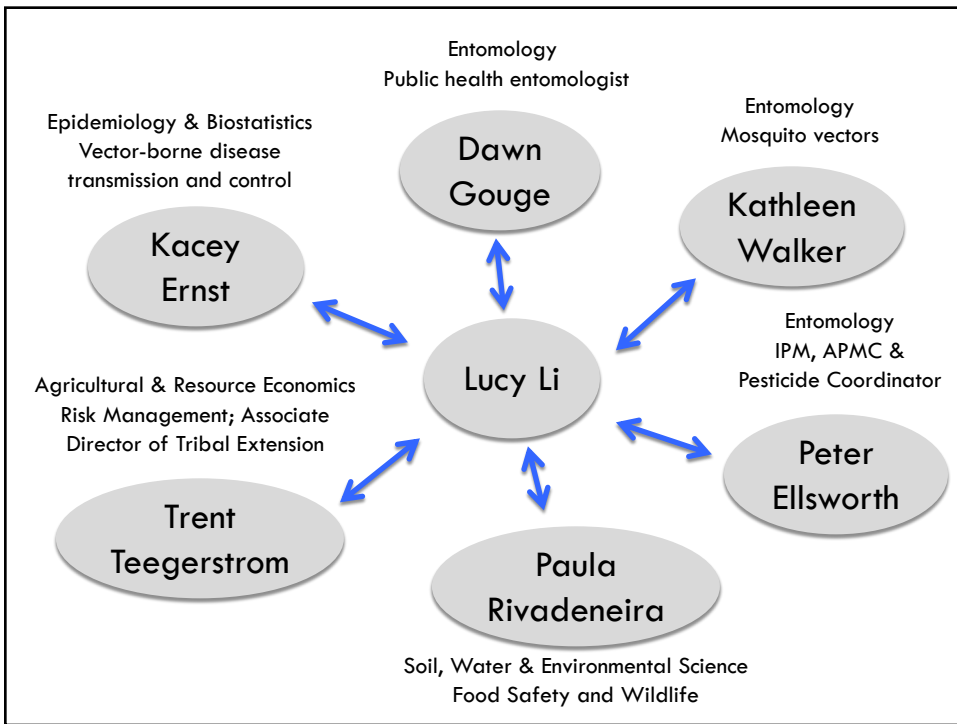


Public Health IPM Leadership Team



An Invasive New Tick Is Spreading in the U.S.

3



The Asian long-horned tick was first identified in New Jersey last November. The species now has been reported in the suburbs of New York City and as far west as Arkansas. James Gathany/Centers for Disease Control and Prevention

- IPM Short
- Extension Publication
- Media release
- Information distribution



UA Cooperative Extension Experts Available to Talk About Ticks

Aug. 29, 2018
TUCSON, Ariz. — Two University of Arizona Cooperative Extension experts are available for comment on recent reports of tick epidemics in the U.S. and Mexico.

The brown dog tick has been found throughout the U.S. and Mexico, and is driving an epidemic of Rocky Mountain Spotted Fever in northwest Mexico. Concern in the U.S. centers around the border states of California and Arizona.

At the same time, the Asian long-horned tick is spreading rapidly in eastern states. This tick species is remarkably easy to reproduce without males, laying thousands of eggs at a time. They utilize an extremely wide range of mammals and birds, and serve as effective vectors of numerous diseases causing concern in the U.S. and Mexico.

"The Asian long-horned tick is spreading rapidly in eastern states. This tick species is remarkably easy to reproduce without males, laying thousands of eggs at a time. They utilize an extremely wide range of mammals and birds, and serve as effective vectors of numerous diseases causing concern in the U.S. and Mexico."

At the same time, the Asian long-horned tick is spreading rapidly in eastern states. This tick species is remarkably easy to reproduce without males, laying thousands of eggs at a time. They utilize an extremely wide range of mammals and birds, and serve as effective vectors of numerous diseases causing concern in the U.S. and Mexico.

Longhorned Tick, a New Invasive Tick in the United States
Shupam (Lucy) Li, Dawn H. Grogan, Kathleen Walker, Albert J. Foussier

The longhorned tick, *Haemaphysalis longicornis*, also known as Asian longhorned tick, cattle tick or bush tick, native to East Asia, is a recent invasive tick species in the United States. It is important to be on the lookout for this tick in Arizona.

The first confirmed appearance of this tick species in the United States occurred on sheep in New Jersey during 2017. To date, the tick has been confirmed in 8 states, including Arkansas, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Virginia and West Virginia, and the suburbs of New York City. This tick species appears to be highly adaptive to a broad range of climates, from tropical to temperate, and utilizes an extremely broad range of host animals.

Within farms, it is found on cattle, horses, sheep, pigs, and poultry. Wild animals can support and move ticks across significant geographic ranges. The ticks have been found on and various birds, including raccoons, hares, rabbits, ferrets, cats, and dogs. It has also been found on in-home pets.

Biology

The longhorned tick is a three-host tick, meaning it requires three different hosts to complete its development through larval, nymph and adult life stages. The tick can reproduce sexually, through an asexual process called parthenogenesis, meaning female ticks can reproduce without a male. The longhorned ticks found in the United States have all been parthenogenetic. Therefore a single fed female tick can produce a whole population by herself.

Generally, female longhorned ticks lay eggs in late spring and early summer. After hatching from an egg, a larva seeks a host in late summer, commences a blood meal, then drops off the host to overwinter. The following spring it molts into a nymph, which seeks a second host and feeds on blood, drops off a second time, molts into an adult. An adult seeks a final host in mid-summer and feeds again. The adult female then drops off the host and lays up to 2,000 eggs over a period of 2-3 weeks.

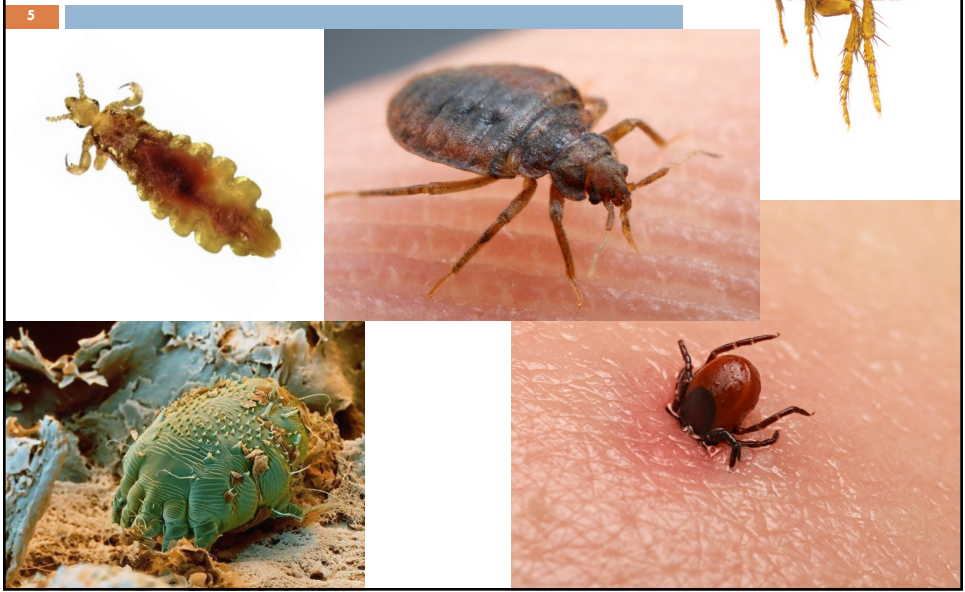
Adult female longhorned tick, nymph, and larva. James Gathany/Centers for Disease Control and Prevention.

Three longhorned ticks are shown. From left, a fully engorged female, a partially engorged female, and an engorged nymph. James Gathany/Centers for Disease Control and Prevention.

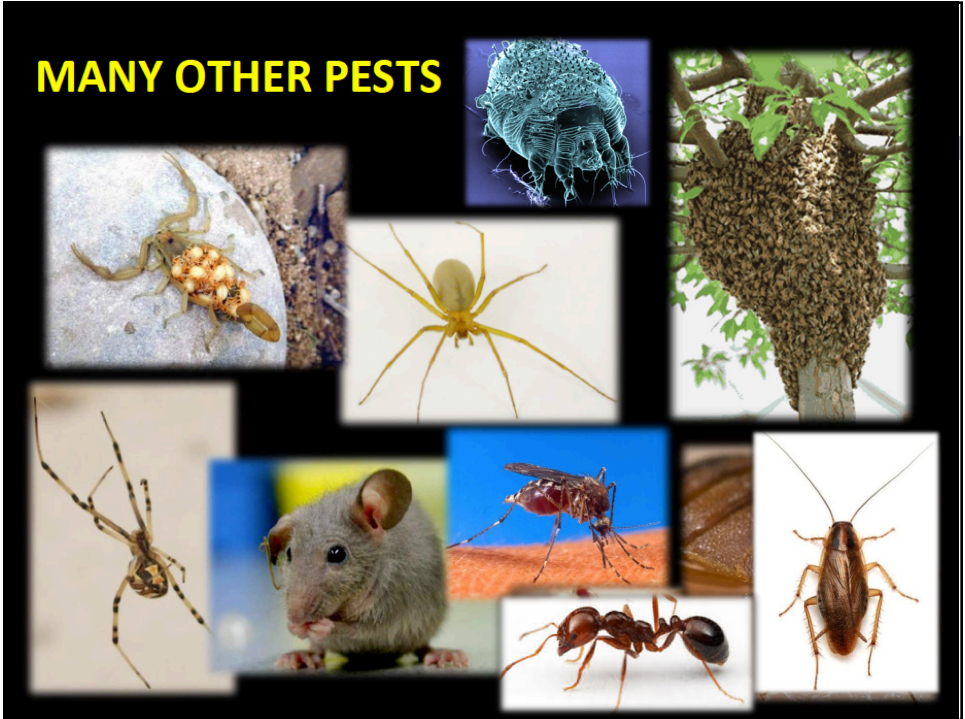
Longhorned ticks are pictured on a U.S. dime. The smaller tick (left) is a nymph, the larger one (right) is an adult female. James Gathany/Centers for Disease Control and Prevention.

The longhorned tick, after feeding (left) and before feeding (right). New Jersey Department of Agriculture.

Human ectoparasites



MANY OTHER PESTS



Integrated Pest Management Team

7

Making life healthier and happier where people

live



learn



heal



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COOPERATIVE EXTENSION
Arizona Pest Management Center

IPM in Public Housing

8

- Implemented IPM strategies in five public housing sites (612 units).
- **87% reduction in German cockroaches**
- **93% reduction in bed bugs**
- **Sanitation standards improved and clutter levels reduced**



Improved satisfaction



United States Department of Agriculture
National Institute of Food and Agriculture



1



2



3



4



5



Wow..... 1,500 participants in one webinar!



9

Integrated Pest Management--A Simple Solution to Problem Pests in Elderly and Disabled Public Housing

Welcome to
Integrated Pest Management--A Simple Solution to Problem Pests in Elderly and Disabled Public Housing

The presentation will begin momentarily
 November 14th, 2018

Download a PDF of today's presentation and other materials at
<http://stoppests.org/go/IPMsolution>

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Presenters: Dawn H. Gouge, Ph.D., Shujuan (Lucy) Li, Ph.D., Shakunthala (Shaku) Nair, Ph.D. - Arizona Pest Management Center, University of Arizona-MAC, Maricopa

Date of live broadcast: November 14th 2018

Integrated Pest Management--A Simple Solution to Problem Pests in Elderly and Disabled Public Housing

Today's Presenters:

Dawn H. Gouge, Ph.D., Shujuan (Lucy) Li, Ph.D., Shakunthala (Shaku) Nair, Ph.D.
 Arizona Pest Management Center, University of Arizona-MAC, Maricopa

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Date of live broadcast: November 14th 2018



Industry Partnership

12



B&G Lo Line Cockroach Traps



SenSci ActivVolcano



14



SOUTH WEST RODENT ACADEMY

2 DAY
EVENT

DECEMBER 4 - 5, 2018

University of Arizona
Maricopa Agricultural Center
37860 W. Smith-Enke Rd | Maricopa, AZ 85138

A Partnership



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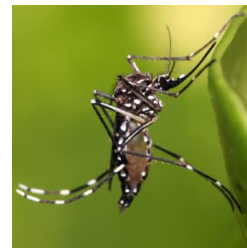
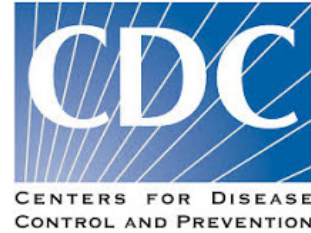





Vector Control (Dawn)

15

- 2017-2020.
- Evaluate field integrated vector management techniques.
- Assess impacts of targeted larviciding and ultra-low volume (ULV) adulticiding on the abundance and age structure of *Aedes aegypti* in south-central Arizona.



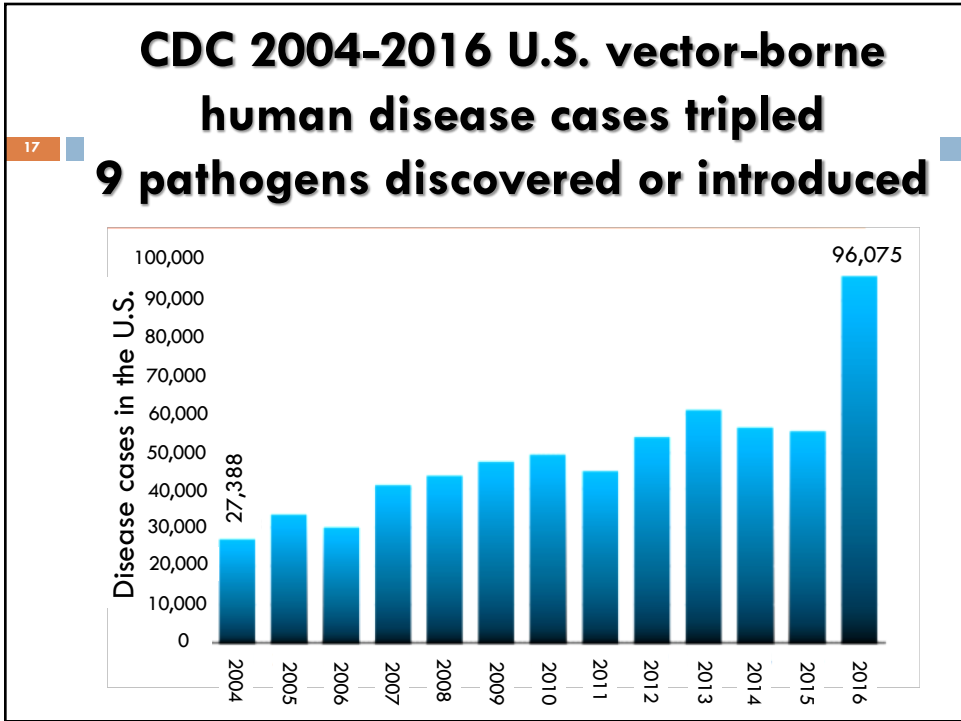
Mosquitoes Suck!



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COOPERATIVE EXTENSION
Arizona Pest Management Center

16





Every year around 110 people in AZ are clinically ill with West Nile - 5-10 preventable deaths

18

2018
23 clinical
4 fatalities

Mosquito that could transmit pathogens to humans if the pathogens were introduced

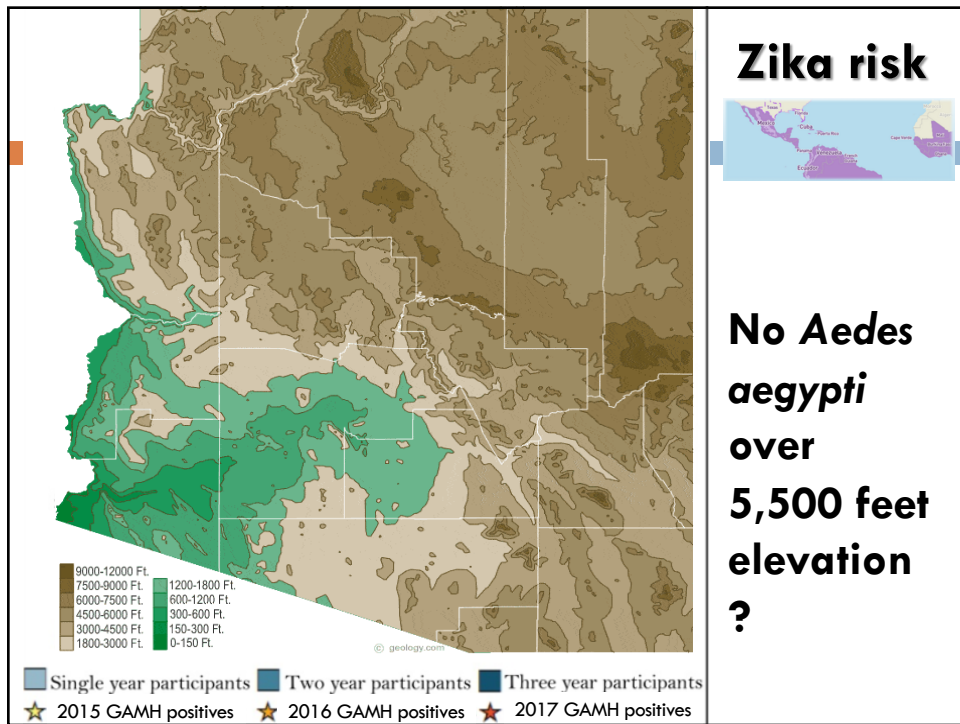
19

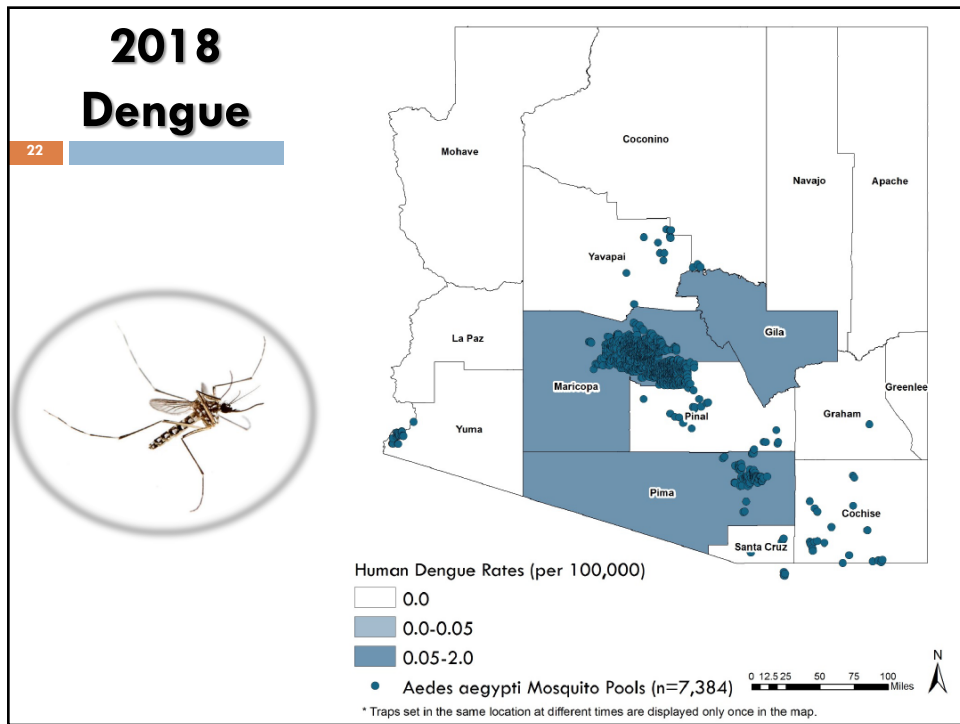
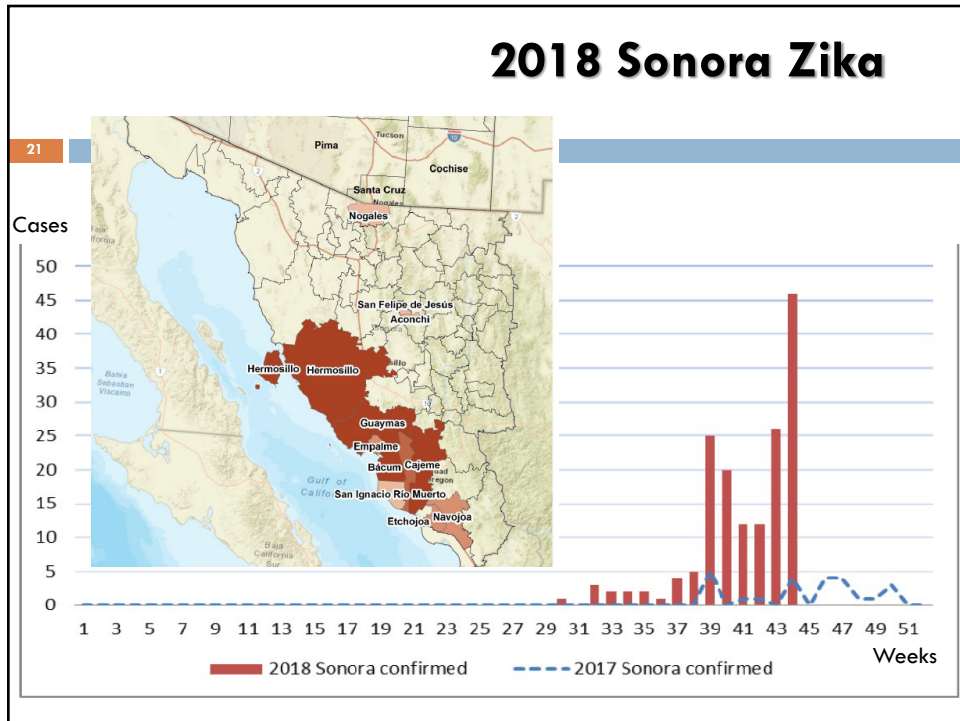
7 travel

0

1 travel

0





"Field" study




25



2017- Are methods used to control *Culex* mosquitoes effective against *Aedes aegypti*?

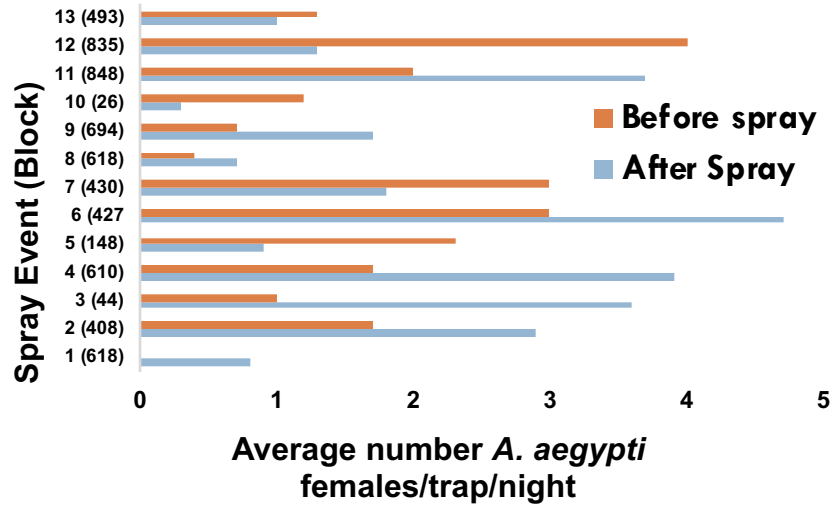
26

- Adulicide fogged from truck
- Granular larvicide
- Surveillance methods effective for *A. aegypti* ?



Adulticiding efficacy

27

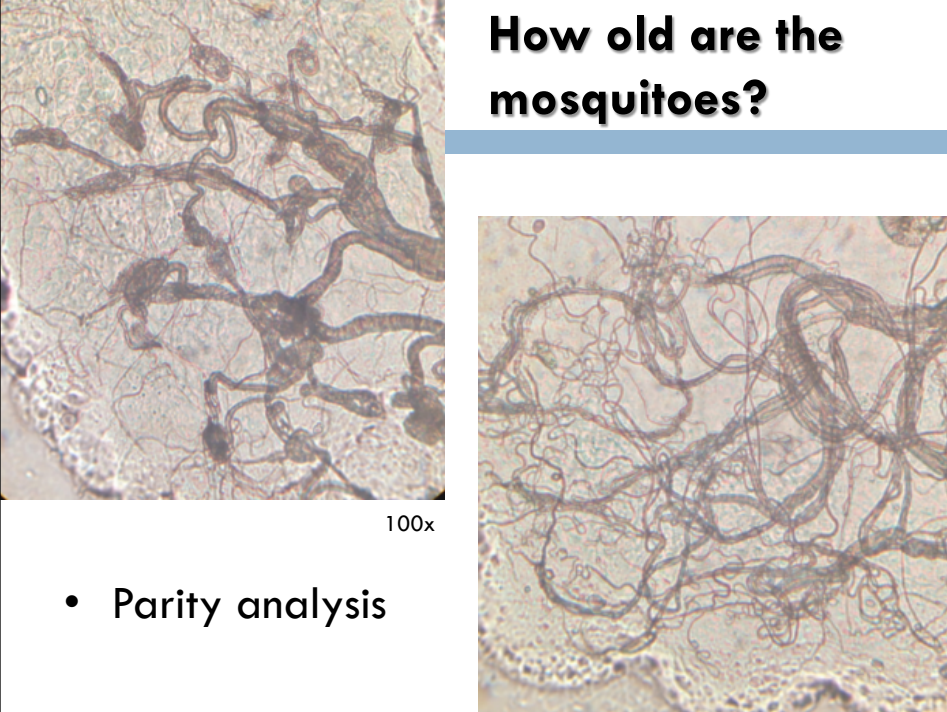


Older mosquitoes are more likely to transmit disease causing pathogens

28

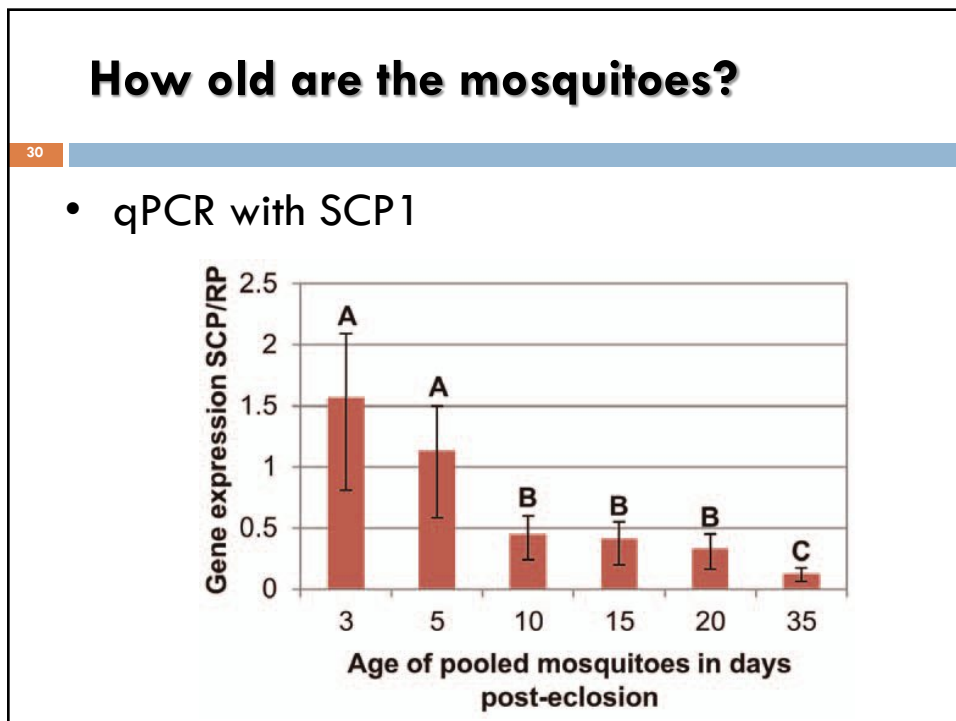


How old are the mosquitoes?



100x

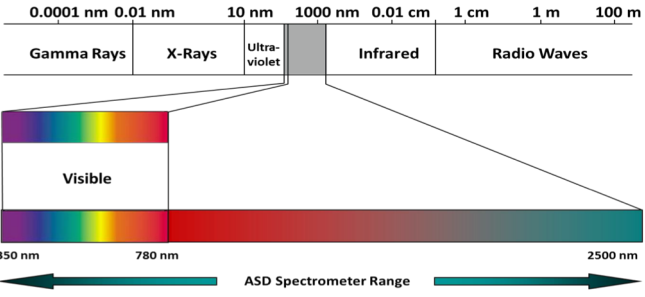

- Parity analysis



31

How old are the mosquitoes?

- NIRS



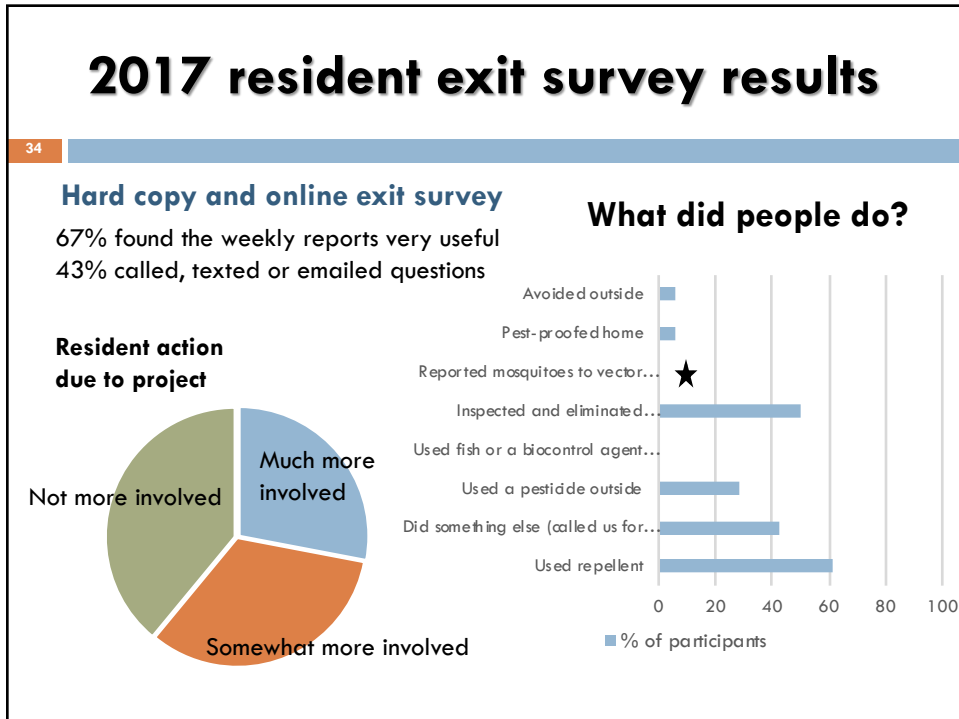
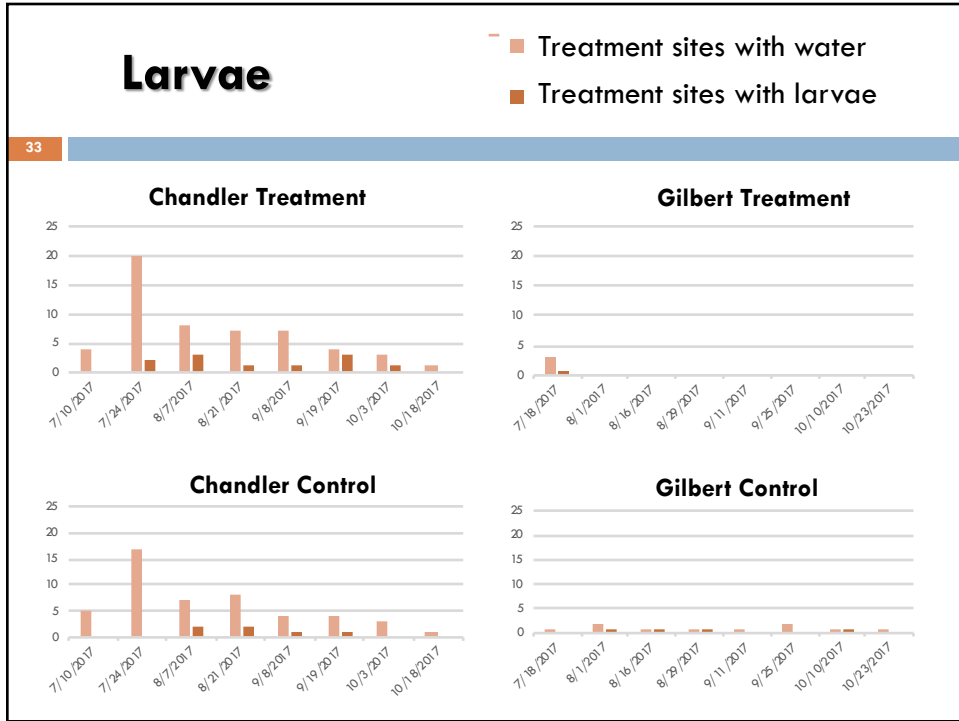
0.0001 nm	0.01 nm	10 nm	1000 nm	0.01 cm	1 cm	1 m	100 m
Gamma Rays	X-Rays	Ultra-violet	Infrared	Radio Waves			

Visible: 350 nm to 780 nm

ASD Spectrometer Range: 350 nm to 2500 nm

Larvae





2017 conclusions

35

- West Nile and/or Saint Louis encephalitis viruses in mosquitoes in 50% of surveyed blocks
- Control methods are not effective
- Monitoring methods are not effective
- Residents are concerned
Residents do not report mosquitoes

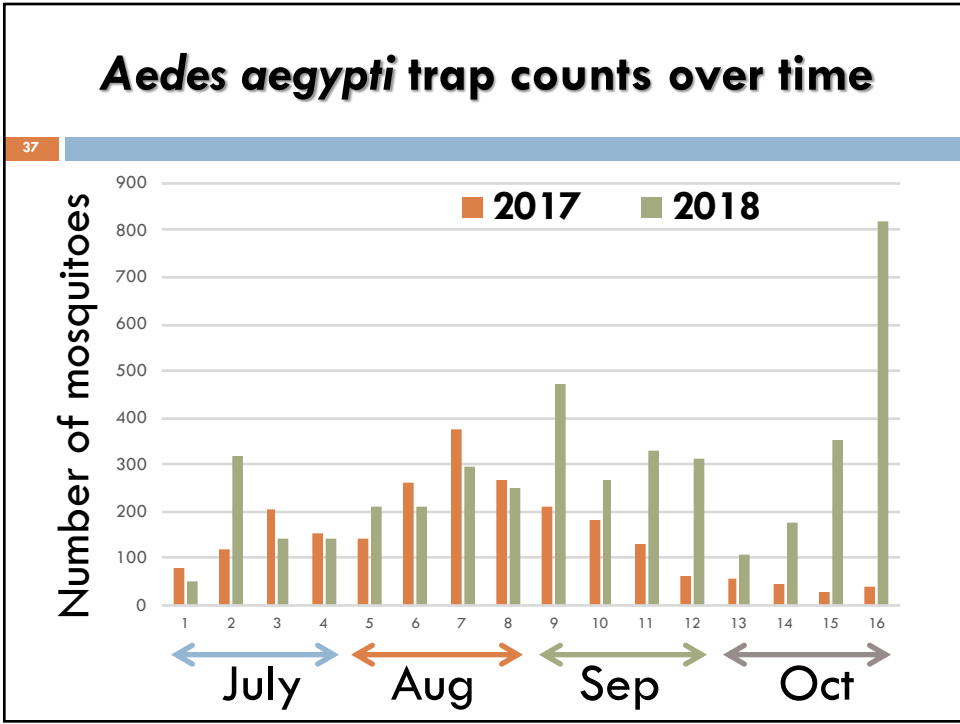


2018 - Are improved methods more effective?

36

- DeltaGard & Permanone adulticide
- Larviciding Altosid® XR-Briquets 150 day





Neighborhood retention areas

39



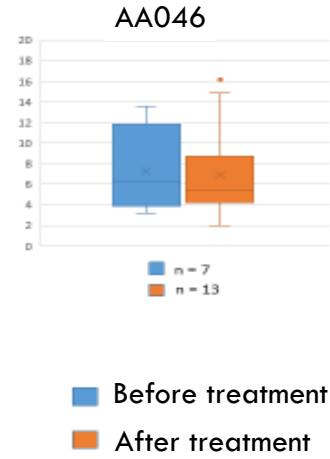
You breed 'em – you feed 'em

40



Are fogged *Aedes aegypti* populations younger?

41

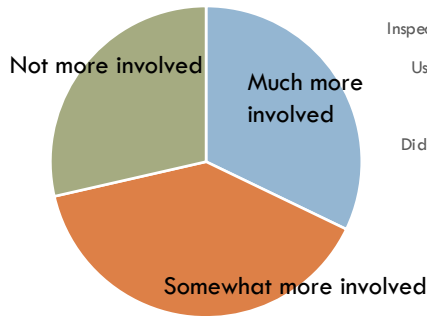


2018 resident exit survey results over half had participated in 2017

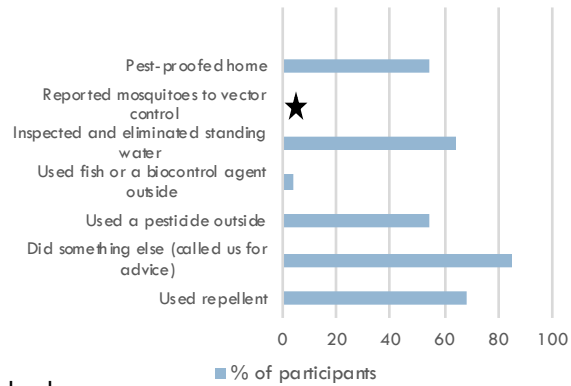
43

Hard copy survey

61% found the weekly reports very useful
46% invited us to HOA meeting
85% called, texted, or emailed



What did people do?



2018 conclusions

44

- West Nile and/or Saint Louis encephalitis viruses in mosquitoes in 50% of surveyed blocks
- Control methods are not effective
- HOAs groups are concerned about health impacts - \$
- Residents do not report mosquitoes
- Water management

