

## SCWDS Arthropod Surveillance

Dr. Joseph Corn and Ms. Stacey Vigil  
Southeastern Cooperative Wildlife Disease Study  
University of Georgia

Dr. James Mertins  
National Veterinary Services Laboratories  
USDA, APHIS VS

Committee on Parasitic Diseases  
United States Animal Health Association  
October 28, 2015, Providence, Rhode Island

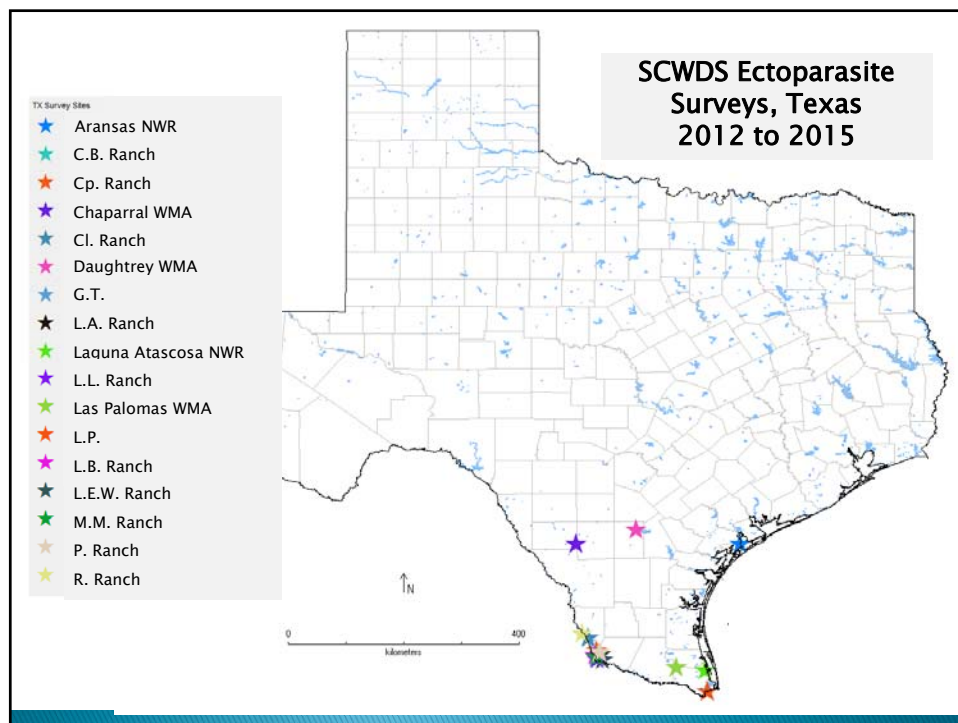
## SCWDS Arthropod Surveillance

- ▶ USDA-APHIS-Veterinary Services Cooperative Agreement (FY2015)
- ▶ Cattle Fever Ticks in South Texas
- ▶ Tropical Bont Ticks in the Caribbean
- ▶ Vesicular Stomatitis Vectors in Colorado
- ▶ *Culicoides* in the Southeast



## Tick Surveys in South Texas

- ▶ Surveys began in February 2012
- ▶ Objective:
  - Determine if wildlife are serving as hosts of the two species of fever ticks; *Rhipicephalus (Boophilus) annulatus* and *Rhipicephalus (Boophilus) microplus* in the quarantine zone in South Texas



## Tick Surveys in South Texas

- ▶ South Texas tick fauna: Only area in U.S. with resident sympatric populations of ticks representing every tick genus known in U.S.
- ▶ Some species feed extensively on domestic animals, but all feed on wildlife to some degree, and most feed exclusively on wildlife

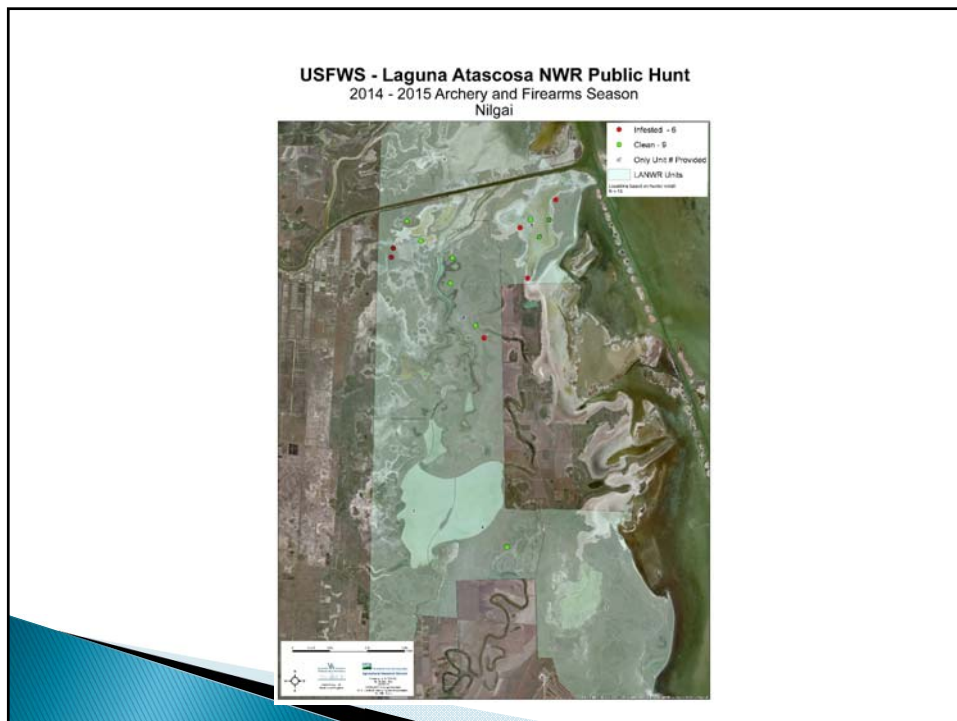
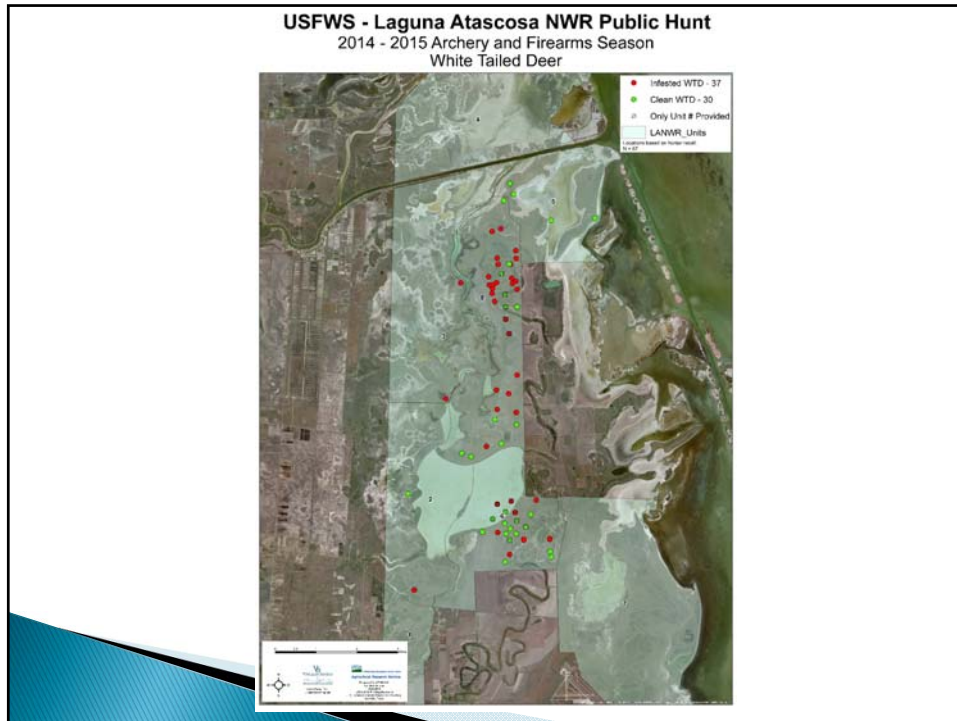
- ▶ During the initial surveys:
  - At least 20 tick species collected
  - **Soft ticks:** *Argas brevipes*, *Carios* sp. (probably *duges*), and *Ornithodoros turicata*
  - **Hard ticks:**
    - *Amblyomma* (i.e., *americanum*, *auricularium*, *cajennense*, *imitator*, *inornatum*, *maculatum* and sp. (an undescribed nymph)
    - *Anocentor nitens*
    - *Dermacentor* (i.e., *albipictus*, *halli*, and *variabilis*)
    - *Ixodes* (i.e., *affinis* (First report in Texas), *conepati*, *cookei*, *scapularis*, *texanus*, *tovari*, and *woodi*)

Cattle fever ticks not found

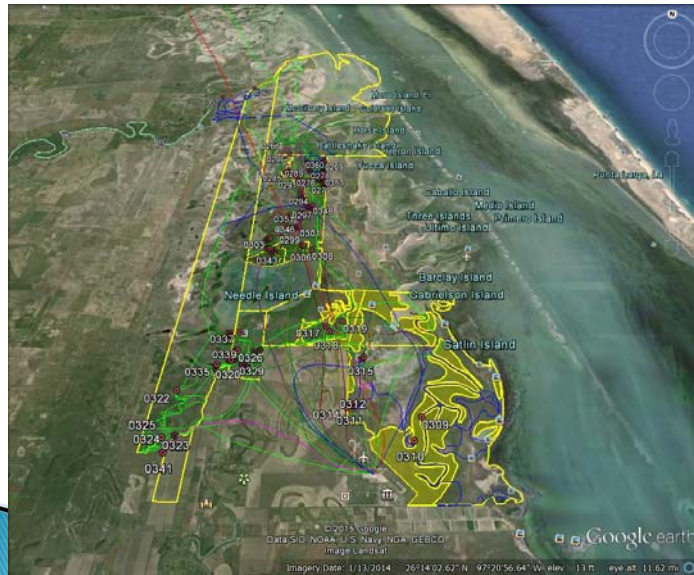
- ▶ Collecting other arthropods from hosts
- ▶ So far have identified over 75 species of dipterans, fleas, chewing lice, sucking lice, and mites
- ▶ Many of the acarine taxa encountered, particularly the feather mites of birds, represent novel forms not previously described
- ▶ These findings emphasize how little is known about the ectoparasite fauna of South Texas

## Feral Swine Tick Survey 2015

- ▶ Survey conducted at Laguna Atascosa NWR
- ▶ Laguna Atascosa: white-tailed deer and nilgai infested by cattle fever ticks
- ▶ Survey for ticks on feral swine conducted in August 2015
- ▶ SCWDS collaborated with USDA-APHIS-Wildlife Services, Laguna Atascosa NWR, USDA-APHIS-Veterinary Services, Texas Animal Health Commission
- ▶ Feral swine examined = 81; all infested by ticks; cattle fever ticks = none found



## Feral Swine Examined



## Vieques, Puerto Rico

- ▶ Surveys for the tropical bont tick conducted in Vieques October–November 2014, March–April 2015, June 2015, and October 2015 and will continue through 2016.
- ▶ Vieques not known to be infested but feral horses present.



## Vieques, Puerto Rico

- ▶ Surveys conducted throughout the island
- ▶ Surveys for ticks on mongooses, cattle egrets, and feral horses



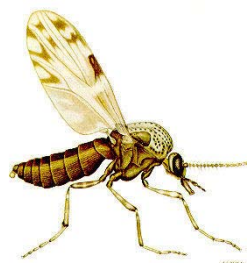
## Vieques, Puerto Rico

- ▶ Surveys include the east end of Vieques
- ▶ East end previously Camp Garcia, U.S. Navy, now Vieques NWR
- ▶ East end previously used for bombing practice and not accessible due to unexploded ordinance
- ▶ Feral horses and cattle present
- ▶ Beginning in 2015 SCWDS working with USFWS to conduct surveys on east end in cleared areas
- ▶ Tropical bont ticks not found to date

## Vesicular Stomatitis Vectors

- ▶ Surveys conducted for VSNJV in overwintering insects in Colorado
- ▶ SCWDS collaborating with USDA-APHIS-VS and the Colorado Department of Agriculture
- ▶ Specimens collected January-June 2015
- ▶ Collected immature blackflies from submerged vegetation and biting midges from moist soil near stock tanks, ponds and streams
- ▶ 420 samples tested and all negative

## SCWDS *Culicoides* Surveillance





## *Culicoides* surveillance in the SE United States – Objectives

- ▶ Determine *Culicoides* present in the Southeast
- ▶ Map the current distributions and identify expansion
- ▶ Identify *Culicoides* present at sites where exotic BT and EHD viruses have been found.

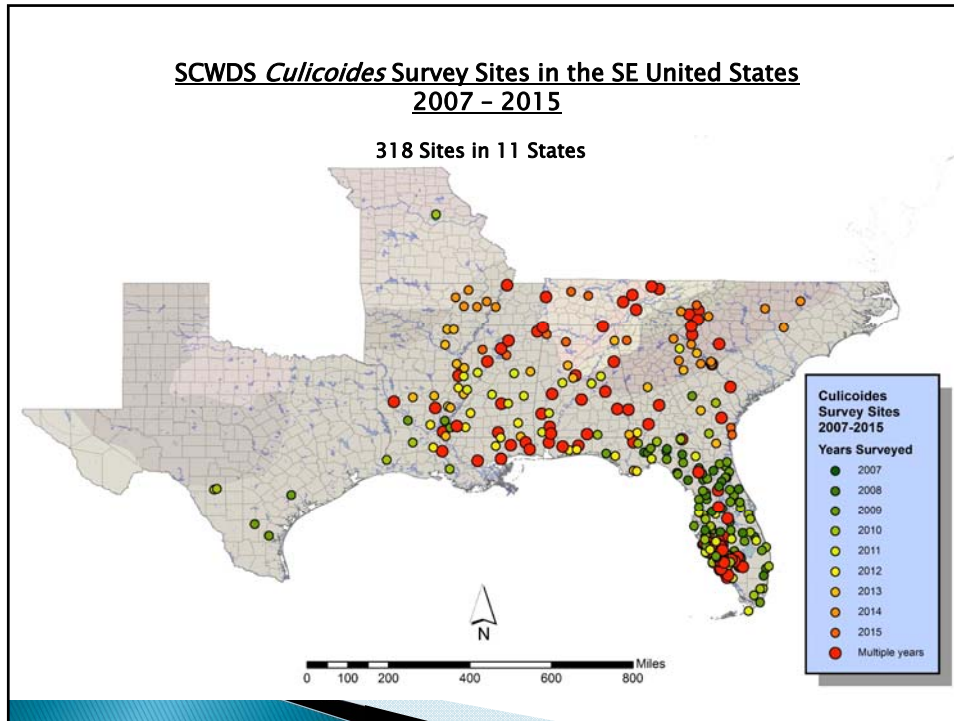


Image from <http://www.culicoides.net>

## Field Methods

- ▶ 10 CDC miniature light traps (equipped w/ UV light and ethanol-filled collection jar) placed out on a site in the late afternoon and collected the next morning
- ▶ Sites include primarily state/county parks, state forests, wildlife management areas, as well as private areas chosen for proximity to BTV/EHDV outbreaks or presence of an exotic serotype of BTV/EHDV
- ▶ Trapping conducted late summer to early fall 2007–2015 across the southeast, and year-around in central and southern Florida from 2007–2012





### November 2007 to October 2015

	Field Work			Lab Work			
	Total Sites	Total Counties	Trap Nights	Traps Sorted	Total <i>Culicoides</i>	Slides	IDs
Florida	178	58	3,013	2,911	82,694	1,558	2,569
S. Carolina	5	6	132	132	762	21	136
N. Carolina	9	10	129	129	2,262	16	29
Tennessee	10	13	128	166	3,096	0	0
Georgia	25	24	680	679	60,624	608	1,214
Alabama	27	33	857	865	13,309	503	1,095
Mississippi	30	30	892	890	59,973	860	1,894
Louisiana	18	22	526	525	25,234	444	946
Arkansas	10	11	238	237	25,514	103	449
Missouri	1	1	25	25	22	7	7
Texas	5	4	41	41	3,364	178	173
<b>All States</b>	<b>318</b>	<b>212</b>	<b>6,909</b>	<b>6,600</b>	<b>276,854</b>	<b>4,298</b>	<b>8,509</b>

## Species found outside historic ranges

<i>Culicoides</i> spp.	Range	New Records:	Recorded states/prov. (2009):	Direction of change:
<i>C. beckae</i>	Eastern seaboard of N. America	Mississippi, Louisiana	New York to Alabama	West along Gulf Coast
<i>C. oklahomensis</i>	Neotropical, Central America; SW U.S.	Arkansas, Alabama	California to Guatemala and Mississippi	North and East along Gulf Coast
<i>C. alachua</i> *	Inland N. Florida	Alabama, Georgia, south Florida	Florida, S. Carolina	West along Gulf Coast
<i>C. neopulicaris</i>	Neotropical; Central America	Alabama	Texas, Louisiana to Costa Rica	North and East along Gulf Coast
<i>C. barbosa</i>	Neotropical; Caribbean	Georgia, Louisiana	Florida to Ecuador	North and West
<i>C. insignis</i> **	Neotropical; Caribbean	Mississippi, Louisiana, FL counties	Argentina to Alabama, Georgia	North and West
<i>C. sonorensis</i> **	Scattered across N. America	Manatee Co., Sarasota Co., FL; Clarke Co., AL; Newberry Co., SC	Across N. America	Uncommon in the Southeast; no evidence of change

\*subgenus *Avaritia*  
 \*\*known vectors of BTV

## Subgenus *Hoffmania* > *Culicoides insignis*



- ▶ Neotropical range, often locally abundant in Florida
- ▶ Often associated with livestock
- ▶ Also found in a variety of other habitats: mangrove swamps, tidal mud flats, drainage ditches, sugarcane fields, etc.
- ▶ Frequent pest of livestock; bites can cause generalized skin reactions
- ▶ Known vector of BTV
  - Thought to be the primary vector in areas where *C. sonorensis* is not present



