

Mosquito Report

for

Preble County

2016



Public Health
Prevent. Promote. Protect.
Preble County

Preble County Public Health

ABOUT PREBLE COUNTY PUBLIC HEALTH

Preble County Public Health (PCPH) is the local public health agency for the city of Eaton and the entirety of Preble County. The directive of the health department is to assure conditions in which people can be healthy whether they live, work or visit Preble County. PCPH provides the community a range of programs providing clinical, environmental, health promotion, and population-based services. The department has an annual budget of approximately \$1.5 million and is staffed by approximately 20 full and part-time employees.

PUBLIC HEALTH AND MOSQUITOES

This year, perhaps more than ever, mosquitoes have become synonymous with infectious disease. In particular, Zika virus has harnessed the world's attention. Mosquitoes are most common and widespread of the numerous kinds of insects that are considered both pests and vectors of disease. Some species of mosquitoes are active during the daytime, though most mosquitoes are active in the evening hours. Most importantly, some species of mosquito successfully spread a number of disease-causing agents to humans.

Zika Virus

Zika virus is a disease transmitted by mosquitoes, and there is no indication that it can spread person to person through casual contact. However, the Centers for Disease Control and Prevention (CDC) has reported several cases of Zika virus infection in non-travelers in the continental United States after their sexual partners returned from an affected area and developed symptoms.

The disease has historically occurred in Africa, Southeast Asia and islands in the Pacific Ocean. In May 2015, Zika virus was found for the time in the Western Hemisphere in northeastern Brazil. The virus has since spread through much of the Caribbean, Central America and South America. The CDC maintains an updated list of affected countries and territories as well as associated travel notices.

Most people, 80 percent, infected with Zika virus do not have any symptoms. Of those who do experience symptoms, they are usually mild and include fever, rash, joint pain or conjunctivitis (red eyes). Other symptoms can include muscle pain and headache. Severe disease requiring hospitalization is uncommon. Despite these relatively mild symptoms, health officials have determined that there is an association between Zika virus infections in pregnant women and birth defects.

The primary mosquito that transmits Zika virus is the yellow fever mosquito, *Aedes aegypti*. This mosquito is found in the tropics and in the southern United States. It is not known to be established in Ohio. The Asian tiger mosquito, *Aedes albopictus*, is a related mosquito that is found in Ohio and may potentially transmit Zika virus, although it has not yet been implicated in the transmission of human cases in the United States. This species was introduced into the U.S. in the 1980s and has been collected in several Ohio counties, and it likely occurs in other counties as well. As a precaution, it is recommended that suspected cases of Zika virus

infection avoid mosquito exposure the week after symptom onset when mosquitoes are active in Ohio (May to October) in order to prevent the possibility that mosquitoes might become infected by biting an infected person and then transmitting the virus to other people. Because most people who have Zika virus will have no symptoms, it is recommended that anyone returning from travel to a Zika-affected area use repellents and otherwise avoid mosquito exposure for three weeks after they return.

West Nile Virus

West Nile virus (WNV) is an arthropod-borne virus (arbovirus) most commonly spread by infected mosquitoes that can lead to severe fever, encephalitis (inflammation of the brain) or meningitis (inflammation of the lining of the brain and spinal cord). The primary vector in Ohio is the northern house mosquito, *Culex pipiens*. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes can then spread the virus to humans and other animals when they bite.

WNV was first detected in the United States in New York City in 1999 and quickly spread across the country within a few years. In Ohio, WNV was first identified in birds and mosquitoes in 2001. The following year, the first human cases and deaths were reported. By the end of 2002, Ohio had 441 human cases, 31 fatalities and all but one of the state's 88 counties reported positive humans, mosquitoes, birds or horses. WNV is now established in Ohio where cases occur each year and seasonal epidemics can flare up under certain conditions in the summer and continue into the fall.

Approximately 80 percent of people who are infected with WNV will not show any symptoms at all, but there is no way to know in advance if you will develop an illness or not. Those who do develop symptoms usually do so between three to 14 days after they are bitten by the infected mosquito:

- Serious symptoms in a few people. About one in 150 people infected with WNV will develop severe illness. The severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent.
- Milder symptoms in some people. Up to 20 percent of people who become infected will have symptoms that can include fever, headache, body aches, nausea, vomiting and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms can last for a few days to as long as several weeks.

There is no specific treatment for WNV infection, and care is based on symptoms.

Animals associated with West Nile virus in Ohio include:

- Birds
- Horses
- Mosquitoes

Other Mosquito Linked Diseases in Ohio

Eastern Equine Encephalitis Virus (EEEV)

Eastern Equine Encephalitis is transmitted to humans through the bite of an infected mosquito. Currently, it is a rare illness in humans, and only a few cases are reported in the United States each year. In the United States, most cases occur in the Atlantic and Gulf Coast states. Usually, humans infected with EEEV have no apparent illness. Severe cases of EEE (involving encephalitis, an inflammation of the brain) begin with the sudden onset of headache, high fever, chills, and vomiting.

La Crosse virus (LACV)

La Crosse encephalitis virus (LACV) is a rare disease that is caused by a virus spread by infected mosquitoes. This virus is one of a group of mosquito-transmitted viruses that can cause inflammation of the brain (encephalitis). In the United States, about 80-100 LACV disease cases are reported each year. Most cases of LACV disease have been reported from upper Midwestern, mid-Atlantic and southeastern states.

St. Louis encephalitis virus (SLEV)

Saint Louis encephalitis virus (SLEV) is transmitted to humans by the bite of an infected mosquito. Most cases of SLEV disease have occurred in eastern and central states. Most persons infected with SLEV have no apparent illness. Initial symptoms of those who become ill include fever, headache, nausea, vomiting, and tiredness. Severe neuroinvasive disease (often involving encephalitis, an inflammation of the brain) occurs more commonly in older adults. In rare cases, long-term disability or death can result.

Source(s): CDC, Ohio Department of Health

2016 Mosquito Surveillance in Preble County

Public Health Sanitarians from PCPH began mosquito trapping and testing in May and suspended trapping in September of 2016. Collection of mosquitoes was conducted in each of the 12 townships on a rotating basis. Each week a set of 3 different traps were collected, the mosquitoes counted, and the traps were put out in 3 new locations in different townships.

Once the mosquitoes were counted by a PCPH sanitarian, they were shipped to the Ohio Department of Health's Zoonotic Disease Program where they were identified by species and tested for West Nile Virus, Zika Virus and other diseases. Reports were sent back to local health departments including Preble County Public Health on a regular basis or when positive cases were detected.

By the end of the 2016 mosquito season, Preble County Public Health had collected 382 samples from 25 different total locations (Figure 1). There were no mosquitoes that came up positive with West Nile Virus or Zika virus. Overall, the number of collected mosquitoes in Preble County was lower than early predictions by the health department.

Plans for 2017

Preble County Public Health will continue and advance its mosquito surveillance program in 2017. Through the help of an Ohio Environmental Protection Agency grant and the alignment of other funds, further collection methods will be used as well as new traps and different locations to be tested. The aforementioned grant money will also help to clean up scrap tire locations that are known to harbor mosquitoes as well as cover costs associated with the purchase of larvicidal mosquito dunks that can be placed in standing water.

Preble County Public Health

Figure 1. Statewide Mosquito Submissions to ODH ZDP Laboratory

Source: Ohio Department of Health Zoonotic Disease Program

2016* Mosquitoes Submitted to ODH ZDP for Arbovirus Testing				
County	Agency	# mosquitoes identified	# pooled samples tested	WNV (+)
Adams	Adams County Health Department / ODH	152	6	
Allen	Allen County Public Health	344	14	
Ashtabula	Ashtabula County Health Department	902		
Athens	Athens City-County Health Department	1,891	75	
Belmont	Belmont County Health Department / ODH	306	11	
Butler	Butler County Health Department	258	22	
Champaign	Champaign Health District / ODH	1,146	31	
Clark	Clark County Combined Health District	246	28	
Clermont	Clermont County Public Health / ODH	1,114	26	1
Clinton	Clinton County Health Department / ODH	101	2	
Columbiana	Columbiana County Health Department	1,457	92	
Cuyahoga	Cuyahoga County Board of Health	11,062	257	12
	OSU-OARDC	1,480	128	4
	Shaker Heights City Health Department	5	2	
Darke	Darke County Health Department / ODH	27		
Defiance	Defiance County General Health District / ODH	3,263	85	4
Delaware	Delaware General Health District	14,210	668	5
Fairfield	Fairfield Department of Health	659	41	
Franklin	Columbus Public Health	40,470	1,207	133
	Franklin County Public Health / VDCI	73,061	1,747	108
Gallia	Gallia County General Health District / ODH	165	4	1
Geauga	Geauga County Health District	66	3	
Greene	Greene County Public Health	433	31	
Guernsey	Guernsey County Health Department / ODH	2,948	67	1
Hamilton	Cincinnati Health Department	725	67	1
	Hamilton County Public Health	1,913	84	1
Hancock	Hancock Public Health	468	23	5
Henry	Henry County Health Department / ODH	455	11	1
Highland	Highland County Health Department / ODH	15	3	
Huron	Huron County Public Health	15	1	
Jackson	Jackson County Health Department / ODH	119	3	
Knox	Knox County Health Department	133	6	
Lake	Lake County General Health District	15,736	458	47
Lawrence	Ironton City Health Department	744	16	
Licking	Licking County Health Department	27,213	663	25
	Village of Hebron	774	26	4
Lorain	Lorain County General Health District	12,612	584	10
Lucas	Toledo Area Sanitary District	8,043	440	25
Madison	Madison County-London City Health District	29	2	
Mahoning	Mahoning County District Board of Health	1,053	90	
	Youngstown City Health District	126	10	
Marion	Marion Public Health	533	40	
Medina	Medina County Health Department	3,436	138	
Meigs	Meigs County Health Department / ODH	2,285	57	
Mercer	Mercer County-Celina City Health Department / ODH	673	24	1
Miami	Miami County Public Health	17	2	
Monroe	Monroe County Health Department / ODH	27		
Montgomery	Public Health Dayton & Montgomery County	5,087	339	7
Muskingum	Zanesville-Muskingum County Health Department	138	13	
Noble	Noble County Health Department / ODH	639	18	1
Perry	Perry County Health Department / ODH	3,114	73	
Pickaway	Pickaway County General Health District	798	51	3
Portage	Kent City Health Department	40,301	876	11
Preble	Preble County Health Department	382	25	
Putnam	Putnam County Health Department / ODH	1,244	39	1
Richland	Richland Public Health	3,030	180	1
	Shelby City Health Department	173	10	
Ross	Ross County Health District	202	14	1
Scioto	Portsmouth City Health Department	1,285	33	1
	Scioto County Health Department	302	16	1
Shelby	Sidney-Shelby County Health Department / ODH	1	1	
Stark	Alliance City Health Department	7	28	
	Stark County Health Department	14,961	412	6
Summit	Barberton-Norton Mosquito Abatement District	29,121	921	21
	Summit County Health Department	73,591	1,920	39
Trumbull	Trumbull County Combined Health District	186	27	
Tuscarawas	Tuscarawas County General Health District / ODH	7,413	162	2
Union	Union County Health Department	555	14	2
Van Wert	Van Wert County Health Department / ODH	845	21	
Vinton	Vinton County Health Department	24	1	
Warren	Warren County Combined Health District	2,919	91	2
Washington	Washington County Health Department	1,702	105	3
Williams	Williams County Health District / ODH	454	11	
Wyandot	Wyandot County Public Health	278	20	
Total		421,662	12,716	491

*updated 11/2/2016

Figure 2. MMWR Statewide Weekly Mosquito County by Species

Source: Ohio Department of Health Zoonotic Disease Program

Species	MMWR Week																								Total		
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		42	43
<i>Ae. albopictus</i>					21	10	14	39	51	105	122	279	369	691	691	808	643	1,547	695	512	574	176	153	1	14	7,505	
<i>Ae. atropaiopus</i>									1												1					2	
<i>Ae. aurifer</i>					2				1	3	9				10											25	
<i>Ae. canadensis</i>				22	13	17	31	23	24	7	1	6	1	2			1									148	
<i>Ae. cantator</i>				8	5		10	10	6	2	12	1	1	20				1	1							77	
<i>Ae. cinereus</i>				2	14	8	2	1	7	6	1	1				1		6	7			1		2		59	
<i>Ae. dorsalis</i>																	2									2	
<i>Ae. excrucians</i>				5	10	27	13	9	7	50	12	28	2	6	3											172	
<i>Ae. grossbeckii</i>					10	3	3	5	13			6	1	5						1						47	
<i>Ae. hendersoni</i>																				1						1	
<i>Ae. implicatus</i>					4	7																				11	
<i>Ae. japonicus</i>		10	39	181	430	750	1,184	867	1,237	928	1,451	1,411	1,069	1,146	689	555	559	344	274	297	399	318	66	15	50	14,269	
<i>Ae. sollicitans</i>					1									5		57						1				64	
<i>Ae. sticticus</i>						1		12						1												14	
<i>Ae. stimulans</i>				8	4	15	16	10	9	2		3				2										69	
<i>Ae. triseriatus</i>					3	26	119	152	236	405	282	214	174	148	115	69	114	88	112	23	80	30	9	3	3	2,405	
<i>Ae. trivittatus</i>				1	165	39	101	49	22	407	222	153	62	45	40	160	71	192	50	39	362	28	8	1	1	2,219	
<i>Ae. vexans</i>				31	86	151	200	158	73	732	460	350	292	310	93	129	404	320	643	486	419	9	7			5,353	
<i>Aedes sp.</i>				3	9	48	168	45	339	159	89	89	34	44	56	47	20	147	21	19	3					1,340	
<i>An. barberi</i>				1			5	4	12	11	17	11	13	12	6	3	10	5	9	1	5	1	2	1		129	
<i>An. crucians</i>							3																			3	
<i>An. perplexens</i>							2	1	16	3		3	2	4		2	4	1		1	2	1				42	
<i>An. punctipennis</i>				17	10	47	101	197	153	93	128	125	124	223	86	104	120	77	55	47	19	5	1	3		1,735	
<i>An. quadrimaculatus</i>				3	2	12	36	30	45	38	76	62	117	173	72	58	100	68	44	21	22	8	3	2		992	
<i>An. walkeri</i>				1	3	1		2	42	15	2		3													69	
<i>Anopheles sp.</i>										1	1	1			2	2				2						10	
<i>Cq. perturbans</i>				7	15	333	555	114	161	936	388	290	94	8	23	25	2	7	3							2,961	
<i>Cs. inornata</i>									2																	2	
<i>Culex sp.</i>	33	201	711	7,453	15,501	17,987	27,660	32,217	23,697	32,204	35,908	35,620	28,824	26,391	26,445	19,255	10,557	9,476	12,686	6,684	7,280	2,005	1,275	46	16	380,132	
<i>Or. signifera</i>				1	1	1	2	2	5	1	2	5	5	2	3	8	6	4	15	1	6	2				72	
<i>Ps. ciliata</i>										6	2				2		3	2	1								16
<i>Ps. columbiae</i>													2	1	1		6	4	2	2	1						19
<i>Ps. cyanescens</i>												1															1
<i>Ps. ferox</i>							2		1	84	3	15	3	1	2		3	14	12			7				147	
<i>Ps. homida</i>											8																8
<i>Ps. howardii</i>												1		1													2
<i>Toxorhynchites sp.</i>												1		1	1												4
<i>Ur. sapphirina</i>								8	1		10	42	44	91	327	136	192	194	380	79	31	1				1,536	
Total	33	211	750	7,734	16,295	19,126	29,885	34,519	25,820	35,603	39,830	38,811	31,492	29,388	28,645	21,369	12,925	12,366	15,144	8,217	9,229	2,587	1,526	72	84	1	421,662

Washington Twp.	June 6, 2016	Preble	Preble County Health Department	June 10, 2016	<i>Culex sp.</i>	1		Negative
Gaspar Twp.	June 6, 2016	Preble	Preble County Health Department	June 10, 2016	<i>Culex sp.</i>	5		Negative