

Mosquito and Tick Control

Bridging the gap between Pest Control Operators and Public Health Officials

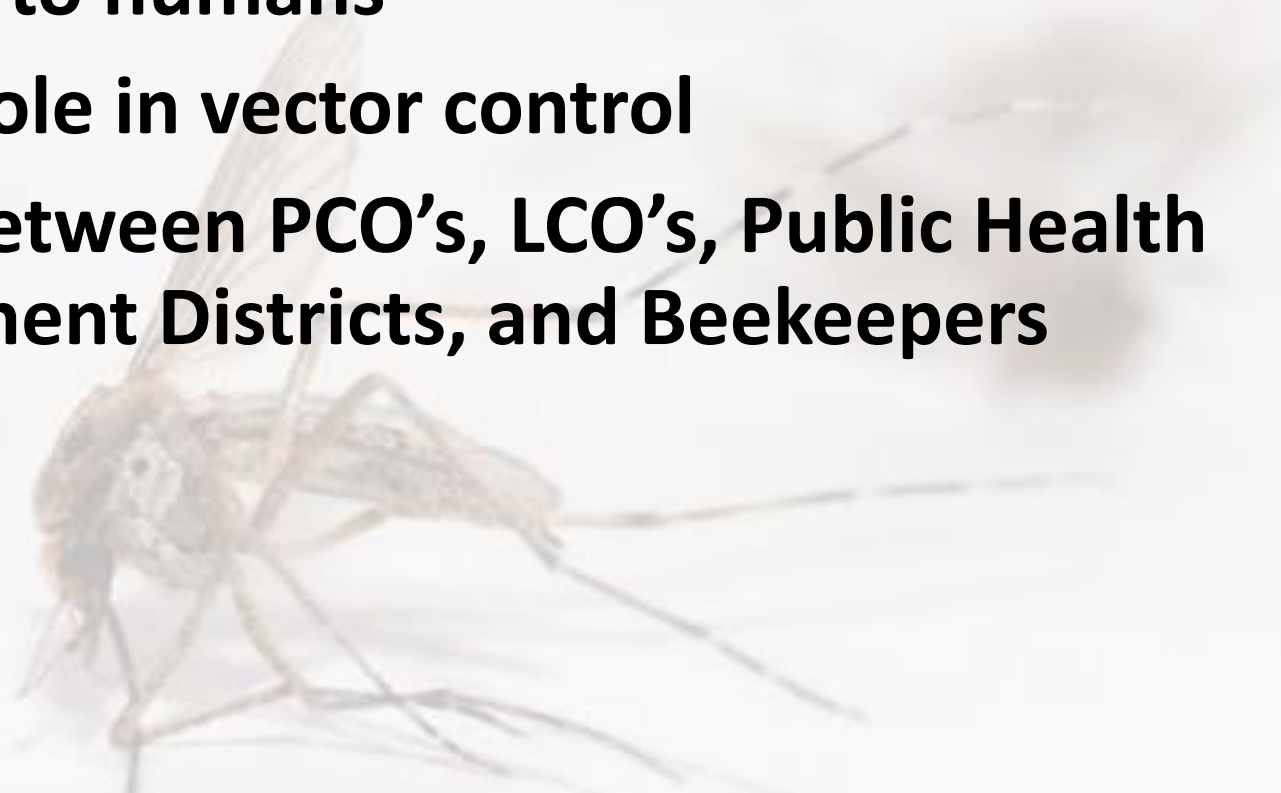
Larry Motes, BCE
Board Certified Entomologist
Director of Sales, East - Vector and PCO



IN THIS PRESENTATION WE WILL

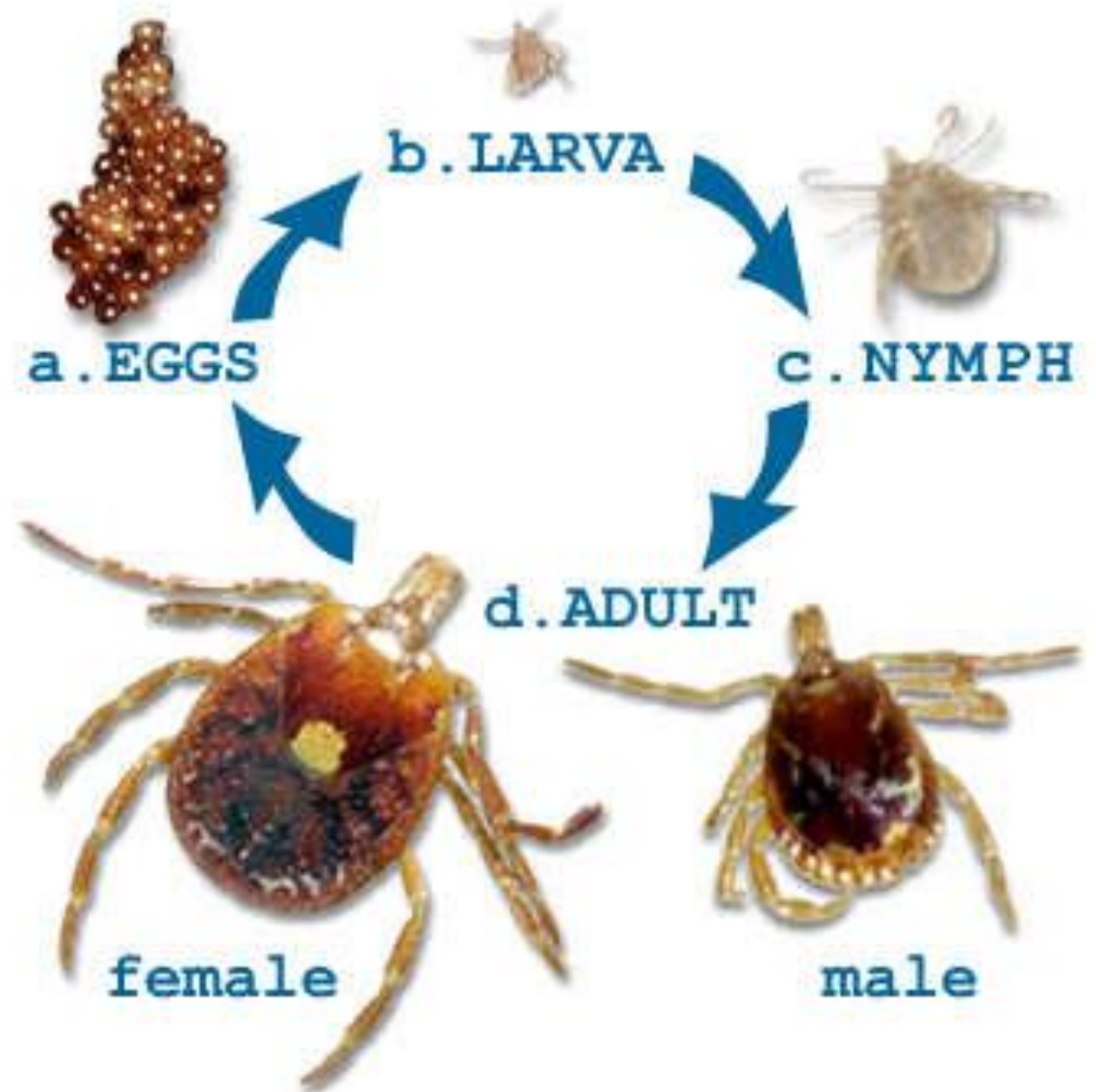


- **Increase our knowledge on select mosquitoes and ticks known to transmit disease to humans**
- **To better understand our role in vector control**
- **Attempt to build bridges between PCO's, LCO's, Public Health Officials, Mosquito Abatement Districts, and Beekeepers**



ARTHROPODS

- Crustaceans
- Millipedes
- Centipedes
- Arachnids
 - ticks
- Insects
 - mosquitoes



Credit: Texas Department of Health Services

American Dog Tick (*Dermacentor variabilis*)



LARVA



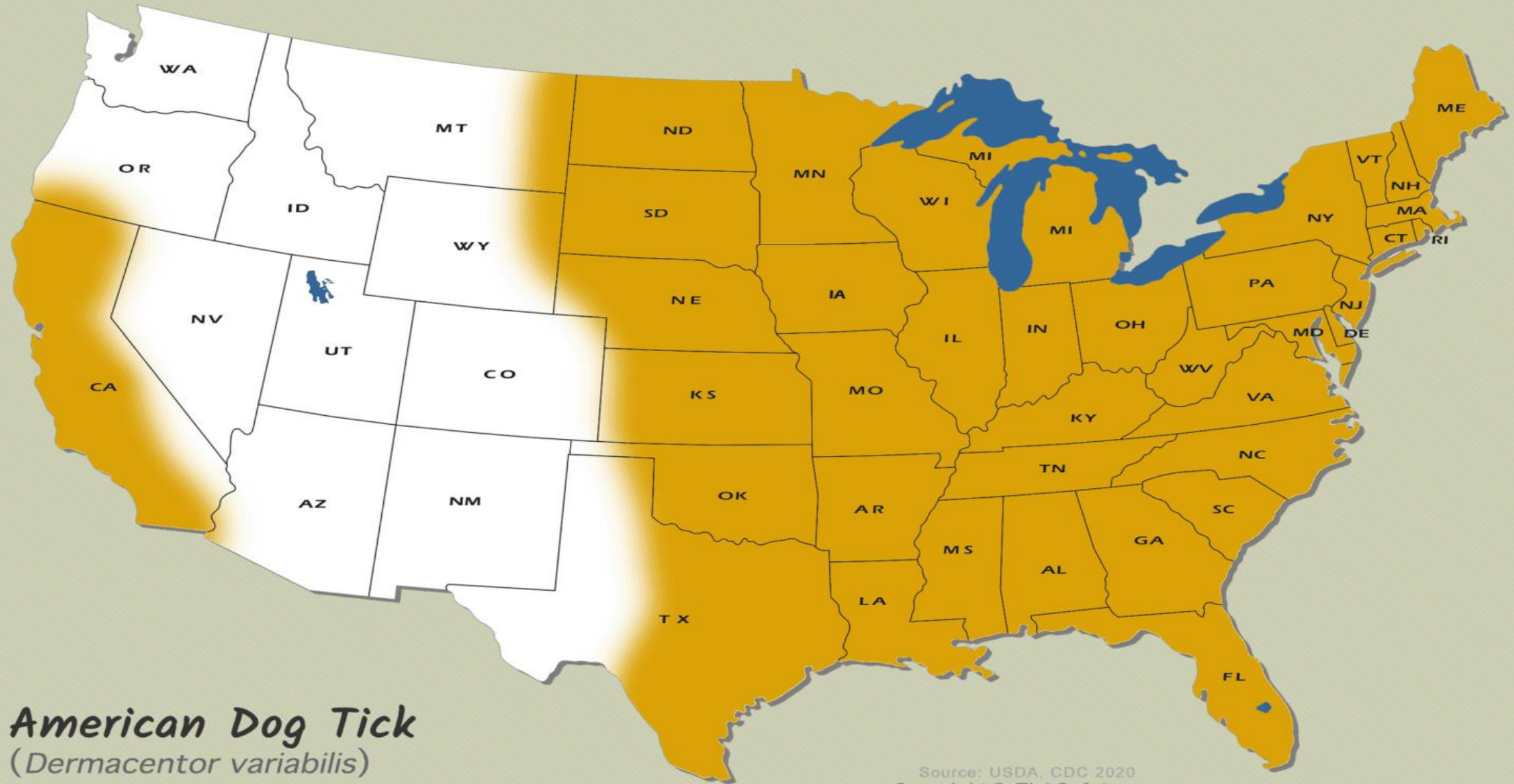
NYMPH



ADULT MALE



ADULT FEMALE





Diseases Vectored by American Dog Ticks

- **Rocky Mountain Spotted Fever**- (*Rickettsia rickettsii*) bacteria
- **Tularemia**- (*Francisella tularensis*) bacteria
- **Canine Tick Paralysis**- Saliva proteins from the tick interacts with the canine causing life threatening complications if not removed. Can affect children in the same way. 10% Fatality Rate if left untreated.

Blacklegged "Deer" Tick (*Ixodes scapularis*)



LARVA



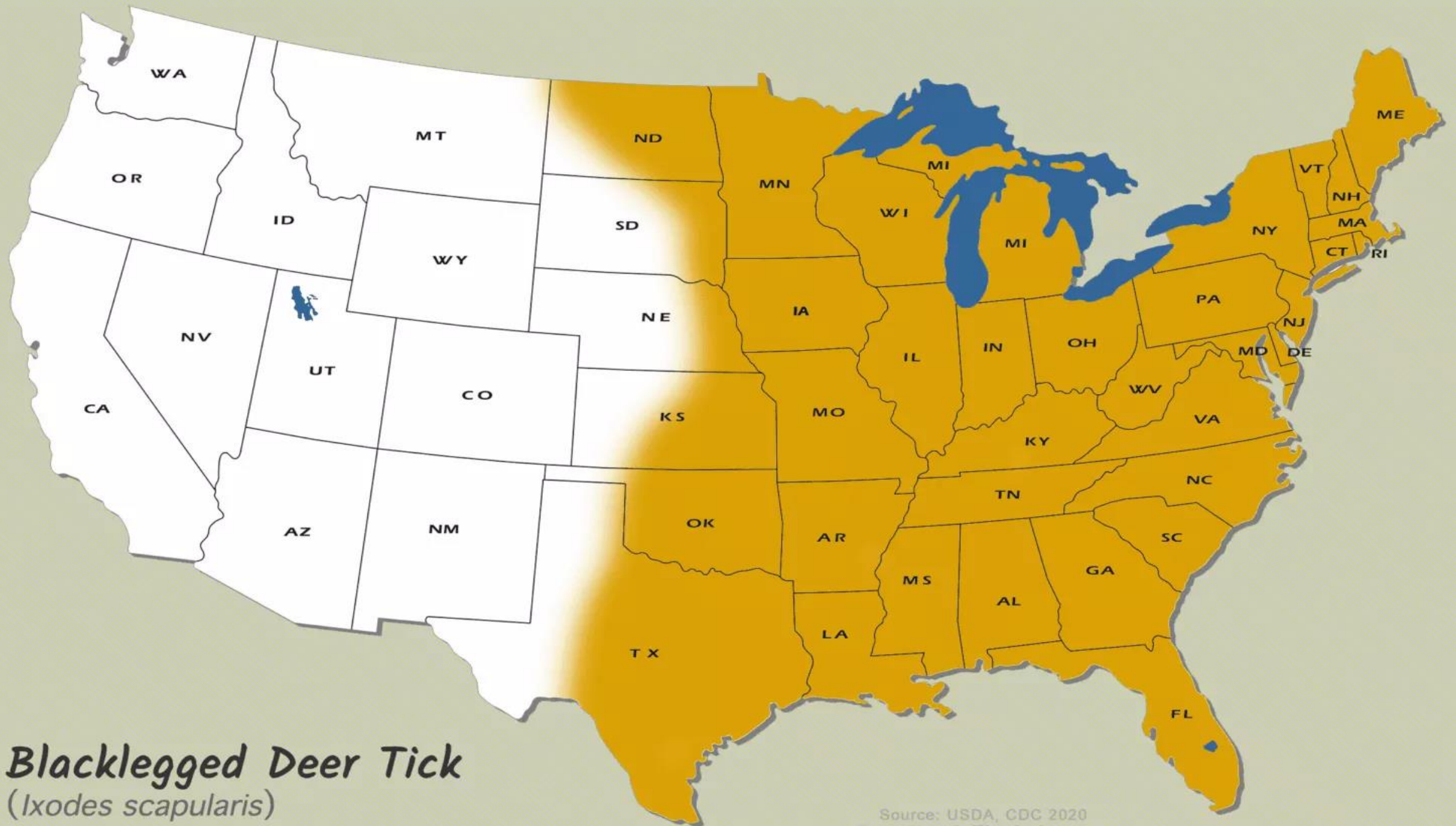
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ADULT MALE



ADULT FEMALE



Blacklegged Deer Tick (Ixodes scapularis)

Source: USDA, CDC 2020
Copyright © TickSafety.com



Diseases Vectored by Black Legged Ticks

- **Lyme Disease** : (**Borrelia burgdorferi**) bacteria
- Anaplasmosis (Anaplasma phagocytophilum) bacteria
- Ehrlichiosis (Ehrlichia chaffeensis) bacteria
- Babesiosis (Babesia microti) parasite

Lone Star Tick (*Amblyomma americanum*)



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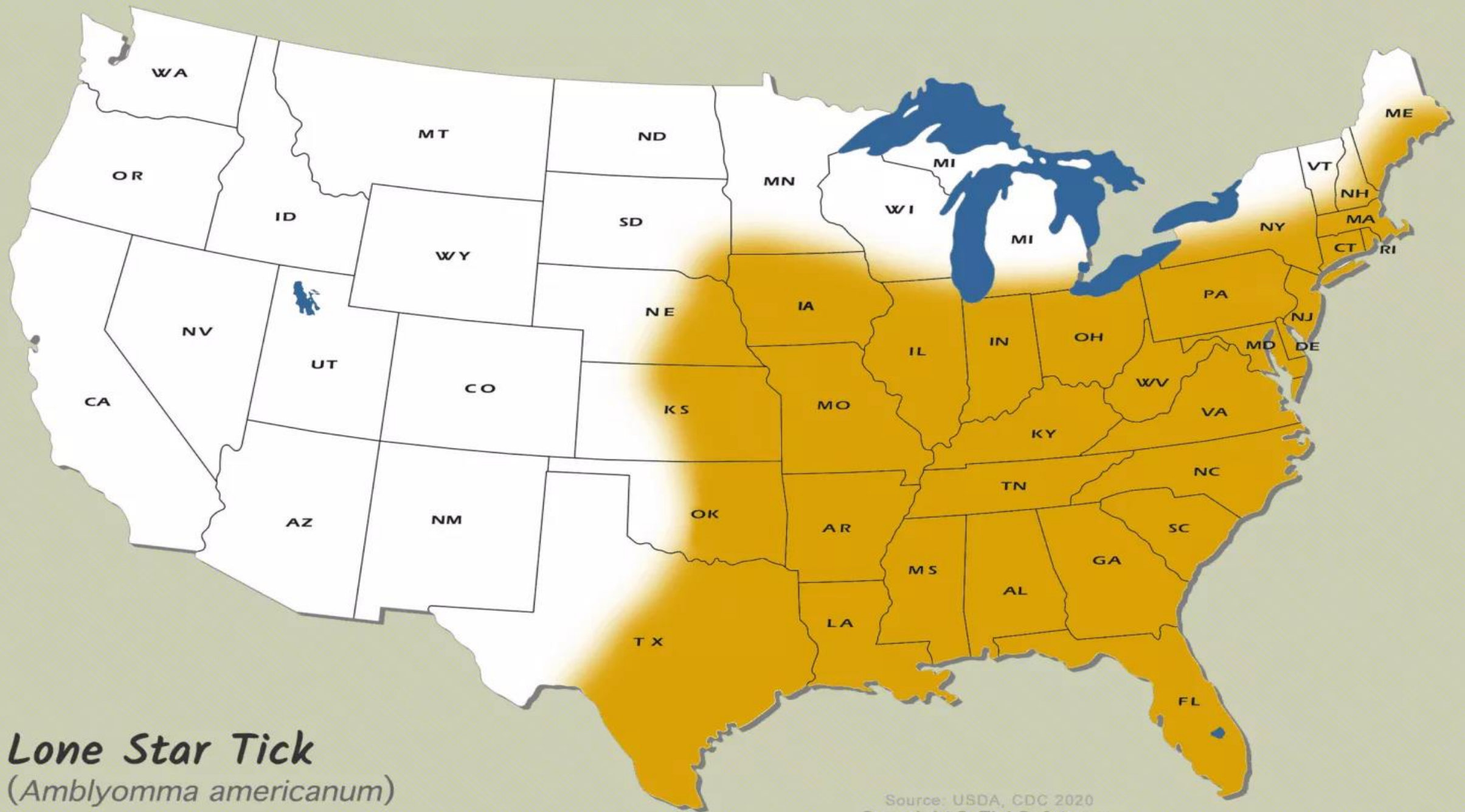
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ADULT MALE



ADULT FEMALE



Lone Star Tick

(*Amblyomma americanum*)

Source: USDA, CDC 2020
Copyright © TickSafety.com



Diseases Vectored by Lone Star Ticks

- **Alpha-Gal Syndrome**- Red Meat Allergy – delayed allergic reaction
- Ehrlichiosis
- Rickettsiosis
- Tularemia
- **Southern Tick-Associated Rash Illness (STARI) – similar to Lyme Disease**

HOW TO PROTECT YOURSELF AND PETS

- DEET
- PERMETHRIN TREATED CLOTHING
- TICK CHECKS- (GET HELP)
- IPM
 - KEEP GRASS LOW AND DRIED OUT
 - KEEP PETS ON TICK AND FLEA CONTROL

- *PCO and Homeowner market trend:*

Residual pesticide applications and botanical materials (25b exempt)



DON'T RAISE YOUR OWN PESTS!



Leaf and Compost Piles

Stacked Wood

Bird Feeders

Damp, Tall Grass and Shrubs

*Journal of Medical Entomology – Artificial Accumulation of Leaf Litter

Schulze & Jordan - 3x increase in *Ixodes scapularis*

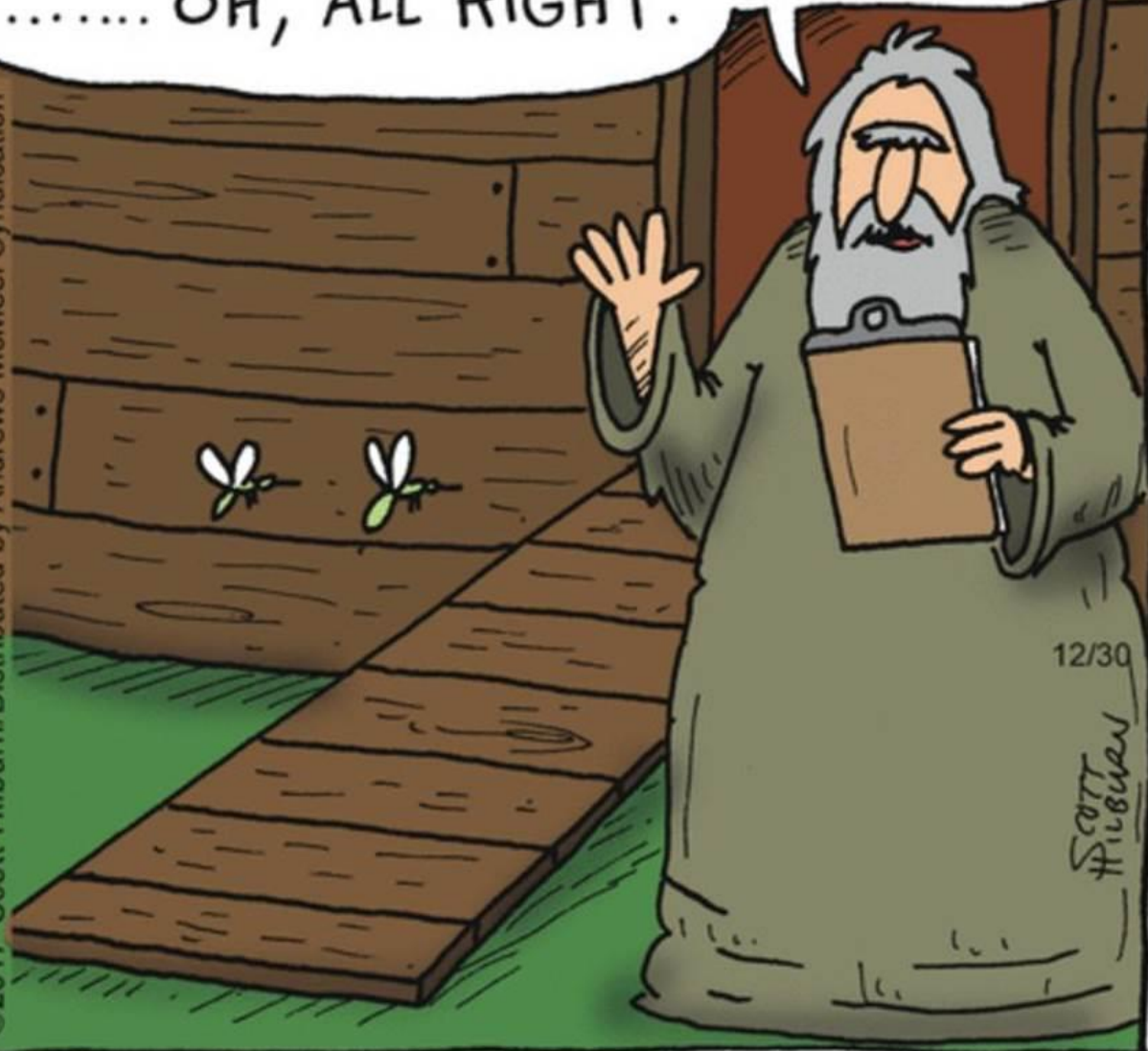


TICK FACTS AND TRENDS

- AMERICAN DOG TICK FEMALES CAN LAY 4,000 EGGS!
- AMERICAN DOG TICKS CAN LIVE 2 YEARS WITHOUT A BLOODMEAL
- MOSQUITO ABATEMENT DISTRICTS ARE DIVERTING FUNDING TO TICKS
- BOTANICAL PESTICIDES REDUCE QUESTING BEHAVIOR FOR SURVIVORS
- PERMETHRIN TREATED COTTON BALLS SHOWED CONTROL
- DEER RUBBED PERMETHRIN TREATED ROLLERS PROVIDED CONTROL

SORRY, MOSQUITOES - WE'RE FULL ...
..... OH, ALL RIGHT.

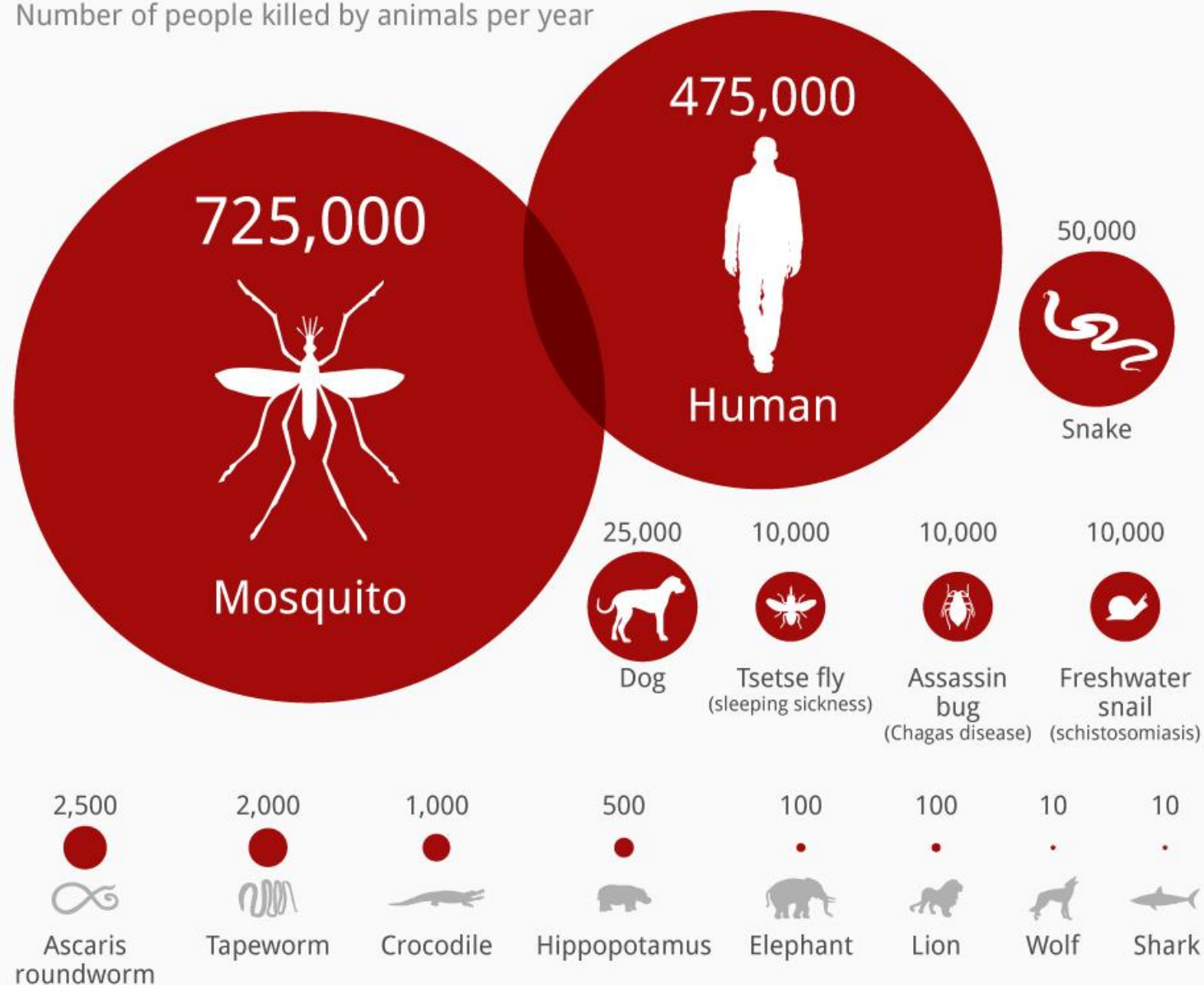
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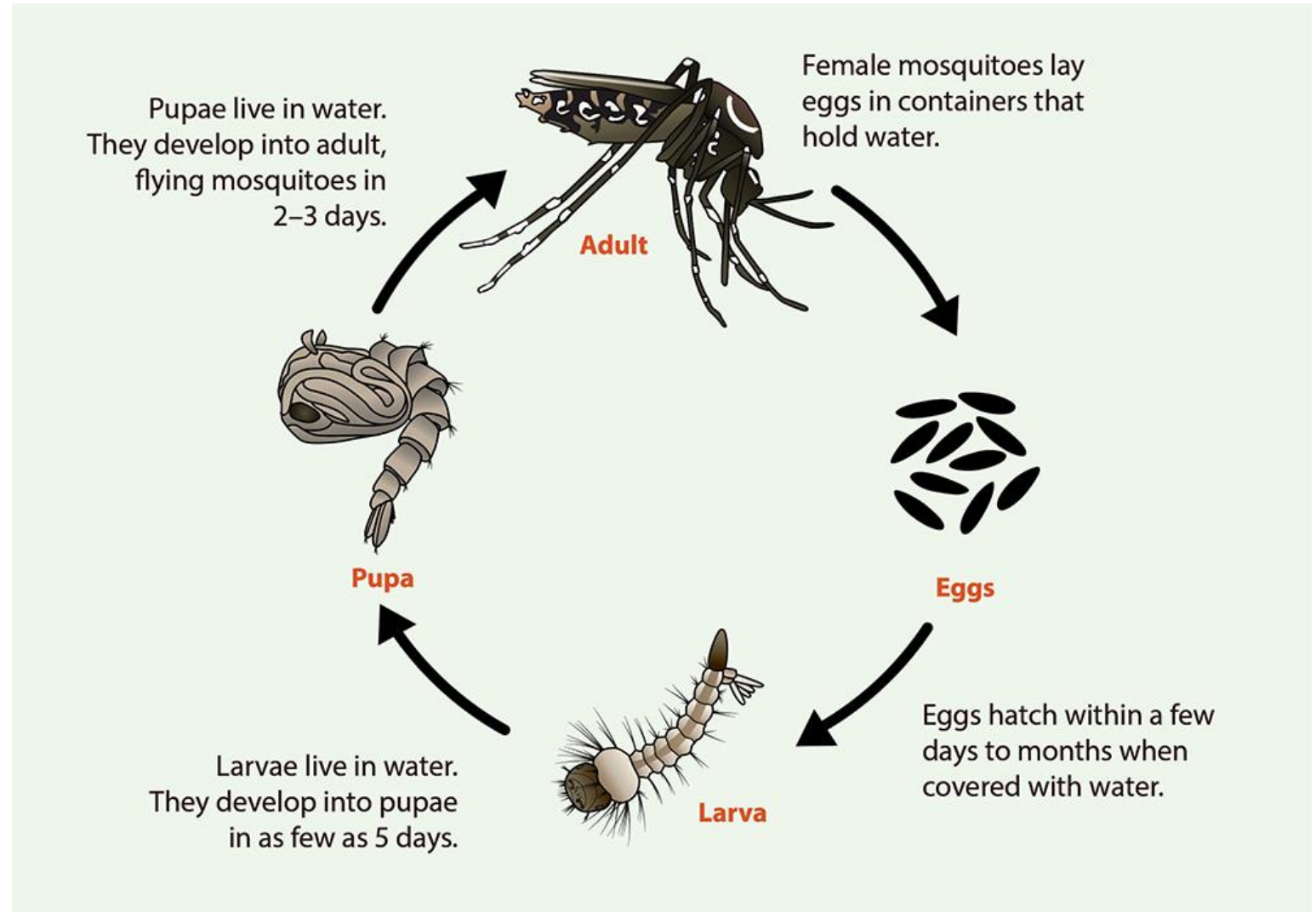
NOAH MAKES A COSTLY MISTAKE

The World's Deadliest Animals

Number of people killed by animals per year



Complete Metamorphosis





Aedes aegypti and Aedes albopictus

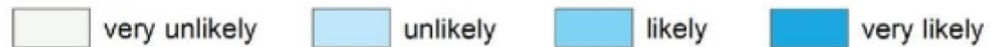
- *Both have prominent white scales*
- *Aedes aegypti possess a lyre (violin) like shape on its thorax. (image left)*
- *Aedes albopictus possess a solid white line down its thorax. (image below)*
- *Vector for several viruses such as Yellow Fever, Dengue, Chikungunya, and Zika Virus*



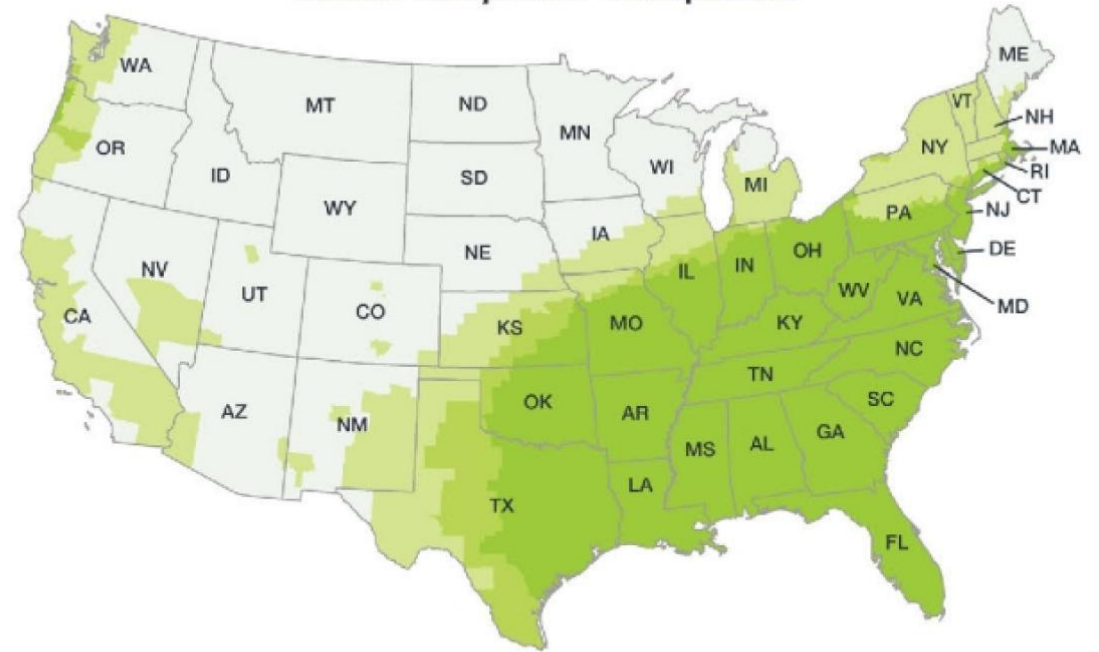
Aedes aegypti mosquitoes



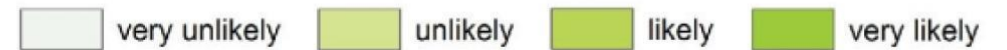
Mosquitoes' ability to live and reproduce



Aedes albopictus mosquitoes



Mosquitoes' ability to live and reproduce



CENTERS FOR DISEASE CONTROL (CDC)

Barrier Sprays

- **STRENGTHS**

- HIGH ROI
- LOW PRODUCT EXPENSE
- QUICK SERVICE: AVG. 15 STOPS
- DIVERSIFIED OFFERINGS

- **WEAKNESS**

- NOT FOCUSED ON ALL LIFE STAGES
- NO MONITORING or MAPPING
- **APPLICATOR EDUCATION**
- CALIBRATION AND DOSAGE
- DOESN'T ADDRESS NEIGHBORS



- **OPPORTUNITIES**

- INCREASED REVENUE
- LOW UP-FRONT COST
- MAKES A CUSTOMER STICKY
- **ASSIST PUBLIC HEALTH DEPTS**
- **IDEATION AND INNOVATION**

- **THREATS**

- **BEE KILLS**
- INCREASING COMPETITION
- CALL BACK MANAGEMENT
- REGULATORY FINDINGS

Considerations when performing barrier treatments

- Wear your protective equipment when performing any pesticide application! PPE protects you and our industry!
- Timing of your application and rain events are critical treatment factors
- Your knowledge about IGR's, adulticides, and organic (botanical) pesticides are important to set expectations and get results!
- Building a robust program involves your knowledge of water flow, water retention, and landscaping.

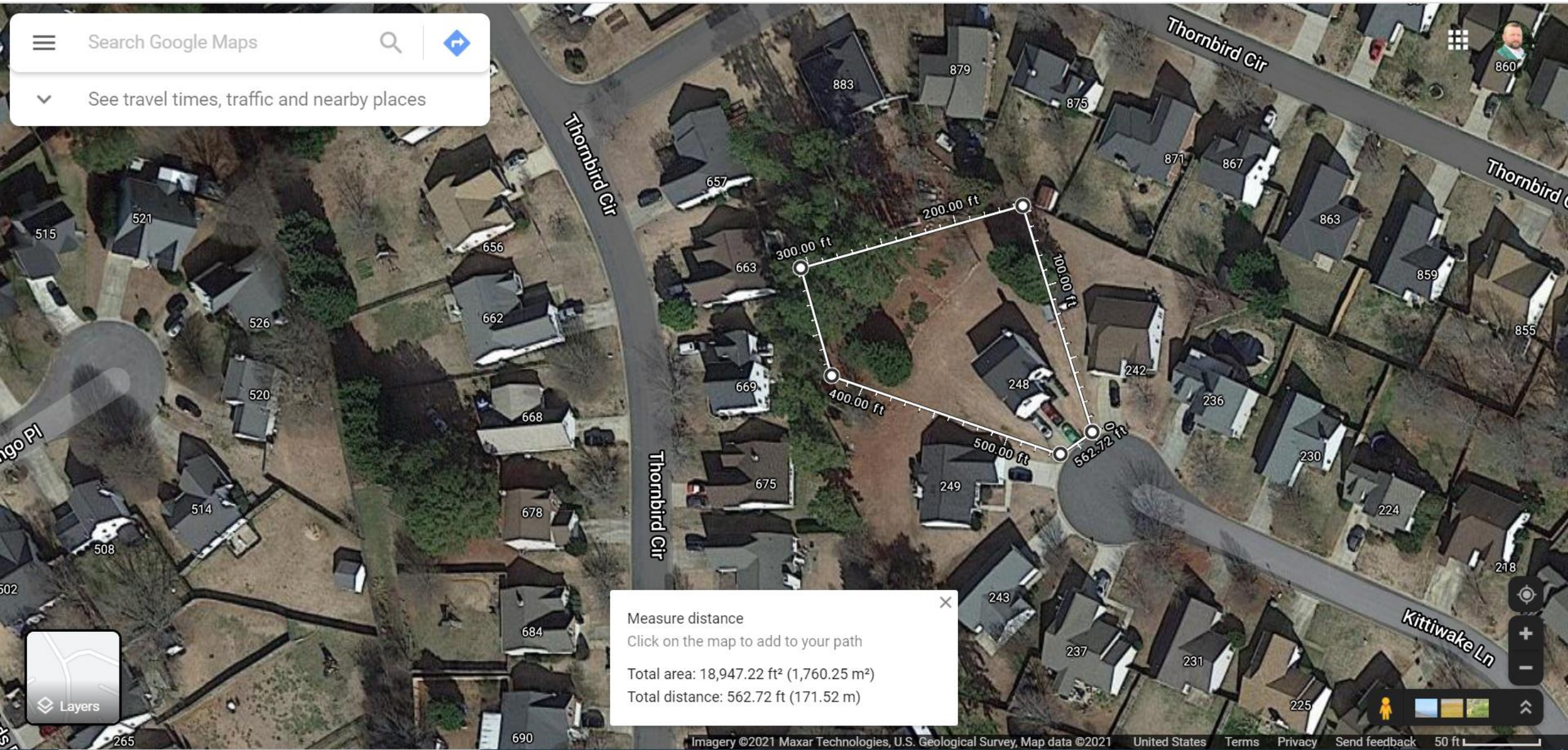
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Search Google Maps

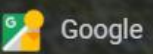
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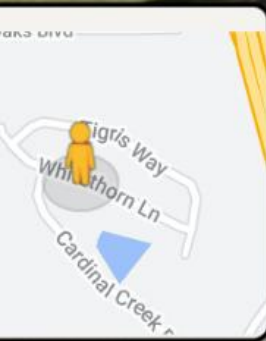
▼ See travel times, traffic and nearby places



Greenville, South Carolina



Street View



Google



TREATING THE SOURCE PROVIDES

- INCREASED PRODUCTIVITY
- REDUCED PRODUCT USE!
- EASIER TO CONTROL IN VULNERABLE STAGES
 - IS IT EASIER TO KILL ROACHES JUST BAITING CABINETS WITHOUT INSPECTION?
 - EASIER TO TREAT FRUIT FLIES AT THE BAR OR NEAR THE DRAINS, TILES, ETC?
 - IS IT EASIER, CHEAPER, CONTROLLING HIGHER POPULATIONS AS ADULTS?
- ALLOWING MOSQUITOES TO BECOME ADULTS INCREASES
 - CLIENT RISK
 - CALL BACKS AND INCREASED PRODUCT USE, GAS, PAYROLL
 - CONTROL DIFFICULTY







Barrier Spray up to 10 feet high

- Chemical trespass
- No spray zones



Drone Usage Increasing

- Traditional MAD
- Commercial Market
- PCO – Barrier Market

[News](#)[Products](#)[Industries](#)[Enthusiasts](#)[Regulations](#)[Business](#)

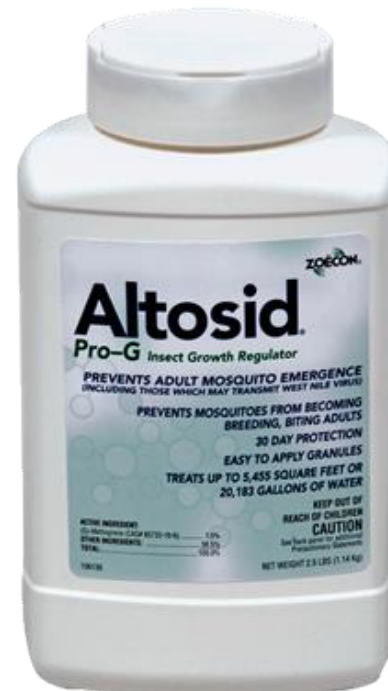
Drones for Mosquito Control: Engineering New Technologies for an Old Problem

Posted By: Miriam McNabb on: April 02, 2021

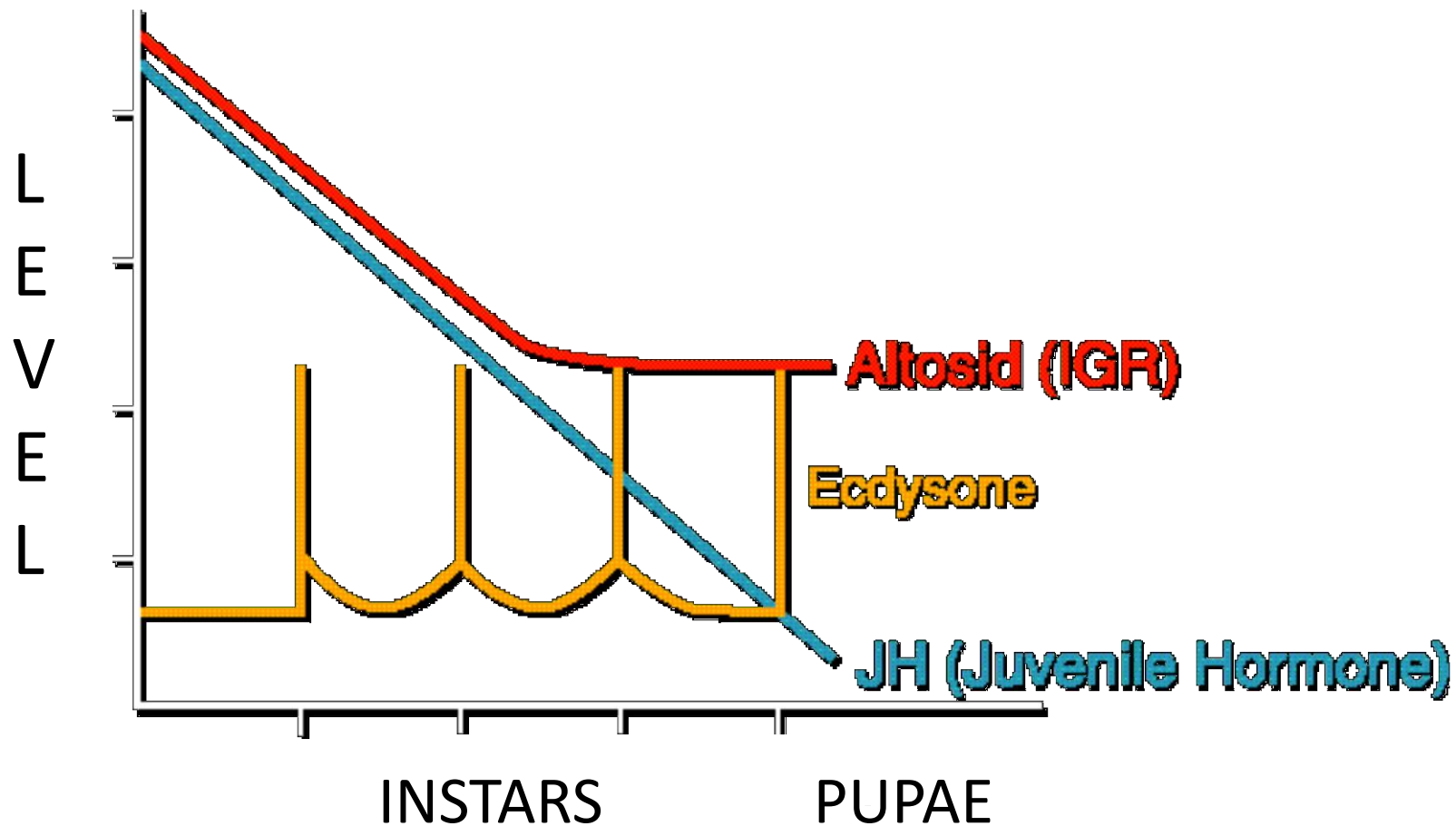
Founder and CEO Bill Reynolds of Leading Edge Associates, Inc. and Leading Edge Aerial Technologies has been working on mosquito control since he entered the industry with a college internship in 1985. Now, he's won an industry award for creative thinking and advancing public health efforts for his work in using drones for mosquito control.

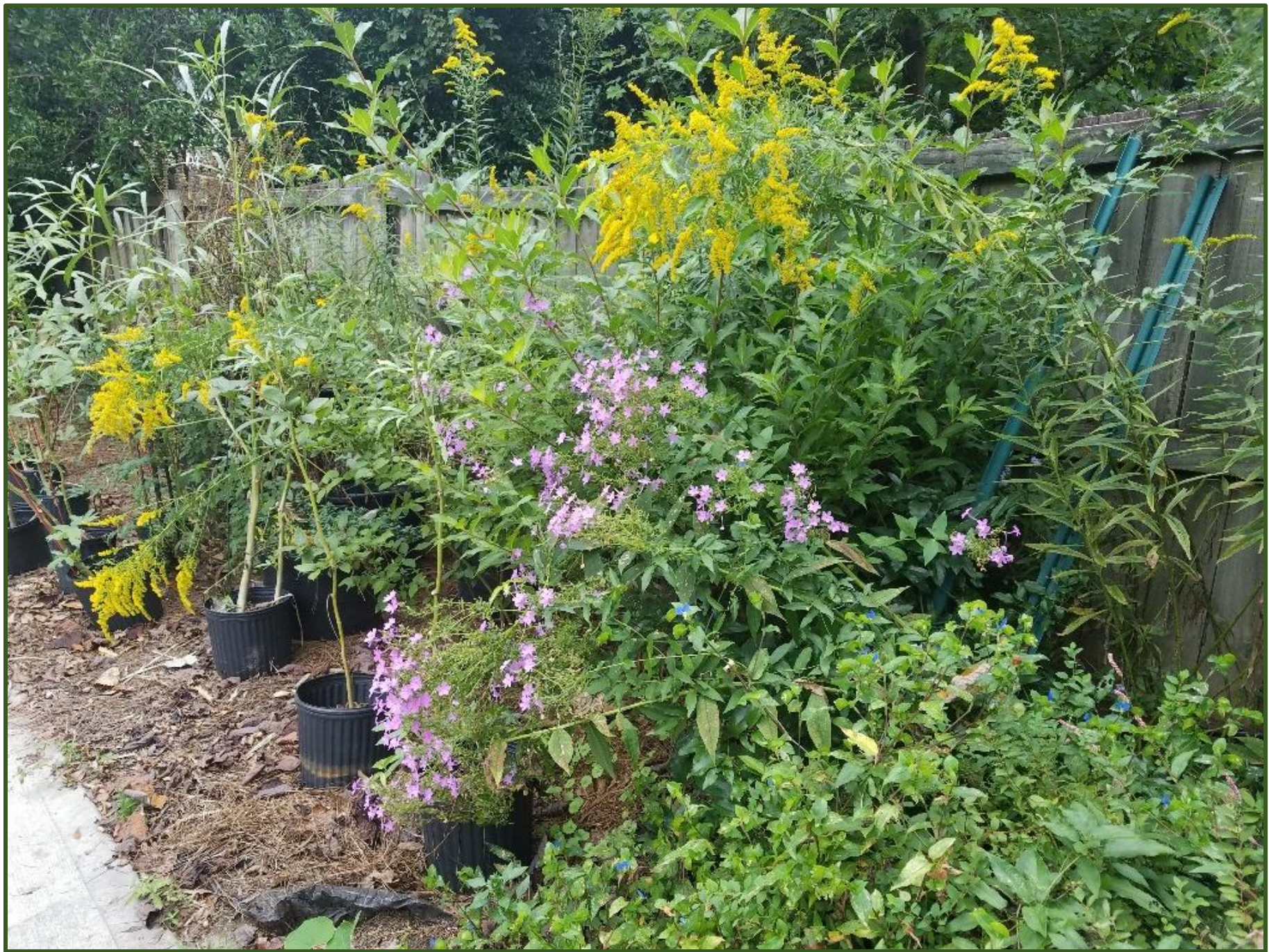


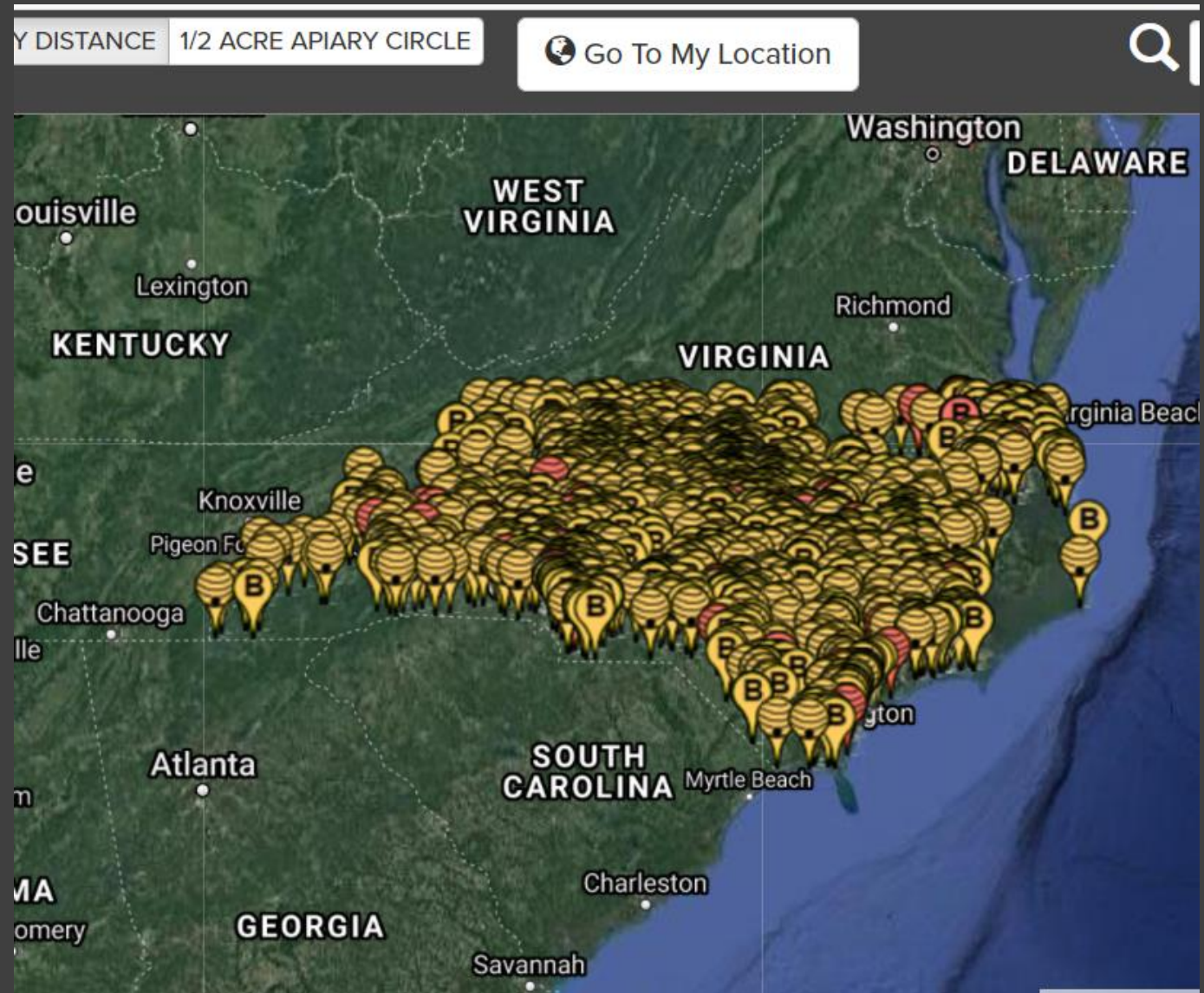
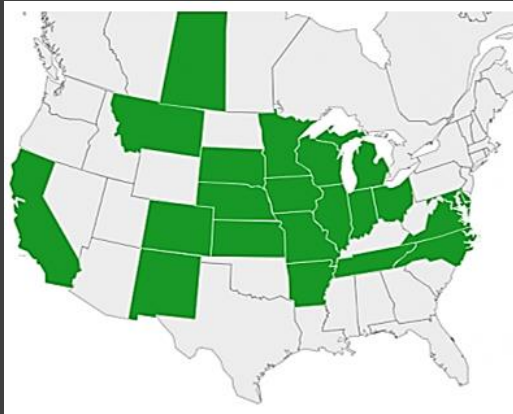
Essentria Botanical line and Altosid (Methoprene) for the Pest Control Market



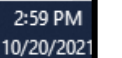
Altosid mimics Juvenile Hormone, interrupting the normal growth cycle







How to avoid barrier spraying apiaries



centrallifesciences.com

The screenshot displays the Centrallife Sciences website interface. At the top, the browser's address bar shows the URL `centrallifesciences.com`. The website header includes the company logo on the left and navigation links for [PROFILE](#), [PARTNERSHIP](#), and [CONTACT](#) on the right, along with a search bar. Below the header, a filter section titled "SORT BY" offers three options: [brands](#) (represented by a gear icon), [active ingredients](#) (represented by a molecular structure icon), and [markets](#) (represented by a group of people icon). A prominent green horizontal band contains five category icons with their respective labels: [Agriculture](#) (leaf icon), [Horticulture](#) (fruit icon), [Livestock](#) (animal head icon), [Pest Control](#) (target icon), and [Vector](#) (mosquito icon). The footer area features a promotional banner for the "Pro2Pro Newsletter" with the text "Read the latest Pro2Pro Newsletter for helpful professional pest control insights from Zoëcon." and a "READ MORE" button. The bottom of the image shows a Windows taskbar with various application icons and a system clock indicating 4:40 PM on 10/14/2021.



Thank You!