# WEST VIRGINIA 2017 ANNUAL ANIMAL RABIES REPORT

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Office of Epidemiology and Prevention Services
Division of Infectious Disease Epidemiology
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## INTRODUCTION

Rabies is a serious viral disease that has a fatality rate of almost 100% if left untreated. The virus is contracted by humans and other animals through bites or scratches from mammals infected with rabies virus. Infection can also occur by way of contact with the saliva of an infected animal with open wounds or contact with mucous membranes such as the eyes and interior of the nose and mouth.

There are different strains of the rabies virus found throughout the United States. In West Virginia, the main type found is the raccoon strain. Most cases of rabies in this state are found in wild animals such as raccoons, skunks and bats, but the virus can spread to many other mammals. Bat strain rabies is widespread across the state and United States. Rabies is considered a Category II infectious disease, and any case in a human or animal is required by state law to be reported to a local health department (LHD) within 24 hours to help prevent the spread of the disease.

There are three rabies surveillance regions in West Virginia: Eastern Surveillance Region, Active Surveillance Region, and Western Surveillance Region (Figure 1). Raccoon strain of rabies is prevalent in the eastern part of the United States. West Virginia has not reported raccoon strain rabies in the Western Region and has instituted surveillance measures to prevent westward expansion of this variant. The majority of animal rabies cases are found in the Eastern Surveillance Region.

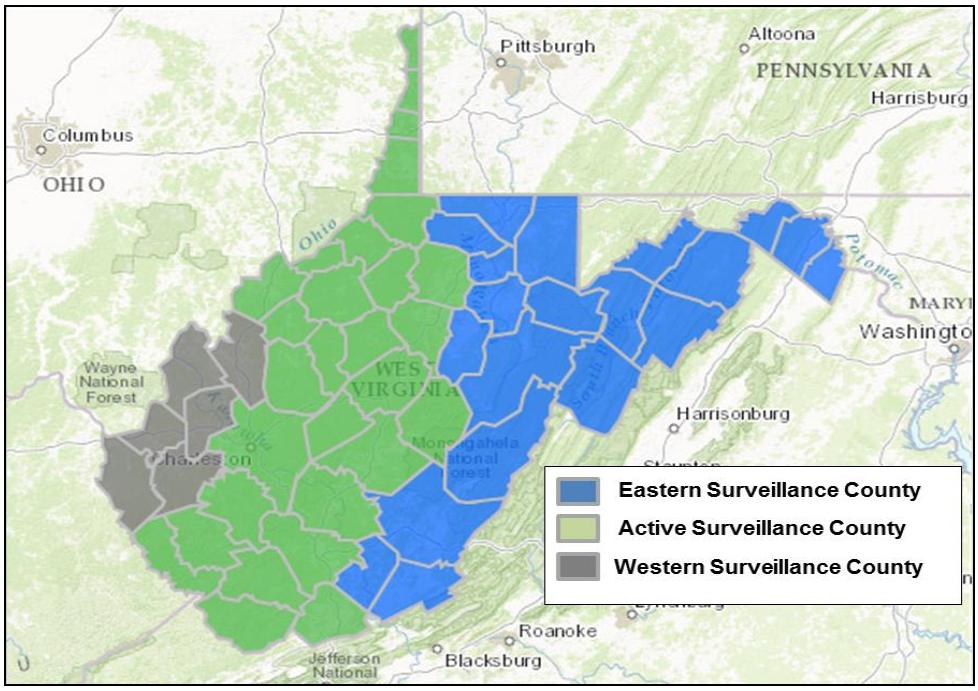


**Figure 1**. Rabies surveillance counties in West Virginia based on monitoring for raccoon variant rabies. Western surveillance counties have not historically reported raccoon rabies. Active surveillance counties report raccoon rabies in lower numbers and are targeted for vaccine intervention. Eastern surveillance counties report the most number of animal rabies cases.

The Active Surveillance Region serves as a buffer zone between the Eastern and Western Regions and contains the area in which Oral Rabies Vaccine (ORV) Project is conducted, an initiative led by the United States Department of Agriculture (USDA). The ORV Project was started in 1997 to prevent the geographic spread of rabies in the United States. Every year towards the end of August, vaccine baits

are spread by plane to targeted areas where expansion of rabies is a concern. In West Virginia, the bait zone includes counties in both the Active Surveillance and Eastern Regions. The hope is that uninfected raccoons and skunks eat the bait and become inoculated against the virus, preventing it from further spreading among wildlife. Figure 2 shows the 2017 ORV bait zone for West Virginia.

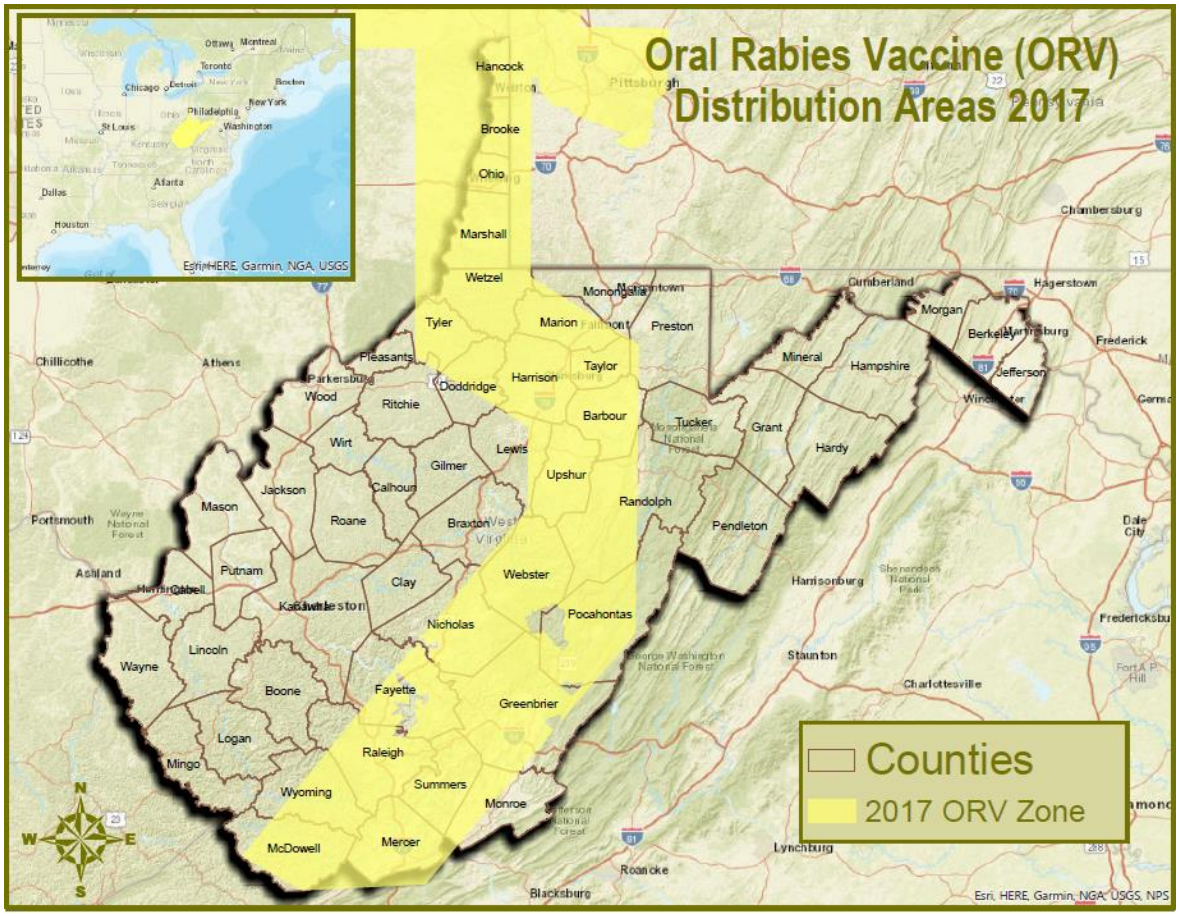


**Figure 2**. 2017 ORV Project distribution areas (courtesy of USDA).

Rabies virus affects the central nervous system of mammalian hosts. Testing the brain of the suspected rabid animal is the best way to determine if an animal is actually rabid. In West Virginia, specimens are sent to the West Virginia Office of Laboratory Services (WVOLS) within the West Virginia Department of Health and Human Resources (DHHR) for testing. To monitor rabies activity in West Virginia, data are collected and analyzed each year and compiled into a report detailing the rabies surveillance activities over the previous year.

## METHODS

*Specimen Submission*

Whole specimens from smaller animals (bats, small rodents) and heads from larger animals were shipped on ice to WVOLS Rabies Unit for testing. If the specimen is too large for shipping, only the brain should be sent. USDA also tested some animals for surveillance purposes and sent the data to DHHR's Division of Infectious Disease Epidemiology for cumulative reporting.

*Testing*
Specimens are tested using the direct fluorescent antibody (DFA) test to detect the rabies virus in animal brain tissue. Only specimens that contained a brain specimen in satisfactory condition (had not been buried, did not show signs of decomposition, etc.) are tested.

*Data collection*
Data related to the species, location (address, county, geographic coordinates), date of collection, who submitted the specimen (e.g. veterinarian, county official) and the reason for submission (e.g. human exposure, pet/domestic animal exposure) were collected on a specimen submission form which is sent in with the specimen to WVOLS. USDA collects its own testing data which includes species and location information.

**RESULTS**

In 2017, the WVOLS tested 481 specimens for rabies of which 29 (6.03%) were positive. Raccoons and skunks (n=21) accounted for 72.4% of all positive animals (Figure 3). Other rabies positive animals include four cats, one bat, two foxes, and one cow. Other animals tested include dogs, rabbits, squirrels, and goats.

USDA also tested an additional 514 specimens for surveillance purposes in 2017. Of these, nine (1.75%) were positive raccoons found in the Eastern or Active Surveillance regions. Raccoons also accounted for most specimens the USDA tested (455 of 514 specimens or 88.5%). Other animals tested include two cats, five coyotes, 16 foxes, four woodchucks, 31 skunks, and one opossum, all of which were negative.

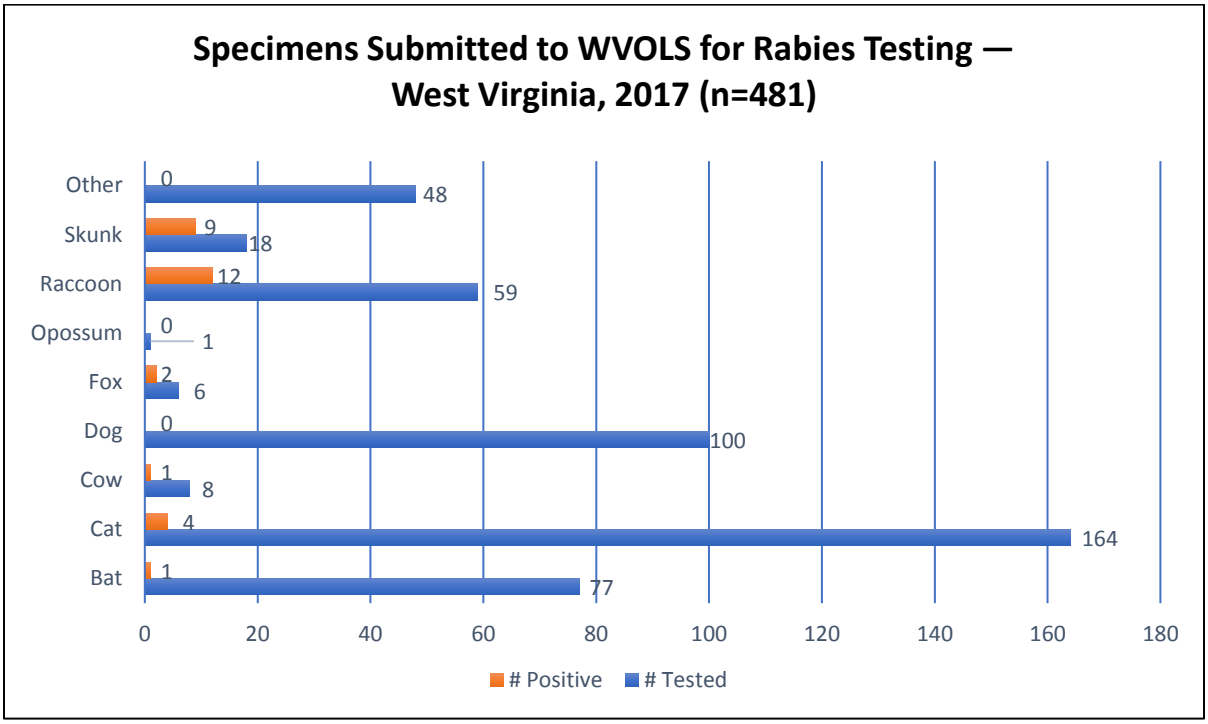


**Figure 3.** Specimens submitted to WVOLS by animal species, 2017.

Seventeen West Virginia counties (30.9%) had rabies positive animals in 2017 (Figure 4). None of the positive animals were from the Western Surveillance Region. Six (15.8%) were found in the Active Surveillance Region. Three were found in Ohio County (two raccoons and a bat), two raccoons in Marshall County, and one in Brooke County. The remaining 32 (84.2%) rabies positive animals were reported from the Eastern Surveillance Region.

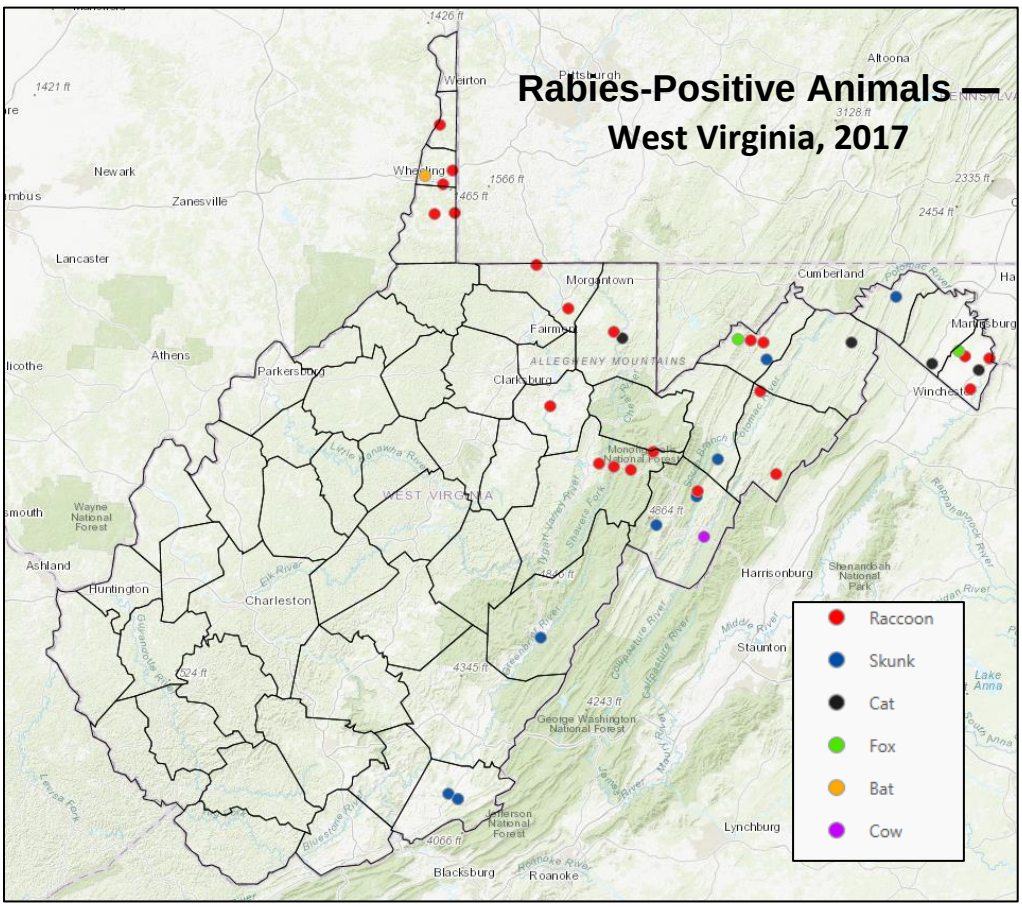


**Figure 4.** Rabies positive animals by county and species, 2017.

Most specimens were sent for testing as a result of human exposure to a potentially rabid animal (319 or 66.3%) (Figure 5). Pet and other domestic animal exposure attributed the next highest number of specimens tested (72 or 14.9%), followed by animals exhibiting odd behavior (27 or 5.6%).

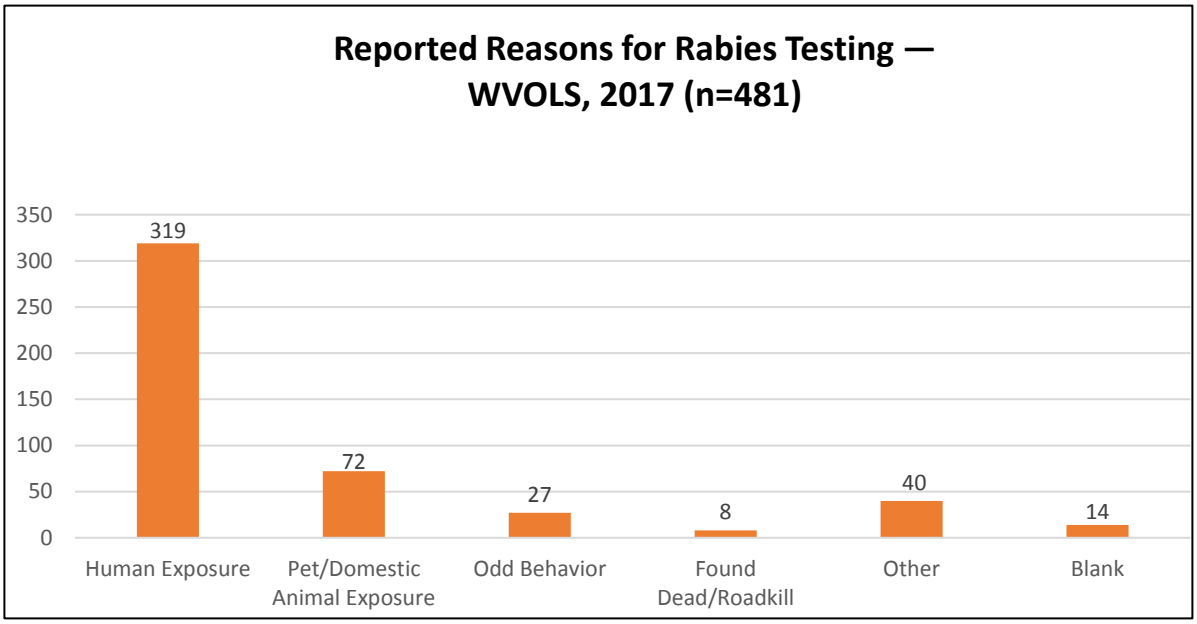


**Figure 5.** Reasons for submitting animal brains for rabies testing to WVOLS in 2017.

Most (39%) specimens were submitted by veterinarians (Figure 6). Animal control officers (17.4%), private citizens (16.8%) and county health officials (14.7%) also submitted many specimens.

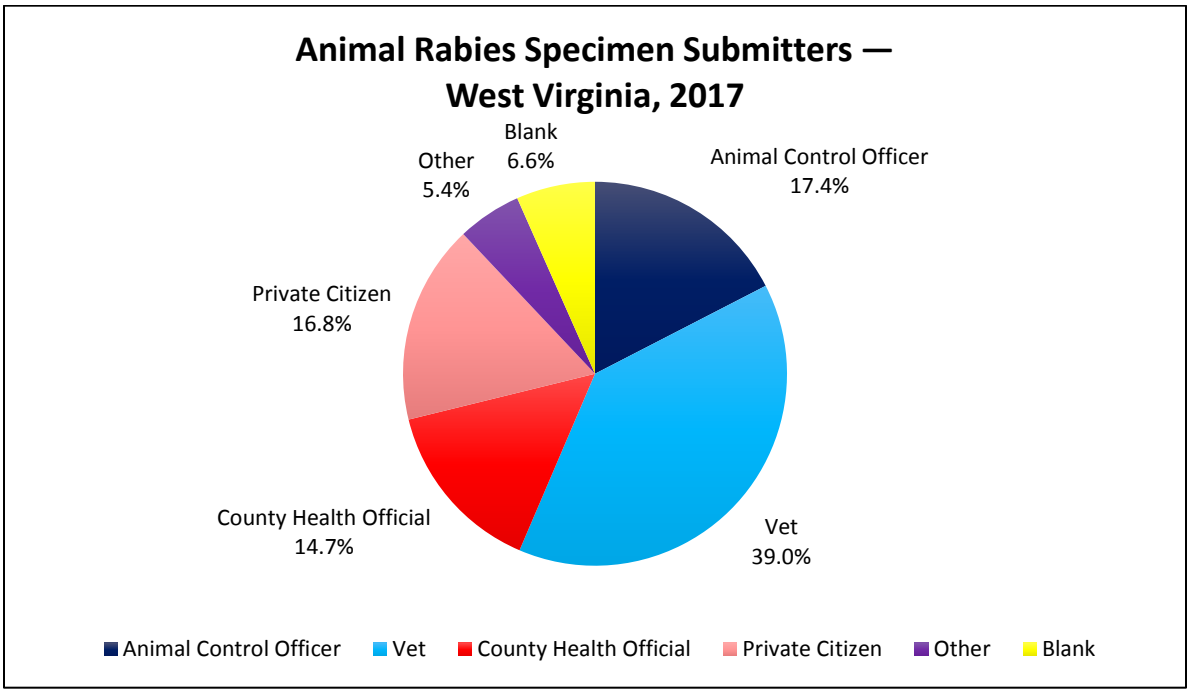


**Figure 6.** Percentage of animal rabies specimen submitters during 2017.

**DISCUSSION**

Cases of rabies are reported each year in West Virginia, with the majority of those coming from the Eastern Surveillance Region. In 2017, about 55% of animals tested by WVOLS were either dogs or cats which only accounted for four of the positive tests (3.4%). The USDA tests mostly wild animals (99.6% of their testing) for surveillance purposes. Domestic animals, such as dogs or cats, who are either not up to date on their rabies vaccinations or have never been vaccinated, are considered for rabies testing. Most positive rabies cases came from wild animal specimens (86%).

Specimens for rabies testing are sent in by many different submitters for many different reasons. Veterinarians, county health officials, animal control officer, and private citizens comprise most specimen submitters. The most popular reasons for sending specimens for testing include human exposure, pet/domestic animal exposure, and odd behavior. All specimens are tested using the DFA test prescribed by the Centers for Disease Control and Prevention for positive identification of the virus.

The number of specimens tested by WVOLS dropped approximately 9% in 2017 compared to 2016 (530 in 2016, 481 in 2017) (Figure 7). Skunks and raccoons are still the animals with the highest number of positive cases. Dogs and cats are the two animals tested most often in both years by WVOLS and have a relatively small percentage of positive cases when compared to number tested (dogs: 0% in both years, cats: 2016 - 1.1%, 2017 - 2.4%). Vaccinating pets for rabies is the most effective way to reduce the number of domestic animals that are tested for rabies.

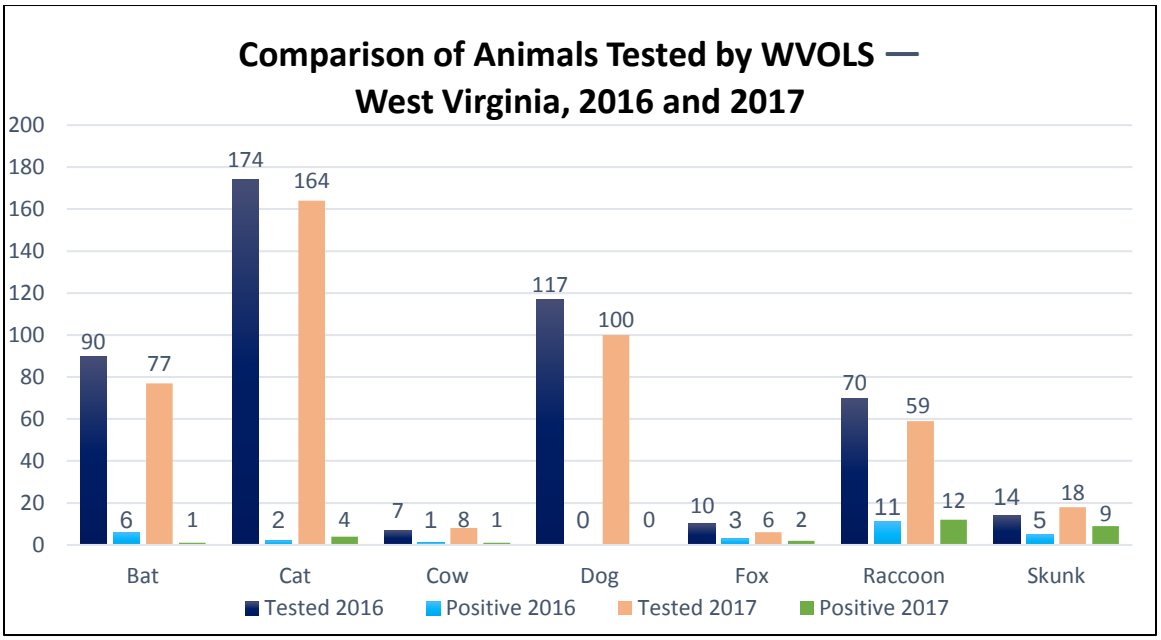


**Figure 7.** Number of animals tested and positive for rabies during 2016 and 2017.

Reported animal rabies cases have been declining since 2011. There was almost no change in the number of positive rabies cases tested between 2016 and 2017, and both were lower than previous years. One major reason for this could be the success rate of the ORV Project in vaccinating wild animal

populations. The goal is to eventually eradicate raccoon rabies in the state of West Virginia. There is no risk of getting rabies from touching the vaccine packet, but it is advised to use gloves or some other type of barrier because adverse skin reactions can occur from direct contact. Any packets found on personal property should be moved to an area where raccoons might find them.

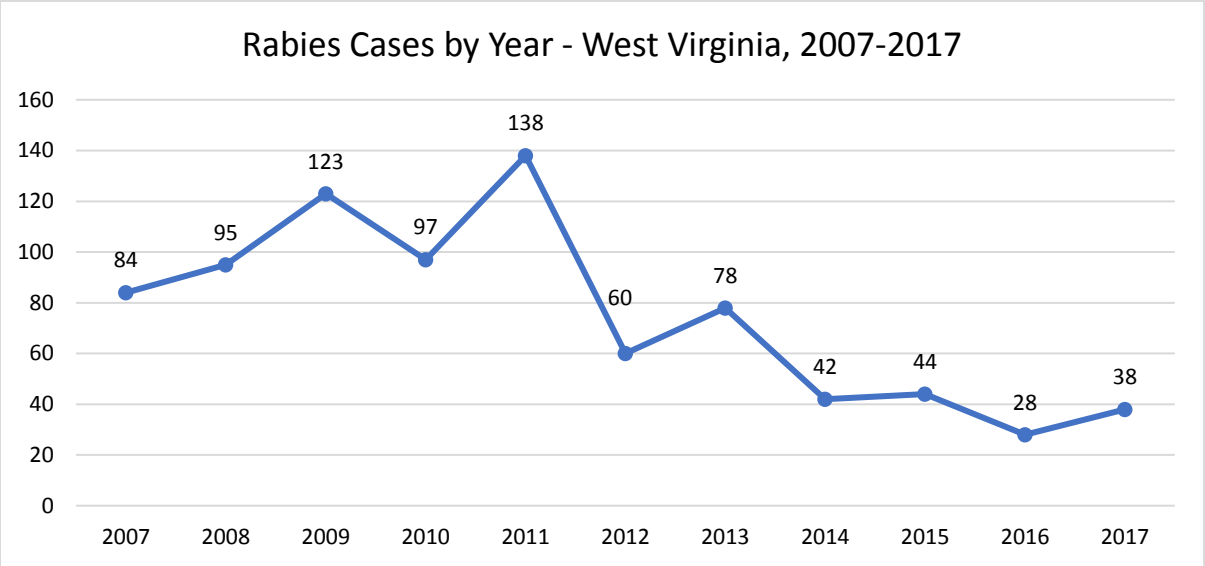


**Figure 8.** West Virginia rabies cases by year, 2007-2017.

A bite or scratch by any wild animal that could possibly carry the virus (e.g. bat, skunk, raccoon, fox, etc.) is considered evidence enough for treatment in humans, unless the animal can be found and tests negative. There has not been a human case of rabies reported in the state of West Virginia since 1994. The main reason for this is the continued surveillance of rabies in wild animal populations in this state. To prevent exposure to the rabies virus:

- Keep garbage in a secured trashcan.
- Feed pets indoors or remove food from bowls when feeding them outdoors.
- Teach children not to approach any wild animals or unfamiliar cats/dogs.
- Vaccinate pets against rabies.
- Do not keep wild animals, such raccoons, as pets.
- Contact your LHD if you see an animal acting strangely or if you have been bitten by a wild or unfamiliar domestic animal.

The DHHR's Zoonotic Disease Program in the Bureau for Public Health, Office of Epidemiology and Prevention Services, Division of Infectious Disease Epidemiology would like to thank the many public health partners who have contributed the data provided in this report. For additional information about rabies surveillance, visit:

- **Division of Infectious Disease Epidemiology Animal Bites and Rabies Webpage:** //dhhr.wv.gov/oeps/disease/Zoonosis/Rabies/pages/rabies.aspx
- **Centers for Disease Control and Prevention Rabies Webpage:** //www.cdc.gov/rabies/index.html

- **United States Department of Agriculture Rabies Webpage:** //www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nrmp/ct_rabies
- **West Virginia Office of Laboratory Services Webpage:** //www.wvdhhr.org/labservices/labs/rabies/index.cfm