



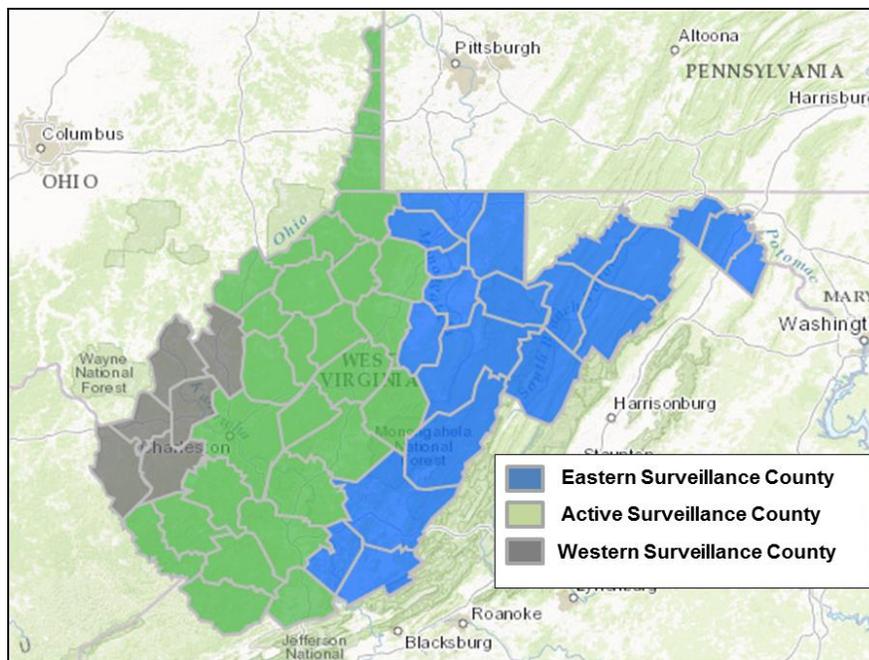
# WEST VIRGINIA 2016 ANNUAL ANIMAL RABIES REPORT

## INTRODUCTION

Rabies is a serious viral infection that is almost 100% fatal. The virus is usually passed to humans through the bite of a rabid animal but can also be spread if the saliva of an infected animal gets into a fresh scratch or break in the skin, or makes contact with mucous membranes (e.g. eyes, mouth, nose).

Different variants (types) of rabies virus are found in the environment. Raccoon rabies variant is found in the eastern United States and in West Virginia; skunk and fox strain are the variants found in the middle and western part of the country. Most cases of rabies in West Virginia occur in wild animals such as raccoons and skunks, though many other mammalian species have been reported as being rabid. To prevent the spread of rabies to other animals and humans, animal bites and other potential rabies exposures (e.g. scratches) are reportable to the local health department within 24 hours according to West Virginia state law.

Counties in West Virginia are divided into three surveillance regions: the Western Surveillance Region, the Eastern Surveillance Region, and the Active Surveillance Region (Figure 1). The Eastern Surveillance Region is important because West Virginia has historically reported animals that were positive for the raccoon rabies variant in these counties. Counties in the Active Surveillance Region serve as a buffer zone between the Eastern and Western Surveillance Regions; the hope is that the number of animals with raccoon rabies variant in this region will reach zero, thus preventing western expansion of raccoon rabies variant. Counties in the Western Surveillance Region have never reported raccoon rabies variant. Bat rabies variant is prevalent throughout West Virginia and the United States.



**Figure 1.** Rabies Surveillance Regions in West Virginia, 2016.

Because rabies is a viral infection of the central nervous system, the brain of a suspected rabid animal is tested for rabies. Brain specimens of suspected rabid animals are routed

through local health departments to the West Virginia Office of Laboratory Services (WVOLS) for testing. The United States Department of Agriculture Wildlife Services (USDA-WS) actively looks for rabid animals (raccoons and skunks) in West Virginia and conducts their own testing of raccoons and skunks.

To monitor rabies activity in West Virginia, data are collected and analyzed each year. This report details animal rabies surveillance activities conducted by West Virginia agencies during 2016.

## **METHODS**

### *Specimen Submission*

Whole specimens from smaller animals (e.g. rodents and bats) and heads from larger animals (e.g. cats, dogs, raccoons, skunks, and livestock) were double-bagged and shipped on frozen cold packs to WVOLS.

### *Testing*

The Rabies Unit in WVOLS uses the direct fluorescent antibody (DFA) test to detect the rabies virus in animal (mammal) brain tissue. DFA is the only diagnostic method recommended by the Centers for Disease Control and Prevention for routine testing of animal tissue. DFA binds to rabies proteins (antigens) creating an antibody-antigen complex. Specimens are viewed under a microscope fitted with a special filter that detects fluorescence of the antibody-antigen complex in rabies-positive tissue.

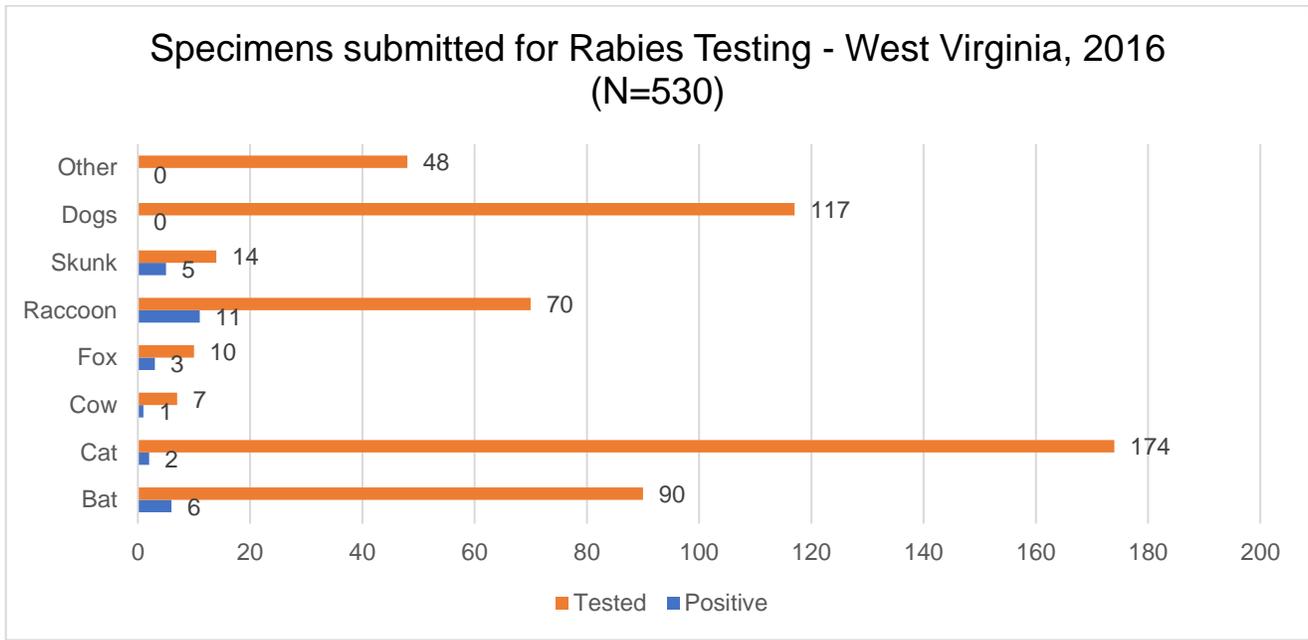
### *Data Collection*

Data related to the location (address, county, geographic coordinates), date of collection, species, submitter, reason for testing and type of exposure (human/pet, bite/scratch) were collected on a specimen submission form and were submitted to WVOLS with each specimen. Data is collected and stored in an Excel database for analysis. Maps were generated using ArcGIS Maps for Office.

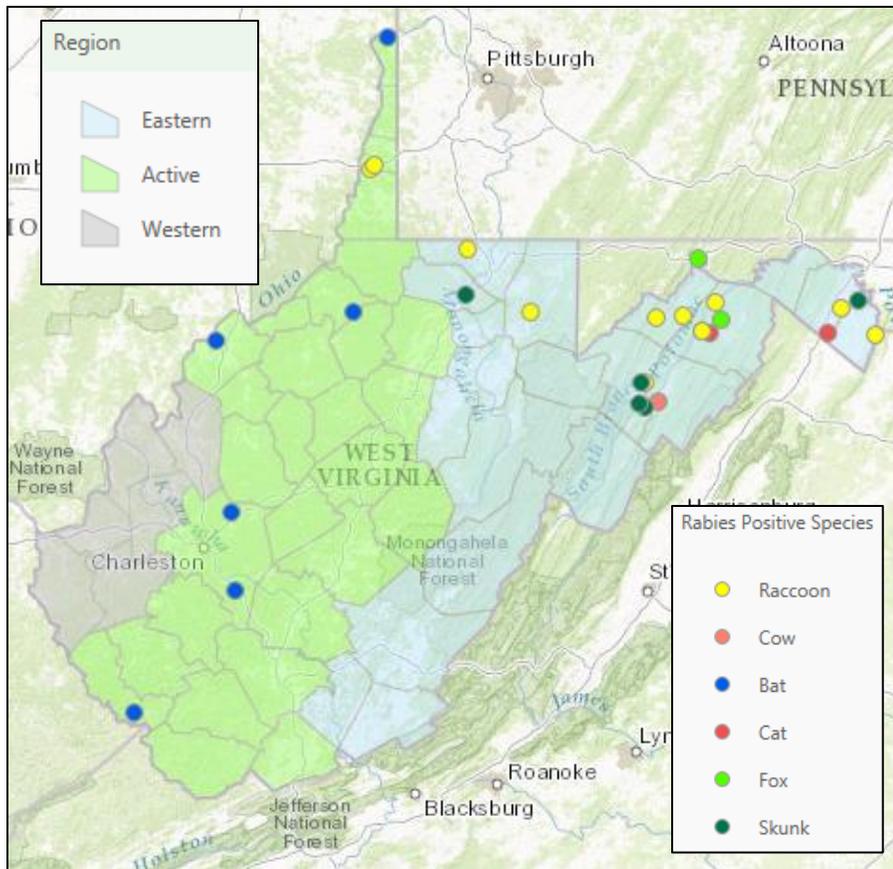
## **RESULTS**

In 2016, the WVOLS tested 530 specimens for rabies of which 28 (5.3%) were positive for rabies (Figure 2). Raccoons, bats, and skunks (n=22) accounted for 78.6% of positive animals. Additionally, the USDA tested and reported another five specimens as rabies positive through their surveillance activities. The USDA data is separate and distinct from the WVOLS data.

Fifteen (27.3%) of West Virginia's 55 counties reported at least one rabies-positive animal (Figure 3). No animals tested positive for rabies from the Western Region, while 20 (71.4%) animals tested positive from the Eastern Region and eight (28.6%) animals tested positive from the Active Surveillance Region. Hampshire County (N=5) reported the most number of rabies positive animals followed by Berkeley County (N=3) and Mineral County (N=3).

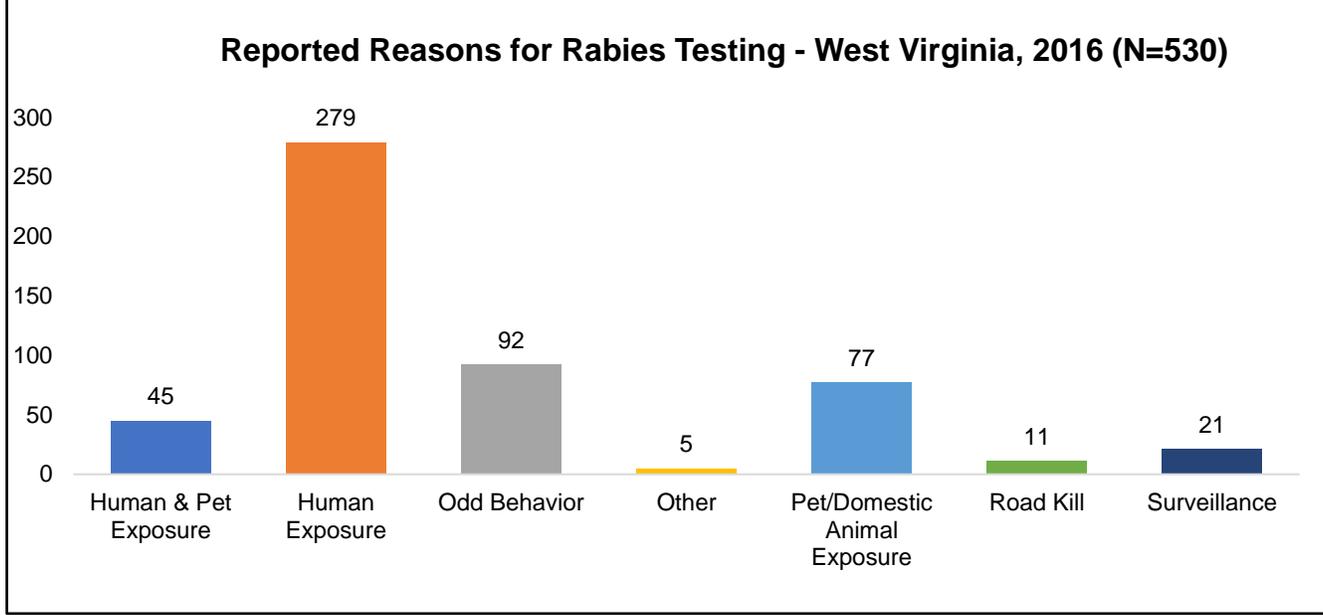


**Figure 2.** Rabies testing by animal species – West Virginia, 2016 (N=530). Raccoons, bats, and skunks represented the majority of rabies positive species. Other animals tested include a beaver, chipmunks, a coyote, horses, a goat, groundhogs, a mink, opossum, rabbits, rodents, and a weasel.



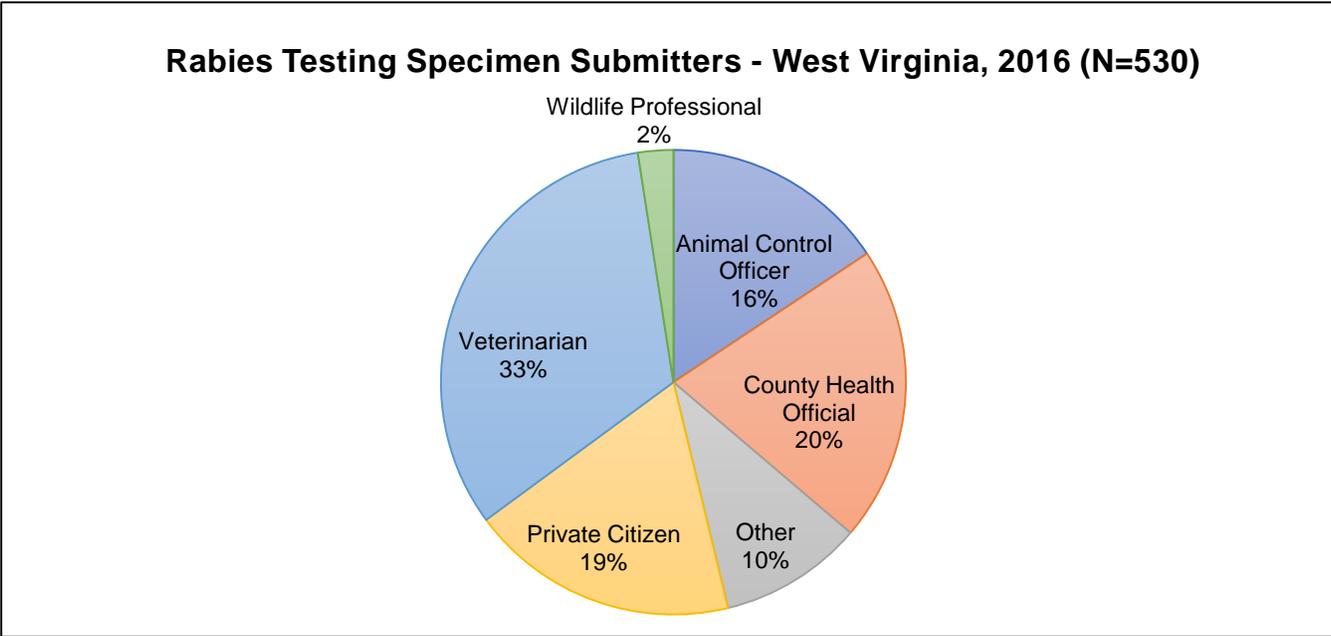
**Figure 3.** Rabies Positive Specimens Map in West Virginia, 2016 (N=28). Rabies positive specimens were predominantly in the Eastern Surveillance Region, followed by the Active Surveillance Region. No rabies positive specimens were found in the Western Surveillance Region.

Of the 530 specimens tested, 324 (61.1%) were due to some type of human or human/domestic animal exposure (i.e. bite, scratch, mucus membrane contact, etc.). Two hundred-six specimens (38.9%) were tested for non-human surveillance purposes (Figure 4).



**Figure 4.** Reasons for Rabies Testing in West Virginia, 2016 (N=530). Human and domestic pet exposure were the primary reasons for rabies testing in West Virginia.

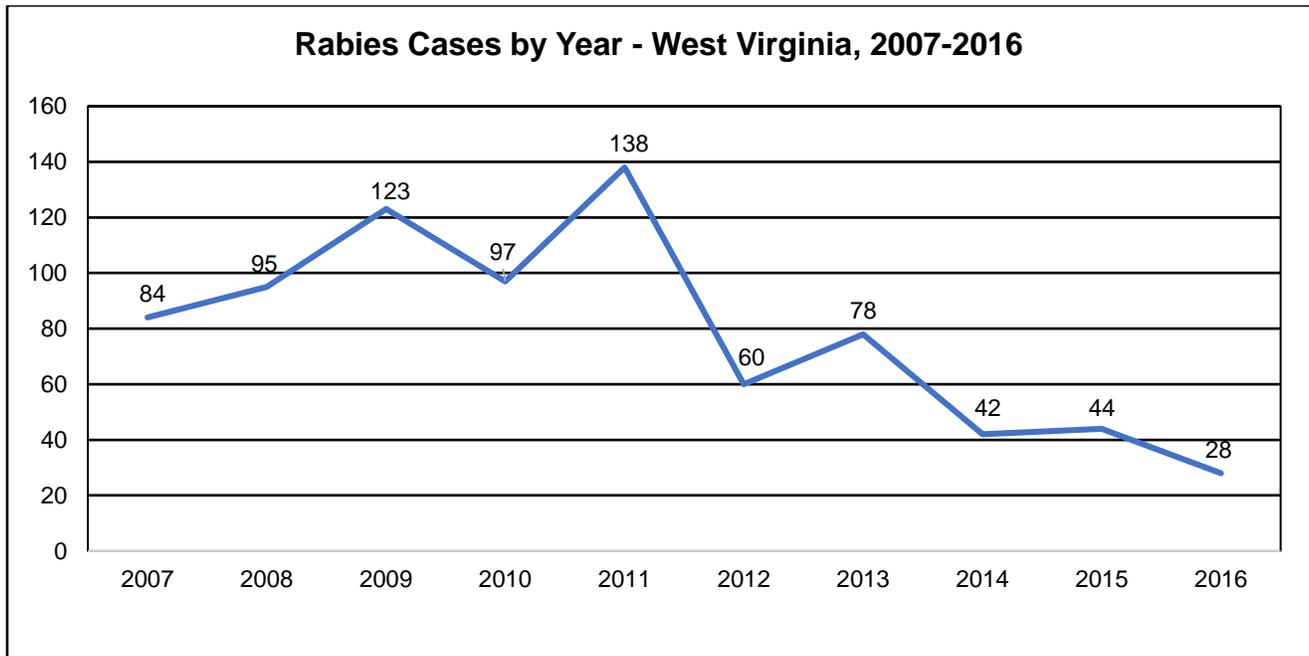
Specimens were submitted by various sources (Figure 5). Veterinarian offices accounted for the majority of specimen submissions (33%), followed by animal county health officials (20%), private citizens (19%), and animal control officers (16%).



**Figure 5.** Rabies Testing Submitters in West Virginia, 2016 (N=530). Specimen submissions were received from multiple sources throughout the State of West Virginia.



Since 2011, the number of animal rabies cases has been decreasing (Figure 7) although it is not a perfect decline. One such explanation may be the success of ORVP in vaccinating wild animals potentially exposed to rabies in the Active and Eastern Surveillance Regions.



**Figure 7.** Rabies Cases by Year in West Virginia, 2007–2016. The number of rabies-positive specimens has been declining.

West Virginia has not reported a human rabies case since 1994. Rabies surveillance in animals is essential to preventing infections in people. There are many things that can be done to prevent potential human exposures to rabies:

- Keep garbage in a secured trashcan.
- Feed pets indoors or remove food from bowls when feeding them outdoors.
- Teach children to appreciate wildlife from a distance.
- Vaccinate pets (dogs, cats, and ferrets) against rabies.
- Contact your local health department if you see a strange-acting animal or if a wild or domestic animal bit you.

The Zoonotic Disease Program in DHHR’s Bureau for Public Health would like to thank the many public health partners who have contributed data provided in this report. For additional information about rabies surveillance, visit:

- **Division of Infectious Disease Epidemiology Animal Bites and Rabies Webpage:**  
<http://www.dhhr.wv.gov/oeps/disease/Zoonosis/Pages/default.aspx>
- **Centers for Disease Control and Prevention Rabies Webpage:**  
<http://www.cdc.gov/rabies/index.html>
- **United States Department of Agriculture Rabies Webpage:**  
[https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nrmp/ct\\_rabies](https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nrmp/ct_rabies)