Rabies

Rabies is a Class A Disease and must be reported to the state within 24 hours by calling the phone number listed on the web page.

Classical rabies virus, family Rhabdoviridae, genus Lyssavirus, causes acute encephalitis in all warm-blooded hosts, including humans. One or two cases of human rabies are reported annually in the United States. The case fatality rate is generally considered to approach 100%. In the U.S., less than 10% of reported cases occur in domestic animals or pets. Classical rabies virus consists of several subtypes, or variants, whose nomenclature reflects the primary reservoir in nature, e.g. skunk variant, raccoon variant, bat variant, etc.

There are also many related lyssaviruses. All known lyssaviruses are thought to cause a neurological disease identical to rabies in humans and other warm-blooded hosts. These related lyssaviruses have been discovered primarily in bats in Europe, Asia, Australia and Africa. Rabies and other lyssaviruses have been classified into three phylogroups. A vaccine exists that is protective against rabies virus, but this vaccine is thought to be protective only against related lyssaviruses in Phylogroup I.

All species of mammals are susceptible to classical rabies, but only a few species are considered important reservoirs, such as bats, skunks, raccoons, foxes and coyotes. Most of these reservoirs harbor specific variants of the virus in distinct geographic locations. Figure 1 illustrates the distribution of terrestrial rabies variants throughout the U.S. and Puerto Rico.

Figure 1: Distribution of major rabies virus variants among mesocarnivores
United States and Puerto Rico, 2008 to 2015
Southern skunk variant and several bat variants of rabies are endemic in Louisiana. The cases reported in Louisiana reflect these predominant virus variants (skunk and bat). Active surveillance for wildlife rabies is not conducted in Louisiana; therefore, the number of cases reported does not reflect the actual ecology of the virus in the state.

Examples of the erroneous picture often presented by passive surveillance is exemplified by reports of two positive skunks from De Soto Parish in 2013, and 13 positive skunks from De Soto in 2016. In 2013, De Soto Parish animal control officials documented the observation, recovery and euthanasia of 14 additional oddly behaving skunks that were not tested. In the same manner in 2016, De Soto officials documented at least 28 additional oddly behaving skunks. Many of these animals certainly could have been infected with the rabies virus.

From 2000 until 2006, a period of seven years, there were no cases of rabies reported in pet species. Since 2007, four dogs and two cats have been reported to be positive for rabies. These recent cases in pet species serve as a reminder of the importance of vaccinating pet dogs, cats and ferrets for rabies (Table 1).

Table 1: Distribution by species and year - Louisiana, 2000-2017

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Eleven different species of bats have been identified within the state of Louisiana. Each species is characterized by at least one distinct variant of rabies. Numbers of rabid bats reported in the state since 2000 have remained fairly constant, one to five reported each year. This consistency likely reflects stringent enforcement of testing policies by public health authorities, which restrict testing generally to animals involved in incidents involving interactions with people. The results may also reflect a consistent level of rabies prevalence in bat species (Figure 2).
Bat variant rabies can be transmitted to terrestrial animals. In fact, the positive dog and cat identified in 2014, the former discovered in Ouachita Parish and the latter discovered in Washington Parish, were both infected with bat variant rabies. These two cases illustrate the importance of rabies vaccination in pets, even those in urban and suburban areas, due to potential contact with bats that are often identified in such environments.

Rabid bats have been discovered in all regions of the state. Higher numbers were identified in populated areas, apparently reflecting the increased likelihood of human/bat interactions. There also appears to be a higher density of bat rabies in the western parishes extending to Rapides parish in central Louisiana (Figure 3).
The only terrestrial variant of rabies known to circulate in Louisiana is the southern skunk variant. Only a small number of rabid terrestrial animals have been reported annually in Louisiana in the past decade.

In 2017, thirteen (13) positive skunks were identified in the state, all in De Soto Parish (Figure 4). The dearth of reports of rabies in wild terrestrial animals, as stated previously, is likely due to stringent enforcement of testing guidelines and the absence of active surveillance.
The relatively high number of reported rabid skunks identified in De Soto Parish indicates the possibility of an epizootic within the area, but also reflects the proactive methods of De Soto Parish Animal Control.

The map of rabies in terrestrial wildlife illustrates the distribution of terrestrial rabies in Louisiana since 1970 (Figure 5).

Figure 5: Rabies in terrestrial wildlife - Louisiana, 1970-2017

Prior to 2010, skunk variant rabies was thought to be present in all of north Louisiana, particularly northwest Louisiana, and areas of south Louisiana west of the Atchafalaya river basin. In 2010, a rabid squirrel infected with the southern skunk variant was identified in Livingston Parish immediately adjacent to the eastern boundary of East Baton Rouge Parish. Prior to the report of the rabid squirrel, the few reports of rabies in terrestrial wildlife east of the Atchafalaya basin involved animals that had been transported to southeast Louisiana after capture, or were terrestrial animals infected with bat variant rabies. Since no evidence of transport of the rabid squirrel existed, state health officials are faced with the apparent reality that the skunk variant may have migrated east, thus the greater Baton Rouge area and all of southeast Louisiana remain in a zone of surveillance for skunk variant rabies.

Since 2010, no further occurrences of skunk variant rabies have been identified in the area where the squirrel was discovered, but surveillance continues. In the past 20 years, most cases of terrestrial rabies have been observed in two foci, one in northwest Louisiana, and a second in an
area centered in south central Louisiana (Lafayette Parish). These foci may not only reflect areas of more intense rabies transmission in skunks, but may also reflect areas with plentiful skunk habitats, or more abundant skunk habitats in areas near human habitation.

Rabies cases in agricultural animals (cattle, goats, sheep, etc.), and horses have been reported sporadically and infrequently (Figure 6).

Figure 6: Rabies cases in agricultural animals (cattle, goats, sheep), and horses - Louisiana, 2000-2017

Rabies in horses and domestic ruminants is almost always geographically and epidemiologically related to the prevalence of skunk variant rabies (Figures 7 and 8).

Figure 7: Agricultural animals, equine species, dog and cat rabies - Louisiana, 1970-2017
The predominant variant identified in dogs and cats is the skunk variant, so the regions from where pet cases of rabies have been reported correspond for the most part with the distribution of reported cases in skunks. Nevertheless, a few cases of bat variant rabies have been identified in pets.

There have been no domestically transmitted human cases of rabies reported in Louisiana since 1953. In August, 2010, Louisiana’s first human case of rabies in over 50 years was reported in a migrant worker from Michoacán, Mexico. The case investigation revealed that this 19 year-old male had been bitten on the heel by a bat approximately 2.5 weeks prior to symptom onset. At the time of the bite, the young man was employed on a ranch in Mexico, but in late July he entered the United States, eventually being employed as an agricultural worker in south Louisiana. Investigators established that the exposure had occurred in Mexico, not in Louisiana.

After the death of the young man, the U.S. Centers for Disease Control and Prevention confirmed the virus to be vampire bat variant rabies, the first human death from this particular variant reported in the United States. Due to a delay in recognition of symptoms of rabies, 95 close contacts, primarily agricultural workers and health care workers, were administered post-exposure prophylaxis to eliminate the possibility of secondary transmission.