

# West Virginia Vectorborne Disease Surveillance Report

JANUARY 1 – NOVEMBER 9, 2015

The purpose of this report is to share descriptive surveillance data related to vectorborne disease activity with public health partners in West Virginia (WV). All information in this report is considered provisional. For questions or comments, contact Miguella Mark-Carew in the Division of Infectious Disease Epidemiology (DIDE) at [miguella.p.mark-carew@wv.gov](mailto:miguella.p.mark-carew@wv.gov).



## MOSQUITOES

### HUMAN SURVEILLANCE

During the period of January 1 to November 9, 2015, three human cases of La Crosse encephalitis were reported; two from Raleigh County and one from Lincoln County. One travel-associated case of malaria was reported from Mineral County. One travel-associated case of dengue fever was reported from Monongalia County (Table 1).

**Table 1.** Summary of human cases of mosquito-borne diseases for the current reporting period in WV.

Mosquito-borne Disease	# Confirmed and Probable Human Cases <sup>a</sup> (Total through November 9, 2015)	Comments
Dengue Fever	1	Case traveled to India
La Crosse Encephalitis	3	Cases from Raleigh and Lincoln counties
Malaria	1	Case traveled to Malawi
<b>Total</b>	<b>5</b>	

<sup>a</sup>Table includes only confirmed and probable cases that have been reviewed and closed by the Zoonotic Disease Epidemiologist.

### BIRD AND HORSE SURVEILLANCE

One bird specimen was submitted for arboviral disease testing (Table 2). Results are pending.

**Table 2.** Summary of surveillance specimens submitted for dead birds and horses (serum) through November 9, 2015.

Type of Specimen	Total through November 9, 2015				Comments
	# specimens submitted	+ Arbovirus <sup>a</sup>			
		WNV	SLE	EEE	
Dead bird	1	-	-	-	Results pending
Horse serum	0	-	-	-	
<b>Total</b>	<b>1</b>				

<sup>a</sup>Note: horse specimens are tested for WNV and EEE only.

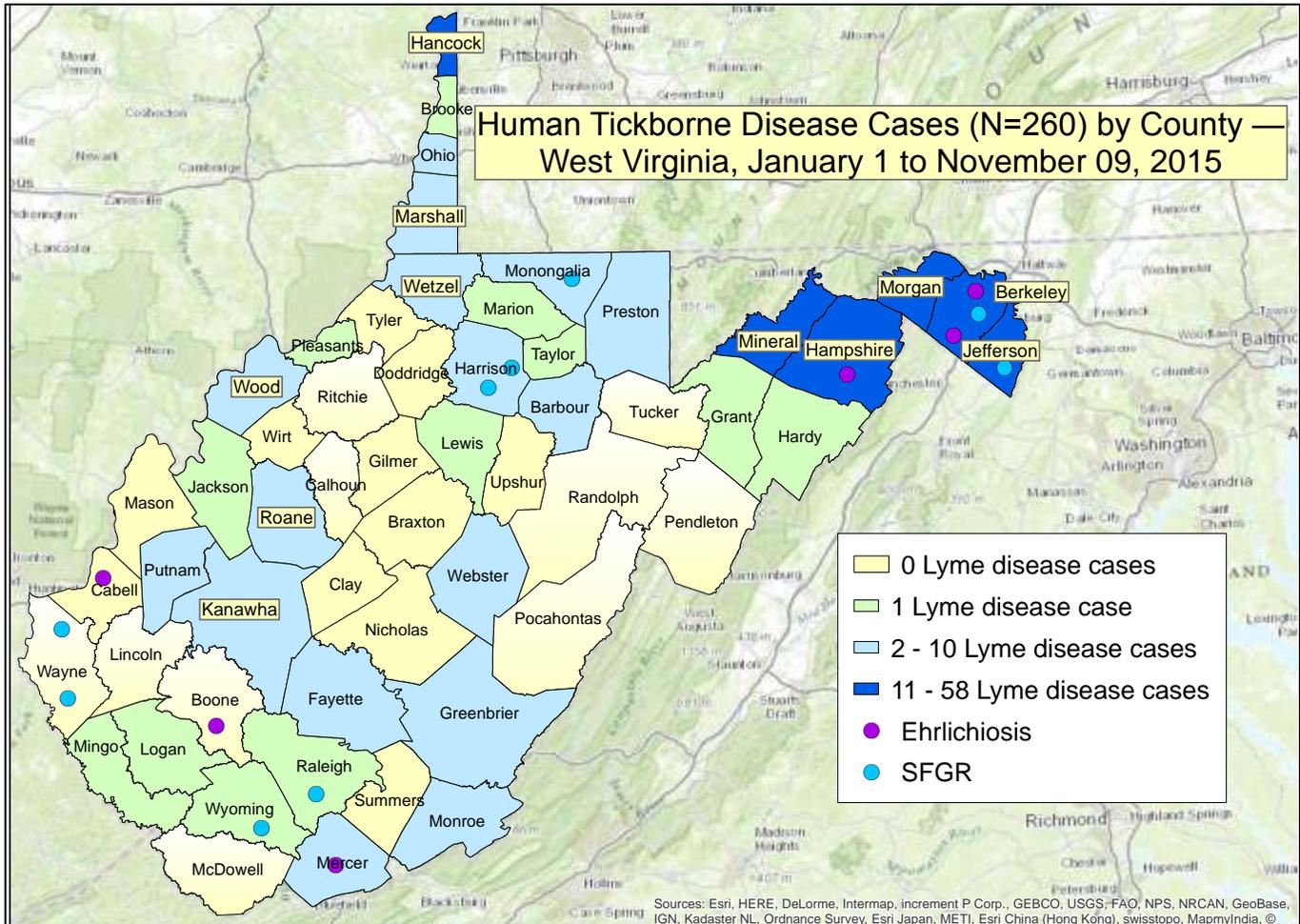
### MOSQUITO SURVEILLANCE

Mosquito surveillance was conducted from May 20 through September 19 in the following 19 counties: Berkeley, Cabell, Fayette, Greenbrier, Hancock, Harrison, Jackson, Jefferson, Kanawha, Mercer, Monongalia, Morgan, Nicholas, Putnam, Raleigh, Roane, Wayne, Wetzel, and Wood. Of 600 total mosquito pools tested, 37 (6.2%) were positive for West Nile virus (WNV) (Table 3). Most West Nile virus positive pools were from counties in the western part of the state (Fig. 1). Twenty-nine mosquito pools from six different surveillance sites in Cabell County contained WNV; the first positive pool was detected in adult *Culex* mosquitoes active on July 13 and last pools were from adult *Culex* mosquitoes and *Aedes* mosquitoes (*Aedes albopictus/Aedes triseriatus*) that were active on August 26. In Kanawha County, WNV was detected in adults *Culex* mosquito pool collected on July 16 and on August 13, and an adult *Aedes japonicus* pool collected on July 23. Three adult *Culex* mosquito pools from Wetzel County and one adult *Culex* mosquito pool from Wood County collected on August 4 also tested positive for WNV. WNV was also detected in a single *Culex* mosquito sample collected August 26 in Jefferson County in eastern WV. No other arboviral diseases (La Crosse virus, eastern equine encephalitis virus, St. Louis encephalitis virus) were detected in the mosquito populations. Peak WNV infection rate in adult *Culex* mosquitoes occurred during the first three weeks in August; however this amount of infection in the mosquito population was still



# TICKS

## HUMAN SURVEILLANCE



**Figure 2.** Distribution of reported human tickborne disease cases. Ehrlichiosis (n=6), Lyme disease (n=245) and spotted fever group rickettsioses (n=9) have been reported. Counties with boxed yellow labels are Lyme disease endemic counties. Ehrlichiosis and SFGR cases are random positioned within the county from which they were reported.

Through November, 2015, 260 confirmed and probable tickborne disease cases were reported in West Virginia. The majority (94.2%) were Lyme disease cases (n=245) (Figure 2). Spotted fever group rickettsioses (n=9) and ehrlichiosis (n=6) cases were also reported (Table 4). Thirty-seven (67.2%) of West Virginia’s 55 counties have reported human tickborne disease activity.

One hundred ninety-five (79.6%) reported Lyme disease cases were from West Virginia’s 11 endemic counties. Ehrlichiosis cases were reported in Berkeley, Boone, Cabell, Hampshire, and Mercer counties. Spotted fever group rickettsioses (SFGR) cases were reported in Berkeley, Jefferson, Harrison, Monongalia, Raleigh, Wayne and Wyoming counties.

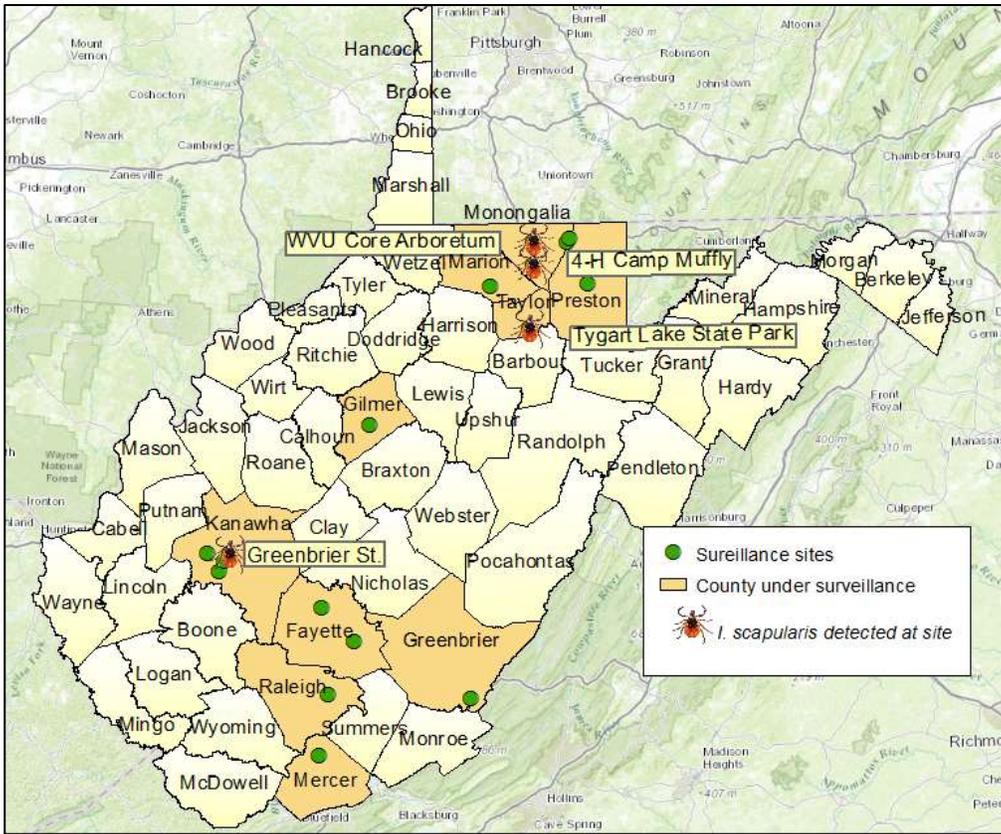
**Table 4.** Summary of human cases of tickborne diseases through November 9, 2015<sup>a</sup>.

Tickborne Disease	# Confirmed or Probable Cases through November 9, 2015 <sup>a</sup>	# of Counties Where Disease Reported
Lyme disease	245	34
Spotted fever group rickettsioses <sup>b</sup>	9	7
Ehrlichiosis	6	5
<b>TOTAL</b>	<b>260 cases</b>	<b>37 counties</b>

<sup>a</sup>Table includes only confirmed or probable cases that have been reviewed and closed by Zoonotic Disease Epidemiologist.

<sup>b</sup>Includes Rocky Mountain spotted fever

## TICK SURVEILLANCE



Active surveillance across the state began on May 8, 2015 at eleven sites in West Virginia. Sites were selected based on 2014 human Lyme disease surveillance data and 2014 West Virginia Veterinary Tick Submission Program (WVVTSP) data (ticks were identified on animal host). *Ixodes scapularis* was collected in four of 16 sites: Greenbrier St. (Charleston) (n=52), Tygart Lake State Park (n=14), 4-H Camp Muffly (n=1), and WVU Core Arboretum (n=1) (Figure 3).

**Figure 3.** Active tick surveillance sites in West Virginia. *I. scapularis* has been identified at four sites across the state.

## VETERINARY TICK SURVEILLANCE

Veterinarians from 49 practices (48 in WV and one in Pennsylvania) have submitted 1,055 ticks from animal clients for identification from January 4 through October 10, 2015 (based on date of collection) (Table 5). Five species have been identified: *A. americanum*, *D. variabilis*, *I. cookei*, *I. scapularis*, and *R. sanguineus*. Ticks have been collected from 54 counties (41 counties in WV, 1 county in Maryland, 2 counties in Ohio, 3 counties in Pennsylvania, and 4 counties in Virginia) based on the home county of the animal host. Animal hosts include cats, a chipmunk, dogs, a horse, and humans.

Adult *I. scapularis* are currently out across the state. In October alone, 113 were identified. These ticks are expected to be active through the rest of the year.

**Table 5.** West Virginia Tick Surveillance Project cumulative IDs as of November 2, 2015.

Species of Tick	# of ticks submitted and identified	Animal host from which tick was removed	# of counties with tick species <sup>1</sup>
<i>Amblyomma</i> spp. (including <i>A. americanum</i> )	86	Dog, Horse	12
<i>Dermacentor variabilis</i>	677	Cat, Dog, Human	44
<i>Ixodes cookei</i>	33	Cat, Dog	11
<i>Ixodes scapularis</i>	207	Cat, Chipmunk, Dog	24
<i>Rhipicephalus sanguineus</i>	4	Dog	3
<i>Ixodes</i> spp.	48	Cat, Dog	14
<b>TOTAL</b>	<b>1,055 ticks</b>	<b>5 host species</b>	<b>54 counties</b>

<sup>1</sup>Based on home county of animal host. Data includes 10 counties outside of West Virginia.

Ticks ID results by veterinary practice can be viewed at: <http://arcg.is/1V3Ob5A> or on the West Virginia Veterinary Tick Submission Project page at: <http://www.dhhr.wv.gov/oeps/disease/zoonosis/tick/pages/wv-veterinary-tick-submission-project.aspx>.

## CUMULATIVE HUMAN VECTORBORNE DISEASE SURVEILLANCE SUMMARY (Jan 1– Nov 9, 2015)

County	MOSQUITO-BORNE					TICKBORNE					
	LAC	WNV	CHIK	DF	Malaria	Anaplasmosis	Ehrlichiosis	Lyme disease	RMSF	Q fever	Tularemia
Barbour								2			
Berkeley								58	1		
Boone							1				
Braxton											
Brooke								1			
Cabell							1				
Calhoun											
Clay											
Doddridge											
Fayette								3			
Gilmer											
Grant								1			
Greenbrier								3			
Hampshire							1	24			
Hancock								12			
Hardy								1			
Harrison								2	2		
Jackson								1			
Jefferson								39	1		
Kanawha								9			
Lewis								1			
Lincoln	1										
Logan								1			
McDowell											
Marion								1			
Marshall								3			
Mason											
Mercer							1	6			
Mineral					1			13			
Mingo								1			
Monongalia				1				5	1		
Monroe								9			
Morgan								28			
Nicholas											
Ohio								2			
Pendleton											
Pleasants								1			
Pocahontas											
Preston								2			
Putnam								2			
Raleigh	2							1	1		
Randolph											
Ritchie											
Roane								3			
Summers											
Taylor								1			
Tucker											
Tyler											
Upshur											
Wayne									2		
Webster								2			
Wetzel								2			
Wirt											
Wood								4			
Wyoming								1	1		
<b>TOTAL</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>245</b>	<b>9</b>	<b>0</b>	<b>0</b>

\*Table includes only confirmed or probable cases that have been reviewed and closed by the Zoonotic Disease Epidemiologist.

LAC = La Crosse encephalitis      WNV= West Nile virus      CHIK= chikungunya      DF= dengue fever  
 RMSF= Spotted fever group rickettsioses including Rocky Mountain spotted fever