Roadside ditches
- Tree holes & artificial containers



“Common Knowledge”

- Wet years are good for mosquitoes (and bad for us)
- Dry years are bad for mosquitoes

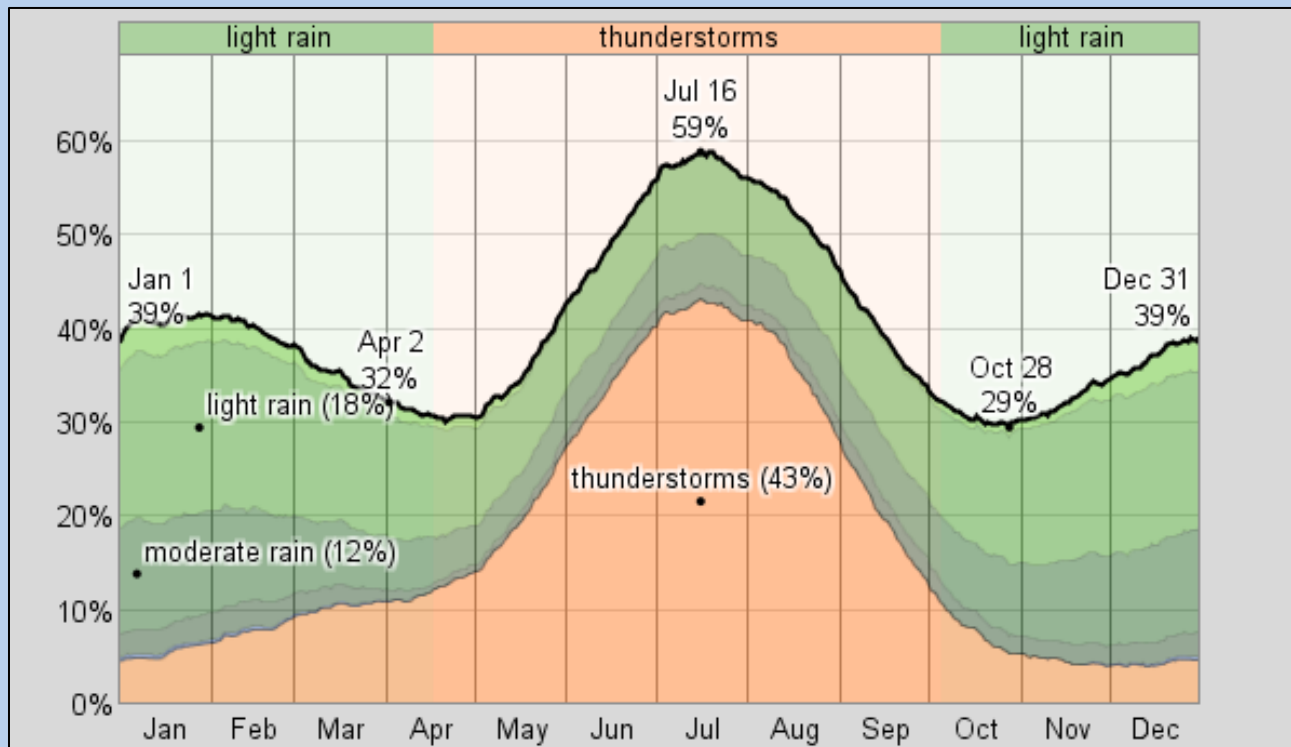


“RAIN MAKES MOSQUITOES”

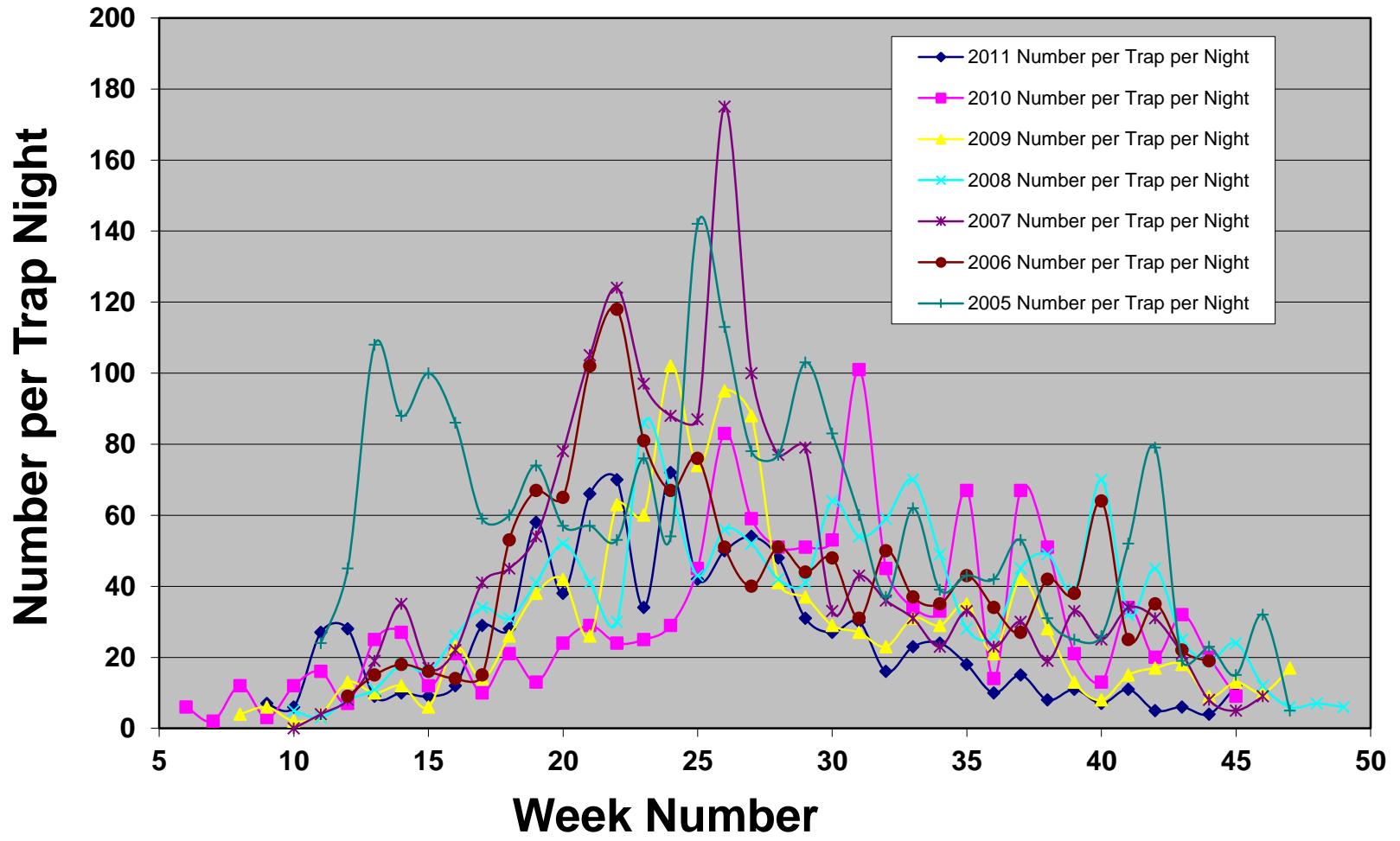
**— FROM EDDIE MCGRUFF, UNIVERSITY OF GEORGIA
EXTENSION AGENT, COFFEE COUNTY, GEORGIA,
ON MARCH 25TH, 2012**

Lowndes Co. Weather

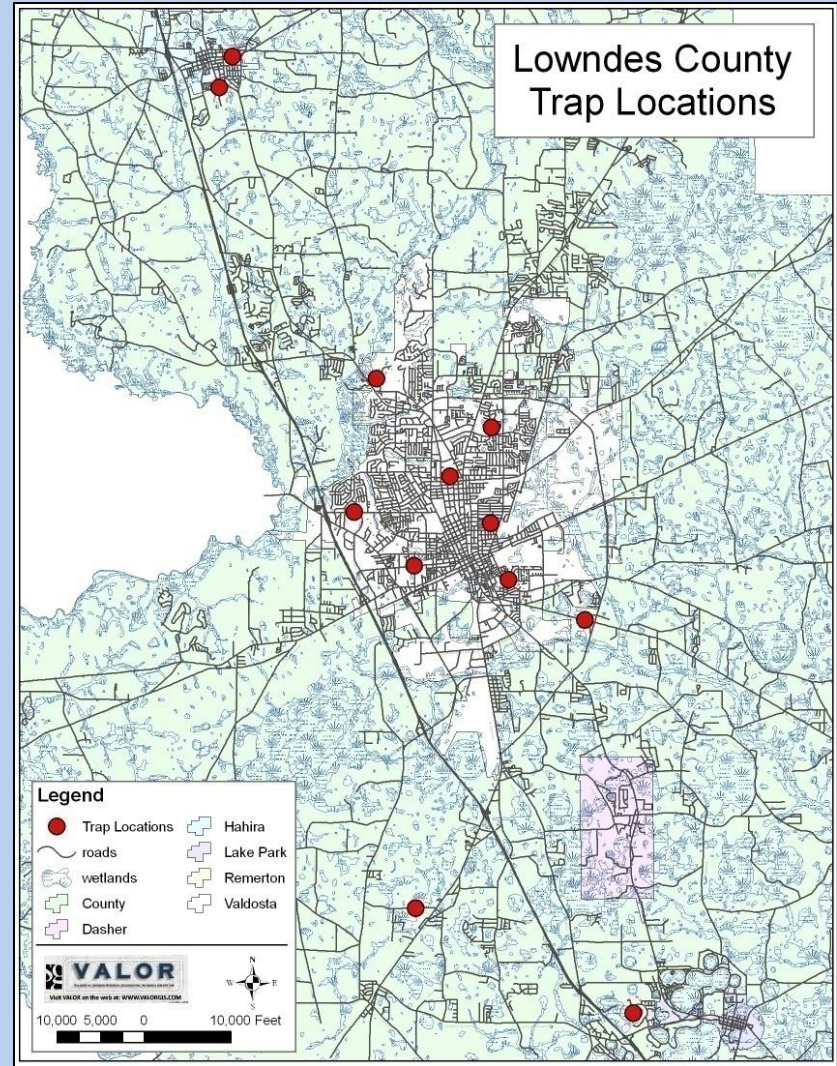
- Average daily temperatures:
January = 10°C (50°F); July = 27°C (80.9°F)
- Annual mean rainfall = 136 cm (53.06")



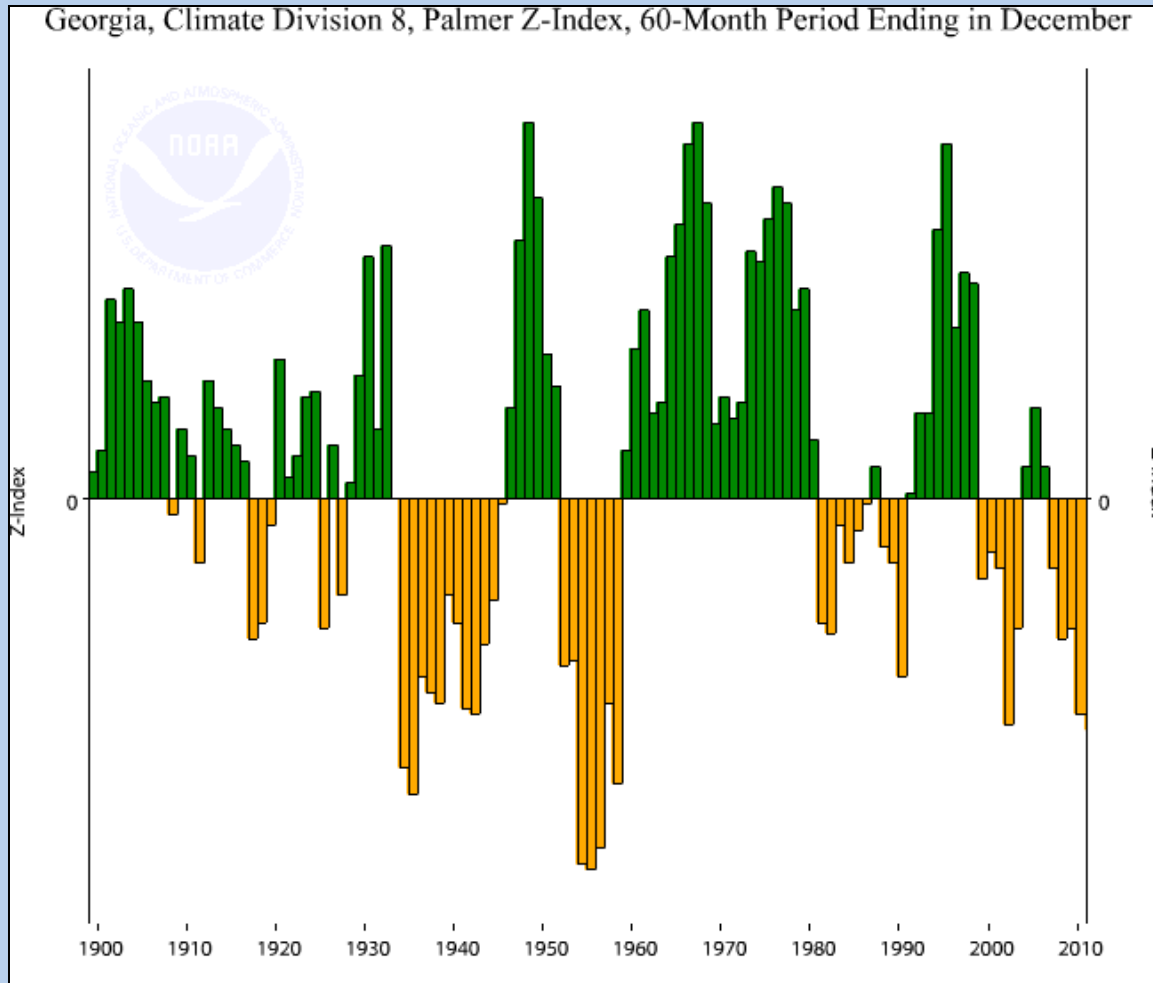
Weekly CDC Light Trap Collections 2005-2011



Mosquito Surveillance In Lowndes County



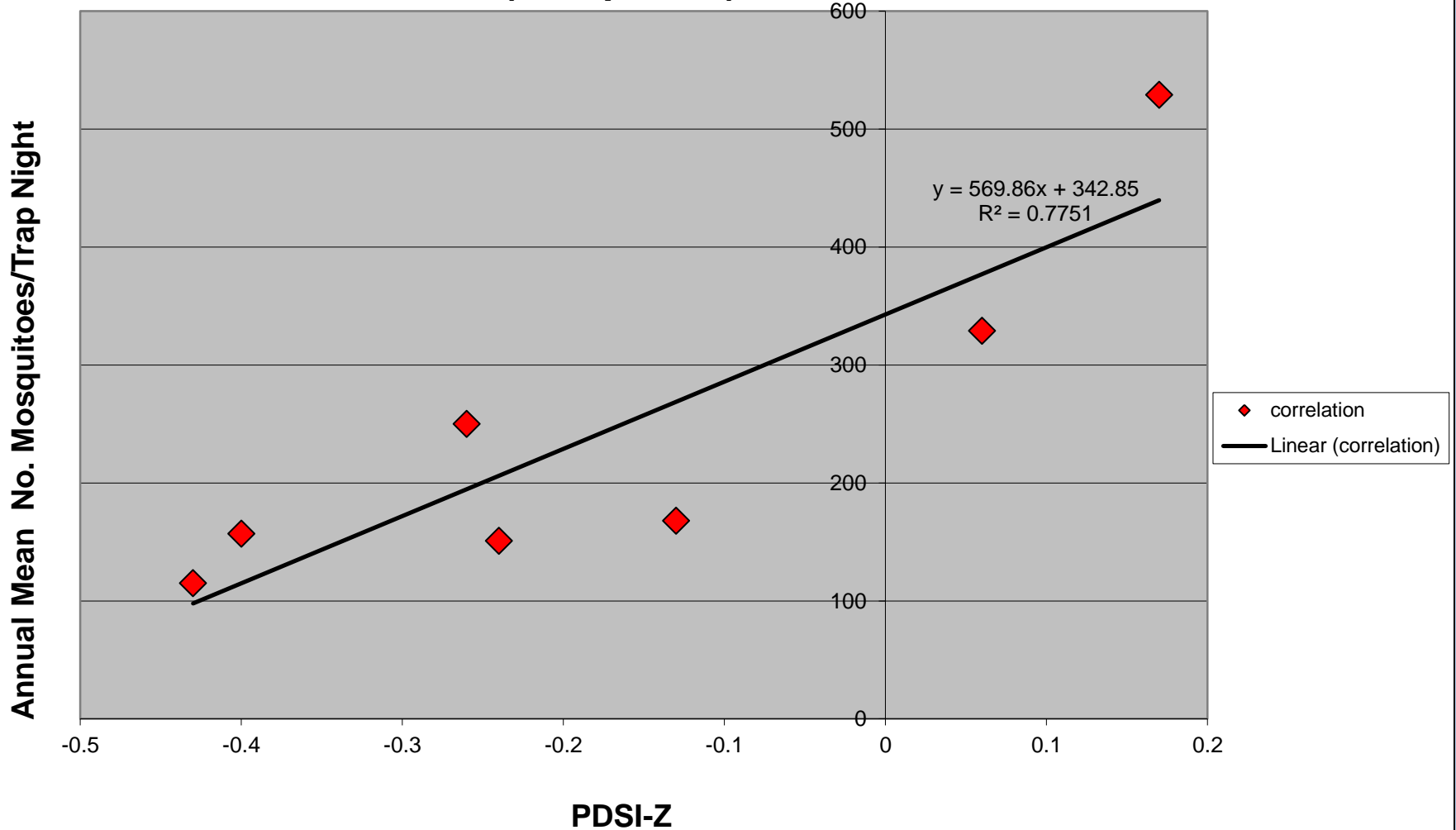
Drought



Palmer Drought Indices

- Factors include:
 - Precipitation totals
 - Evapotranspiration
 - Soil runoff
 - Soil recharge
- Palmer-Z shows how monthly moisture conditions depart from normal

Effect of Drought Severity on Mosquitoes Collected (All Species)

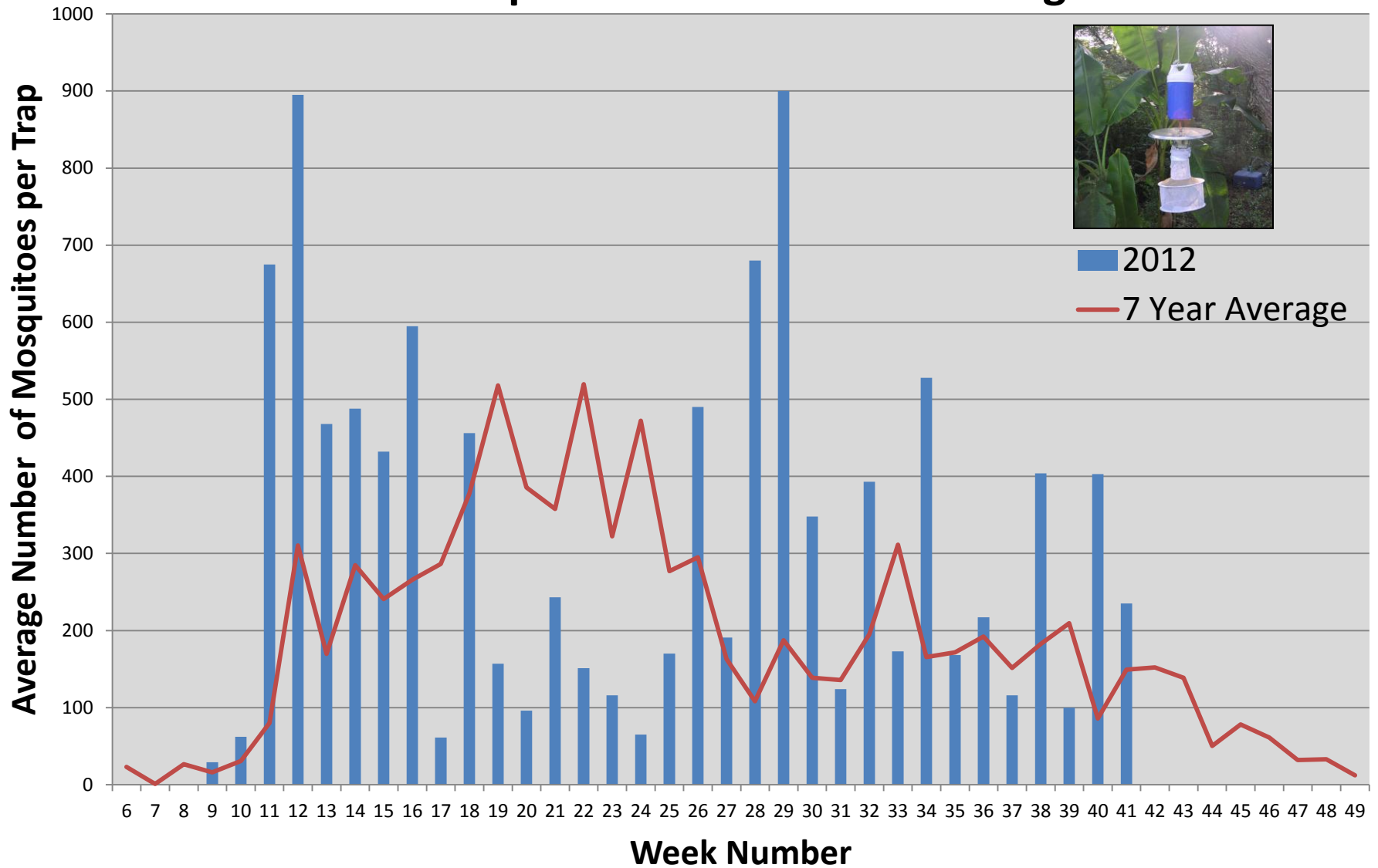


Surprising effects of drought

- Smith & Love (1956)
 - Nightly collections increased in drought year compared to normal
 - Shift in species dominance
 - Species from temporary pools > permanent pool breeders
- Chase & Knight (2003)
 - Similar observations
 - Attributed to changes in predators & competitors

CDC Light Trap Totals

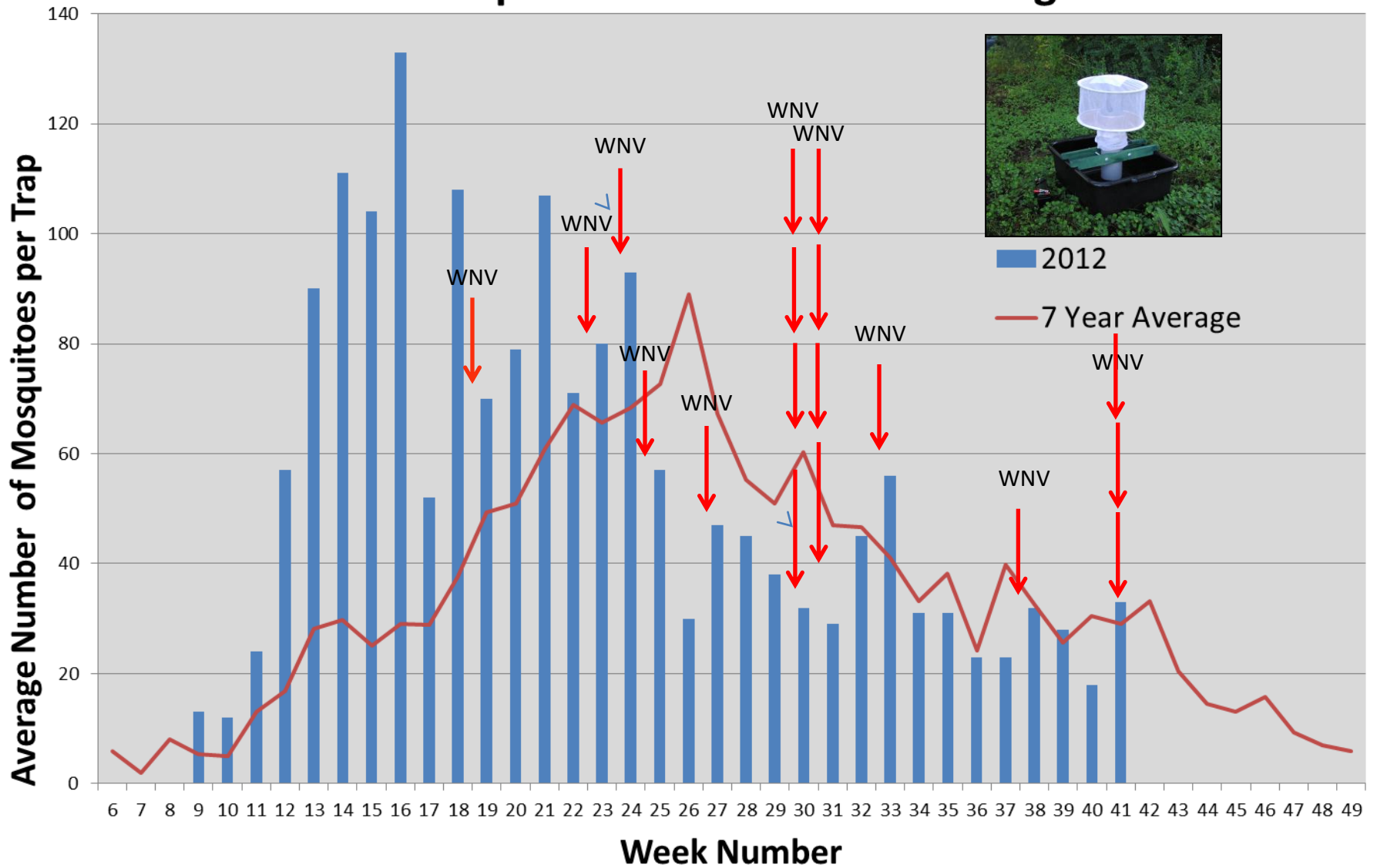
2012 Compared to Seven Year Average



■ 2012
— 7 Year Average

Gravid Trap Totals

2012 Compared To Seven Year Average

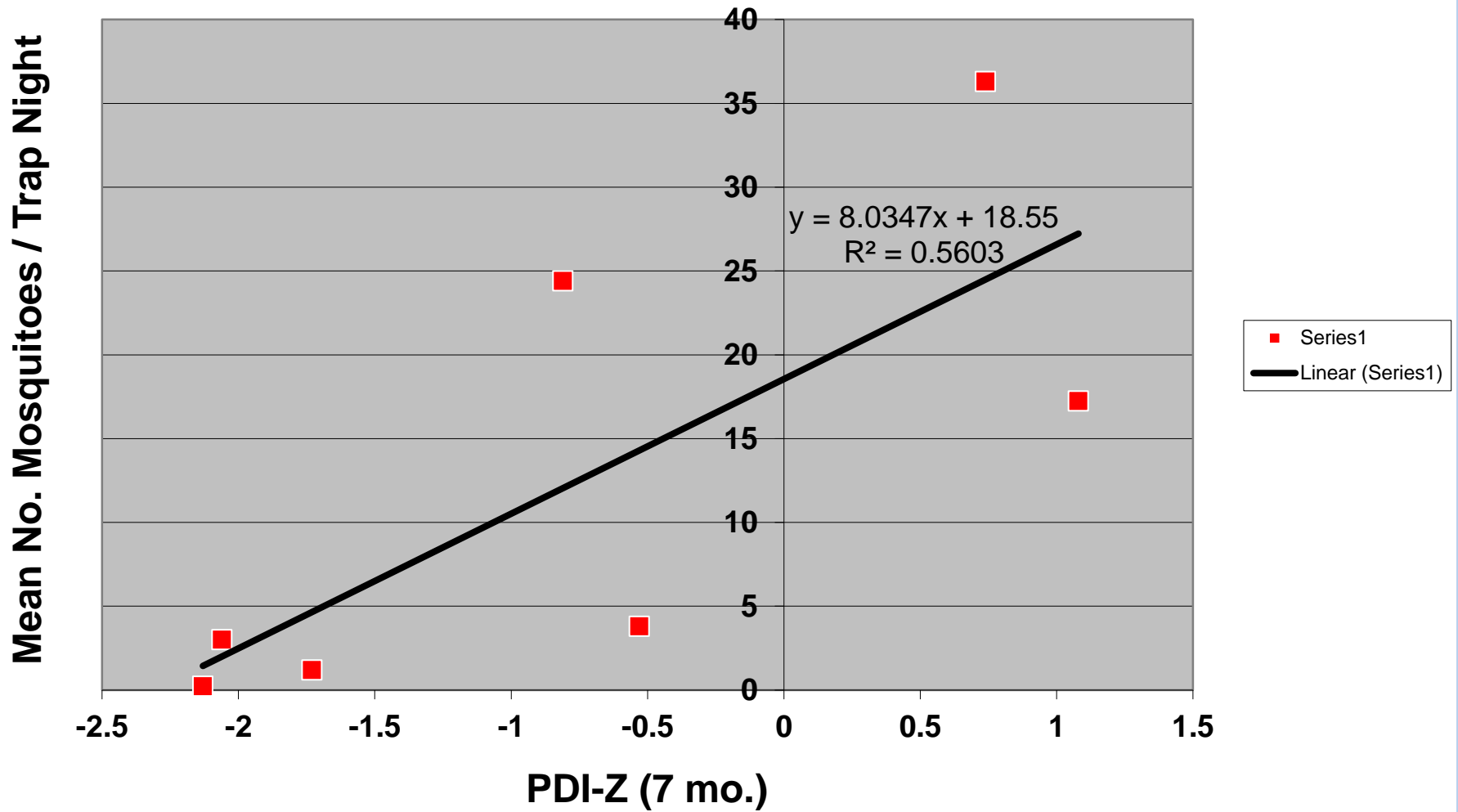


■ 2012
— 7 Year Average

Species-specific Patterns

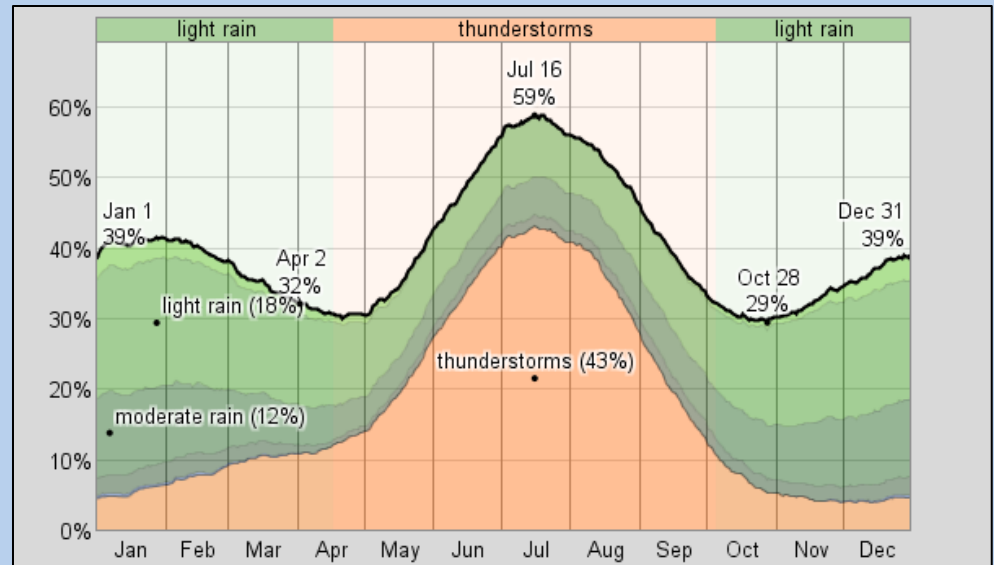
- Populations positively related to moisture levels
 - *Oc. atlanticus*, *Oc. canadensis*, *Oc. infirmatus* & *Cs. melanura*
- Negative relationship
 - *Ps. columbiae*
- No clear pattern for rest

Oc. infirmatus



Other factors to consider

- How precipitation occurs
- “gully washers” may remove larvae (eg. *Culex spp.* in catch basins)
- Irrigation practices





WHAT IS THAT?

Skeeter

Thank you!

Acknowledgements:

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