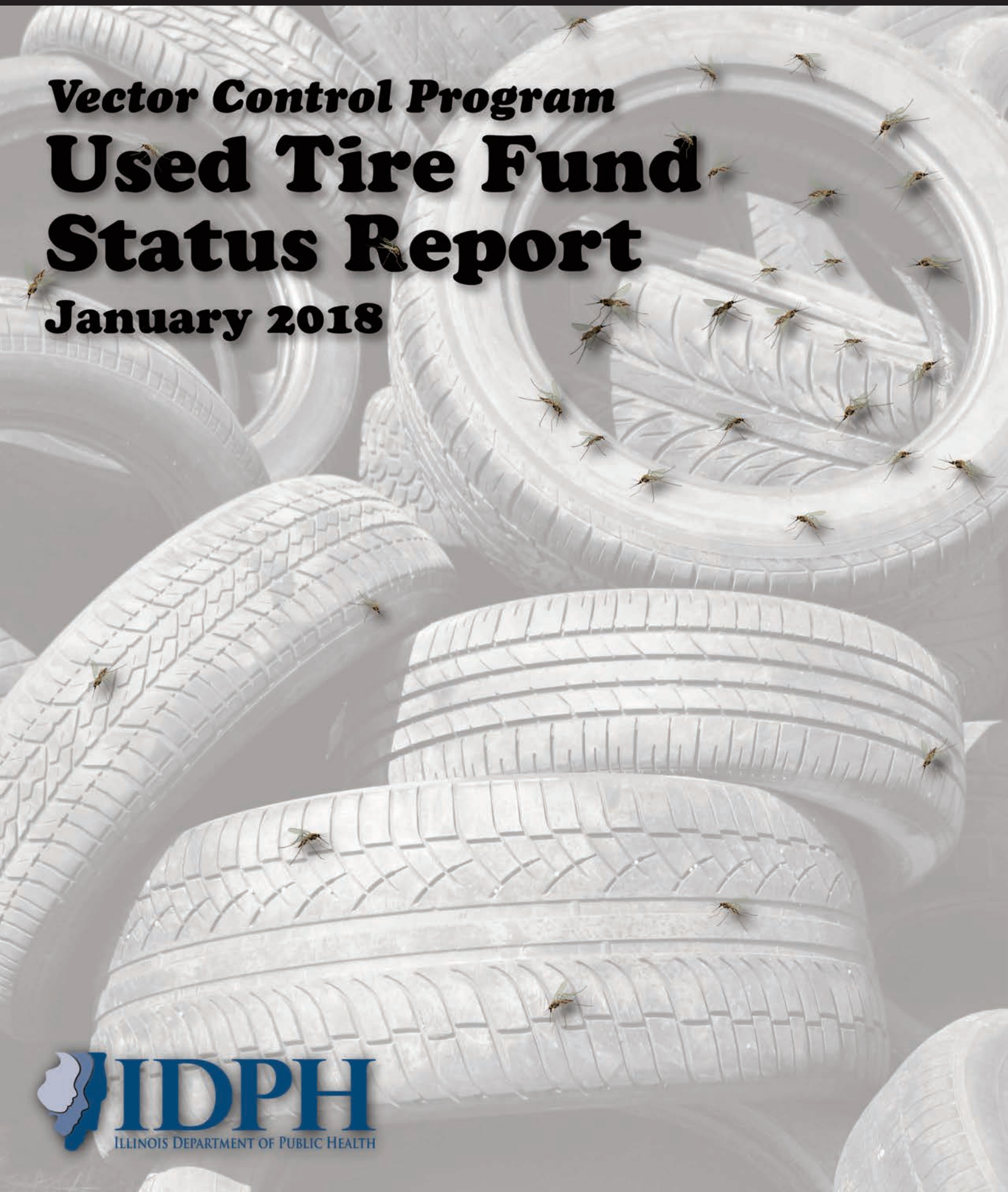
State of Illinois
Illinois Department of Public Health



Vector Control Program

Used Tire Fund Status Report

January 2018

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

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Legislative History

In the late 1980s, a committee of representatives from the Illinois Pollution Control Board, Illinois Environmental Protection Agency, and the Illinois Departments of Agriculture, Energy and Natural Resources, and Public Health proposed changes to regulate the disposal of used tires and to establish research and vector control programs. One reason for the proposed regulations was the introduction of the Asian tiger mosquito (*Aedes albopictus*), a carrier of dengue fever in tropical climates, to the U.S.; the Asian tiger mosquito uses used tires as breeding sites. In September 1989, the Used Tire Act (ILCS 5/53 to 55.7a) and the Vector Control Law (ILCS 95/1 to 11) were passed by the Illinois General Assembly and signed by Gov. James R. Thompson. This legislation established the Used Tire Management Fund, which was expected to receive $2 million annually. The money was to be distributed as follows: 44 percent ($880,000) to the Illinois Environmental Protection Agency (IEPA) to regulate commercial used tire collection and reprocessing; 39 percent ($780,000) to the Illinois Department of Energy and Natural Resources (now the Department of Natural Resources - IDNR) for grants to private industry for recycling and energy generation and for research on mosquitoes associated with tires; 13 percent ($260,000) to the Illinois Department of Public Health (IDPH) for mosquito-borne disease surveillance and grants to local health departments (LHDs), and 2 percent each ($40,000) to the Illinois Pollution Control Board and the Illinois Department of Agriculture for their respective activities relating to used and waste tires.

Public Act 87-727 (415 ILCS 5/55.8 to 5/55.15), a 1991 amendment to the Used Tire Act, imposed a $1 tax on all new retail tire sales that provided IEPA and IDNR with about $1.5 million in additional funds; however, IDPH's funding remained constant. Public Act 89-499, effective July 1, 1996, amended the Used Tire Act to increase the percentage of the Used Tire Management Fund available to the Department from 13 percent to 25 percent of the first $2 million collected or $500,000 per fiscal year. Also, Public Act 89-499 required IDPH to submit a report to the legislature biannually beginning January 1, 1998, concerning its activities under the Used Tire and Vector Control Acts. This report fulfills that requirement for 2016 and 2017.

Introduction: Public Health and Mosquito-borne Diseases

West Nile virus fever or encephalitis (WNV), LaCrosse (California) viral encephalitis, and St. Louis viral encephalitis (SLE) are the mosquito-borne diseases most likely to occur in Illinois. These infections are most common from June through October when mosquitoes are active. Although these viruses produce similar symptoms, they vary in severity and typically affect different age groups. Fortunately, only a few types of mosquitoes can transmit these kinds of viruses and usually only a small proportion of those mosquitoes actually carry the virus.

Historic data show that high summer temperatures are favorable to an increased risk of transmission of WNV (and the related St. Louis encephalitis virus - SLE) to humans. High temperatures increase the risk of a WNV or SLE outbreak because of rapid maturation of larvae, early abundance of the vector mosquito species - *Culex pipiens*, increased mosquito flight (blood-seeking) activity, and rapid multiplication of the virus in *Culex* mosquitoes and domestic bird species such as crows, robins and sparrows. Furthermore, high temperatures (usually associated with low rainfall) increase stagnation in thousands of urban catch basins (storm sewers), ditches, and retention ponds, which makes many water impoundments particularly suitable for the prolific breeding of *Culex* mosquitoes. In contrast, heavy rainfall produces hordes of "floodwater mosquitoes" that are not important WNV vectors. Additionally, frequent heavy rains kill many *Culex* larvae by flushing catch basins and similar water impoundments in urban areas.

For example, in 2014, WNV cases remained low because that summer was abnormally cool and had frequent rains that flushed the street "catch basins" where *Culex* mosquitoes develop. Meanwhile, the 2012 above-normal temperatures combined with drought resulted in more WNV activity in *Culex* mosquitoes and the largest number of human cases since 2002 (see Table 1). 2016 and 2017 had more complex weather conditions, as evidenced by the surveillance data. In 2016, above average temperatures extended into the fall, and *Culex* and WNV activity increased significantly in August. In 2017, the weather in June and early July was hot and dry and WNV surveillance data were. similar to 2012; however, rains came in late July, followed by a cool August, and WNV activity declined as conditions for *Culex* mosquito development became less favorable.

Table 1. Weather Conditions, Mosquito Positivity and WNV Cases

Year	Number of WNV Positive Counties	% Birds Positive-as of August 1	% *Culex* Mosquito Samples Positive as of August 1	Total Confirmed Cases Statewide	Summer Weather Conditions
2012	55	13%	20%	290	above normal temps with drought
2014	50	6%	2%	44	cool & wet; very cool July
2016	61	17%	8%	155	above normal temps with intermittent wet & dry periods
2017	64	7%	9%	84	hot, dry June & early July; rainy late July; very cool August

In both Cook and DuPage counties, local mosquito control agencies and LHDs responded to the high level of WNV activity during summer 2012 by expending considerable additional resources. Nevertheless, educating the public that WNV risk increases during hot, dry weather (despite the absence of swarms of non-vector "floodwater" mosquitoes) continues to be a challenge for local and state officials. For additional information about epidemiology and prevention of mosquito-borne diseases see Appendices I, II, and III.

Vector Control / Surveillance Program

The primary activity conducted directly by IDPH with money from the Used Tire Fund is environmental surveillance (monitoring and testing) of the animal reservoirs of mosquito-borne disease. IDPH's environmental health staff, assisted by LHDs and other local agencies, collects mosquitoes and birds and tests them for WNV and SLE (see Tables 2 and 3). Testing of birds and mosquitoes provides early warning of an impending outbreak of mosquito-borne disease.

Table 2. Dead Birds Collected and Tested for WNV During 2016 and 2017* **

Year	Total Dead Birds Tested	Total WNV Positive Samples (%)
2016	220	74 (34%)
2017	269	25 (9%)

*The Illinois Department of Agriculture and the University of Illinois, Department of Veterinary Pathobiology, provided laboratory support for testing of dead birds for WNV. ** Most dead birds were collected by LHDs supported by grant funds from the Department.

Table 3. Mosquito Samples Collected and Tested for WNV During 2016 and 2017* **

Year	Total Mosquito Samples	Total WNV Positive Samples (%)
2016	14,020	2,433 (17%)
2017	14,263	2,022 (14%)

*Most mosquito samples (typically 25 to 50 specimens each) were collected by local agencies; the Illinois Natural History Survey (University of Illinois) provided supplemental laboratory support for mosquito testing. **Many mosquito samples also were tested for St. Louis encephalitis virus.

IDPH staff also assist LHDs with "dead bird surveillance" – collecting dead birds for WNV testing (surveillance for human cases of mosquito-borne diseases is conducted by IDPH's Communicable Diseases Section). Testing of dead crows, blue jays, other birds, and mosquito "batches" (samples) provides an early warning system to detect WNV activity. For example, the U.S. Centers for Disease Control and Prevention (CDC) has found that counties recording a WNV-positive bird before August 1 are twice as likely to have a human case than those recording a WNV-positive bird after August 1. These data are used to alert the public about the imminent threat of WNV to human health.

Because surveillance data can be used to direct local mosquito control operations to "hot spots" of mosquito and virus activity, IDPH added surveillance for mosquitoes that can transmit the Zika virus to the protocol in 2016. This included the capacity to obtain mosquito traps to capture *Aedes albopictus* (one vector known to carry Zika virus and also present in Illinois), identify and report on the presence of these mosquitoes, as well as conducting Zika-specific education and preparedness.

Vector control staff provide training to LHD personnel in surveillance and control of mosquitoes, flies, rodents, bats, birds, ticks, and other vectors of disease and public health pests. In sum, program activities include:

- Collecting mosquito samples for WNV testing and assisting local agencies doing similar testing
- Coordinating the WNV "dead bird" surveillance effort by LHDs
- Assisting the University of Illinois Cooperative Extension Service with training for mosquito pesticide applicator licenses
- Conducting mosquito control training for local officials
- Providing technical information about WNV to LHDs, municipalities, and citizens
- Preparing and distributing public information materials about WNV and related issues
- Assisting IEPA in investigations of used tire sites
- Obtaining federal funding for WNV surveillance
- Responding to inquiries about other vectors and pests, such as ticks, rodents, bed bugs, nuisance birds and bats in buildings

Emergency Public Health Fund Vector Surveillance and Control Grants

Effective July 1, 2003, Senate Bill 361 (now 415 ILCS 5/55.6a) amended the Environmental Protection Act to increase the fee for retail sale of tires by 50 cents; that increase is subsequently distributed to IDPH. SB 361 also amended the Used Tire Act to provide that the increase in the fee shall be distributed to LHDs for expenses related to the West Nile virus and other vector-borne diseases. Additionally, IDNR, (specifically the Illinois Natural History Survey, now associated with the University of Illinois) received $200,000 from the fund for research and testing of mosquitoes for WNV. IDPH retained operating costs for three staff to deal with technical questions from municipalities and review, process, and administer grants annually to about 90 LHDs. IDPH estimated that with the 50 cent per tire fee increase, $2 to $3 million from the Emergency Public Health Fund (EPHF) established by the law would be available for Vector Surveillance and Control grants to certified LHDs. Awards are based on population and surveillance data (human cases, mosquito, and bird testing data) as required by statute.

The grants are used by LHDs primarily for WNV surveillance (testing of mosquitoes, birds and investigation of possible human cases). Additionally, some LHDs assist municipalities with preventive treatments of standing water impoundments (larviciding), such as street catch basins, roadside ditches and similar locations. Preventive treatment with larvicides is the most effective and environmentally-sound method of mosquito control. Spraying for adult mosquitoes could be included, but only as a supplement to larviciding. Additionally, the LHD program may include public information activities, investigations of mosquito nuisance complaints, and epidemiological investigations of human cases of WNV and other mosquito-borne diseases. IDPH recommends local agencies contribute some resources to the statewide coordinated WNV prevention

effort. LHDs can conduct limited prevention and control activities for non-mosquito vectors such as ticks, rats, etc.

In spring 2016, $2.5 million was awarded to 94 LHDs for WNV response activities for April 2016 to March 2017. During 2017, $3.6 million was awarded to 94 LHDs for WNV response activities for April 2017 to June 2018 (a 15-month period), as the annual grant cycle was shifted to the state fiscal year. Additionally, in response to severe flooding conditions in 11 northern Illinois counties designated for disaster relief, $47,300 was awarded for the purpose of purchasing larvicide and conducting larviciding activities to combat the production of *Culex* mosquitoes in post-flooding water impoundments. LHDs conducted other vector surveillance and control activities such as:

- inspecting and treating mosquito production ("breeding") locations,
- locating and removing discarded tire accumulations,
- conducting public information activities about prevention of mosquito-borne diseases,
- training of municipal staff in mosquito control,
- investigating suspected human WNV cases, and
- conducting field surveys for other disease vectors (e.g., ticks, rats, etc.)

IDPH has requested that grantees emphasize collecting and testing of *Culex* mosquitoes for WNV. These grants do not include funding for routine "nuisance" mosquito control applications because of the high cost of these programs and their low priority as a public health issue.

Other Vector Prevention and Control Activities Supported by Used Tire Fund Monies

Mosquito Applicator Training Clinics. During 2016 and 2017, IDPH staff assisted the University of Illinois Cooperative Extension Service during the annual training program for mosquito control applicator licensing. As part of this effort, IDPH staff reviewed educational materials and exams and conducted training seminars at several locations throughout the state and trained hundreds of mosquito control applicators at pesticide applicator clinics. Additionally, under an Illinois Department of Agriculture special rule, IDPH staff trained hundreds of local government staff to apply approved insecticides to control mosquito larvae and to test mosquito samples for WNV.

Internet Access to Publications about Vectors and Pests. During the summer months, IDPH staff are available to provide expertise about vectors and pests to the public, sister state agencies, local government officials, health care staff, and the news media. A series of program-developed fact sheets on vectors and pests were available on IDPH's website during 2016 and 2017:

- Ants
- Arboviral Encephalitis
- Asian Tiger Mosquito
- Babesiosis
- Bats & Bat Exclusion
- Bed Bugs
- Bees & Wasps
- Bird Exclusion & Dispersal
- Biting Flies
- Black Flies ("Buffalo Gnats")
- Brown Recluse & Black Widow Spiders
- Carpenter Ants
- Clothes Moths & Carpet Beetles
- Cockroaches
- Common Tick Identification
- DEET Insect Repellents
- Ehrlichiosis
- Fleas
- Head Lice
- House & Other Filth Flies
- House Mouse Prevention & Control
- Lyme Disease
- Mites Affecting Humans
- Mosquitoes
- Mosquitoes & Disease
- Mosquito Prevention
- Mosquito Spraying
- Municipal Rodent Management
- Occasional Invaders
- Pest Control - Do It Yourself or Hire a Pro
- Pyrethroid Insecticides
- Rat Prevention & Control
- Spiders

The fact sheets can be found on IDPH's website at
< http://www.dph.illinois.gov/topics-services/diseases-and-conditions/west-nile-virus/vector-control > and

< http://www.dph.illinois.gov/topics-services/environmental-health-protection/structural-pest-control >.

Pest Identification Service for Citizens and Health Professionals. IDPH is contacted for assistance by citizens, LHD staff, and medical personnel because IDPH staff have specialized training in identifying ticks, bed bugs, mosquitoes, spiders, cockroaches, fleas, rodents, and other pests. The concern about the occurrence of tick-borne Lyme disease in Illinois has led to regular requests for tick identification support. Proper identification of ticks helps medical personnel determine appropriate treatment for patients. Additionally, proper identification of pests can help determine the most effective management techniques and to avoid excessive use of pesticides. Annually, IDPH staff identify more than 100 specimens for the public and local health personnel. Of these specimens, approximately 35 percent were ticks and 8 percent were bed bugs. Additionally, there continued to be considerable interest by the public and news media about the increasing incidence of tick-borne diseases, personal protection measures against mosquitoes, and the prevention and control of bed bug infestations.

Distribution of the Asian Tiger Mosquito (Aedes albopictus). Until its discovery in Houston, Texas in August 1985, this species was not established in the Western Hemisphere. Currently, the species is believed to be established in as many as 34 states in the continental U.S. The Illinois distribution of the Asian tiger mosquito has been monitored by a variety of agencies, including LHDs receiving grant funds. As of November 30, 2017, the Asian tiger mosquito has been found in 40 Illinois counties:

- Adams
- Alexander
- Champaign
- Clay
- Coles
- Cook
- Douglas
- Effingham
- Fayette
- Franklin
- Gallatin
- Hamilton
- Jackson
- Jasper
- Jefferson
- Jersey
- Johnson
- Kankakee
- Logan
- Macon
- Macoupin
- Madison
- Marion
- Massac
- McLean
- Menard
- Montgomery
- Peoria
- Perry
- Piatt
- Pope
- Pulaski
- Randolph
- Richland
- Saline
- Sangamon
- St. Clair
- Union
- Williamson
- White

WNV, La Crosse encephalitis virus, and eastern equine encephalitis virus have been detected in the Asian tiger mosquito in other states. In addition, the global emergence of the Zika virus has increased concern about the Asian tiger mosquito, although not the primary vector for Zika virus transmission. Further, all human cases in Illinois have been related to travel to areas where the Zika virus is present, local transmission is possible via the Asian tiger mosquito. Thus, the spread of the Asian tiger mosquito, which breeds in water-filled used tires and other containers, emphasizes the need for continued abatement of discarded tires by IEPA and LHDs.

Discovery of the Aedes japonicus, an "Invasive" Introduced Mosquito in Illinois. About 1998, *Aedes japonicus* was most likely brought into the U.S. with the movement of used tires for recapping. The "Japanese rock pool mosquito" was first identified in Illinois in Champaign County in July 2006, during WNV surveillance activities conducted by the Medical Entomology Program of the Illinois Natural History Survey (INHS). As of November 30, 2017, *Aedes japonicus* has been found in 29 Illinois counties:

- Adams
- Boone
- Brown
- Bureau
- Cass
- Champaign
- Christian
- Cook
- DeWitt
- DuPage
- Effingham
- Fulton
- Grundy
- Knox
- LaSalle
- Lake
- Lee
- Logan
- Macon
- Macoupin
- McDonough
- McLean
- Menard
- Peoria
- Putnam
- Rock Island
- Sangamon
- Shelby
- Vermilion

WNV has been detected in *Aedes japonicus* in other states. Consequently, continued efforts by state and local agencies to remove or treat accumulations of used tires will help limit the involvement of the Japanese rock pool mosquito in the WNV transmission cycle.

Conclusion

Thanks to additional resources provided by P.A. 89-499, IDPH has maintained its vector control activities, primarily through increased vector control grants to LHDs. The threat of vector-borne disease continues to be a public health hazard and the surveillance efforts supported by the current funding help assure early detection and response to impending outbreaks.

Appendix I: Epidemiology and Prevention of Mosquito-borne Diseases

In Illinois, arboviruses are primarily transmitted to humans by the bites of infected mosquitoes. Arboviruses (viruses carried by arthropods, such as mosquitoes and ticks) and certain other types of viruses can cause encephalitis, an inflammation of the brain. Additionally, WNV can cause "West Nile fever," which may require an extended convalescence.

In Illinois, the primary vector (carrier) of WNV and SLE is the northern house mosquito (*Culex pipiens*). The northern house mosquito breeds in small stagnant bodies of water (catch basins, storm drains, slowly draining ditches, etc.) and receptacles (discarded tin cans, flowerpots, old tires, buckets and other containers) that hold water. The mosquitoes become infected with SLE and WNV when they feed on infected birds. Historically, high summer temperatures are correlated with increased risk of transmission of WNV (and the related St. Louis encephalitis virus) to humans. High temperatures (usually with reduced rainfall) increase the risk of a WNV or SLE outbreak because of rapid maturation of larvae, early abundance of *Culex pipiens*, increased mosquito flight (blood-seeking) activity and rapid multiplication of the virus in *Culex* mosquitoes in stagnant water impoundments.

The tree-hole mosquito (*Ochlerotatus triseriatus*) is the vector of LaCrosse encephalitis virus. Found in many wooded areas, the tree-hole mosquito breeds in water-filled discarded tires, other containers, and in tree holes. LaCrosse encephalitis infection in mosquitoes occurs when they bite small mammals or when an infected female mosquito transmits the infection to her offspring.

About two weeks after a heavy rain, large numbers of "floodwater mosquitoes" (such as *Aedes vexans*) can emerge from river floodplains and flooded woods. Although they can be a major biting nuisance for several weeks, floodwater mosquitoes have not been significant disease carriers in Illinois.

Most persons bitten by an infected mosquito will experience no symptoms of arboviral disease or will only have very mild symptoms. Approximately 1 percent to 2 percent will develop recognizable symptoms. The symptoms of WNV, SLE and LaCrosse encephalitis are similar. Some persons may have mild symptoms, such as fever and headache. Severe infection may produce a rapid onset of severe headache, high fever, muscle aches, stiffness in the back of the neck, problems with muscle coordination, disorientation, convulsions and coma. Symptoms usually occur 5 to 15 days after the bite of an infected mosquito.

Although anyone can be infected with an arbovirus, severe symptoms of WNV and SLE usually occur in persons older than 50 years of age. Most patients recover fully, but severe infection may result in neurological damage or death.

LaCrosse encephalitis most often occurs in children. Symptoms are generally milder than those of WNV and SLE, and fatalities rarely occur. In most cases, neurologic and behavioral symptoms resolve within a few months. Nevertheless, there are significant long-term neurologic, cognitive and behavioral effects on some children.

An arbovirus infection is usually diagnosed through a blood test. A follow-up blood test two weeks or three weeks after the onset of symptoms is almost always necessary to confirm an arbovirus diagnosis. A physician will attempt to relieve symptoms of the illness, but there is no specific medication available to treat or cure the disease.

Local health agencies should conduct public education programs about mosquito-borne diseases. An active public information effort includes conducting seminars or lectures, interviews with the news media, news releases and informational publications. Informed citizens can report suspected mosquito breeding sites to control personnel and remove containers that hold water from around their residences. Nevertheless, even the most effective mosquito control program cannot eliminate mosquitoes.

Mosquito bites and disease can be prevented through properly maintained window screens, protective clothing and repellents that include DEET, picaridin and oil of lemon eucalyptus. Directions on the repellent's label should be followed. Mosquitoes are less attracted to white clothes than to dark-colored clothes. Long sleeves and long pants also offer protection against mosquito bites.

Community-wide mosquito preventive abatement efforts can be quite effective if they are conducted as part of an integrated pest management program. This includes monitoring of vector mosquito populations and draining or treating ("larviciding") areas where mosquitoes breed such as street catch basins, stagnant ditches, intermittently flooded marshes, river backwater areas, swamps and other low-lying areas. Spraying for adult mosquitoes ("adulticiding") should only be a supplement to the preventive mosquito control "larviciding" effort.

Appendix II: Key Illinois West Nile Virus Surveillance Data: 2001 – 2017

The tables in Appendix II summarize WNV surveillance data from 2001 to 2015. WNV activity in Illinois has fluctuated annually, being largely dependent on summer weather conditions. Specifically, a *hot - dry* summer increases *Culex* mosquito infection rates and human disease risk. WNV is now endemic, so the WNV surveillance system in Illinois is aimed at watching for unusual WNV activity each summer. The state-wide WNV surveillance system of testing of birds and mosquitoes detected the 2005, 2006 and 2012 WNV outbreaks – and the public was warned in advance. A key point is that many communities increased their WNV prevent efforts since the original WNV 2002 outbreak, specifically for *Culex* mosquitoes in catch basins – something that many communities outside of the Chicago area did not do before 2002. Consequently, this increased effort to suppress *Culex* mosquitoes (particularly through preventive larviciding) has reduced the risk of human disease in Illinois.

Studies have shown that human WNV cases are much underreported – many more WNV cases occur each summer than those that become "confirmed cases." Many of those with the most serious form of WNV disease (with neurological symptoms) have long-term symptoms that may continue for years or even create a permanent disability. Thus, the WNV surveillance system has another important function: determining when WNV activity is <u>not</u> high and the disease risk is low. When aggressive and abundant (non-vector) "floodwater" mosquitoes appear after heavy rains, citizens and local government officials become concerned about increased WNV disease risk and often inquire about "emergency" mosquito control. Emergency "nuisance" mosquito control operations are very, very expensive, for example, $60 - $80 per linear mile for truck-mounted adult mosquito spraying for one application. Despite being a nuisance, non-vector "floodwater" mosquito populations are not a public health hazard and providing control of nuisance mosquitoes is far beyond the resources available to LHDs. Limited available public health resources should be focused on control of *Culex* mosquitoes – the primary WNV vectors.

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017*
Confirmed Human Cases (*Deaths*)**	5 (*0*)	61 (*4*)	34 (*3*)	290 (*12*)	117 (*11*)	44 (*4*)	77 (9)	155 (8)	86 (*1*)
Counties With Any Evidence of WNV Activity	36	30	19	55	76	50	64	61	64
Positive Birds	26	64	21	128	88	41	51	74	25
Positive Mosquito Samples	404	2,296	1,068	3,948	2,716	1,275	1,713	2,433	2,022

*Provisional data as of November 30, 2017. ** As many as 100 cases are unreported for each human case confirmed (per CDC research).

Year	2001	2002	2003	2004	2005	2006	2007	2008
Confirmed Human Cases (*Deaths*)	0	884 (*66*)	54 (*1*)	60 (*4*)	252 (*12*)	215 (*10*)	101 (*4*)	20 (*1*)
Counties With Any Evidence of WNV Activity	7	100	77	62	55	77	48	28
Positive Birds	138	517	236	234	232	169	39	31
Positive Mosquito Samples	20	624	507	1,671	2,523	3,350	1,552	658

Appendix III: Illinois Counties with the Most WNV Human Cases: 2002 – 2017

Confirmed Cases	County	Cases	Population	Incidence per 100,000 population
2017: 86	Cook	51	5,203,499	1.0
	DuPage	6	929,386	0.6
	Lake	6	703,047	0.9
	McHenry	4	307,004	1.3
	Winnebago	3	285,873	1.0
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2016: 155	Cook	90	5,203,499	1.7
	DuPage	10	929,386	1.1
	Kane	6	531,715	1.1
	Will	9	689,529	1.3
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2015: 77	Cook	27	5,224,823	0.5
	DuPage	9	931,819	1.0
	Lake	5	703,413	0.7
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2014: 44	Cook	26	5,246,456	0.5
	DuPage	5	932,708	0.5
	Kane	2	527,306	0.4
	Lake	2	708,186	0.3
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2013: 117	Cook	60	5,246,635	1.1
	DuPage	6	931,523	0.6
	Franklin	2	39,572	5.1
	Jackson	2	59,981	3.3
	Lake	6	704,000	0.9
	McHenry	2	307,367	0.7
	McLean	2	174,893	1.1
	St Clair	5	265,065	1.9
	Vermilion	3	80,418	3.8
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2012: 290	Cook	174	5,194,675	3.4
	DuPage	56	916,924	6.1
	Kane	13	515,269	2.5
	Lake	7	644,000	1.1
	McHenry	6	308,760	1.9
	Will	11	677,560	1.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2011: 34	Cook	22	5,194,675	0.4
	DuPage	2	916,924	0.2
	Marion	3	39,437	7.6

Confirmed Cases	County	Cases	Population	Incidence per 100,000 population
2010: 61	Cook	30	5,194,675	0.6
	DuPage	17	916,924	1.9
	Kane	5	515,269	0.9
	Kendall	2	114,736	1.7
	Will	2	677,560	0.3
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2009: 5	Cook	1	5,376,000	0.1
	St. Clair	2	256,000	0.8
	Tazewell	1	128,000	0.8
	Williamson	1	61,000	1.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2008: 20	Boone	2	42,000	4.8
	Cook	9	5,376,000	0.2
	Kane	3	404,000	0.7
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2007: 101	Cook	31	5,376,000	0.6
	DuPage	10	904,000	1.1
	Kane	13	404,000	3.2
	Lake	5	644,000	0.8
	McHenry	5	260,000	1.9
	Saline	3	27,000	11.1
	St. Clair	3	256,000	1.2
	Will	3	502,000	0.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2006: 215	Cook	86	5,376,000	1.6
	DuPage	43	904,000	4.8
	Kane	4	404,000	1.0
	Lake	11	644,000	1.7
	McHenry	6	260,000	2.3
	Will	18	502,000	3.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2005: 252	Cook	135	5,376,000	2.5
	DuPage	47	904,000	5.2
	Kane	17	404,000	4.2
	Lake	11	644,000	1.7
	Peoria	7	183,000	3.8
	Will	8	502,000	1.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2004: 60	Cook	23	5,376,000	0.4
	DuPage	5	904,000	0.6
	LaSalle	5	112,000	4.5
	Sangamon	3	189,000	1.6
	St. Clair	3	256,000	1.2
	Will	3	502,000	0.6

Confirmed Cases	County	Cases	Population	Incidence per 100,000 population
2003: 54	Cook	20	5,376,000	0.4
	DuPage	3	904,000	0.3
	Piatt	3	16,000	18.8
	Sangamon	4	189,000	2.1
	Whiteside	3	61,000	4.9
	Will	3	502,000	0.6
Confirmed Cases	**County**	**Cases**	**Population**	**Incidence per 100,000 population**
2002: 884	Cook	635	5,376,000	11.8
	DuPage	51	904,000	5.6
	Madison	14	259,000	5.4
	Sangamon	13	189,000	6.9
	St. Clair	15	256,000	5.9
	Will	18	502,000	3.6

Acknowledgements

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