CONNECTICUT
Public Health

Surveillance for Vector-borne Diseases in Humans

April 9, 2025

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Changes to the List of Reportable Diseases and Laboratory Findings — 2025

Vector-borne Diseases in CT

Aedes species
(Ae. albopictus)

Anopheles species

Coquillettidia perturbans

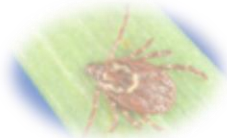
Culex species

Mosquito-borne Diseases	Tick-borne Diseases
California serogroup viruses	Anaplasmosis
Chikungunya virus	Babesiosis
Dengue virus	*Borrelia miyamotoi* disease
Eastern equine encephalitis (EEE) virus	Ehrlichiosis
Malaria	Lyme disease
Oropouche	Powassan virus
St. Louis encephalitis virus	**Spotted fever rickettsiosis**
Venezuelan equine encephalitis virus	• *Rickettsia rickettsii, R. parkeri, R. rickettsii* subsp. *Californica, R. akari*
West Nile virus (WNV)	Tularemia
Yellow Fever virus	
Zika virus	

CT Provider Reportable Diseases

Blacklegged Tick
(*Ixodes scapularis*)

Lone Star Tick
(*Amblyomma americanum*)

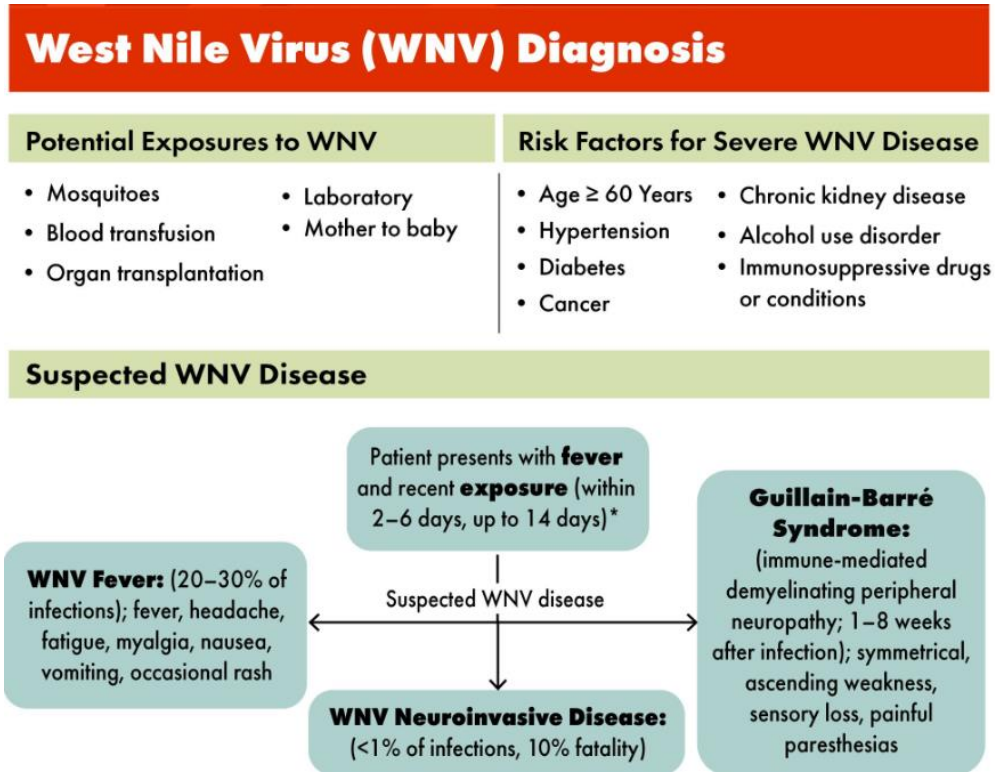


American Dog Tick
(*Dermacentor variabilis*)

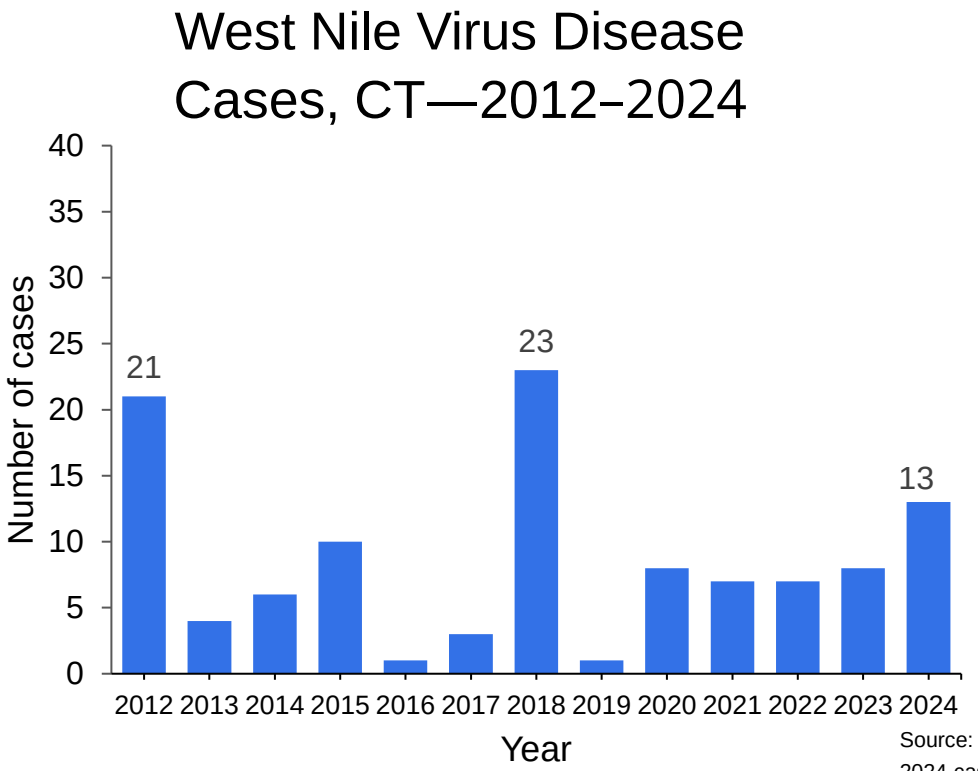
Mosquito-borne Disease Surveillance

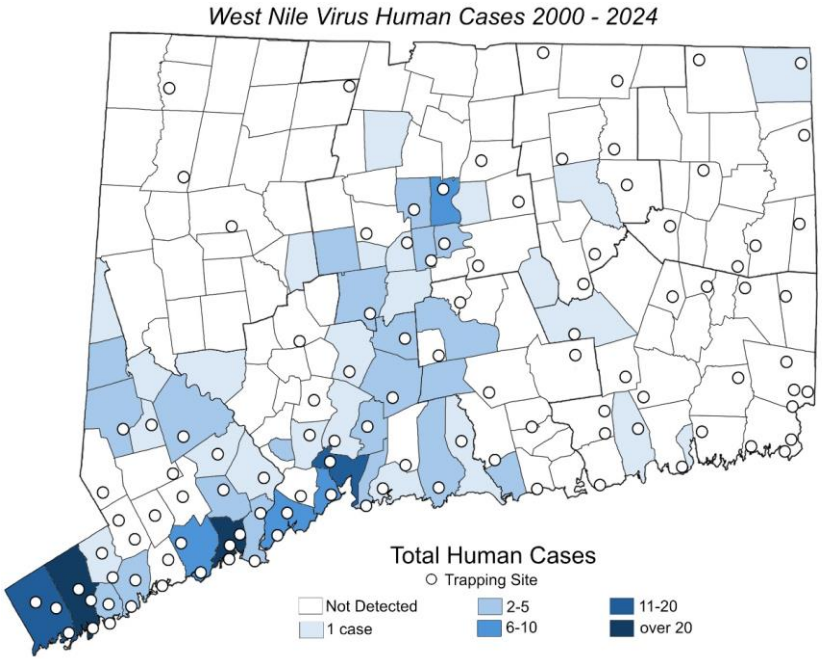
West Nile Virus

- Caused by: Flavivirus
- Primary vector: *Culex* spp.
- Incubation period: 2–14 days
- Can cause an acute febrile illness or neuroinvasive disease
- 70-80% of human WNV infections are subclinical or asymptomatic
- Less than 1% develop neuroinvasive disease: meningitis, encephalitis, and/or acute flaccid myelitis
- Case fatality rate (neuroinvasive disease): ~10%
- Long-term neurologic sequelae are common with encephalitis and acute flaccid myelitis



WNV Disease Risk is Not Evenly Distributed

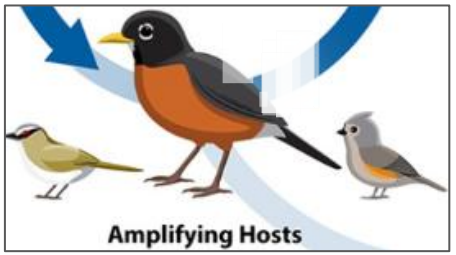


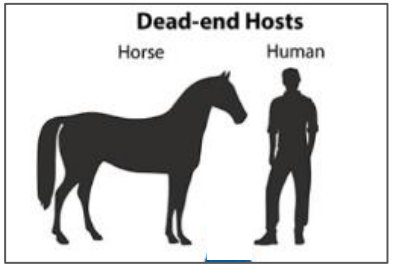


Source: ArbNET and CT Agricultural Extension Station
2024 case count is preliminary and subject to change

Eastern Equine Encephalitis Virus (EEEV)

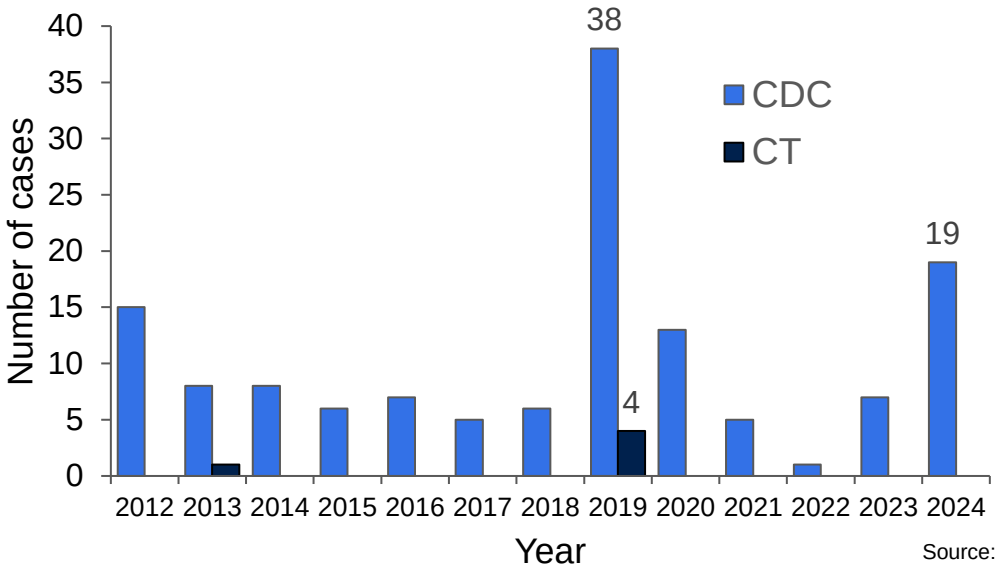
- Caused by: alphavirus
- Primary vector: mosquito (several genera)
- Most cases occur in eastern or Gulf Coast states
- Incubation period: 4–10 days
- Most human infection asymptomatic
- Can cause a febrile illness or neurologic disease; disease severity greatest in young children and the elderly
- ~5% progress to severe neuroinvasive disease: meningitis and/or encephalitis
- Case fatality rate (neuroinvasive disease): ~30%
- >50% of survivors experience long-term sequelae

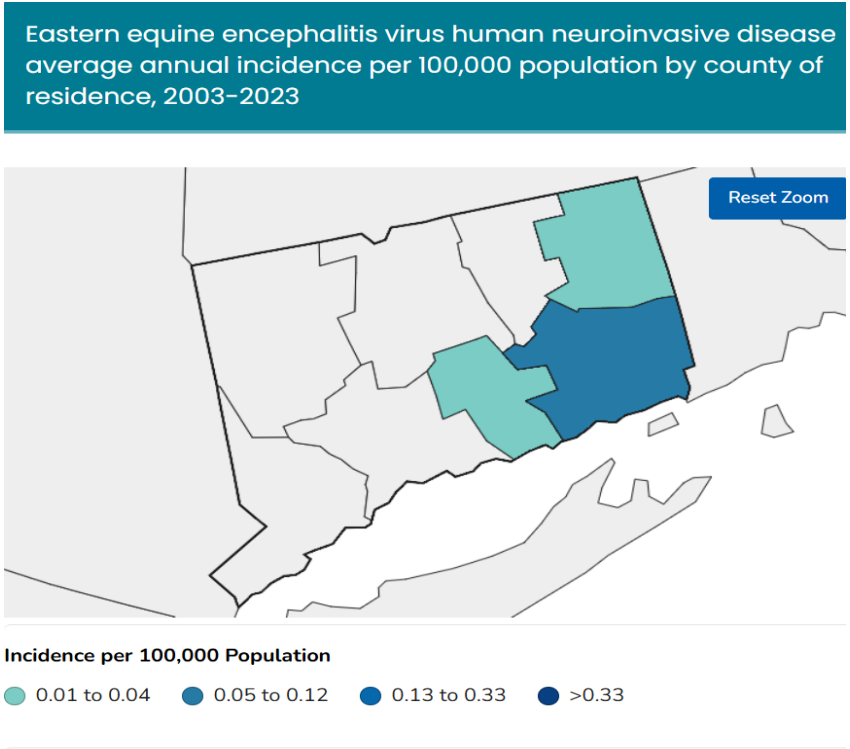




Few Cases of EEEV Disease Have Been Reported in CT

Eastern Equine Encephalitis Virus Disease Cases, United States and CT—2012–2024





Source: ArbNET

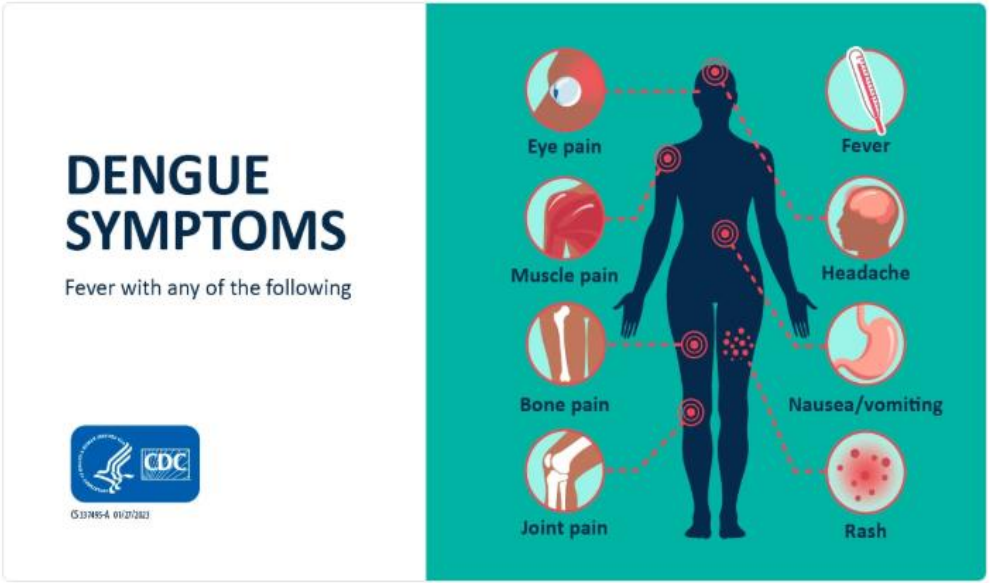
2024 case count is preliminary and subject to change

Dengue Virus Basics

- Caused by: a type of flavivirus, any of 4 serotypes
- Primary vector: *Aedes* spp. mosquito
- Incubation Period: 3–10 days
- ~25% of those infected become symptomatic
- ~5% develop severe dengue characterized by shock, internal bleeding, death
- Case fatality rate (if severe): ~10% if untreated, or 0.1% with appropriate clinical management

Aedes aegypti

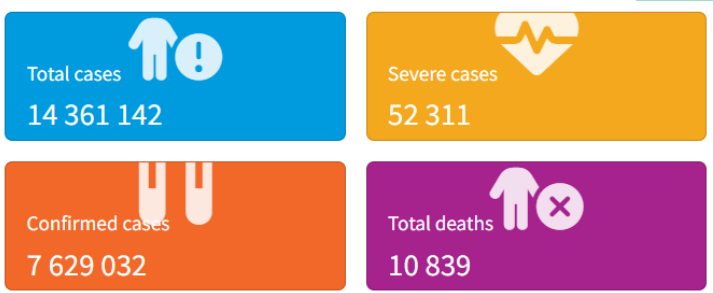
Aedes albopictus

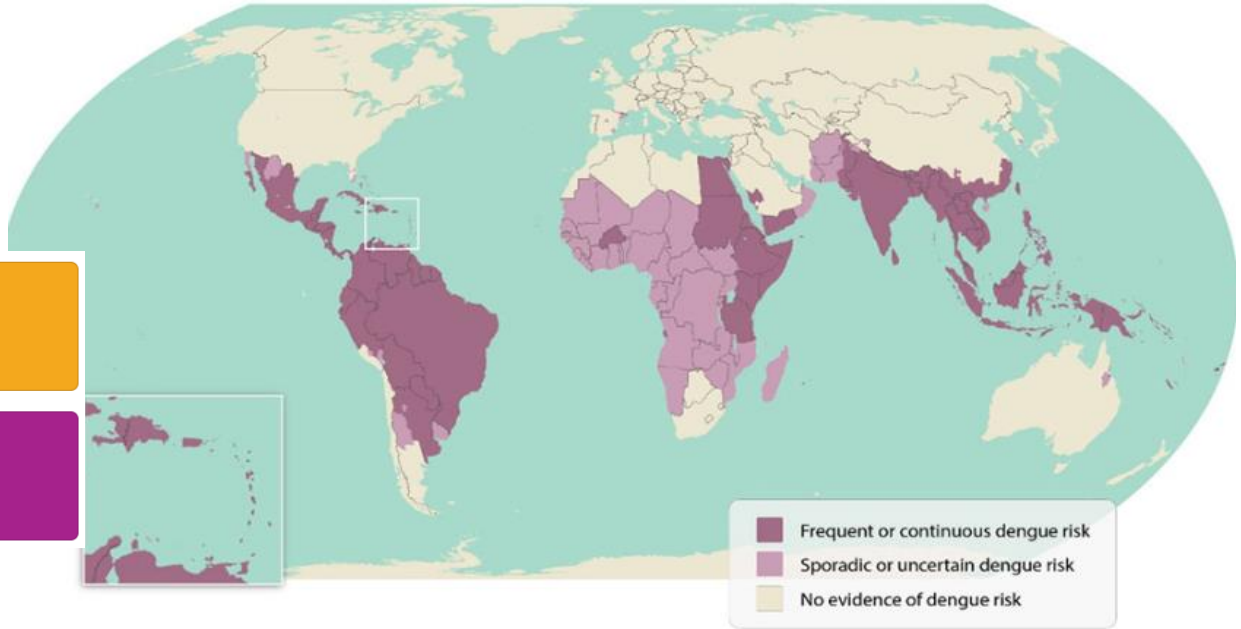


Dengue Risk is Increasing Globally

- Risk increasing globally and in the Americas
  - Increase especially pronounced in the Americas
  - 92 countries/territories
  - 23 countries reporting outbreaks

Global cases, 2024*

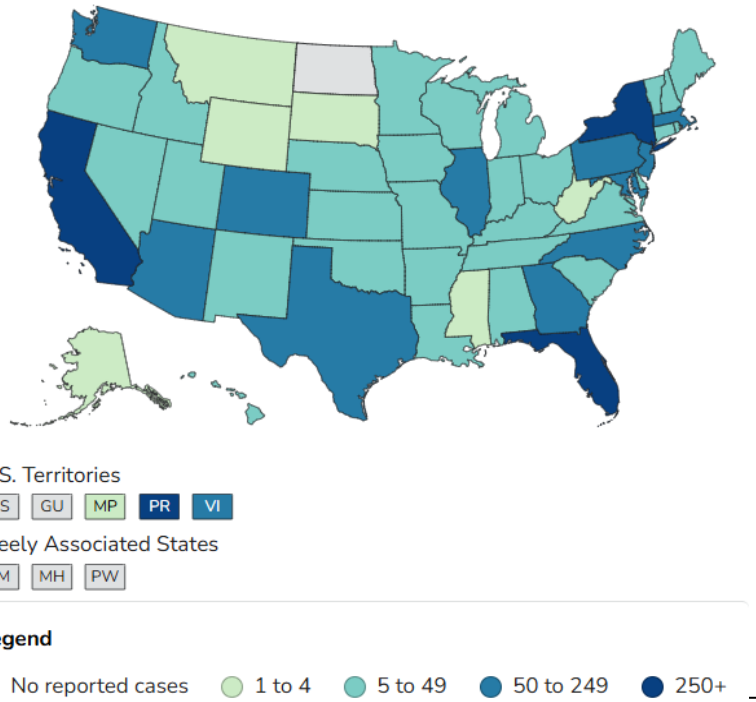




[* WHO Global dengue surveillance]

Risk of Widespread Dengue Transmission in the US is low

All dengue cases by jurisdiction of residence in US states and territories, 2024

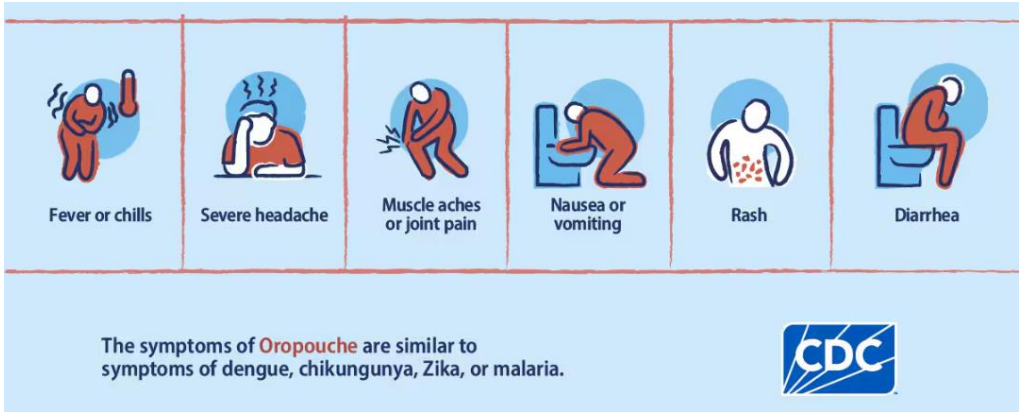


- Most dengue **cases in the US occur in travelers infected in areas with risk of dengue**
- Limited local spread of dengue reported in FL, HI, TX, AZ, and CA
- Most local transmission occurs in U.S. territories where dengue is common: American Samoa, PR, USVI, and freely associated states (Federated States of Micronesia, the Republic of Marshall Islands, and the Republic of Palau)
- Dengue vectors (*Ae. aegypti and Ae. albopictus*) are present across much of the U.S.

Oropouche Virus

- Caused by: orthobunyavirus
- Primary vector: *Culicodes paraensis* (biting midge) and some mosquitoes
- The virus is typically found in certain areas of South and Central America and the Caribbean
- Incubation Period: 3–10 days

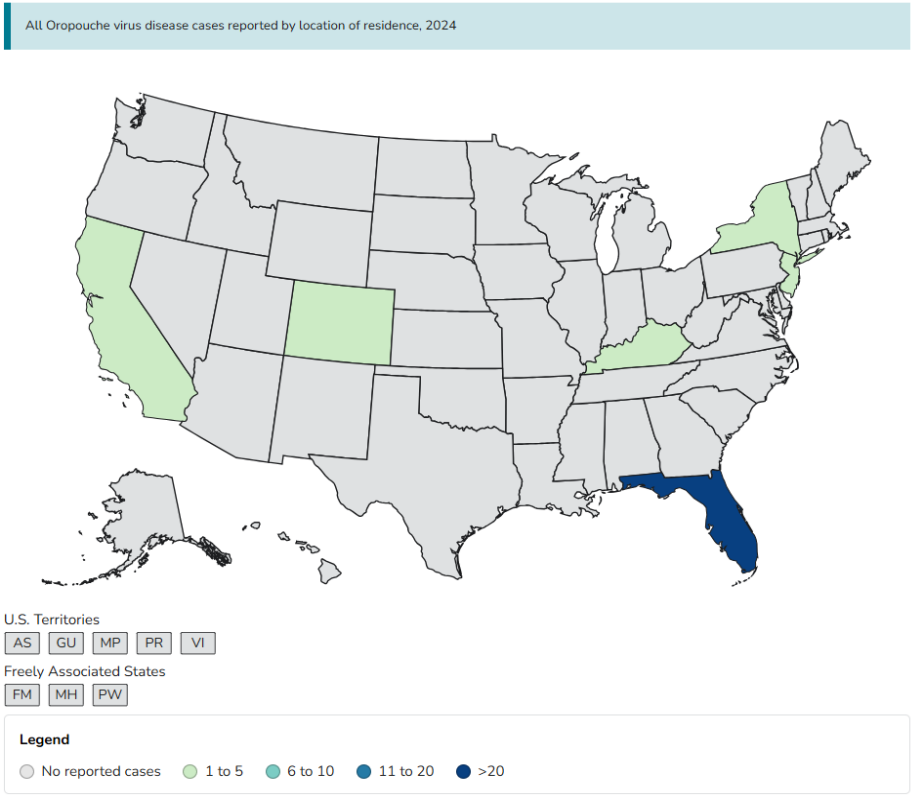
A biting midge (left) is much smaller than a mosquito (right)
Source: Photo courtesy: Dunpharlain



- Majority of infections are asymptomatic
- Relapse of symptoms in up to 60% of cases days to weeks later
- Fewer than 5% will develop more serious disease (e.g., meningitis, encephalitis, or bleeding)
- Disease in typically mild, deaths are rare

Risk of sustained local transmission in the U.S. is likely low

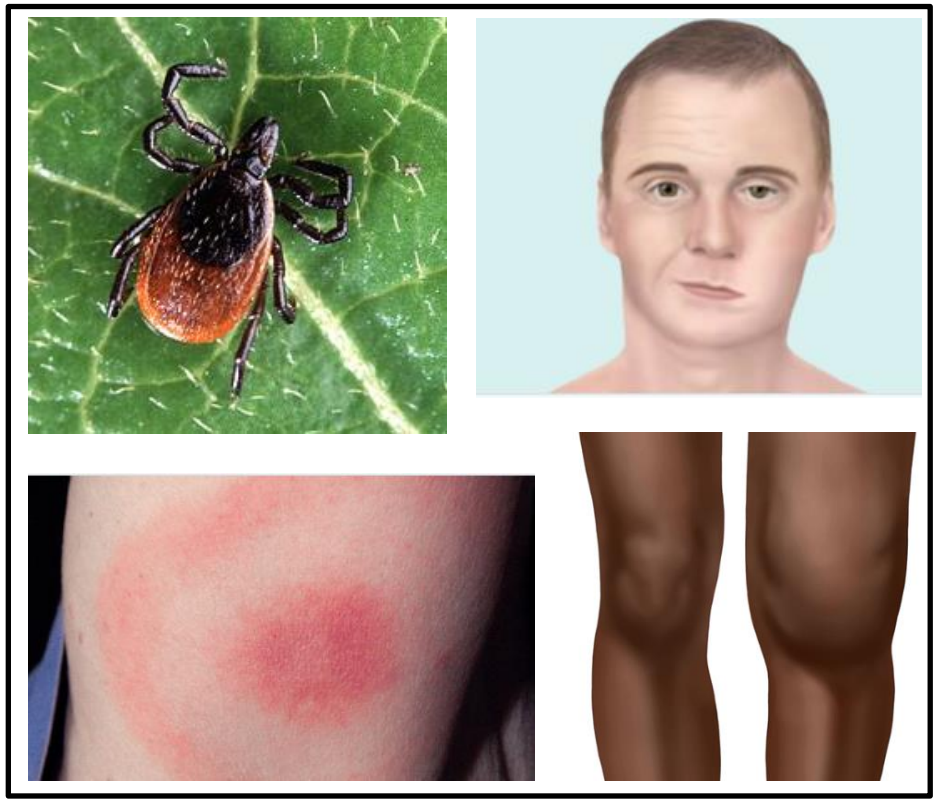
- Vectors are in low abundance
- US cases occur in travelers to infected areas
- In 2024, 108 cases reported in US
- No cases reported in CT



Tick-borne Disease Surveillance

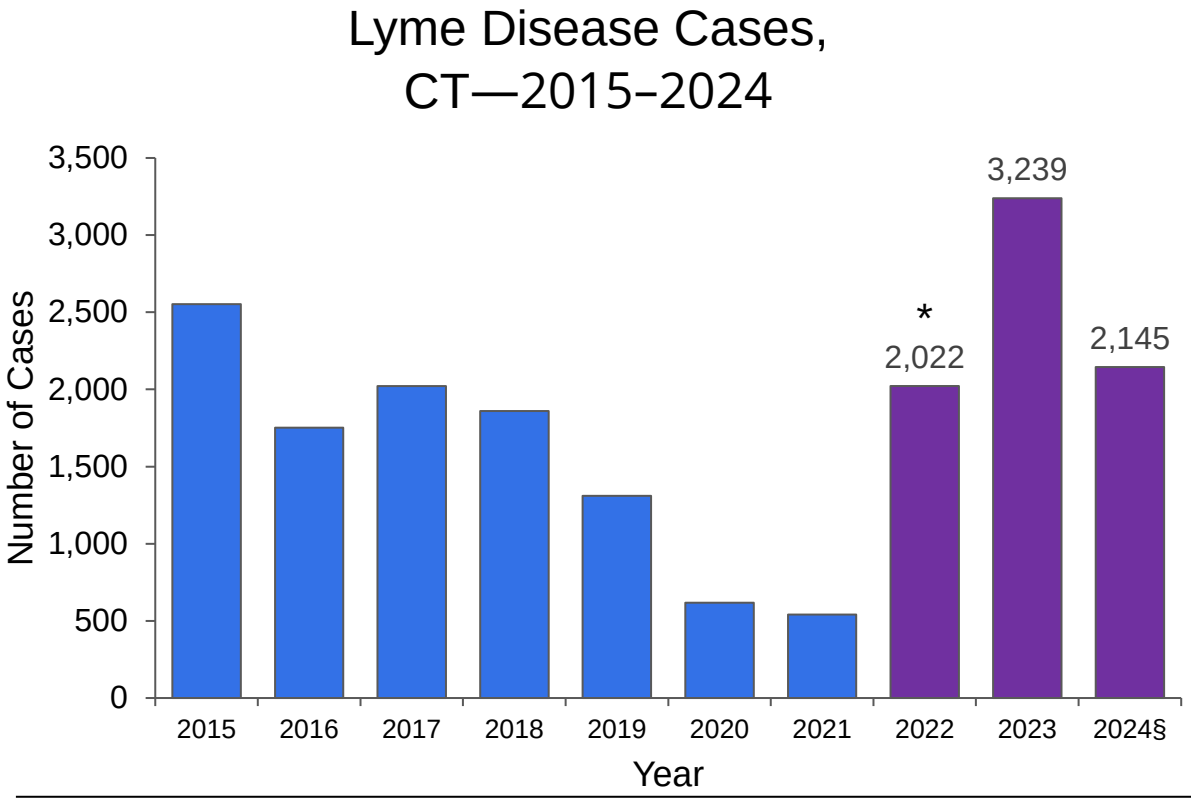
Lyme Disease

- Caused by: *Borrelia burgdorferi*
- Primary vector: *Ixodes scapularis*
- Incubation period: 3–30 days
- Typical symptoms: fever, headache, fatigue, and a skin rash (erythema migrans (EM))
- 70-80% of infected people develop EM
- If untreated, Lyme can disseminate to joints, heart, and nervous system
- Out of every 100 patients reported:
  - 25 have arthritis
  - 9 have facial palsy
  - 4 have radiculopathy
  - 3 have meningitis or encephalitis
  - 1 has carditis



Source: Surveillance for Lyme Disease — United States, 2008–2015 | MMWR

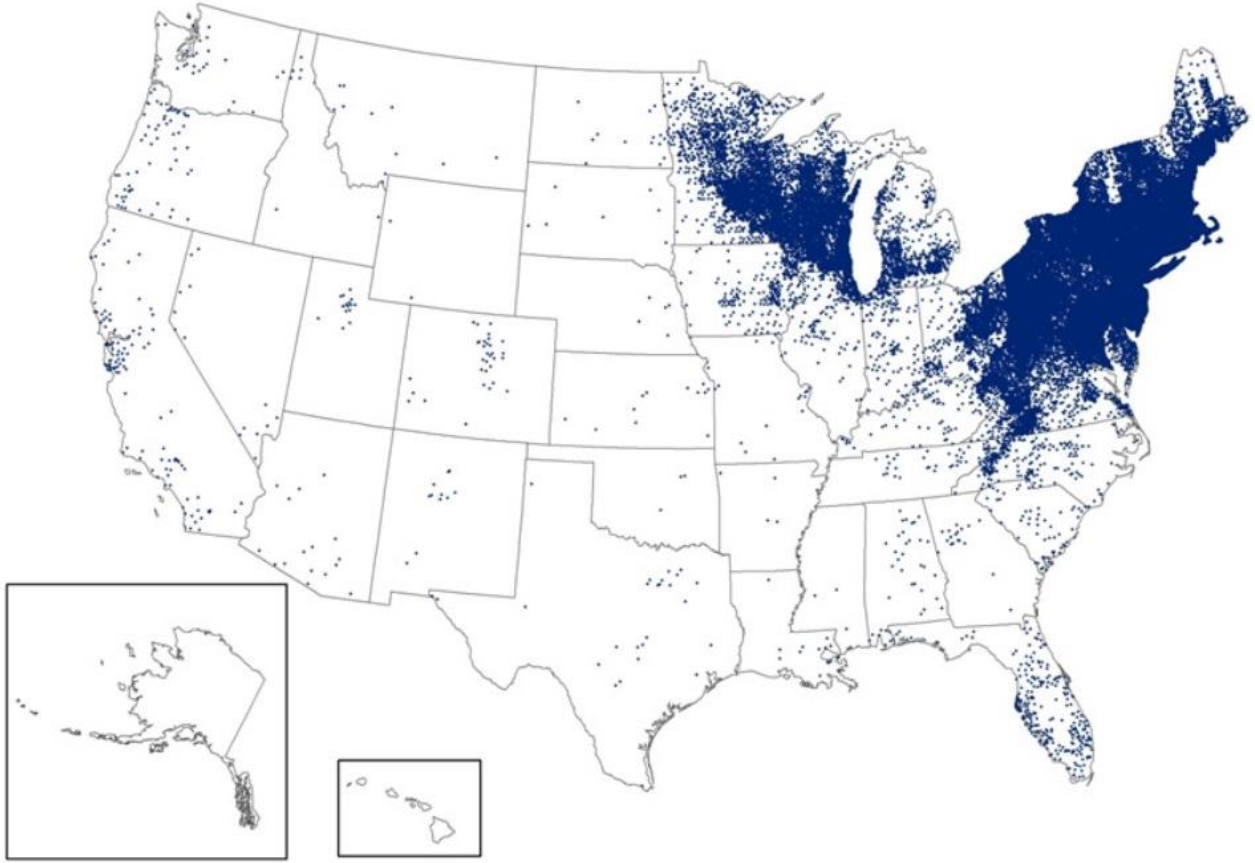
Lyme Disease is CT's Most Commonly Reported Vector-borne Disease



High-incidence jurisdictions*	2022 Incidence
Connecticut	56.1
Delaware	30.1
District of Columbia	11.2
Maine	194.7
Maryland	32.9
Massachusetts	71.9
Minnesota	47.1
New Hampshire	78.8
New Jersey	63.5
New York	83.2
Pennsylvania	64.7
Rhode Island	212.0
Vermont	204.0
Virginia	16.3
West Virginia	137.7
Wisconsin	88.4
Subtotal	**68.3**

*2022 began new revised case definition
** High-incidence jurisdictions are defined as jurisdictions reporting 10 or more confirmed cases per 100,000 population for 3 years. All other jurisdictions are low incidence
§ 2024 Cases are preliminary and subject to change

Reported Cases of Lyme Disease – United States, 2023



1 dot placed in county of residence for each reported case

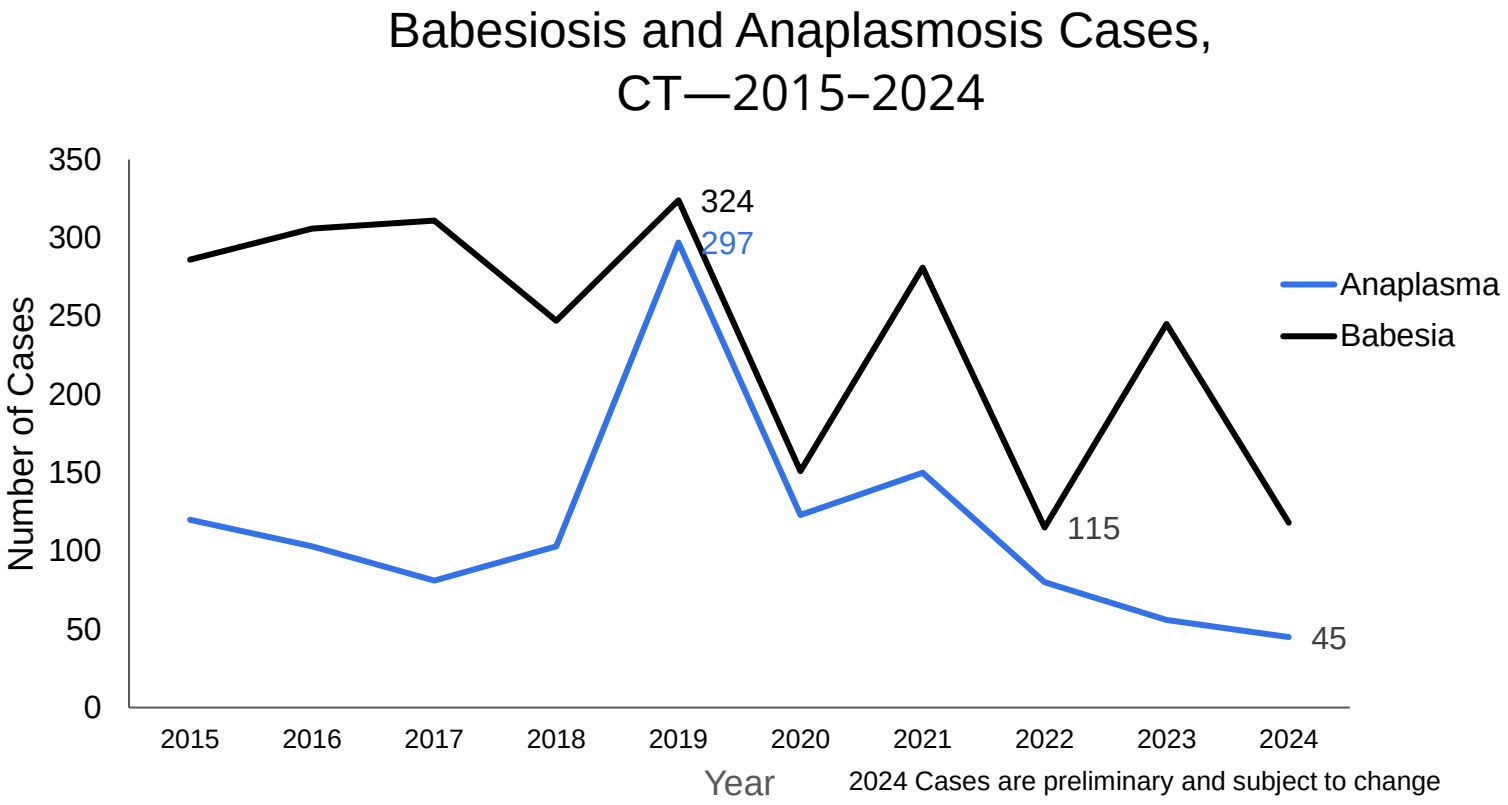
Babesiosis

- Caused by: *Babesia microti,* a protozoa
- Vector: *Ixodes scapularis*
- Incubation period: 1–4 weeks
- Most infections asymptomatic
- Typical symptoms: malaria-like
- Manifestations of disease include fever, chills, sweating, myalgias, fatigue, hepatosplenomegaly, and hemolytic anemia

Anaplasmosis

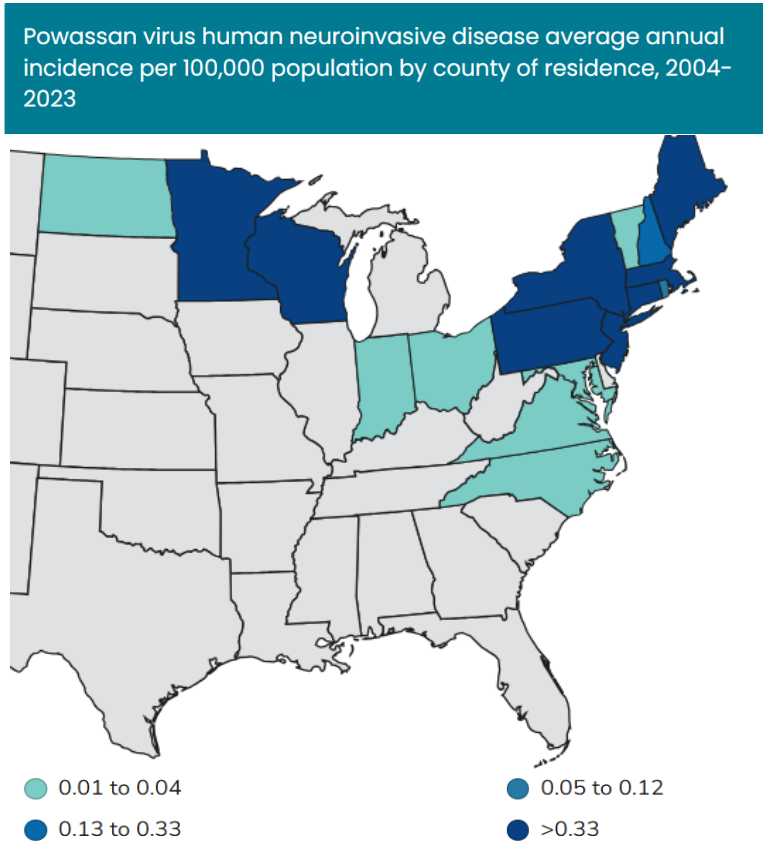
- Caused by: *Anaplasma phagocytophilum*
- Vector: *Ixodes scapularis and I. pacificus*
- Incubation period: 5–14 days
- Symptoms: fever, headache, and malaise
- Most commonly reported in Northeastern and upper Midwestern states
- Symptoms vary, usually mild to moderate

Babesiosis and Anaplasmosis are Far Less Frequently Reported Than Lyme Disease

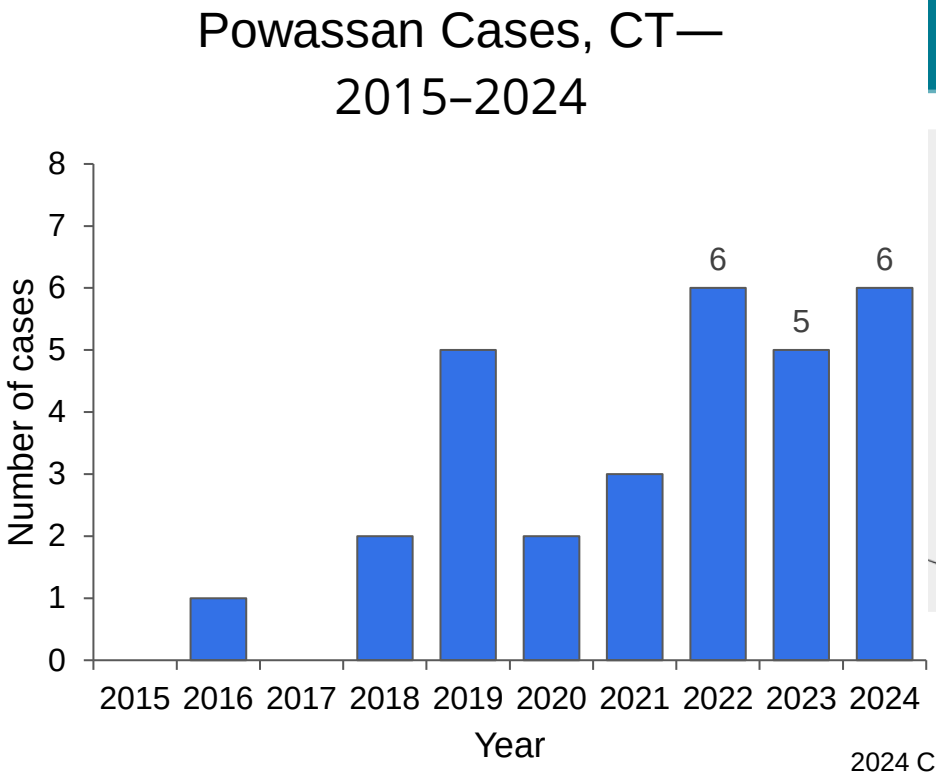


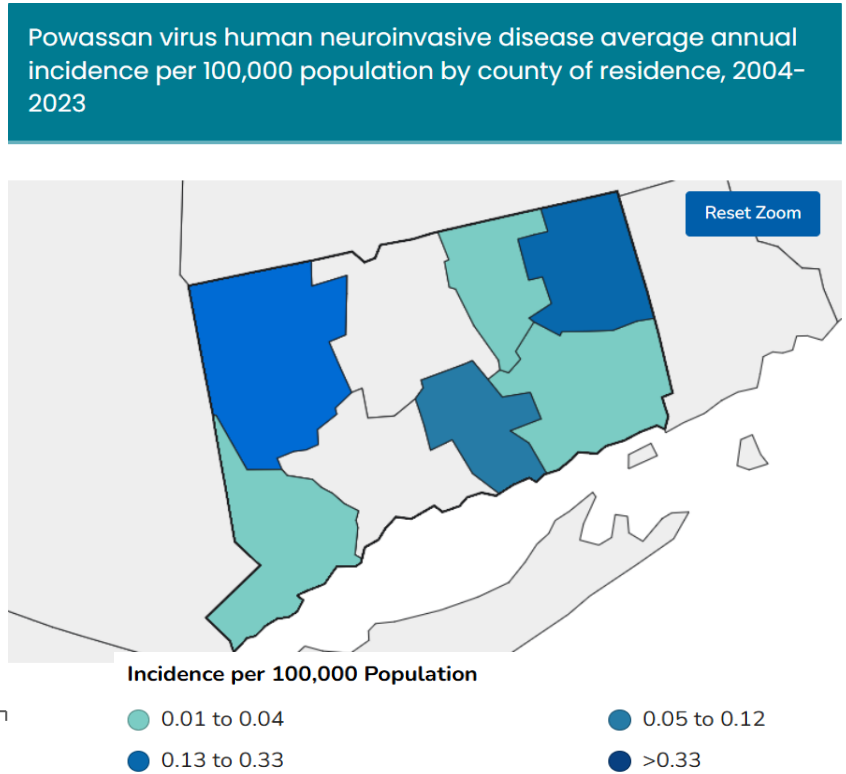
Powassan Virus

- Caused by: Flavivirus
- Vector: *Ixodes* spp.
- An infected tick only needs to be attached to a person for 15 minutes to transmit virus
- Incubation period: 1–4 weeks
- US cases of reported primarily from northeastern states and the Great Lakes
- Typical symptoms: fever, headache, vomiting, and weakness
- Severe disease can result in encephalitis or meningitis
  - ~50% will have long term sequelae
  - Case fatality rate (severe disease): ~10%



Powassan Cases Increasing





2024 Cases are preliminary and subject to change

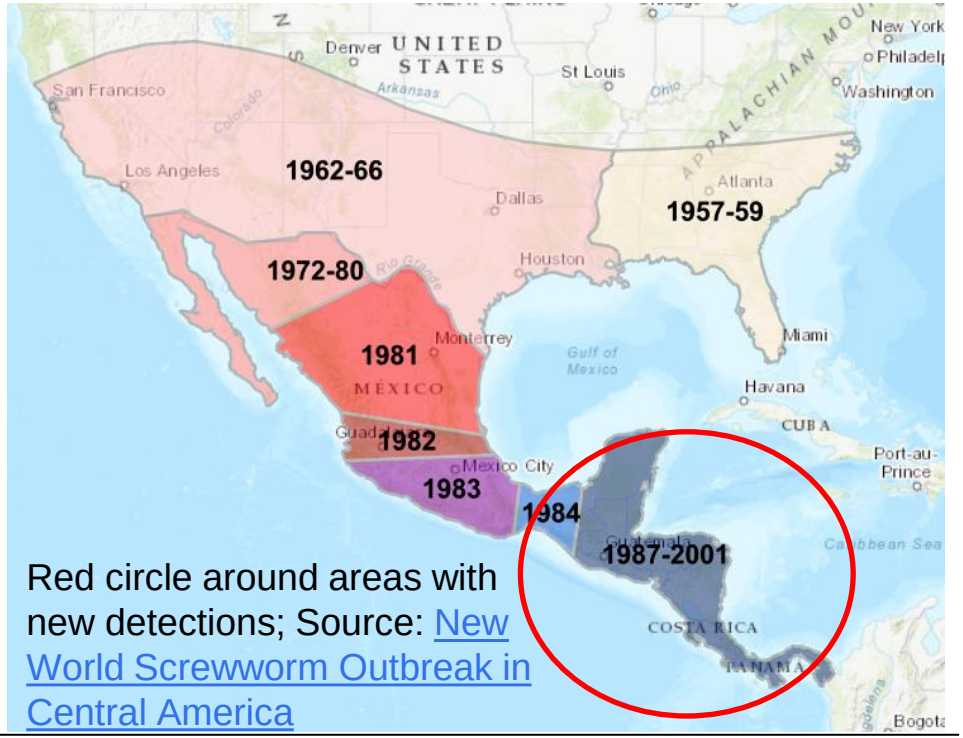
A Re-emerging Disease

New World Screwworm Myiasis

- Myiasis is a parasitic infection of fly larvae (maggots) in human tissue
- *Cochliomyia hominivorax,* the New World screwworm (NWS), is a species of parasitic worms that can cause myiasis and feed on live tissue
- Primarily affects livestock, but it can infest people
- NWS is typically found in South America and the Caribbean; countries where NWS was previously controlled are reporting an increase in cases

[New World Screwworm Bench Aid]

Cochliomyia hominivorax third-instar larvae



Red circle around areas with new detections; Source: [New World Screwworm Outbreak in Central America]

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