

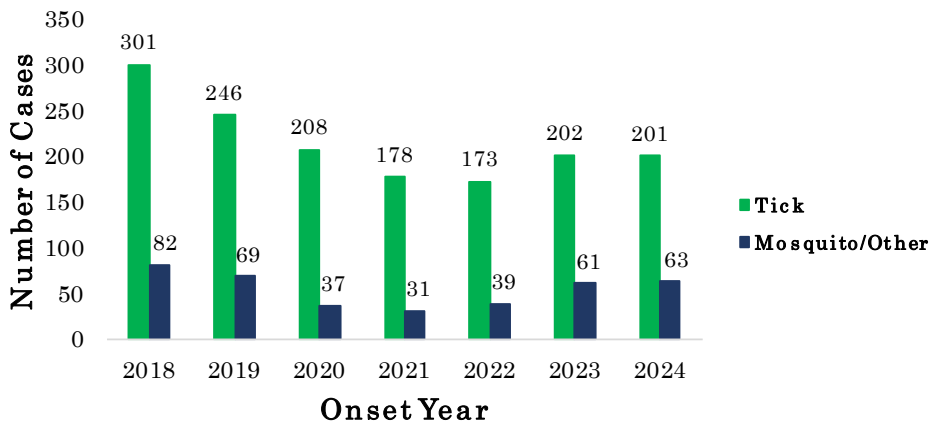
This report describes cases of vector-borne diseases (VBDs) reported among humans in the Disease Reporting System internet (DRSi), and summarizes vector collection and testing efforts completed by staff at military installations globally and the Military Tick Identification/Infection Confirmation Kit (MiTICK) program. The human population includes all individuals that visited military medical treatment facilities, including U.S. Armed Forces Service members (Active Duty, trainees, Reserve, and Guard members) and non-Service members (dependents, retirees, civilians, etc.). Cases meet the case definitions outlined in the Armed Forces Reportable Medical Events Guidelines and Case Definitions.<sup>1</sup> Appendix B outlines the VBDs assessed for this report.

## Disease Reporting System internet (DRSi) Surveillance

### Year-to-date

From 1 January 2024 to 30 September 2024, 264 VBD cases, with onset dates during the specified time period, have been reported in the DRSi (Figure 1). Fifty-three percent (n=141) of cases were Service members, and 46% (n=122) of cases were Army beneficiaries (Table 1); Air Force beneficiaries made up 22% (n=59) of the cases. To date, the largest number of VBD cases were diagnosed among individuals who were 30–39 (n=72, 27%) and 18–29 years of age (n=55, 21%). During the same time period in 2023, 263 cases were reported in the DRSi (Figure 1). The highest proportion of cases with onset dates in 2024 were reported from locations\* in the Southern region<sup>2</sup> of the U.S. (n=118, 46%) and Europe (n=53, 21%).

**Figure 1: Number of Vector-borne Disease Cases during January–September by Onset Year and Disease Vector, 2018–2024**

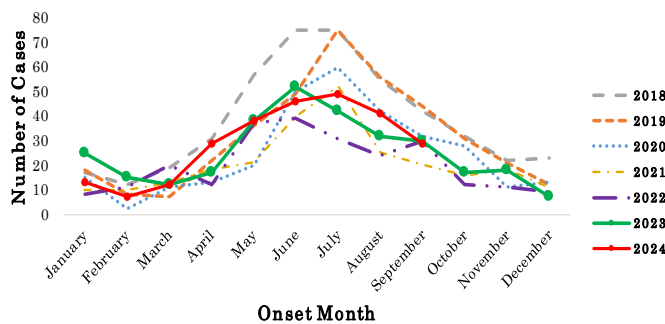


*\*Reporting location is not necessarily an indicator of exposure location.  
Values are based on symptom onset dates and totals are subject to change.*

## Month of September, 2018-2024

A total of 29 VBD cases with onset dates in September 2024 were reported to the DRSi (Figure 2), and 55% (n=16) of the cases were Service members. Of the 29 cases, 20 were diagnosed with Lyme disease, 3 with arboviral diseases, 3 with malaria, and 3 with spotted fever rickettsiosis. Compared to the previous year, during September 2023, 30 VBD cases were reported; Lyme disease and malaria accounted for 80% (n=24). Eighty-three percent (n=24) of the cases in September 2024 were reported from locations in the Southern and Northeast regions of the U.S.

**Figure 2: Number of Vector-borne Disease Cases by Onset Month and Onset Year, 2018–2024**



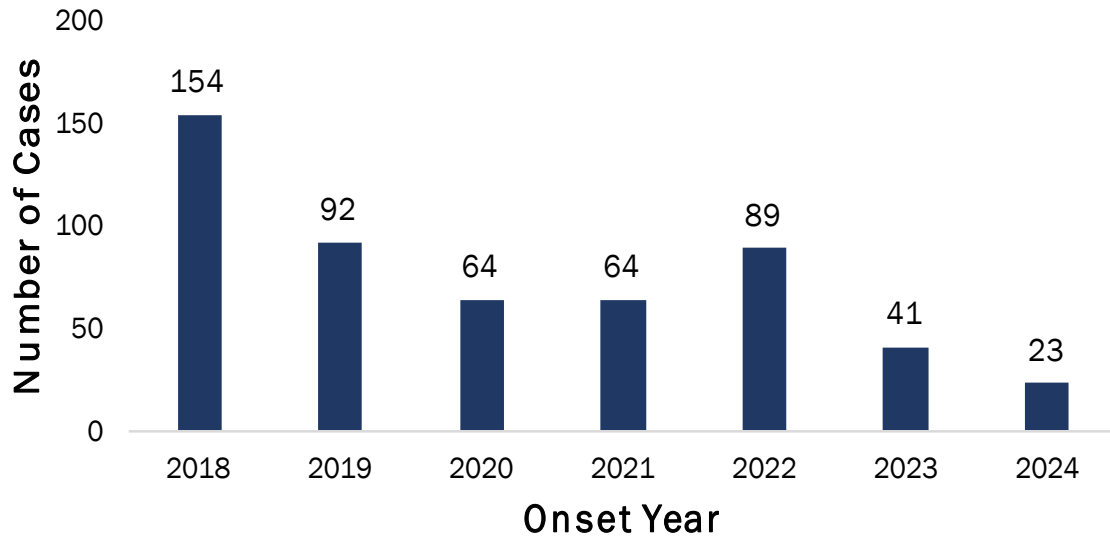
[Click on image to enlarge](#)

### Spotlight: Spotted fever rickettsiosis

Spotted fever rickettsioses are tick-borne diseases caused by the bites of ticks and mites infected with various *Rickettsia* species bacteria. Rocky Mountain spotted fever is the most commonly reported spotted fever in the U.S.<sup>3</sup> Other spotted fevers include Pacific Coast tick fever, African tick-bite fever, *Rickettsia parkeri* rickettsiosis, and others.<sup>1,3</sup> The typical first symptom of spotted fever rickettsiosis is a scab at the location of the tick/mite bite; this scab is known as an eschar and may occur days to weeks after a bite from an infected tick/mite.<sup>3</sup> Other symptoms of spotted fever rickettsiosis may include fever, rash, headache, nausea, vomiting, and body aches.<sup>1,3</sup> For Rocky Mountain spotted fever, which occurs throughout most of the U.S., a rash that develops within days of developing a fever is common.<sup>4</sup> If you were bitten by a tick and/or visited grassy/wooded areas, and develop symptoms after, it's best to contact your healthcare provider. If left untreated, spotted fever rickettsioses may become life-threatening. Prevention of spotted fever rickettsiosis includes avoiding tick bites through the use of EPA-registered insect repellents and protective clothing while outdoors to help remain safe.

From 1 January 2024 to 30 September 2024, 23 cases of spotted fever rickettsiosis have been reported in the DRSi; this is the lowest number of reported cases by this time of the year since 2018 (Figure 3). All cases reported in 2024 were reported from locations in the South and the Midwest; Ft. Liberty, NC reported 39% (n=9) of the cases. Most of the affected individuals participated in outdoor work and recreational activities, or lived/worked with animals. Individuals in the 30-39 age group were the most affected age group (n=11, 48%) and Service members accounted for 52% (n=12) of cases.

Figure 3: Number of Spotted Fever Rickettsiosis Cases by Onset Year, 2018–2024





# Vector-borne Disease Report



Table 1: Vector-borne Diseases by Service, Year-to-Date (January–September) 2024

	Number of Cases by Service Branch					
	Army	Air Force and Space Force	Navy	Marine Corps	Coast Guard	Other/Unknown
<b>Total</b>	122	59	41	21	10	11
<b>Age Group (Years)</b>						
<18	18	10	5	2	1	-
18–29	23	10	8	11	3	-
30–39	41	14	10	3	2	2
40–49	27	9	9	3	-	4
50–59	9	7	5	1	1	4
60+	4	9	4	1	3	1
<b>Beneficiary Category</b>						
Service member	69	26	25	14	5	2
Non-Service member	53	33	16	7	5	9
<b>Sex</b>						
Female	35	22	12	4	-	4
Male	87	37	29	17	10	7
<b>Vector-borne Disease</b>						
Arboviral diseases	6	1	-	-	-	-
Chikungunya	-	1	-	-	-	-
Dengue	8	-	8	4	-	3
Ehrlichiosis/anaplasmosis	1	-	1	-	-	-
Leishmaniasis	-	-	-	-	-	-
Lyme disease	74	47	27	13	9	6
Malaria	14	-	1	3	-	2
Plague	-	-	-	-	-	-
Relapsing fever	-	-	-	-	-	-
Spotted fever rickettsiosis	13	6	2	1	1	-
Trypanosomiasis	1	-	-	-	-	-
Typhus fever	5	4	1	-	-	-
Yellow fever	-	-	-	-	-	-
Zika virus	-	-	1	-	-	-

**2024 Year-to-Date Regional Vector Testing, U.S. Army**

As of 30 September,

- Public Health Command (PHC), East tested 208 (94 pools\*) *Aedes aegypti* for Zika, dengue and chikungunya viruses; 27 (10 pools) *Coquillettidia perturbans* and *Culiseta melanura* for eastern equine encephalitis virus; 9 (6 pools) *Anopheles* spp. for *Plasmodium* spp. (the causative agent of malaria - analysis includes multiple *Plasmodium* species); and 3792 (553 pools) *Culex* spp. mosquitoes for West Nile virus. West Nile virus was detected in 7 pools from Ft. Meade, MD (6) and Ft. Jackson, SC (1).

- PHC, West tested 909 (270 pools) *Amblyomma*, *Dermacentor*, and *Ixodes* ticks for testing for *Borrelia* spp., *B. burgdorferi*, *B. miyamotoi*, *B. lonestari*, *Ehrlichia chaffeensis*, *E. ewingii*, *E. muris*, *Francisella tularensis*, *Rickettsia* spp., *Anaplasma phagocytophilum*, *Babesia microti*, *Babesia duncani*, Bourbon virus, Heartland virus, and Powassan virus (deer tick virus), as appropriate by vector species. Positive results include 12 pools of *E. ewingii*, 4 pools of *E. chaffeensis*, 3 pools of *B. lonestari*, 1 pool of *Rickettsia* spp. and 3 pools of *Borrelia* spp. Additionally, 4,832 (251 pools) *Culex* mosquitoes were tested for West Nile virus; 9 pools tested positive (50 pools pending).

\*Pooling refers to the collection and combining of mosquitoes or ticks for pathogen testing.

**Military Tick Identification/Infection Confirmation Kit (MiITICK)**

MiITICK is a service provided by the Tick-Borne Disease Laboratory at the Defense Centers for Public Health—Aberdeen. It is a free tick testing and identification service available for ticks removed from Department of Defense personnel and their dependents. For more information about MiITICK, visit <https://ph.health.mil/topics/entomology/kits/Pages/HumanTickTestKitProgram.aspx>. To visualize near-real time testing results, visit <https://carepoint.health.mil/sites/ENTO/miltick> (CAC-enabled).

As of 30 September,

- 2262 *A. americanum* ticks were tested for multiple *Ehrlichia* pathogens; 82 (3.6%) *A. americanum* ticks tested positive for *E. ewingii*, 47 (2.1%) *A. americanum* ticks tested positive for *E. chaffeensis*, and 38 (1.7%) *A. americanum* ticks tested positive for Panola Mountain *Ehrlichia*. Of these positive *A. americanum* samples, 8 were co-infected with multiple *Ehrlichia* pathogens (*E. ewingii*, *E. chaffeensis*, Panola Mountain *Ehrlichia*).

- 8 *A. maculatum* ticks and 533 *Dermacentor* ticks were tested for multiple *Rickettsia* pathogens; 3 (37.5%) *A. maculatum* ticks tested positive for *R. parkeri*.

- 10 *I. pacificus* ticks were tested for a variety of pathogens (*B. burgdorferi*, *B. mayonii*, *B. miyamotoi*, *Babesia microti*, and *A. phagocytophilum*), all were negative.

- 132 *I. scapularis* ticks were tested for a variety of pathogens (*B. burgdorferi*, *Borrelia mayonii*, *Borrelia miyamotoi*, *Babesia microti*, and *A. phagocytophilum*); 7/132 (5.3%) *I. scapularis* ticks tested positive for *Babesia microti*, 5/132 (3.7%) *I. scapularis* ticks tested positive for *A. phagocytophilum*, and 40/132 (30.3%) *I. scapularis* ticks tested positive for *B. burgdorferi*. Of these positive *I. scapularis* samples, 6 were co-infected with multiple pathogens (*A. phagocytophilum*, *B. burgdorferi*, and *Babesia microti*).

## Appendix A

### References

1. Armed Forces Health Surveillance Branch, Defense Health Agency, U.S. Department of Defense. In collaboration with U.S. Air Force School of Aerospace Medicine, Army Public Health Center, and Navy and Marine Corps Public Health Center. Armed Forces Reportable Medical Events. Guidelines and Case Definitions, October 2022. Accessed Jul. 25, 2024. <https://health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines>
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3. Centers for Disease Control and Prevention. About Other Spotted Fever Rickettsioses. Accessed Oct. 31, 2024. <https://www.cdc.gov/other-spotted-fever/about/index.html>
4. Centers for Disease Control and Prevention. About Rocky Mountain Spotted Fever. Accessed Oct. 31, 2024. <https://www.cdc.gov/rocky-mountain-spotted-fever/about/index.html>



# Vector-borne Disease Report



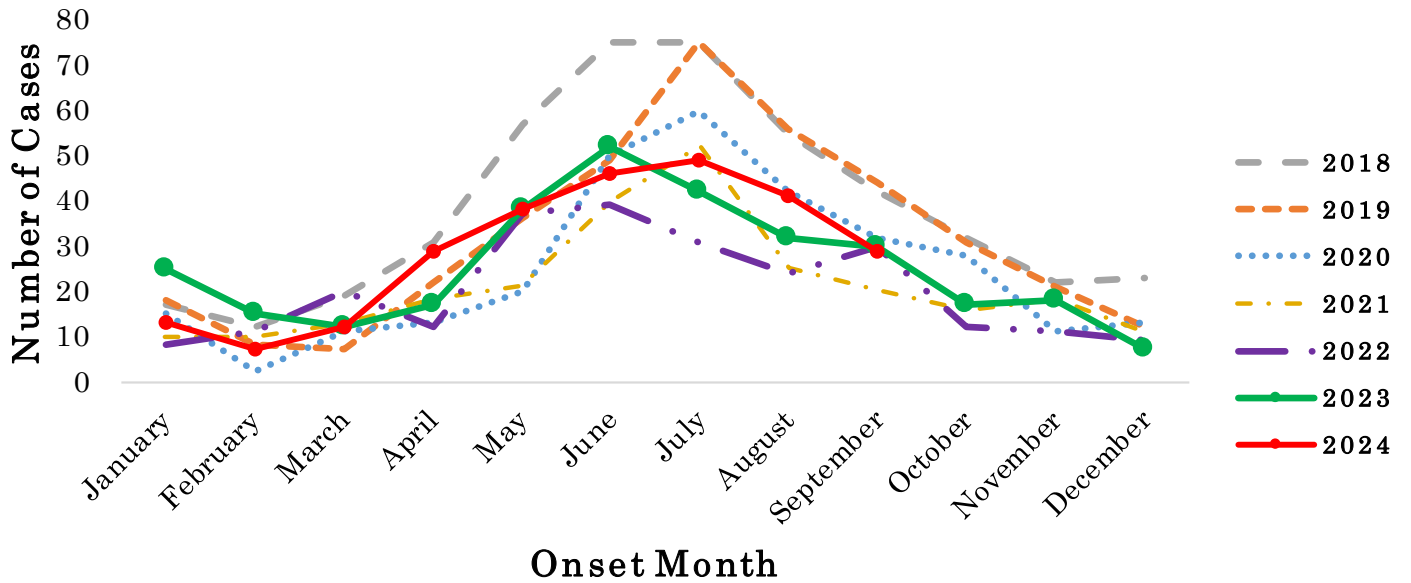
## Appendix B

### Vector-borne Diseases and Case Classifications, DRSi Reporting

Vector-borne disease	Case classification
Arboviral diseases, neuroinvasive and non-neuroinvasive	Probable, confirmed
Chikungunya virus disease	Probable, confirmed
Dengue virus infection	Probable, confirmed
Ehrlichiosis and anaplasmosis	Suspect, probable, confirmed
Leishmaniasis	Confirmed
Lyme disease	Suspect, probable, confirmed
Malaria	Suspect, confirmed
Plague	Suspect, probable, confirmed
Relapsing fever	Confirmed
Spotted fever rickettsiosis	Suspect, probable, confirmed
Trypanosomiasis	Suspect, probable, confirmed
Typhus fever	Probable, confirmed
Yellow fever	Probable, confirmed
Zika virus	Probable, confirmed



**Figure 2: Number of Vector-borne Disease Cases by Onset Month and Onset Year, 2018–2024**



[Click here to return to page 2.](#)