



Michigan Zoonotic & Vector-Borne Disease  
**SURVEILLANCE  
SUMMARY  
2014**

# Michigan Zoonotic and Vector-borne Disease **SURVEILLANCE SUMMARY, 2014**

Prepared by the Michigan Department of Health and Human Services  
Bureau of Disease Control, Prevention, and Epidemiology  
Emerging & Zoonotic Infectious Disease Section (EZID)

201 Townsend St., 5<sup>th</sup> Floor Lansing, MI 48913  
(517) 335-8165

Created July 2015

## **Emerging & Zoonotic Infectious Disease Section (EZID)**

Mary Grace Stobierski, DVM, MPH, DACVPM –Manager, State Public Health Veterinarian

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[www.michigan.gov/emergingdiseases](http://www.michigan.gov/emergingdiseases)



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# Michigan Zoonotic and Vector-borne Disease SURVEILLANCE SUMMARY, 2014



## INTRODUCTION

Zoonotic diseases are diseases that can be passed between animals and humans either directly, or through a vector. They can be caused by viruses, bacteria, parasites, and fungi. Some 6 out of every 10 infectious diseases in humans are spread from animals. In Michigan, there are many endemic zoonotic and vector-borne diseases, as well as several emerging diseases.

From West Nile virus to Lyme disease, emerging zoonotic diseases in Michigan are maintained in complicated cycles including people, animals, vectors, and the environment. To this end, it is important for human healthcare providers, animal healthcare providers, public health officials, and environmental scientists to work together to detect, prevent, and control disease. This emerging collaborative process is called One Health.

The Michigan Department of Health and Human Services (MDHHS) partners with its sister state agencies and public universities to detect and define the geographic, environmental, and exposure risk of emerging diseases. The MDHHS is also dedicated to providing stakeholders with information on emerging diseases and best practices for surveillance, prevention, and control, including the Emerging Diseases website ([www.michigan.gov/emergingdiseases](http://www.michigan.gov/emergingdiseases)) and quarterly One Health webinars.

This report provides summary epidemiologic information for select zoonotic and vector-borne diseases in Michigan for 2014, as well as updates on special projects and recent international outbreaks.



# REPORTABLE ZONOTIC DISEASE IN MICHIGAN

The list of reportable diseases in Michigan includes many diseases that are transmitted by animals and arthropods to people (see table below). The Michigan Department of Health and Human Services, Zoonotic Disease and Special Projects Section is responsible for statewide human case surveillance and cooperates in multi-agency ecologic and animal case surveillance.

### Zoonotic Diseases in Michigan – 5 Year Table

Disease	2010	2011	2012	2013	2014	Total
<i>Bird-Associated</i>						
Psittacosis	0	1	0	0	0	1
<i>Livestock-Associated</i>						
Anthrax	0	0	0	0	0	0
Q Fever, acute	3	8	3	1	2	17
Q Fever, chronic	2	2	0	0	1	5
<i>Mosquito Borne</i>						
Dengue Fever	11	6	9	16	5	47
Encephalitis, California (La Crosse)	2	1	0	0	0	3
Encephalitis, Eastern Equine	3	0	0	0	1	4
Encephalitis, St. Louis	2	0	0	0	0	2
Encephalitis, Western Equine	0	0	0	0	0	0
Malaria	35	34	26	24	17	136
West Nile Virus	29	35	202	35	1	302
Yellow Fever	0	0	0	0	0	0
<i>Multi-Mode Zoonoses</i>						
Brucellosis	4	1	1	0	2	8
Leptospirosis	0	1	0	1	1	3
Plague	0	0	0	0	0	0
Rickettsial Disease - Typhus	1	0	0	0	0	1
Tularemia	0	0	0	0	2	2
<i>Public Health Pest</i>						
Head Lice (Aggregate School Reporting)	4063	5551	6855	6121	5853	28443
<i>Rabies and Animal Bites</i>						
Animal Bite	2381	3066	2775	2997	3477	14696
Rabies, Animal	72	65	60	41	42	278
Rabies, Human	0	0	0	0	0	0
<i>Rodent Borne</i>						
Hantavirus	0	0	0	0	0	0
Hantavirus, Other	0	0	0	0	0	0
Hantavirus, Pulmonary	0	0	0	0	0	0
<i>Tick Borne</i>						
Babesiosis, <i>Babesia microti</i>	0	0	0	2	2	4
Ehrlichiosis, <i>Anaplasma phagocytophilum</i>	4	5	6	5	4	24
Ehrlichiosis, <i>Ehrlichia chaffeensis</i>	2	4	2	1	3	12
Ehrlichiosis, <i>Ehrlichia ewingii</i>	0	0	0	0	0	0
Ehrlichiosis, human other/undetermined	0	0	1	1	0	2
Encephalitis, Powassan	0	0	0	0	0	0
Lyme Disease	97	104	99	168	127	595
Rickettsial Disease – Spotted Fever	2	4	3	3	0	12
<b>Total</b>	<b>6713</b>	<b>8888</b>	<b>10042</b>	<b>9416</b>	<b>9540</b>	

Michigan Zoonotic and Vector-borne Disease  
**SURVEILLANCE SUMMARY, 2014**



**ARBOVIRUSES**

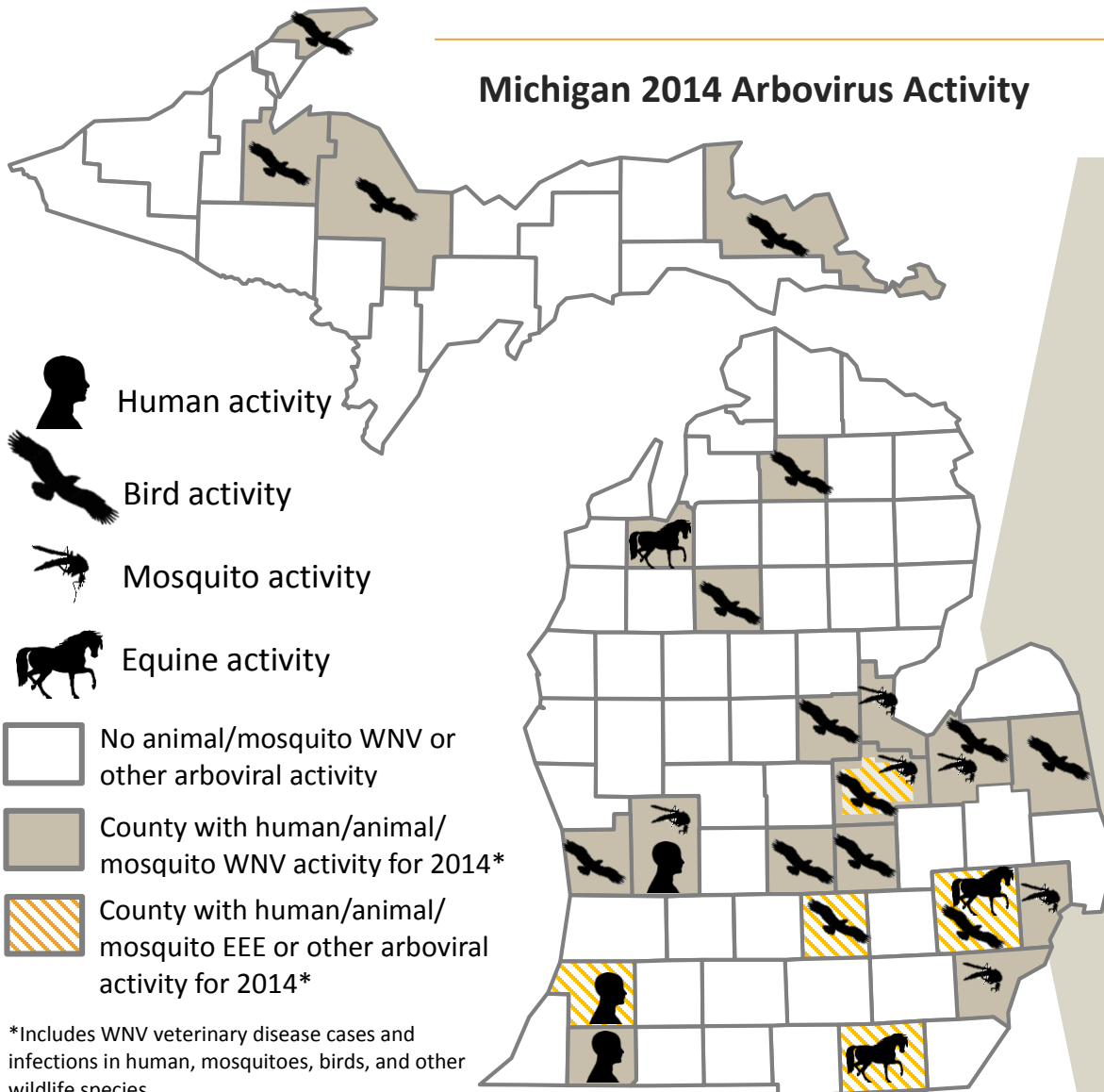
# WEST NILE VIRUS & EASTERN EQUINE ENCEPHALITIS

In 2014, arbovirus activity in Michigan was relatively mild. There were two hospitalized patients, one with West Nile virus (WNV) with an onset of symptoms in late-August and one patient with neuro-invasive Eastern Equine Encephalitis (EEE) with an onset date of mid-September. There was also one case of presumptive viremic blood donor (PVD) WNV. PVD are people who had no symptoms at the time of donating blood through a blood collection agency, but whose blood tested positive when screened for the presence of WNV.

Nationally, there were 2,122 cases of WNV with 85 deaths, and 337 PVD WNV. There were 8 cases of EEE nationally (Michigan, Alabama, Maine, New Hampshire, and New York). Michigan is unique in that EEE is present in the state, but not found in other Midwestern states.

A cool summer with plentiful rain events likely contributed to the mild arbovirus season in Michigan for 2014. Previous experience with WNV has shown that hot and dry conditions favor the WNV transmission cycle in the Midwest, providing ideal conditions for larval mosquito development in the stagnant water of retention ponds and urban and suburban catch basins. Hot, dry summers are associated with increased WNV activity in many species, including humans.

## Michigan 2014 Arbovirus Activity



\*Includes WNV veterinary disease cases and infections in human, mosquitoes, birds, and other wildlife species.



# ENHANCED MOSQUITO SURVEILLANCE PROJECT

The mosquito trapping for *Culex* vectors was conducted from early June through September.

**357** total mosquito pools tested  
representing  
**5,674** mosquitoes

Positive mosquito pools were identified in  
Kent County **2/69**  
Wayne County **1/125**  
Macomb County **1/61**

**In 2014, in addition to Michigan's mosquito control districts, several of Michigan's local health departments conducted enhanced mosquito surveillance for West Nile virus (WNV).**

Kent, Macomb, Wayne, and Washtenaw health jurisdiction participated in the ELC funded enhanced mosquito surveillance project. The health departments placed 5-10 traps in their jurisdiction and used a field-expedient VectOR Test on *Culex* species mosquitoes to detect WNV in samples.

Information gathered from the project was used to help alert local communities of increased WNV risk, and help promote personal protective measures and local mosquito control options. Mosquito surveillance has the potential to provide early detection of arbovirus activity, and can be used to guide intervention strategies that ultimately reduce human risk for infection.

### Interventions in counties with positive mosquitoes identified included:

- Press release educating the public regarding West Nile virus prevention in three of the counties
- Kent county instituted larval mosquito control in areas with positive mosquitoes identified

### The Benefits

Provides a timely, low-cost, non-labor intensive surveillance program to detect WNV activity at the community level

### The Challenges

- Time investment- average 19 hours/week
- Retraining of personnel each year
- Maintaining funding
- Maintaining interest

**Kent, Macomb, Wayne, and Oakland Counties will participate in the continuation of the enhanced mosquito surveillance project in the summer of 2015.**

The training provided health department staff with information on mosquito biology, trap operation and placement, the use of the field expedient WNV test, and data reporting.

Gravid traps were used by health departments to capture blood-fed female mosquitoes.



Health department staff were able to learn about mosquito identification, so that WNV vectors could be targeted for virus testing.



## WHAT CAN BE DONE?

### Public Health Agencies can...

- ➔ Monitor Michigan's mosquito populations
- ➔ Maintain a surveillance system for arboviral diseases
- ➔ Make Michigan data publicly available
- ➔ Promote arbovirus disease prevention guidance

### Health Providers can...

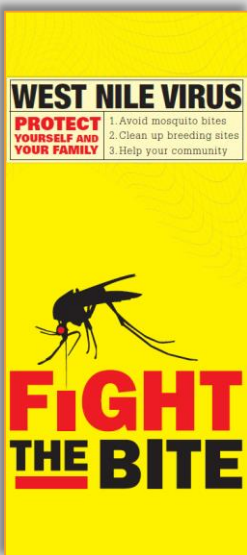
- ➔ Review public health data regarding the risk of arboviruses in Michigan
- ➔ Diagnose and treat infections using best practices
- ➔ Report cases promptly to your local health department
- ➔ Remind patients about the risk of arbovirus infection in your area and ways to prevent infections

### Everyone can...

- ➔ **Inform** yourself about where risk for contracting arboviruses is greatest (lack of reported activity ≠ lack of risk)
- ➔ **Inform** yourself about when the risk for contracting arboviruses is greatest:
  - ✦ Summer
  - ✦ At dusk and dawn, mosquitoes are most active
  - ✦ Adults > 50 years of age are more susceptible to serious illness from WNV
  - ✦ Children < 15 years of age are more susceptible to serious illness from EEE and La Crosse encephalitis virus
- ➔ **Eliminate** standing water where mosquitos can lay eggs
- ➔ **Report** dead birds to your local authorities
- ➔ **Protect.** Take precautions to prevent mosquito bites when engaging in outdoor activities



## GUIDES AND PRINTED RESOURCES



Posters, pamphlets, and guides are available to download, print and order at:

[http://www.michigan.gov/documents/emergingdiseases/Publication\\_Order\\_Form\\_357623\\_7.pdf](http://www.michigan.gov/documents/emergingdiseases/Publication_Order_Form_357623_7.pdf)

MDHHS West Nile Virus Website:

[www.michigan.gov/westnile](http://www.michigan.gov/westnile)

Centers for Disease Control and Prevention West Nile Virus Website:

[www.cdc.gov/westnile](http://www.cdc.gov/westnile)

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# TICKBORNE DISEASES




# LYME DISEASE

Lyme disease (LD) is the most commonly reported vector-borne disease in the United States; over 30,000 cases were reported nationally in 2012<sup>1</sup>. In the U.S. cases tend to be geographically focused in the northeastern and north-central United States, but Lyme disease is also endemic and expanding in Michigan. In 2014, 128 human cases were reported with most Michigan exposures occurring in the Upper Peninsula and western Lower Michigan.

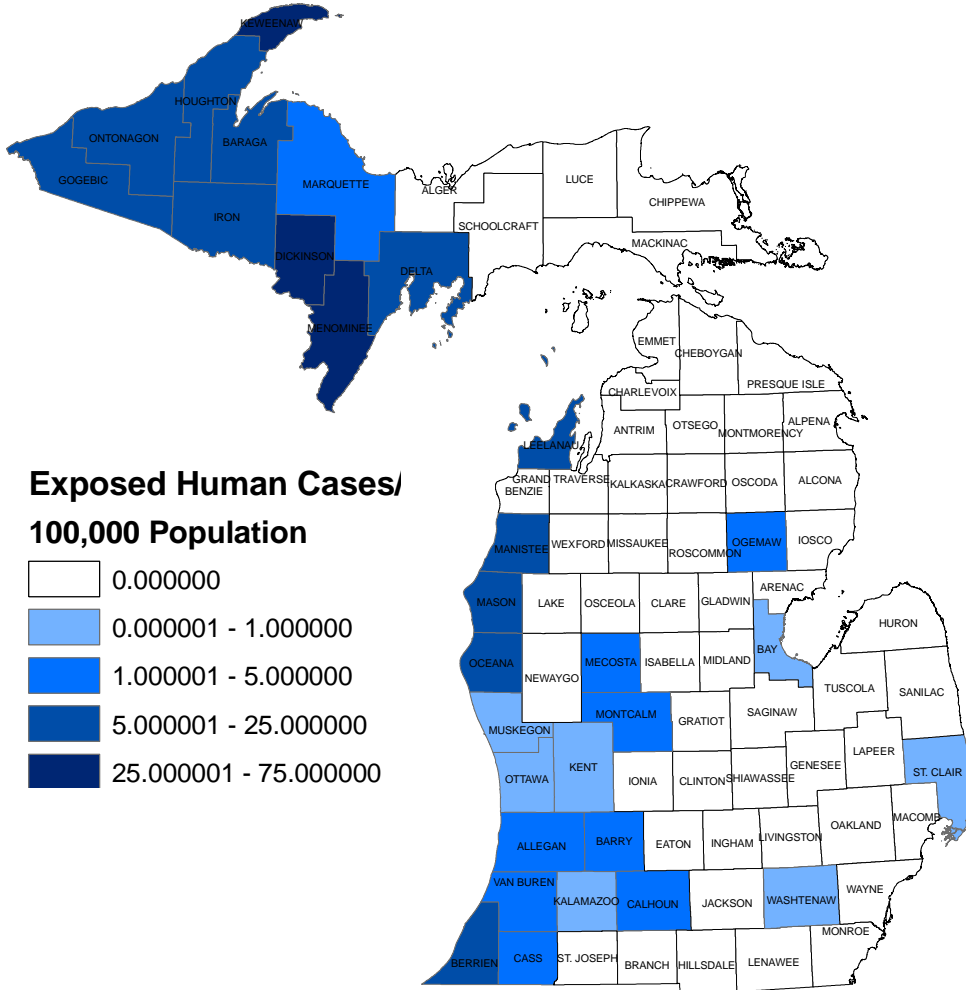
The tick vector, *Ixodes scapularis* (blacklegged tick), is now endemic in the western Lower Peninsula along Lake Michigan, and the highest tick populations occur among coastal communities. Although rare, *I. scapularis* is also responsible for transmitting other diseases to humans including anaplasmosis, babesiosis, deer-tick virus, and a recently discovered novel Ehrlichia species in Michigan.

In 2014, MDHHS conducted human case surveillance and field ecologic surveillance for blacklegged ticks in the state with the help of its partners, including Michigan State University, Michigan's Departments of Natural Resources, and Agriculture and Rural Development. Educational materials will continue to be updated and made available to the public via the MDHHS "Emerging Diseases" Website.

**128** 

**"In 2014, 128 human cases were reported with most Michigan exposures occurring in the Upper Peninsula and western Lower Michigan."**

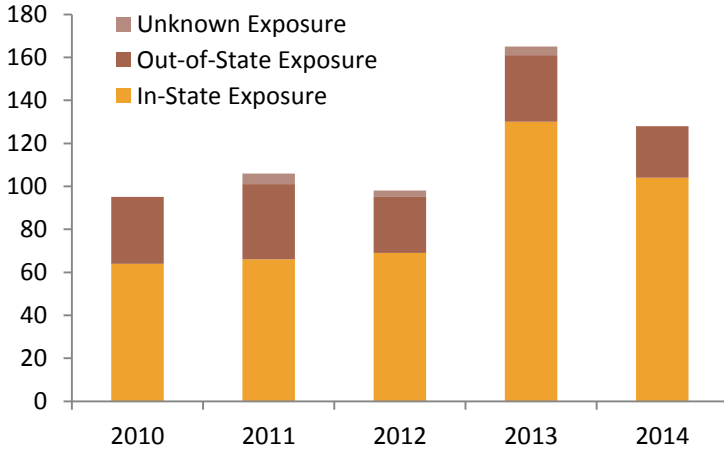
## Michigan 2014 Lyme Disease Activity



- late-April**  
Environmental sampling confirms the beginning of blacklegged tick activity in 2014.
- late-May**  
Conclusion of 30-site statewide tick survey for blacklegged ticks.
- mid-July**  
Lyme disease human cases peak. Peak cases are associated with nymphal stage ticks.
- early-November**  
Blacklegged ticks found in Ingham County. This is a substantial shift in the geographic range of potential LD risk in Michigan.

# 2014 LYME DISEASE DATA

**Michigan Lyme Disease Cases, 2010--2014**



**EPI SNAPSHOT 2014**

Cases (N=128)

- ➔ 104 reported in-state exposure
- ➔ 24 reported out-of-state exposure

**Age**

Range: 2 – 84 years  
 Median: 40 years

**Race/Ethnicity**

86% Caucasian, non-Hispanic

**EPI SNAPSHOT 2014**

*Incidence of locally acquired Lyme disease:*

**Full State:**

1.04 cases/100,000 pop.

**Upper Peninsula:**

15.44 cases/100,000 pop.

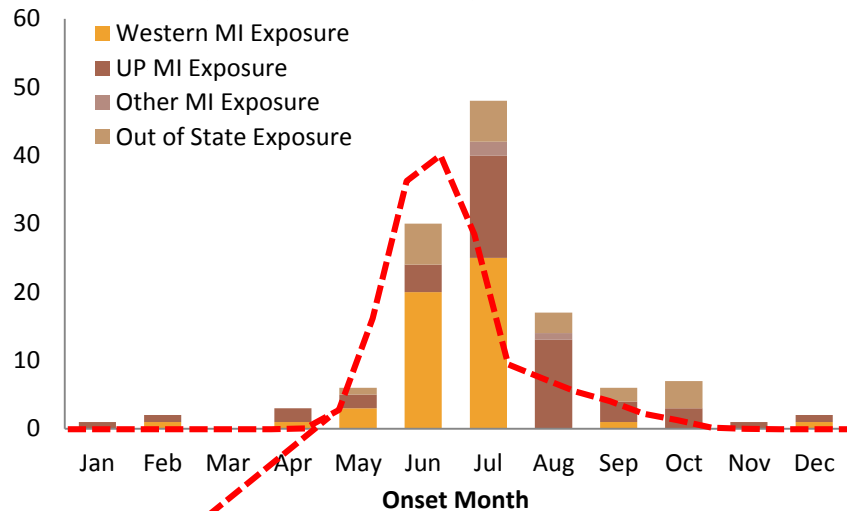
**Western Lower Peninsula:**

2.36 cases/100,000 pop.

**Counties outside of western UP/LP regions:**

0.05 cases/100,000 pop.

**MI Lyme disease cases by month of onset, 2014**



Peak transmission season for Lyme disease in Michigan is associated with nymphal stage blacklegged ticks. Approximately the size of a poppy seed, these ticks are active from May through August, and peak in June. Frequent tick checks are important during this time of year as prompt removal of ticks is preventive of Lyme disease.

# STATEWIDE RISK ASSESSMENT

**In 2014, in addition to epidemiologic investigations of reported human illness due to Lyme disease in Michigan, MDHHS and partner agencies conducted statewide field surveys for new or expanding populations of blacklegged ticks.**

Tick sampling was conducted by a process called "tick dragging," where ticks are collected from fabric cloths that are passed over vegetation and leaf litter for a predetermined distance. This method is meant to estimate the number of ticks a person would come into contact with while walking along the same route.

**36** sites across the Lower Peninsula were sampled for the presence of blacklegged ticks  
**At 10** sites, new populations of blacklegged ticks, or population expansion was documented.

New detections of blacklegged ticks occurred in:  
**Clinton County May, 2014**  
**Ingham County October, 2014**  
**Charlevoix County (Beaver Island) May, 2015**

To document the geographic risk of tickborne diseases associated with blacklegged ticks, the MDHHS chose field sites based upon suitable environmental factors for ticks, accessibility, historic tick submissions, and visitation by the public.

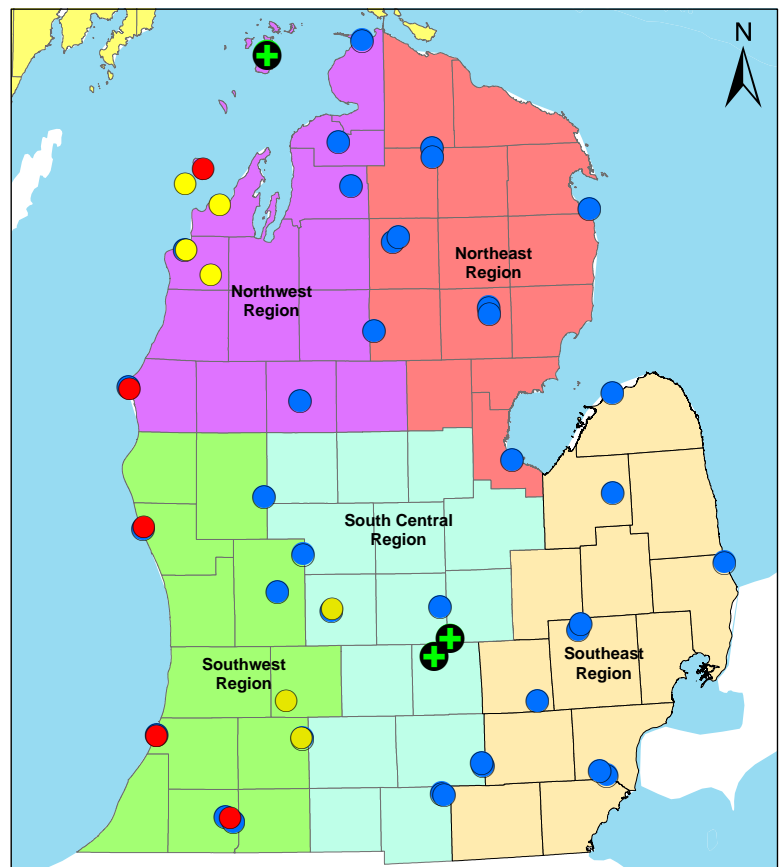
Partner agencies included:

- Michigan State University
- Michigan Department of Natural Resources
- National Park Service staff

The map below shows results of tick presence/absence, by site, of the field survey conducted from April 2014 to May 2015.

### Map Legend

- Site where blacklegged ticks are well established.
- Site where blacklegged ticks are increasing.
- ⊕ Site where blacklegged ticks have recently (2014-2015) been discovered.
- Site where no blacklegged ticks were found.



# BABESIOSIS

Several other tickborne diseases are associated with the blacklegged tick, and will likely emerge as populations of ticks expand. These tickborne diseases include:

- Anaplasmosis
- **Babesiosis**
- Deer tick virus
- *Ehrlichia muris*-like

First Reported in Michigan:	2014 Cases:
2005	4
2008	2
--	0
2013	0

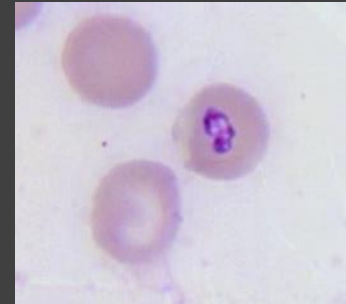
Babesiosis is caused by the protozoal parasite *Babesia microti*, which infects red blood cells. It mainly occurs during warmer months in regions where blacklegged ticks are established. Some people who are infected with *Babesia microti* feel fine and do not have any symptoms. Many people may develop nonspecific flu-like symptoms. Babesiosis may also cause hemolytic anemia leading to jaundice and dark urine. Babesiosis can be severe and life-threatening in people who are elderly, have a weak immune system, have chronic health conditions, or are asplenic.

Babesiosis is now a nationally notifiable condition, and reportable in Michigan. Cases should be reported using the Babesiosis specific case investigation form in the Michigan Disease Surveillance System (MDSS). The national case definition can be found at:

[www.cdc.gov/nndss/conditions/babesiosis/case-definition/2011/](http://www.cdc.gov/nndss/conditions/babesiosis/case-definition/2011/)

## Symptoms of Babesiosis

- Fever (may come and go)
- Chills and sweats
- Headache
- Body ache
- Nausea
- Fatigue



Blood smear showing larger trophic stage of *Babesia microti* in erythrocyte. CDC/Dr. George Healy

# IMPROVED PROVIDER WEBSITE



The MDHHS has created a new Lyme disease web portal for healthcare providers. [www.michigan.gov/lymeinfo](http://www.michigan.gov/lymeinfo) includes easy tab navigation and contains the most current information regarding the epidemiology of Lyme disease, prevention, symptoms, diagnostics, and treatment guidelines.

## NEW MICHIGAN-SPECIFIC LYME DISEASE CME COURSE

Lyme disease is becoming an increasingly important health issue in Michigan. Due to its recently emerging status in some parts of the state, many healthcare providers may have limited experience when dealing with the disease. The MDHHS has created web-based, CME granting materials regarding Lyme disease in our state specifically targeted for healthcare providers.

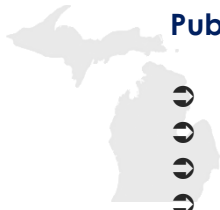


### Topics include:

- Identifying common exposures to Lyme disease in MI
- Interpreting patient history, presentation, and/or laboratory testing for Lyme disease diagnosis
- Applying IDSA guidelines for treatment of Lyme disease and tick bites

Registration information can be found at [www.michigan.gov/lymeinfo](http://www.michigan.gov/lymeinfo)

## WHAT CAN BE DONE?



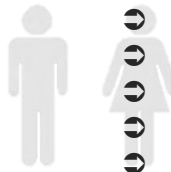
### Public Health Agencies can.....

- Monitor Michigan's tick populations
- Maintain Lyme disease surveillance system
- Offer tick identification and testing services to the public
- Make Michigan data publicly available
- Promote tick-borne disease prevention guidance

### Health Providers can....

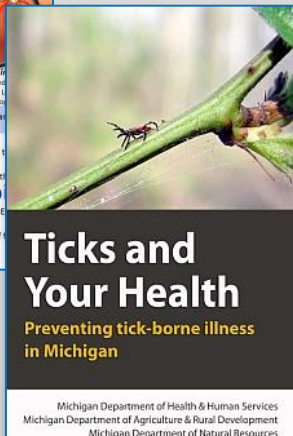
- Review public health data regarding the risk of Lyme disease in Michigan
- View the FREE Michigan Lyme disease continuing medical education activity at: [www.michigan.gov/lymeinfo](http://www.michigan.gov/lymeinfo)
- Diagnose and treat infections using best practices
- Report cases promptly to your local health department
- Remind patients about the risk of Lyme disease in your area, and ways to prevent infections

### Everyone can....



- Inform yourself about where ticks can be encountered in Michigan
- Prevent tick bites by using EPA approved repellents on skin and clothing
- Check yourself and others for ticks regularly after spending time outdoors
- Remove ticks promptly and safely if you have been bitten
- Submit ticks you find on yourself or your pets for identification
- Recognize the symptoms of Lyme disease
- Seek prompt medical care if illness occurs after exposure to ticks

## UPDATED GUIDES AND PRINTED RESOURCES



**Tick ID Cards** are now available for order. This pocket-sized resource provides information on how to identify common Michigan ticks, proper tick removal, and preventing tick bites.

The **Ticks and Your Health** brochure has been updated to include the most up-to-date information about Michigan ticks and tickborne diseases, and is now available online and to order.

Posters, pamphlets, and guides are available to download, print and order via the Communicable Disease Division's publication order form at:

[www.michigan.gov/cdinfo](http://www.michigan.gov/cdinfo)



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**RABIES**



# 2014 RABIES DATA

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. In Michigan, the majority of reported cases each year occur in wild animals like bats, skunks, and foxes.

The rabies virus infects the central nervous system, ultimately causing disease in the brain and death. Exposure to the virus occurs when saliva from an infected animal contaminates broken skin or mucus membranes. Rabies is not transmitted through exposure to blood, urine, or feces of an infected animal.

Another possible exposure occurs when a bat is found in a room with sleeping individuals. In these cases, it is important not to let the bat go before consulting the local health department to determine if the bat should be tested for rabies.

Between January 1, 2014 and December 31, 2014, the Michigan Department of Health and Human Services Bureau of Laboratories (MDHHS BOL) received 3,235 specimens for rabies testing, of which 3,078 could be tested. Of these, 41 (1.3%) were positive for rabies, including 38 bats and 3 skunks. An additional rabies positive bat collected in Michigan was reported by the United States Department of Agriculture's Wildlife Services (USDA/WS).

In comparison, in 2013, 3,028 animals were tested for rabies at MDHHS BOL. Of these, 40 (1.3%) were positive for rabies, all bats.



**3.4%**

Percent of bats submitted to the State Laboratory for rabies testing that were infected with rabies.

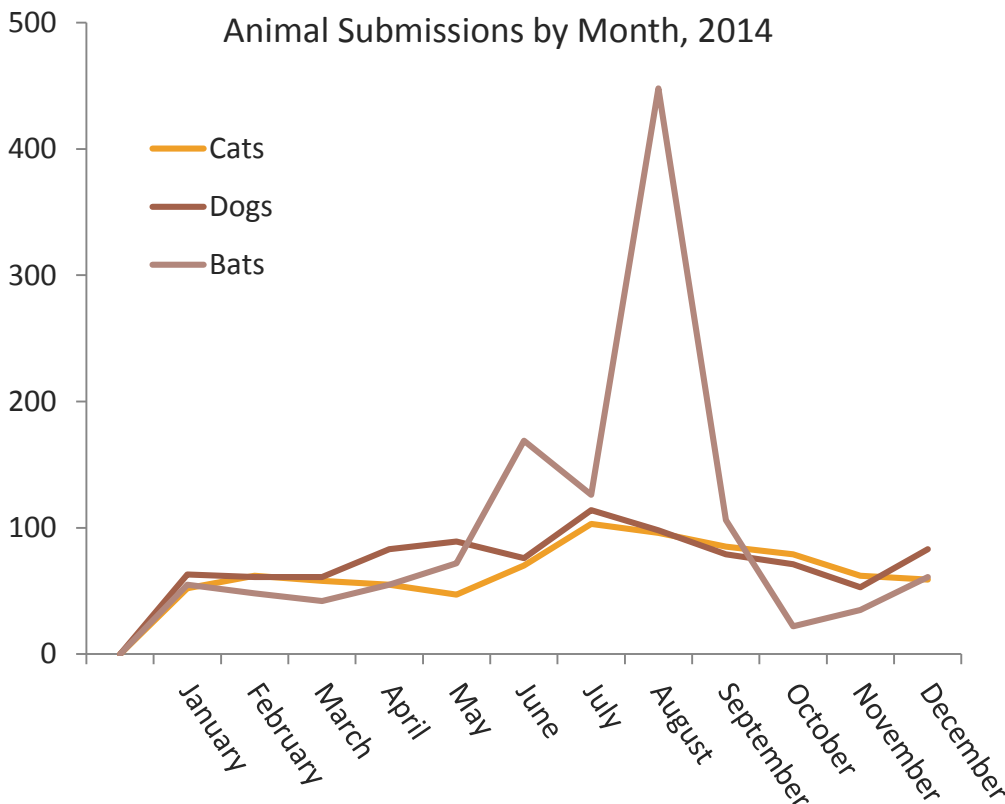
# August

The highest bat submission rate occurred in August (448 bats), corresponding with increased juvenile bat activity. This is when most potential human exposures occur.



**3,235**

Over 3,000 animals were submitted for rabies testing in 2014.



- 3,078 animals were tested for rabies by the MDHHS Bureau of Laboratories in 2014.
- Bats were the most frequently tested animal (1,132) followed by 817 cats, and 922 dogs.
- Michigan reported a total of 42 rabies-positive animals in 2014, 1 more than in 2013.
- Of the 1,132 bats that were tested at MDHHS, 38 (3.4%) were positive for rabies. An additional MI bat was tested positive by the USDA/WS.
- A total of 23 skunks were submitted for rabies testing, of which 21 could be tested, and three (14%) were positive.

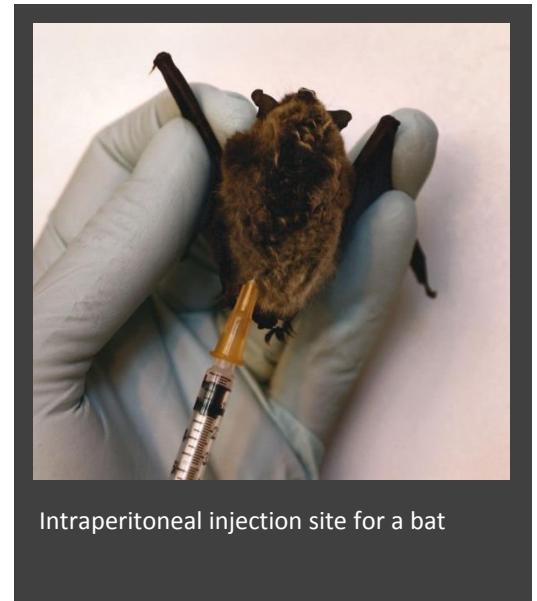
# MICHIGAN HUMANE BAT EUTHANASIA GUIDANCE UPDATE

In 2008, the Michigan Rabies Working Group developed guidance for the humane euthanasia of bats for public health testing, based on recommendations for other similar species found in the 2007 American Veterinary Medical Association's "Guidelines on Euthanasia", and other resources.

The guidance was developed for use by public health and animal health professionals that are called upon to provide for the humane euthanasia of bats for rabies testing following an exposure to people or unvaccinated pets.

In 2013, the AVMA updated their guidance. While still not specifically addressing the euthanasia of bats, this guidance did change recommendations for some procedures that had previously been considered acceptable.

In 2014, the RWG updated their bat euthanasia guidance to reflect the current science. The updated version can be found on the Michigan Emerging Diseases – Rabies website, under "[Library](#)".



Intraperitoneal injection site for a bat

## WHAT CAN BE DONE?

### Public Health Agencies can

- Maintain a rabies surveillance system
- Provide rabies testing services to the public
- Provide consultation to health care providers and the public
- Make Michigan data publicly available
- Maintain relationships with animal control and animal health organizations
- Promote rabies prevention

### Veterinarians can

- Vaccinate pets and livestock against rabies
- Educate your clients and the public about rabies prevention
- Ensure your rabies titers remain at protective levels

### Health Care Providers can

- Review epidemiology of rabies in Michigan
- Treat potential exposures using best practices
- Report animal bites to your local health department

### Everyone can

- **Vaccinate** your pets against rabies and keep them up to date
- **Avoid** contact with wild or unfamiliar animals
- **Know** what to do if you find a bat in your home
- **Keep** a list of important phone numbers that includes animal control and your local health department
- **Seek** prompt medical care if you are bitten by an animal

## GUIDES AND PRINTED RESOURCES

MDHHS has resources regarding rabies available at [www.michigan.gov/rabies](http://www.michigan.gov/rabies)

Human rabies post-exposure prophylaxis protocols are available for order at [www.michigan.gov/cdifno](http://www.michigan.gov/cdifno)

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**OTHER DISEASE ISSUES**

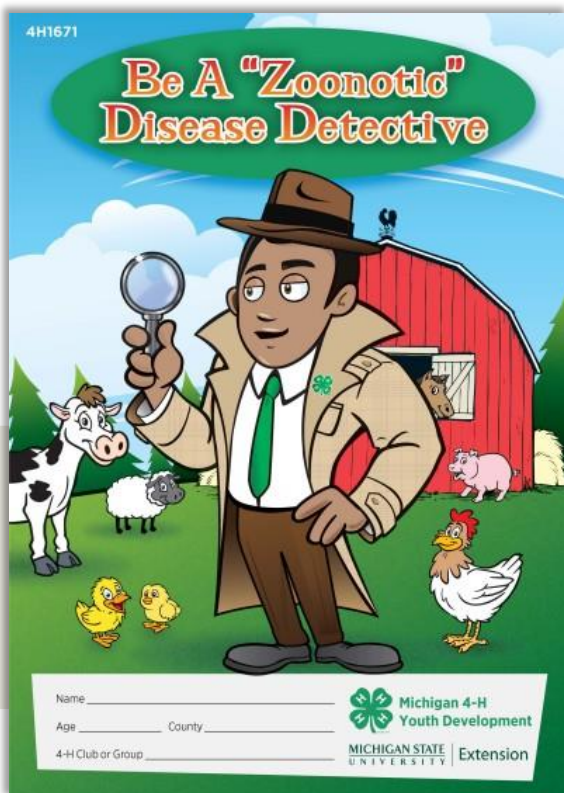


# YOUTH IN AGRICULTURE EDUCATIONAL RESOURCES

In recent years, there have been outbreaks of diseases such as influenza and E. coli in people following exposure to animals in agricultural exhibits. This has increased awareness among fair organizers and the public about diseases that people and animals share.

In 2014, MDHHS collaborated with Michigan State University and the Michigan Department of Agriculture and Rural Development on a project to educate youth in agriculture about zoonotic diseases. The effort was funded through a grant from the Council of State and Territorial Epidemiologists. The purpose of this grant was to improve youth awareness and understanding about zoonotic diseases and to motivate them to take precautions and to develop life skills of personal safety and disease prevention.

In Michigan, funds were used to develop an 8-page bulletin, **Be A "Zoonotic" Disease Detective**, which was distributed to over 50,000 Michigan 4-H and Future Farmers of America members. In addition, more than 1,900 Zoonotic Disease Educational Tool Kits were developed and delivered to 4-H volunteers, Future Farmers of America advisors, and fair and exhibit organizers. These tool kits included three lesson plans and supplies to complete each lesson. Funds from the grant were also utilized to develop posters for display around animal exhibits reminding the public to take precautions to prevent illness from zoonotic diseases.



For more information about these resources, visit the MSU Extension website at: [http://msue.anr.msu.edu/news/new\\_michigan\\_youth\\_zoonotic\\_education\\_resources](http://msue.anr.msu.edu/news/new_michigan_youth_zoonotic_education_resources)

## TULAREMIA IN A GROUP OF FALCONERS

Tularemia, a rare but serious bacterial infection, is not very common in the United States. Cases are rarely seen in Michigan; however two cases were reported in the fall of 2014.

In late October, 2014, a 26 year old male, previously healthy, presented to ER with periorbital swelling, fever, chills, body aches, nausea, and headache. During follow-up the patient mentioned a recent rabbit hunting trip to Kansas and that he was a falconer. The doctor presumed this might be tularemia. Culture confirmed the bacteria as *Francisella tularensis* by PCR at the Michigan Department of Health and Human Services Bureau of Labs.

A 60 year old female presented to the ER on November 1<sup>st</sup>, 2014, with fever and right axillary lymphadenopathy. The patient suspected tularemia because a friend, the case presented above, was diagnosed a day prior; both were on the same hunting trip. She is also a falconer. Antibiotic treatment for tularemia was started.

The hunting trip involved a group of five falconers that traveled to Dodge City, Kansas from in mid-October 2014 to go rabbit hunting. Two local health departments interviewed the other falconers for symptoms and potential exposures. Only the two cases described had symptoms and/or diagnosis of tularemia. Although the route of exposure to tularemia is not known in these two cases, there are certain routes that were more likely to cause disease than others.

**Five out of the five falconers participated in the jackrabbit hunting and skinning of the captured rabbits, however only two out of the five got sick.** Although this route of transmission is possible and plausible, other sources of infection should be examined.

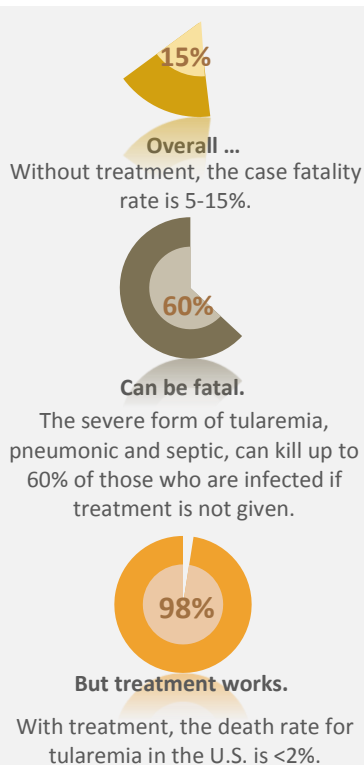
**Two out of the five falconers handled a road kill rabbit found on the side of the road.** The two falconers were those who became sick. Improper use of gloves could have resulted in infection through contamination of fresh cuts.

The two ill falconers who handled the road kill rabbit also fed the road kill rabbit to their hawks. This is another potential route of transmission—through the falcon. The falcon's talons could have been contaminated and scratches to unprotected skin could have resulted in infection.

This is an interesting case study of a disease not often seen in the United States.

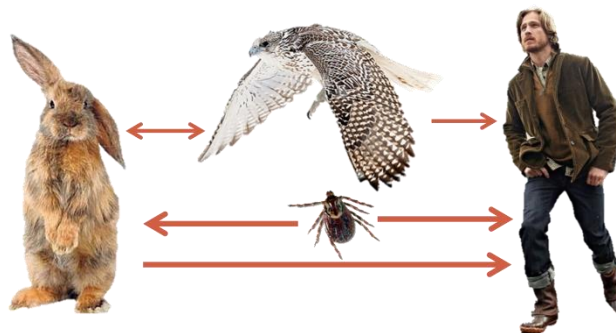
**Hunters and falconers should follow these simple measures to decrease the risk for tularemia exposure:**

- Rubber gloves and eye protection should be used when handling wild animals.
- Avoid handling or consuming any sick or road kill animals.
- Always thoroughly cook rabbit meat.
- Use protective clothing and insect repellants and check for ticks frequently.



### What is Tularemia?

- Caused by the bacterium *Francisella tularensis*.
- As few as 10 organisms can cause disease.
- There are less than 200 cases per year in the U.S.
- The incubation period is 3-5 days (range 1-21 days).
- Category A biological warfare agent.



There are many routes of exposure (i.e. inhalation, ingestion) and potential sources of infection. Tularemia has been identified in the following animals: rabbits, squirrels, muskrats, beavers, prairie dogs, cats, bobcats, deer and sheep. **Rabbits are the most common source** of tularemia in the United States.

**Falconry** is the hunting of wild quarry in its natural state and habitat by means of a trained bird of prey. Little is known about birds and tularemia; however there are studies which show some birds may be more susceptible to infection, while others are resistant but still may be infectious. *F. tularensis* organisms can get under the talons of the falcon during hunting or feeding which may infect a human if scratched by the bird.

# EMERGING DISEASES and OUTBREAK UPDATE

## AVIAN INFLUENZA

- Highly pathogenic avian influenza A H5 viruses have been detected in birds in the U.S. since December, 2014.
- Most of these infections have occurred in poultry, including backyard and commercial flocks. The USDA estimates that over 40 million birds have been impacted in 20 states. To date, Michigan has not detected birds infected with these new viruses.
- No human infections with U.S. H5 viruses have occurred. CDC considers the risk to the public to be low, but people with prolonged and direct contact with infected birds or their environments are potentially at risk for infection.
- As of June 8, 2015, Michigan detected H5N2 in wild geese.

Learn more about the outbreak in birds at: [www.aphis.usda.gov/](http://www.aphis.usda.gov/)

Learn more about the human health risk at: [www.cdc.gov/flu/avianflu/h5/](http://www.cdc.gov/flu/avianflu/h5/)

For Michigan-specific information about HPAI: [www.michigan.gov/avianinfluenza/](http://www.michigan.gov/avianinfluenza/)

## CHRONIC WASTING DISEASE

- In May, 2015 the Michigan Department of Natural Resources (DNR) confirmed the first case of chronic wasting disease (CWD) in a free-ranging white-tailed deer in Michigan in Ingham County. In 2008, a privately owned deer tested positive in Kent County.
- CWD is a prion disease of deer, elk, and moose (collectively known as cervids). The prions are present in the saliva, blood, and feces of infected cervids and can remain indefinitely in certain types of soil.
- Michigan is one of 23 states and two Canadian provinces that have detected CWD in either free-ranging or captive cervids.
- There is no treatment for CWD, it is fatal in all cervids that become infected. CWD spread can be minimized by limiting contact between infected and non-infected animals. Feed and baiting bans are one practical way to limit contact.
- The DNR and the Michigan Department of Agriculture and Rural Development (MDARD) are following the 2012 Michigan CWD Surveillance and Response Plan to detect any additional infected animals and prevent the further spread of CWD in the Michigan deer herd.
- To date, there is no evidence that CWD presents any risk to non-cervids. However, as a precaution, CDC and the World Health Organization recommend that infected animals not be consumed as food by either people or domestic animals.

Learn more about CWD at [www.michigan.gov/cwd](http://www.michigan.gov/cwd).

## EBOLA VIRUS DISEASE (EVD)

- The 2014-15 Ebola epidemic is the largest in history, affecting multiple countries in West Africa.
- Two imported cases, including one death, and two locally acquired cases in healthcare workers have been reported in the U.S.
- As of June 7, 2015 there have been over 27,000 suspect, probable and confirmed cases and over 11,000 deaths, mostly in West Africa.
- There have been a total of 869 confirmed health worker infections and 507 deaths reported from Guinea, Liberia, and Sierra Leone since the start of the outbreak.
- Michigan and other states continue to conduct active health monitoring of travelers returning from impacted countries and will continue to do so until the outbreak in West Africa is contained.
- As of June 11, the countries of Guinea and Sierra Leone continue to report new cases of EVD.
- On May 9, 2015, the World Health Organization declared the end of the Ebola outbreak in Liberia after 42 days had passed since the last Ebola patient was buried.
- At this time, CDC is continuing to recommend public health monitoring of all travelers arriving in the U.S. from Guinea, Sierra Leone and Liberia for 21 days.
- To date, 266 returning travelers have been actively monitored for EVD in Michigan.

For current information about this ongoing Ebola epidemic, visit CDC's EVD page at [www.cdc.gov/vhf/ebola/](http://www.cdc.gov/vhf/ebola/).

## CHIKUNGUNYA

- Chikungunya (CHIKV) is a mosquito-borne virus in which humans are the reservoir host.
- Infection spreads between people through the bite of an infected mosquito. CHIKV is most often spread by *Aedes aegypti* and *Aedes albopictus* mosquitoes.
- Outbreaks of CHIKV have occurred in Africa, Asia, Europe and the Indian and Pacific Oceans.
- In late 2013, the first local transmission of CHIKV in the Americas was reported in some Caribbean countries and territories. CHIKV is new to the Americas and most people in the region are not immune.
- For 2014, a total of 2,492 CHIKV cases were reported from U.S. states. Most cases occurred in travelers, but 11 were locally acquired in Florida. Imported cases could result in local introduction and spread of the virus in the U.S., as many states in the U.S. harbor the mosquitoes that transmit CHIKV.
- 21 confirmed and probable cases of CHIKV were reported in Michigan residents returning from travel in the Caribbean in 2014.
- Michigan is currently not endemic for these mosquitoes, but that could change.

Chikungunya guidance for local health departments and healthcare providers is available at Michigan's Emerging Diseases website [www.michigan.gov/emergingdiseases](http://www.michigan.gov/emergingdiseases)  
Learn more about CHIKV at: [www.cdc.gov/chikungunya/](http://www.cdc.gov/chikungunya/)



**Michigan Zoonotic & Vector-Borne Disease  
SURVEILLANCE SUMMARY  
2014**

Prepared by the Michigan Department of Health and Human Services  
Bureau of Disease Control, Prevention and Epidemiology  
Emerging & Zoonotic Infectious Disease Section (EZID)

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