

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. On average, one or two cases of human rabies are reported annually in the United States, although three deaths from rabies were reported in 2021, all males, two adults and one child. All three victims had been exposed to bats and none had sought post exposure prophylaxis. The case fatality rate of rabies in humans approaches 100%, with the chance of survival being so rare as to be considered negligible.

In the U. S., less than 10% of reported cases occur in domestic animals or pets. Ninety percent (90%) of cases are reported in wild mammals. 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. Fortunately, classical rabies is the only lyssavirus that circulates in the Americas.

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 United States and Puerto Rico.

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 illustrated 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 fourteen 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. Certainly, many of these animals 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 three cats have been reported to be positive for rabies (Table 1). These recent cases in pet species serve as a reminder of the importance of vaccinating pet dogs, cats and ferrets for rabies.

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. An average of 3.27 positive bats have been reported annually in Louisiana since 2000, with one each being reported in 2010 and 2021, and nine being reported in 2018. The low numbers of positives reflect 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 prevalence in bat species (Figure 2).

Figure 1: Distribution of major Rabies virus variants among mesocarnivores in the United States and Puerto Rico. The areas indicated by black diagonal stripes represents the distribution of Arizona gray fox RVV. The solid-colored areas represent RVV distributions for 2014 through 2018; dashed borders represent the previous 5-year distributions for 2013 through 2017.

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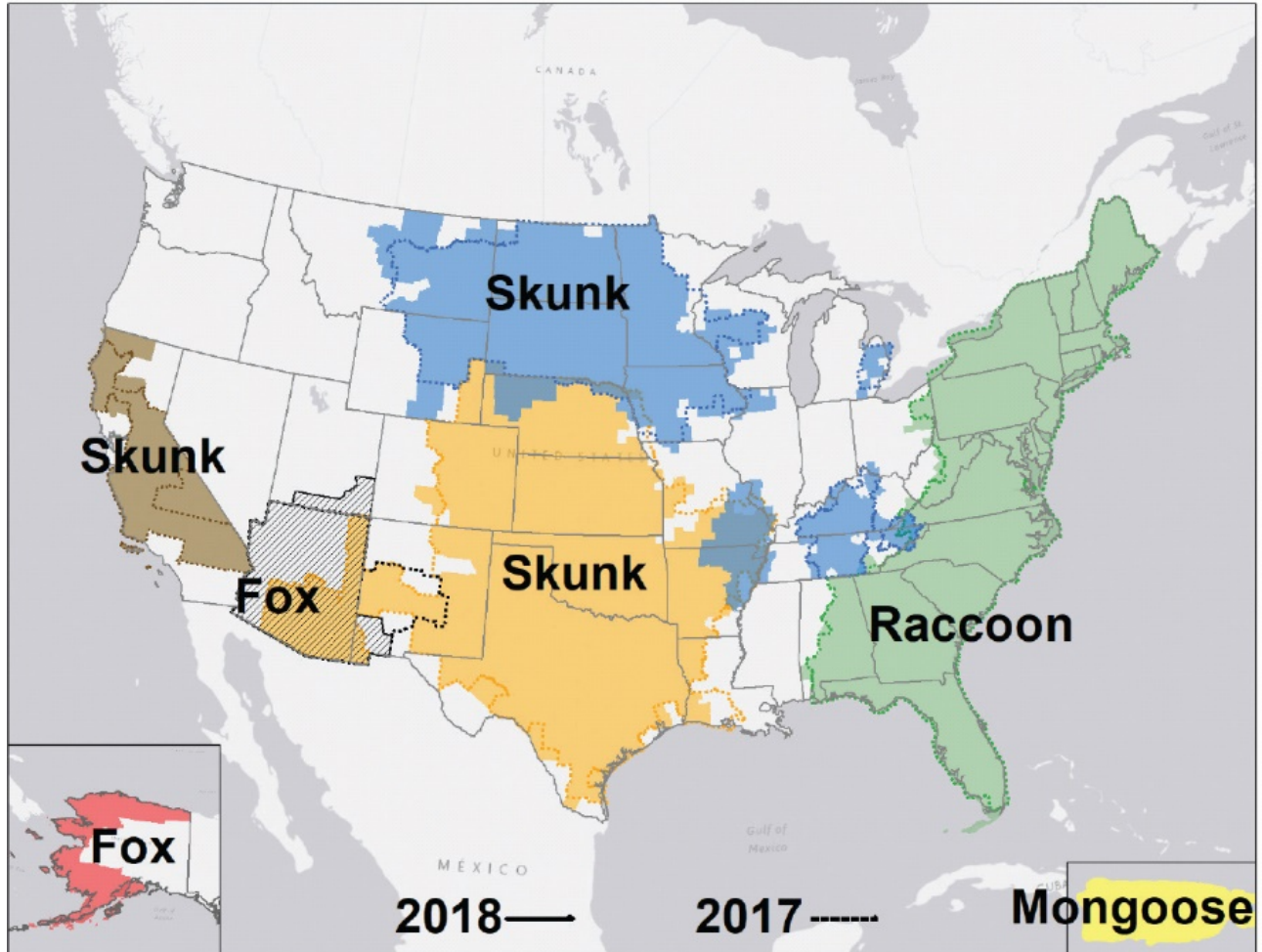
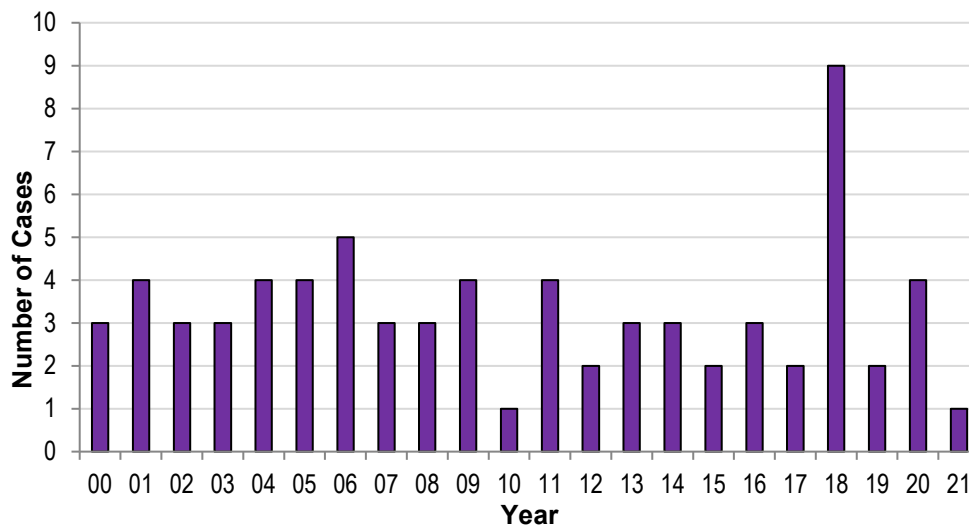


Table 1: Distribution by species and year - Louisiana, 2000-2021

SPECIES	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
SKUNK	11	5	2	1		3	2	1	3		7	2	2	4		3	1	13	1	5	1		67
BAT	3	4	3	3	4	4	5	3	3	4	1	4	2	3	3	2	3	2	9	2	4	1	72
DOG								1			1			1	1								4
CAT										1					1				1				3
HORSE		1	1					1															3
SQUIRREL											1									1			2
TOTAL	14	10	6	4	4	7	7	6	6	5	10	6	4	8	5	5	4	15	11	8	5	1	151

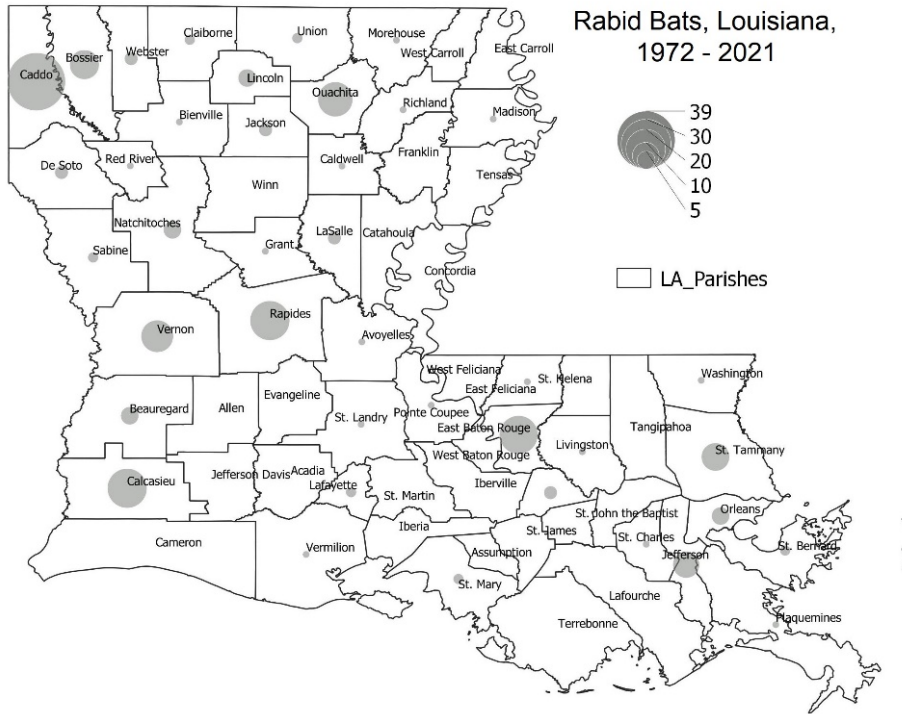
Figure 2: Rabies cases in bats - Louisiana, 2000-2021



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, and the cat reported from St. Helena Parish in 2018, were infected with bat variant rabies. These three cases illustrate the importance of rabies vaccination in pets, including pets in urban and suburban areas, due to potential contact with bats that often thrive in such environments.

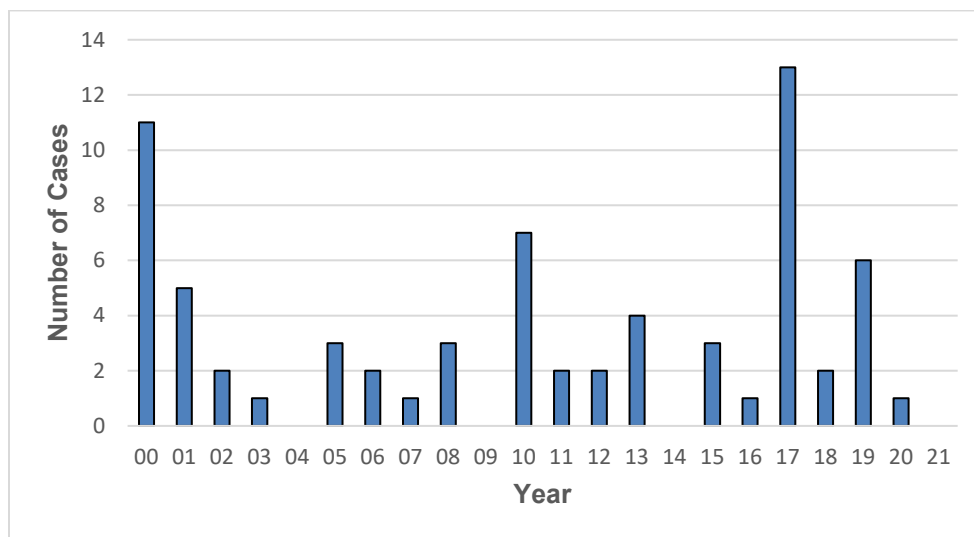
Figure 3 is a map illustrating the number of rabid bats reported in Louisiana in the past 50 years (1972 to 2021). The map illustrates that rabid bats have been discovered in all regions of the state. Higher numbers were identified in densely populated areas, with the exception of the Lafayette and Houma/Thibodaux areas, apparently reflecting the increased likelihood of human/bat interactions.

Figure 3: Bat rabies - Louisiana, 1972-2021



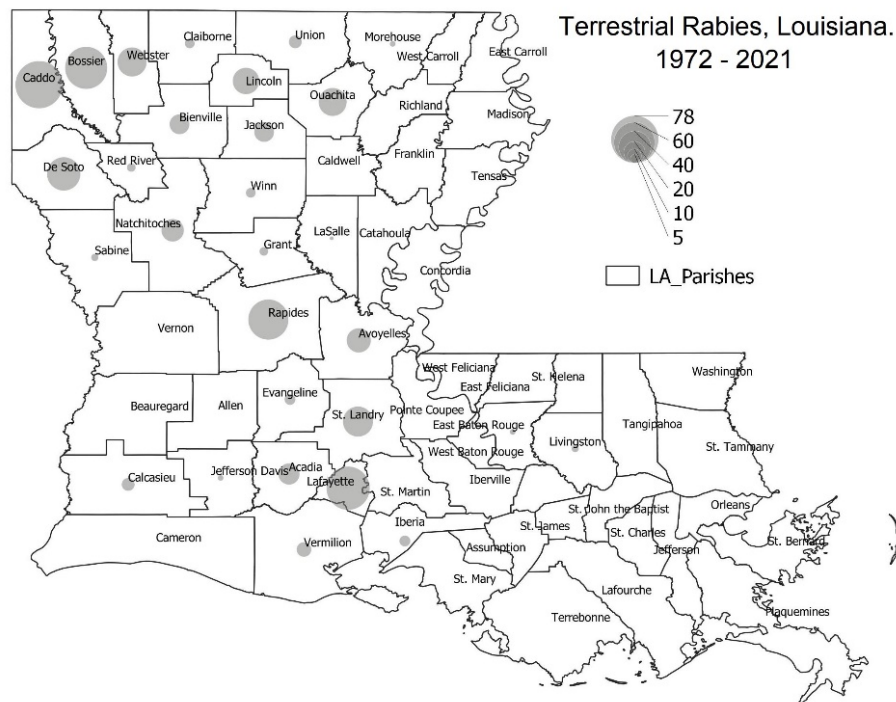
The only terrestrial variant of rabies known to circulate in Louisiana is the southern skunk variant. Figure 4 shows that only a small number of rabid terrestrial animals have been reported annually in Louisiana since 2000. In 2021, no positive skunks were identified in the state. The dearth of reports of rabies in wild terrestrial animals, as stated previously, is likely due to stringent enforcement of testing guidelines and the absence of active surveillance. These figures do not represent the true prevalence of rabies in skunks.

Figure 4: Rabies cases in terrestrial species - Louisiana, 2000- 2021



The map of rabies in terrestrial wildlife illustrates the distribution of terrestrial rabies in Louisiana since 1972 (Figure 5). 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. In 2019, another squirrel infected with the skunk variant was identified in East Baton Rouge Parish. Prior to the reports of the rabid squirrels, all 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 squirrels exists, state health officials are faced with the apparent reality that the skunk variant has migrated east. The greater Baton Rouge area and all of southeast Louisiana remain in a zone of surveillance for skunk variant rabies. In the past twenty 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.

Figure 5: Rabies in terrestrial species - Louisiana, 1972-2021

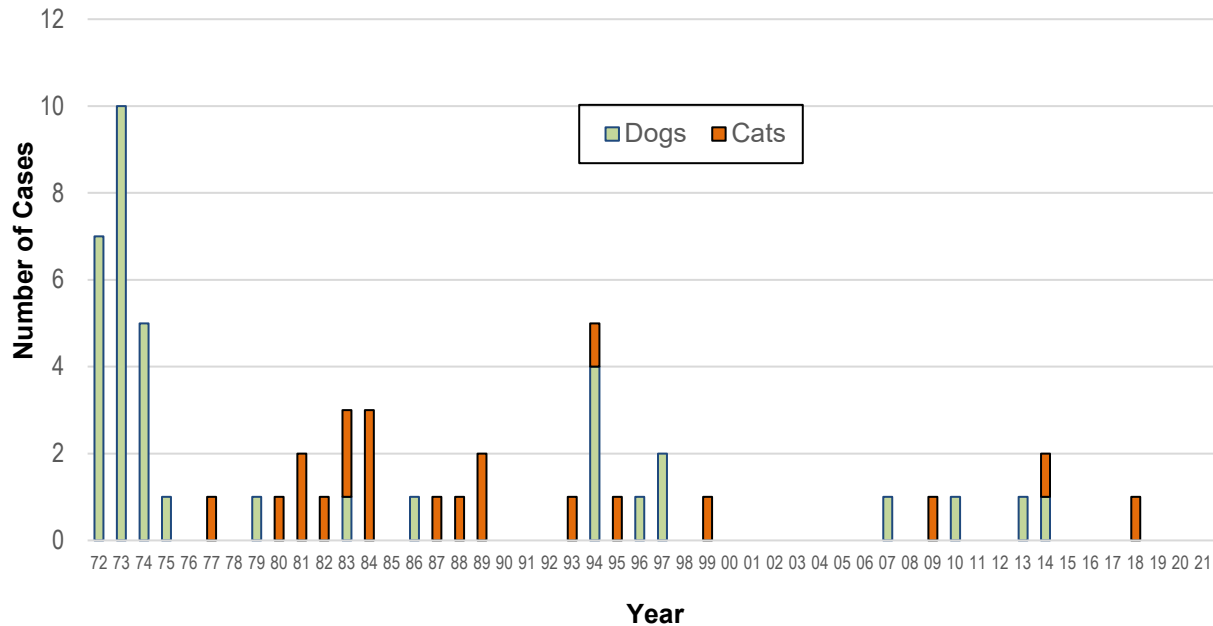


Rabies cases in agricultural animals (cattle, goats, sheep, etc.) and horses have been reported sporadically and infrequently. Rabies in horses and domestic ruminants is almost always geographically and epidemiologically related to the prevalence of skunk variant rabies.

Few cases of rabies in dogs and cats have been reported in the past fifty years. Twenty two rabid dogs were reported in the years 1972 to 1974. Since that time, the usual number of rabid dogs and cats reported annually has been zero to two, the only exception being 1994 when four dogs and one cat were reported (Figure 6). The predominant variant identified in dogs and cats is also 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, as mentioned previously, a few cases of bat variant rabies have been identified in pets.

Figure 6: Rabies cases dogs and cats- Louisiana, 1972-2021



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.

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.

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