



Arkansas
State Public Health

Veterinarian
Surveillance
Summary
2020

Surveillance Summary

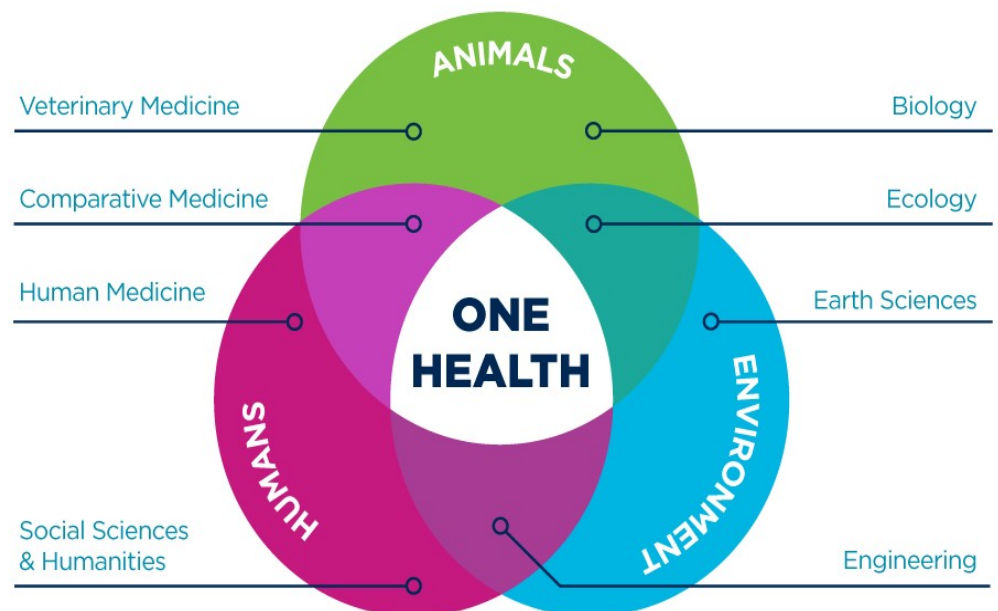


Zoonotic diseases are diseases that can be transmitted between animals and humans directly or through a vector (mosquitos, ticks, etc.). They can be caused by viruses, bacteria, parasites, and fungi. About 60% of infectious diseases in humans are transmitted from animals and 75% of emerging infectious diseases are zoonotic.

Zoonotic diseases develop and are spread within complex cycles involving people, animals, vectors, and the environment. Thus, it is essential for healthcare providers, veterinarians, public health officials, and environmental scientists to work together in the identification, prevention, treatment, and control of disease.

This collaborative initiative is known as One Health.

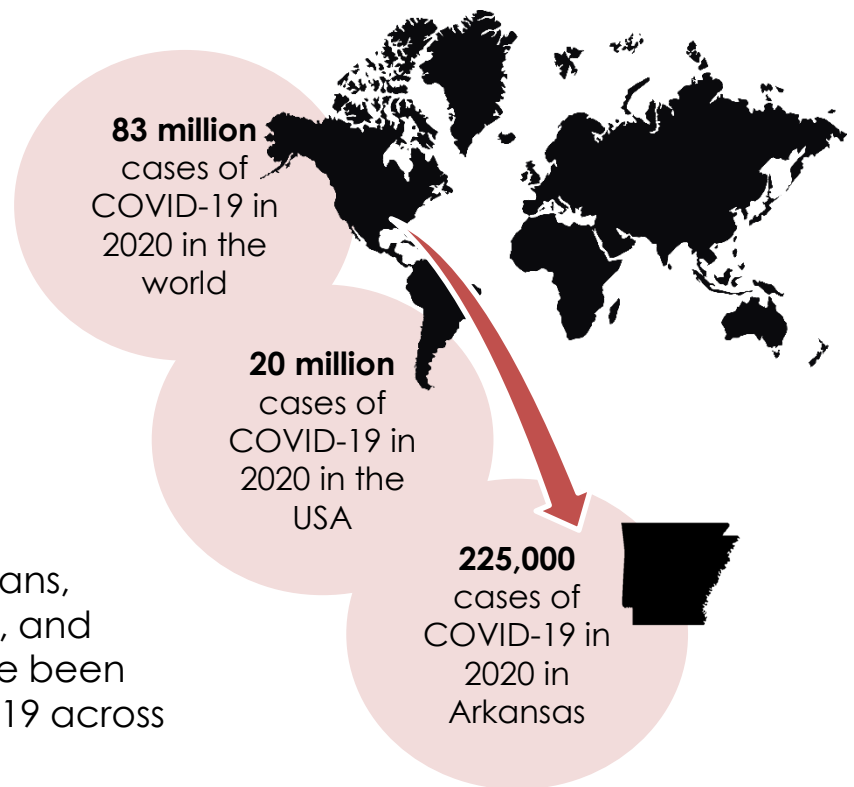
This report provides a summary of epidemiologic information for select zoonotic and vector-borne diseases in Arkansas.



COVID-19 Impact



The coronavirus disease 2019 (COVID-19) pandemic had long-standing impacts across the world. The first case of SARS-CoV-2, the virus that causes COVID-19, in Arkansas was documented on March 11, 2020, in Jefferson County. By the end of 2020, over 225,000 cases of COVID-19 had been documented.



Through joint efforts from veterinarians, commercial, university, state, local, and federal organizations, animals have been identified with exposure to COVID-19 across the states.

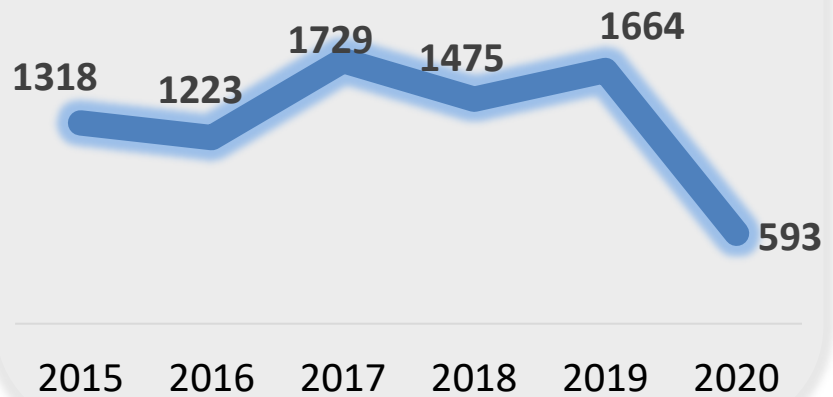
- Most animals with clinical signs showed mild clinical signs and fully recovered.
- The only animal to human transmission identified has been mink to human in Europe. Although recently hamsters were implicated in zoonotic transmission in China.
- It appears that in some situations, animals can spread the virus to humans.
- **At this time, there is no evidence that companion animals play a significant role in spreading SARS-CoV-2, and routine testing is not recommended.**
- In Arkansas, four animals have tested positive for SARS-CoV-2.
- For more updated information, please go to the following websites:
 - <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html>
 - <https://www.aphis.usda.gov/aphis/dashboards/tableau/sars-dashboard>

Disease reporting during COVID-19

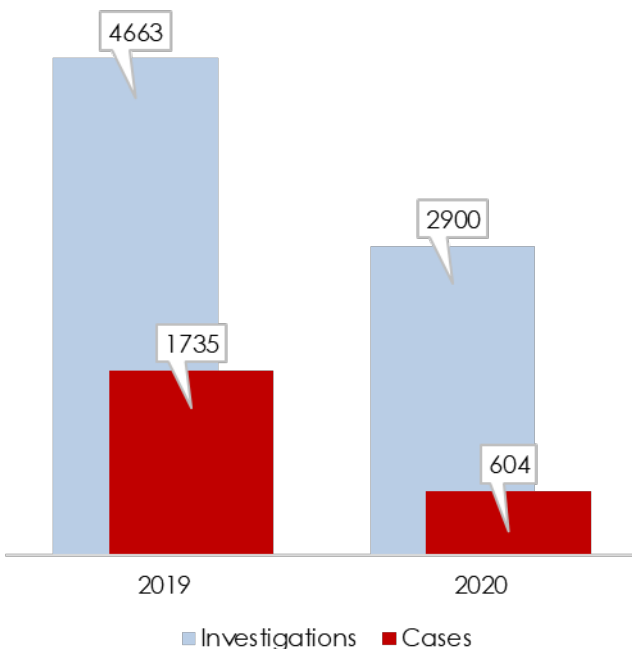


While many public health efforts have been directed towards the COVID-19 pandemic, reporting of other diseases have been impacted. A study performed by Johns Hopkins Medicine and the University of California found an overall decrease in most nationally notifiable infectious diseases and conditions. Arkansas saw over a 30% decline in reporting of zoonotic diseases in 2020 from 2019.

Select zoonotic cases across 6 years in Arkansas



Total investigations vs. cases



“Reporting of infectious diseases other than COVID-19 has been greatly decreased throughout the COVID-19 pandemic. We find this decrease varies by routes of transmission, reporting state, and COVID-19 incidence at the time of reporting. These results underscore the need for continual investment in routine surveillance efforts despite pandemic conditions.”

Crane et al, 2021

Reporting Summary



Disease	2015	2016	2017	2018	2019	2020
Fungal Infections						
<i>Blastomycosis</i>	21	8	12	12	28	21
<i>Histoplasmosis</i>	60	72	161	85	95	69
Livestock-Associated						
Q Fever, acute	3	4	3	2	2	0
Q Fever, chronic	0	1	0	0	0	0
Mosquito Borne						
Chikungunya virus	4	1	0	0	0	0
Dengue	1	3	0	2	3	1
Encephalitis, Eastern Equine	0	0	0	0	0	0
Encephalitis, St. Louis	0	0	0	0	0	0
Malaria	9	6	5	2	0	3
West Nile Virus	18	9	18	8	9	1
Yellow Fever	0	0	0	0	0	0
Multi-Mode Zoonoses						
Brucellosis	1	3	1	2	3	2
Toxoplasmosis	2	11	12	14	21	25
Tularemia	24	33	32	56	95	36
Public Health Pest						
American Trypanosomiasis (Chagas Disease)	-	2	-	-	2	1
Rabies and Animal Bites						
Rabies, Animal	73	23	43	32	30	33
Tick Borne						
<i>Anaplasma phagocytophilum</i>	16	14	6	8	9	11
Babesiosis, <i>Babesia microti</i>	0	1	0	2	1	1
Bourbon Virus	-	-	-	-	1	1
Ehrlichiosis, <i>Ehrlichia chaffeensis</i>	193	200	198	167	244	160
Ehrlichiosis, <i>Ehrlichia ewingii</i>	1	4	9	5	6	3
Heartland Virus	-	-	2	1	1	0
Lyme Disease	1	7	9	11	19	12
Rickettsial Disease – Spotted Fever	891	821	1,218	1,066	1,095	213†

Reported cases in people

†Case definition was changed to be more specific regarding serologic test results.

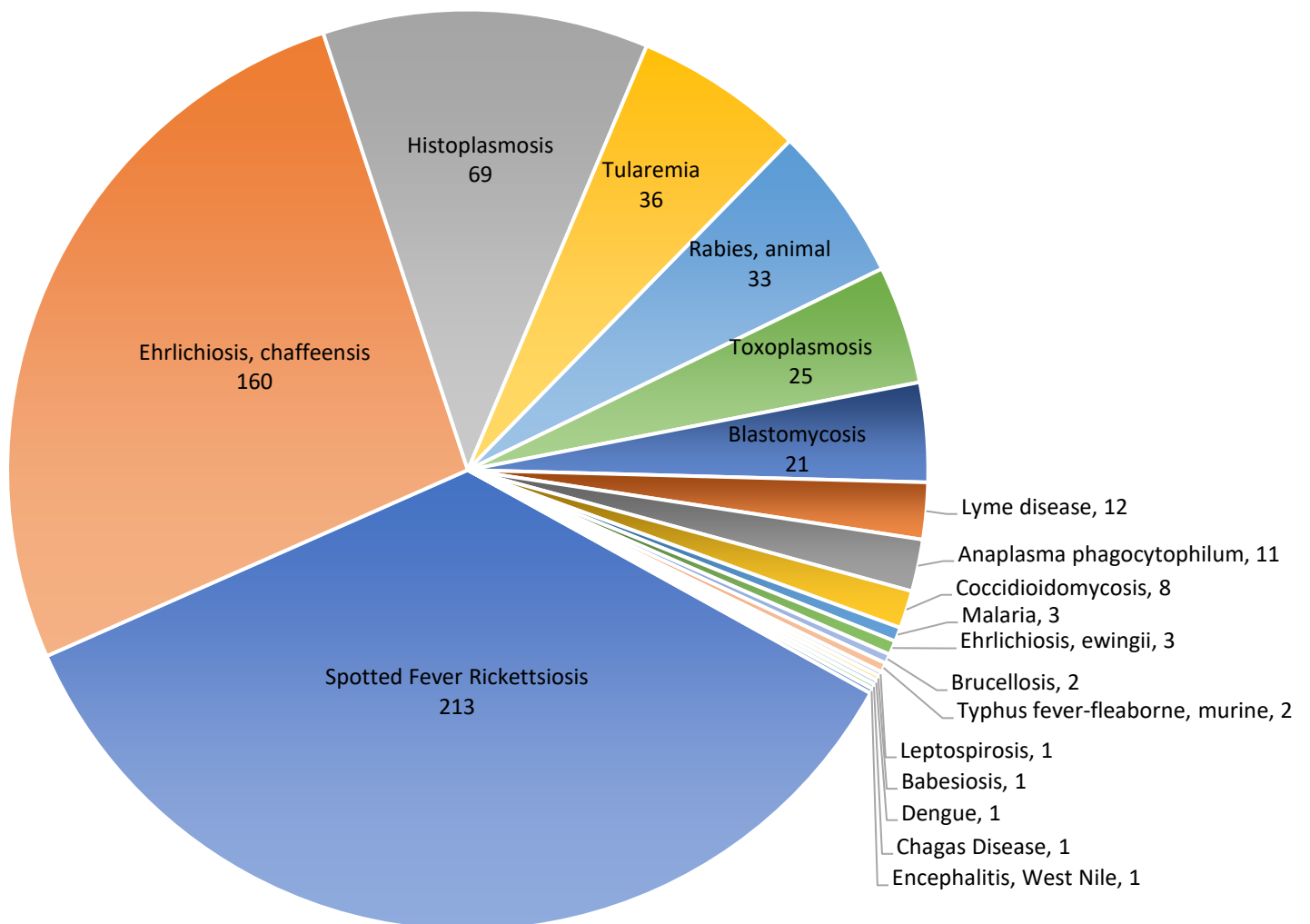
Zoonoses Overview



Zoonotic diseases are very common, both in the United States and around the world. Scientists estimate that more than 6 out of every 10 known infectious diseases in people can be spread from animals, and 3 out of every 4 new or emerging infectious diseases in people come from animals.

Spotted fever rickettsiosis is the most prevalent zoonotic disease in Arkansas, followed by ehrlichiosis and histoplasmosis.

Cases of zoonotic disease in 2020



Tick-borne Diseases

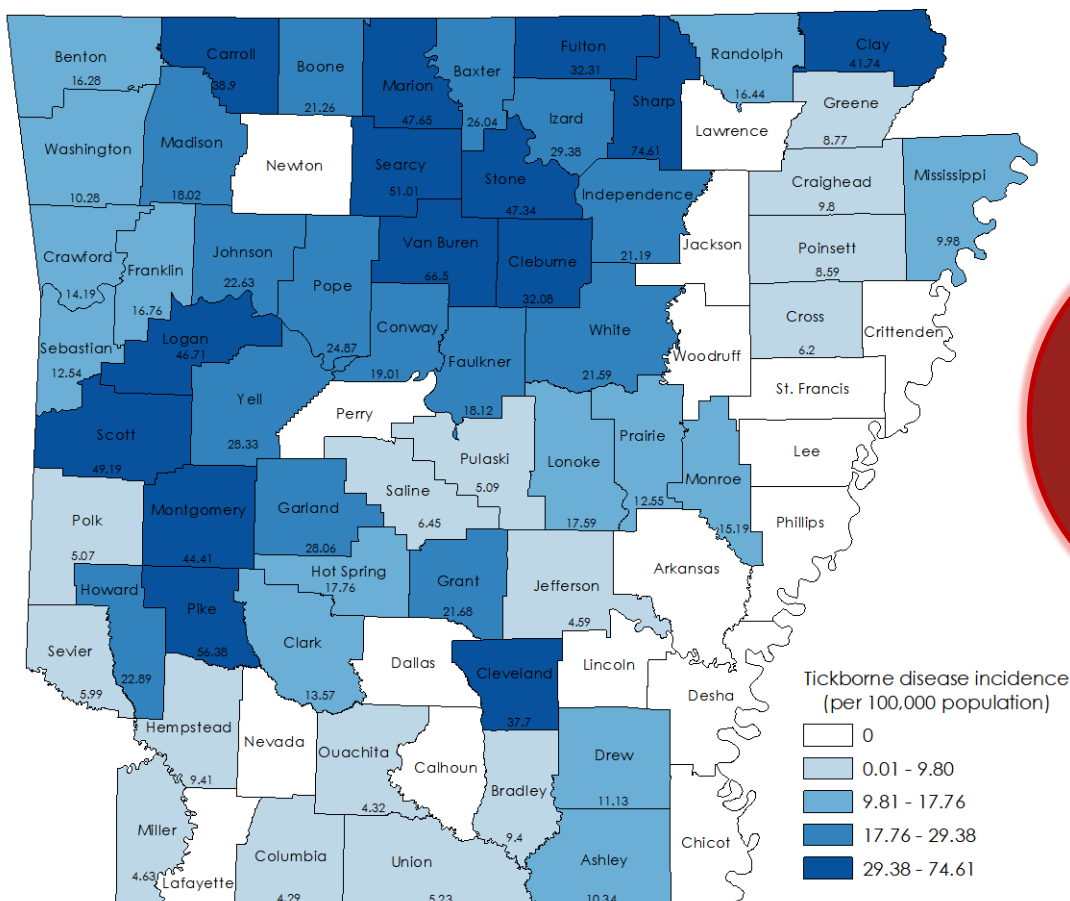


All tickborne disease

Tickborne Disease (TBD) is a type of zoonotic disease (an infectious disease transmitted between animals and humans) that is transmitted by ticks, a member of the arachnid family. In Arkansas, ticks are responsible for more human disease than any other arthropod vector, but not all ticks transmit disease. Of the many different tick species found in Arkansas, only a select few bite and transmit disease to humans.

The tickborne rickettsial disease (TBRD), including Rocky Mountain Spotted Fever (RMSF), Ehrlichiosis (HME), and Anaplasmosis (HGA) are caused by *Rickettsia rickettsii*, *Ehrlichia chaffeensis* (or *ewingii*), and *Anaplasma phagocytophilum*, respectively.

These pathogens are maintained in nature by interactions of wild mammals with hard-bodied (ixodid) ticks and are the most frequently reported zoonotic diseases found in Arkansas.



436 cases of tickborne disease in 2020

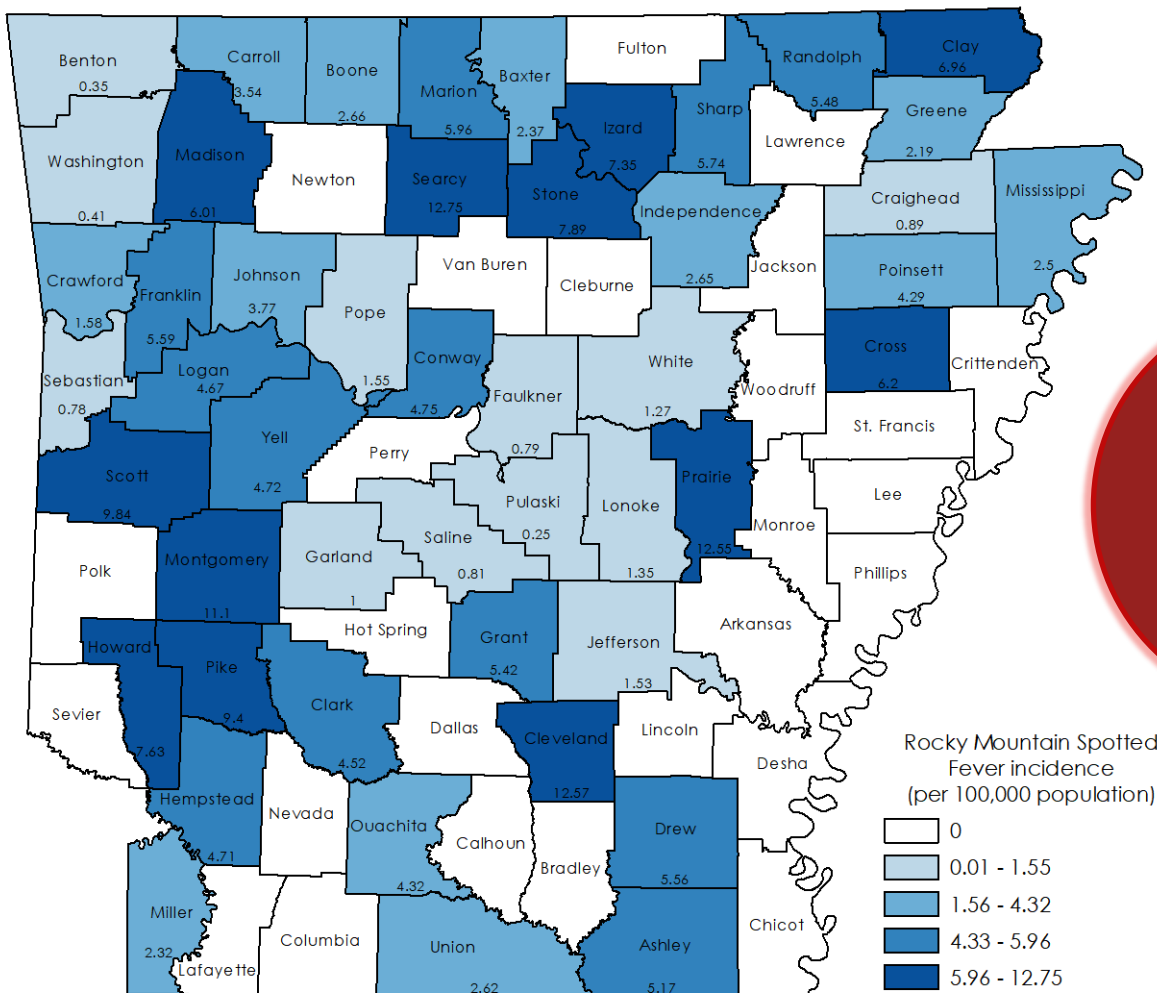
Tick-borne Diseases



Rocky Mountain Spotted Fever

Rocky Mountain spotted fever (RMSF) is the most common tickborne disease in Arkansas. RMSF is caused by the bacterium *Rickettsia rickettsii*. This bacterium is carried mostly by the American dog tick, *Dermacentor variabilis*, but also by the brown dog tick, *Rhipicephalus sanguineus*. In addition to *Rickettsia rickettsii*, the agent of Rocky Mountain spotted fever (RMSF), several other tick-borne species of *Rickettsia*, broadly grouped under the heading "Spotted Fever group *Rickettsia* (SFGR)" have been shown to cause human infections and may be transmitted by other tick species such as the Lone star tick, *Amblyomma americanum*.

The ADH investigated 859 reports of RMSF in 2020, resulting in 213 confirmed/probable cases.



213 cases of RMSF in 2020

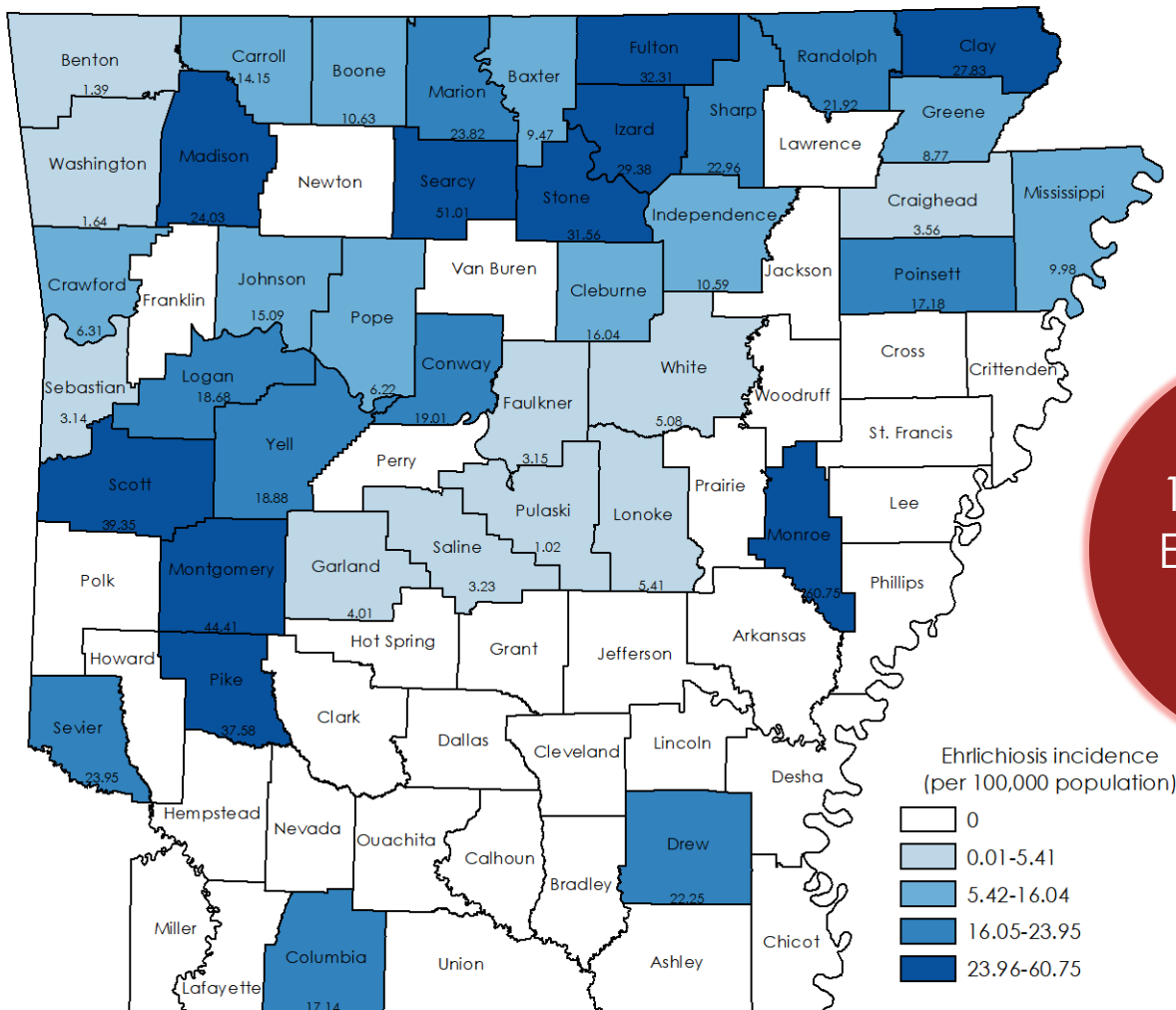
Tick-borne Diseases



Ehrlichiosis

Ehrlichiosis is the general name used to describe several bacterial diseases that affect animals and humans. Human ehrlichiosis is a disease caused by at least three different ehrlichial species in the United States: *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, and a third *Ehrlichia* species provisionally called *Ehrlichia muris-like* (EML).

The ADH investigated 267 reports of Ehrlichiosis in 2020, resulting in 163 confirmed/probable cases (three cases of *E. ewingii* and 160 cases of *E. chaffeensis*).



163 cases of Ehrlichiosis in 2020

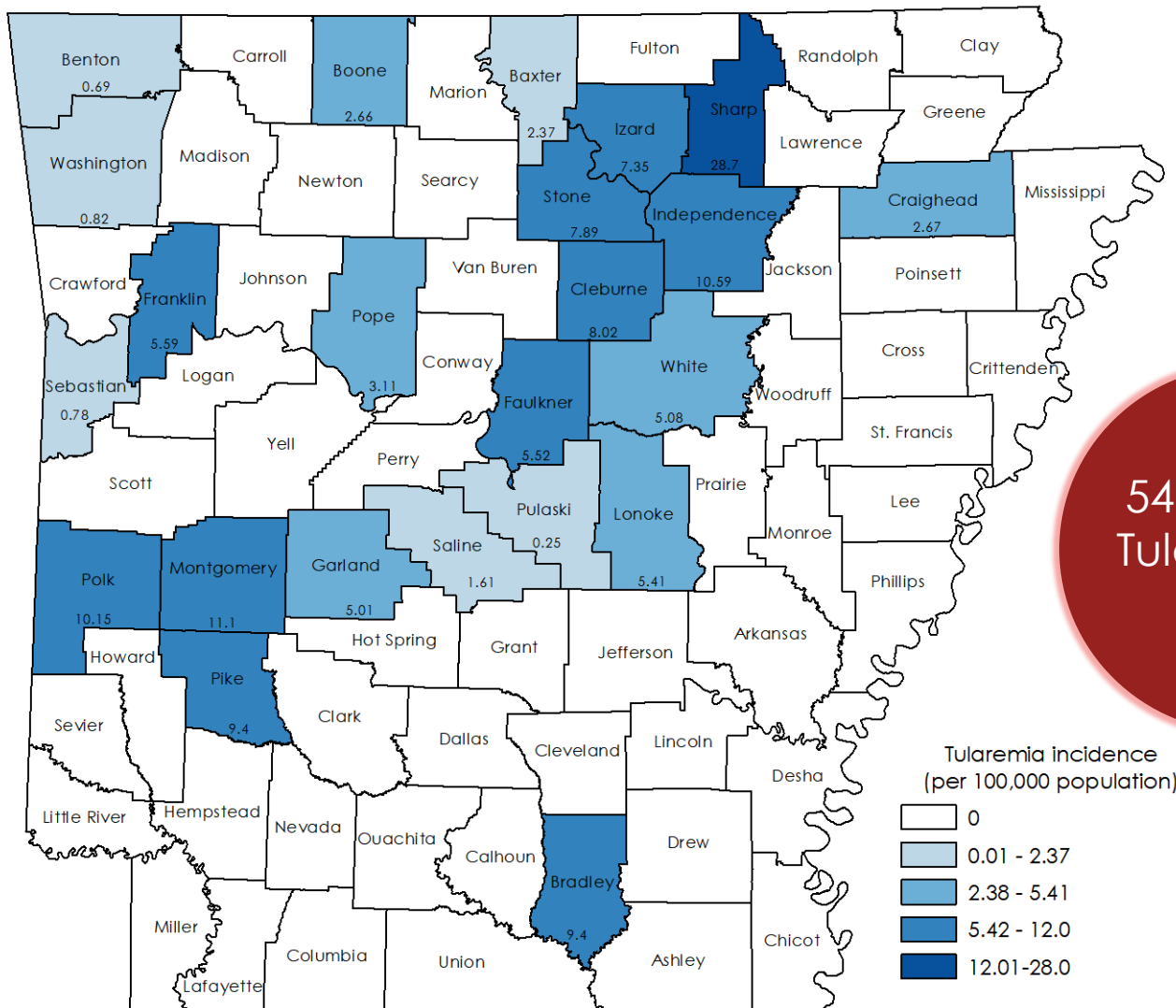
Tick-borne Diseases



Tularemia

Tularemia is an uncommon but potentially serious bacterial zoonosis that has been reported from all U.S. states except Hawaii. The etiologic agent, *Francisella tularensis*, is highly infectious and can be transmitted through arthropod bites, direct contact with infected animal tissue, inhalation of contaminated aerosols, and ingestion of contaminated food or water.

The ADH investigated 115 reports of Tularemia in 2020, resulting in 58 confirmed/probable cases.



54 cases of Tularemia in 2020

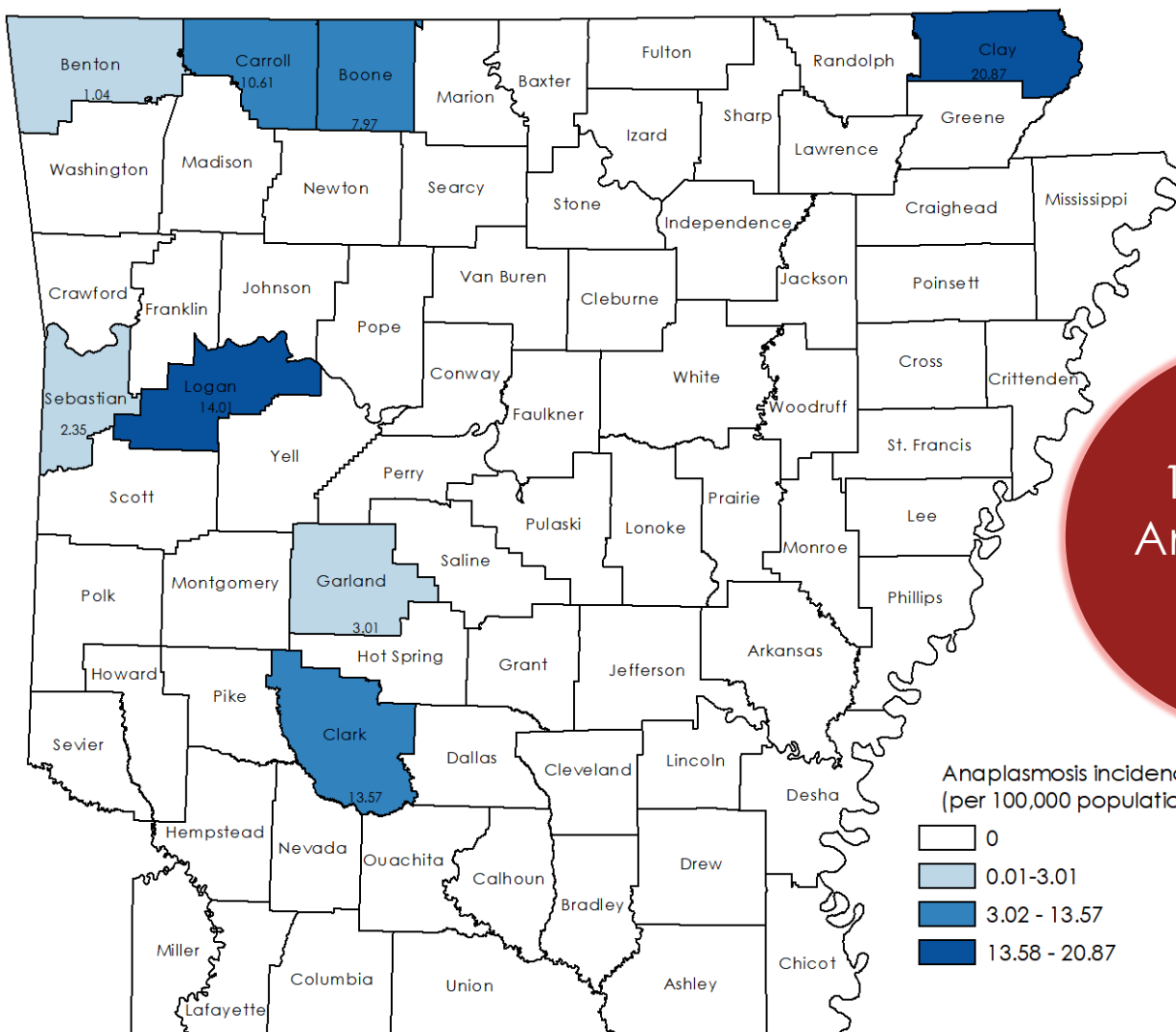
Tick-borne Diseases



Anaplasmosis

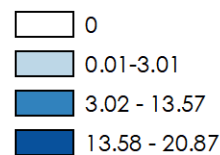
Anaplasmosis is a disease caused by the bacterium *Anaplasma phagocytophilum*. These bacteria are spread to people by tick bites primarily from the blacklegged tick (*Ixodes scapularis*) and the western blacklegged tick (*Ixodes pacificus*).

The ADH investigated 26 reports of Anaplasmosis in 2020, resulting in 11 confirmed/probable cases.



11 cases of
Anaplasmosis
in 2020

Anaplasmosis incidence
(per 100,000 population)



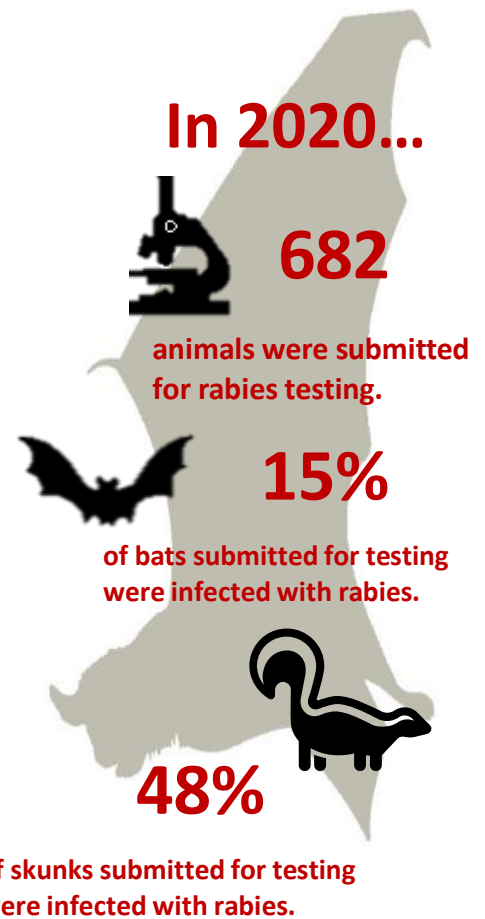
Rabies



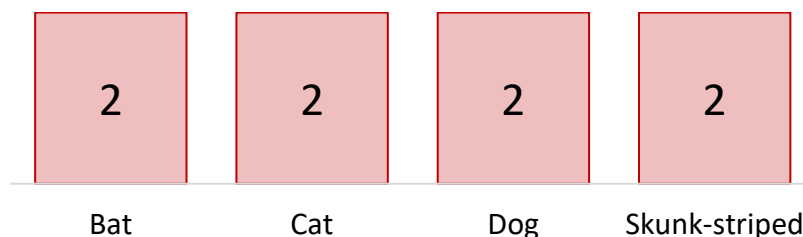
Rabies is a deadly but preventable viral disease of mammals most often transmitted through a bite from an infected animal. The rabies virus is transmitted when saliva from an infected animal is exposed to broken skin or mucous membranes. Rabies infects the central nervous system, which causes disease in the brain and death in almost 100% of symptomatic cases.

In Arkansas, the State Public Health Veterinarian and the Zoonotic Epidemiologists coordinate positive animal rabies follow-up, including the quarantines for domestic animals and the risk assessments of people exposed to rabid animals.

Additionally, the State Public Health Veterinarian coordinates the recommendation for Post-Exposure Prophylaxis (PEP) for all animal bites and exposures, whether the rabies status is known or not. Arkansas Department of Health (ADH) Environmental Health Specialists (EHS) conduct quarantine monitoring in instances of animal exposures throughout the year.



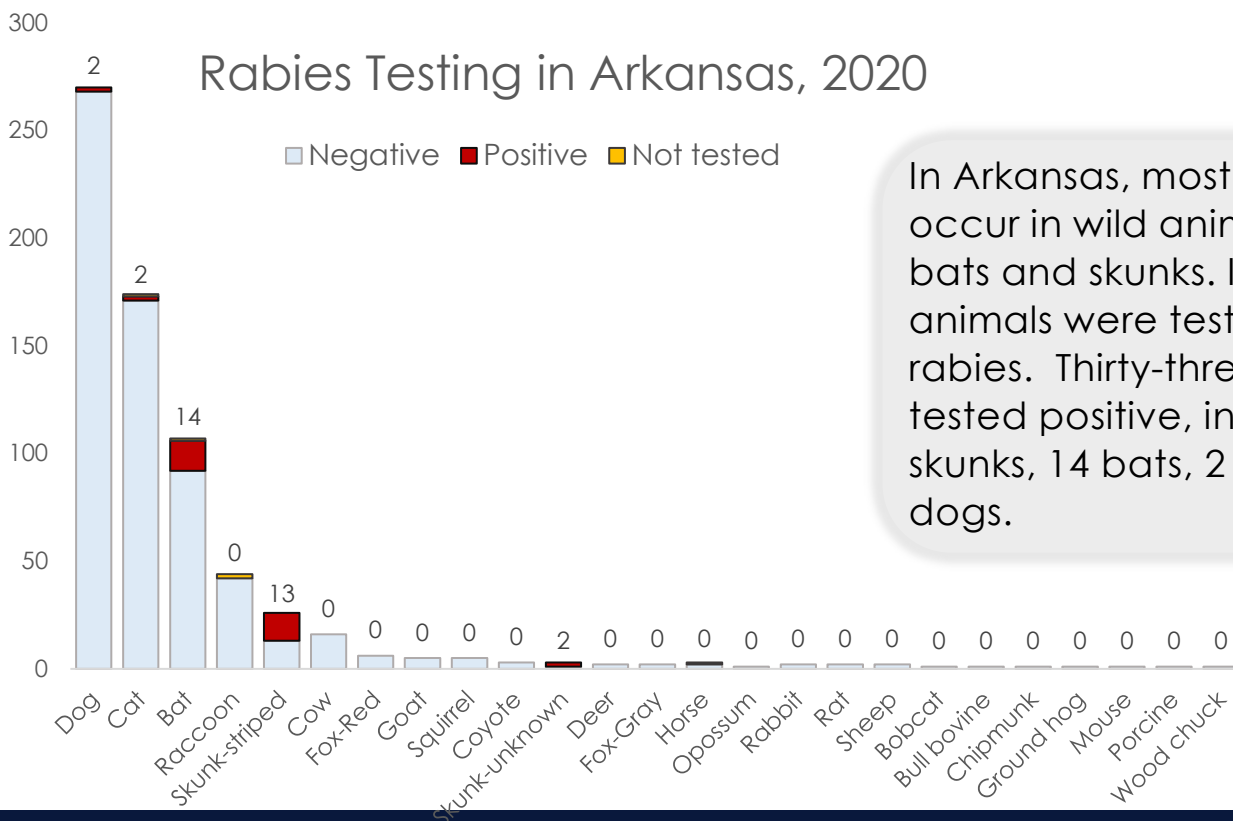
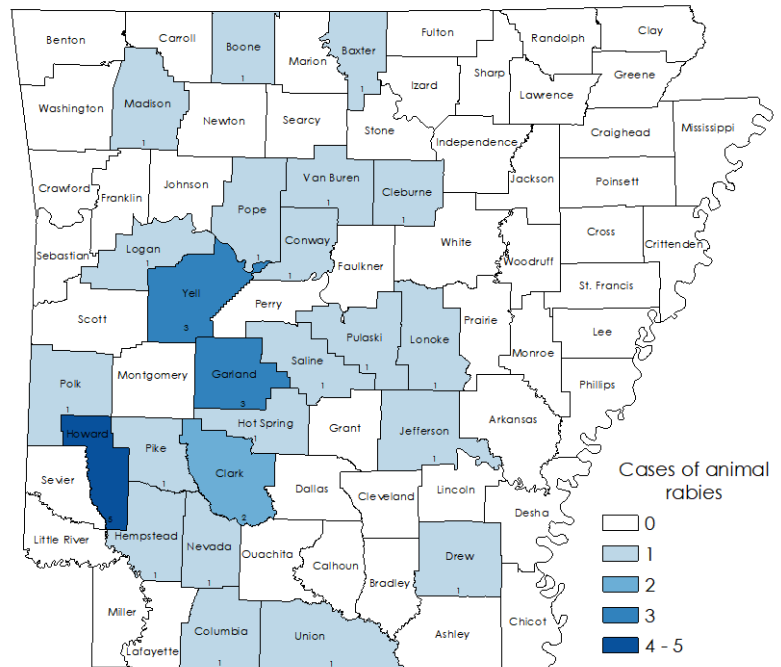
Human exposures in 2020 by species



Rabies



The data collected on rabies is from a passive surveillance system. The data is dependent on informed veterinarians, animal control officers, and citizens submitting specimens of suspect animals. Surveillance is incomplete, and the incidence of rabies is likely to be underestimated.



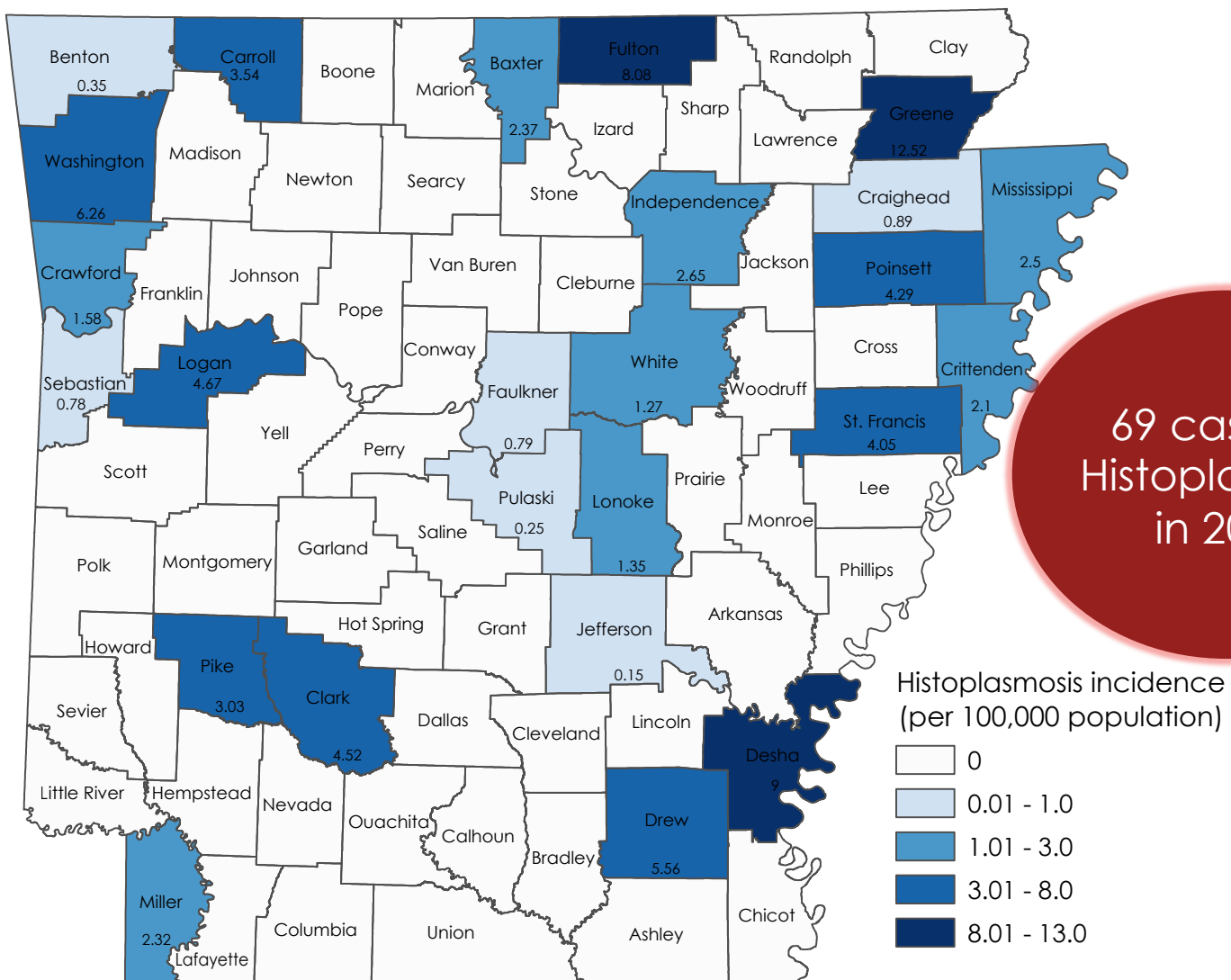
In Arkansas, most rabies cases occur in wild animals such as bats and skunks. In 2020, 682 animals were tested for rabies. Thirty-three animals tested positive, including 15 skunks, 14 bats, 2 cats, and 2 dogs.

Fungal Diseases



Histoplasmosis and blastomycosis are both endemic in Arkansas, and are on Arkansas's reportable disease list, however, the Arkansas Department of Health receives no State funding for surveillance and/or control of these diseases. Coccidioidomycosis, while not known to be endemic in Arkansas, is also on Arkansas's reportable disease.

The ADH investigated 159 reports of histoplasmosis, 51 reports of blastomycosis, and 11 reports of coccidioidomycosis in 2020, resulting in 69, 21, and 8 confirmed/probable cases, respectively.



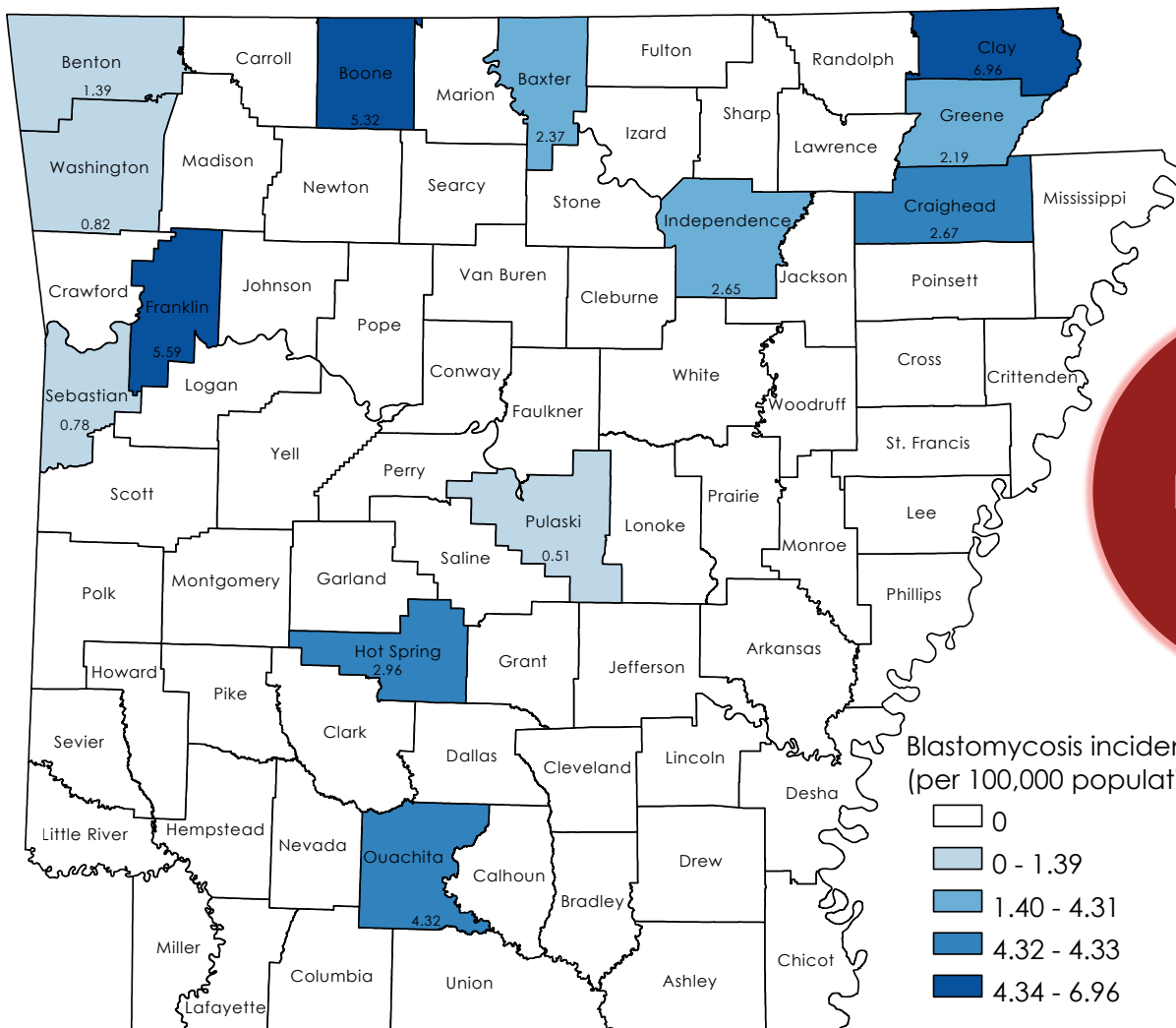
69 cases of Histoplasmosis in 2020

Fungal Diseases



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21 cases of Blastomycosis in 2020

Blastomycosis incidence (per 100,000 population)

- 0
- 0 - 1.39
- 1.40 - 4.31
- 4.32 - 4.33
- 4.34 - 6.96



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