Epidemiology in Texas 2006 Annual Report

Zoonotic Diseases

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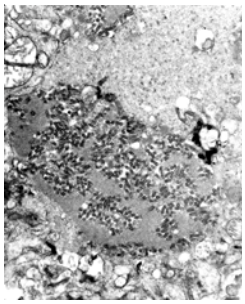
Table of Contents Page



(Zoonosis Control Branch web page)

Rabies in Animals

Rabies is a viral zoonosis affecting the central nervous system of warm-blooded animals. Transmission occurs when saliva containing rabies virus is introduced into an opening in the skin, usually through the bite (or possibly scratch) of a rabid animal. Though rare, transmission can also occur through contamination of mucous membranes. Animals considered to be high risk for transmitting rabies in Texas include bats, skunks, foxes, coyotes, and raccoons; the first 4 of these wildlife species serve as reservoirs for specific rabies virus variants (types) in Texas. Rabies infection in a species other than the reservoir species for the variant is considered "spillover." An example of spillover would be a cat infected with a skunk variant of rabies virus.

In 2006, 888 (7%) of 13,608 animal specimens in Texas that were tested (confirmed as positive or negative) were positive for rabies. This was a 20% increase in cases from the 741 cases confirmed in 2005. In 2006, there were 65 positive rabies cases per 1,000 specimens tested, which was down from 67 positive rabies cases per 1,000 specimens tested in 2005. Yearly totals of positive cases for 1994 through 2006 are illustrated in **Figure 1**.

During 2006, the highest monthly number of laboratory-confirmed rabies cases (120) occurred in September with bats (86) being the predominant rabid species reported. October had the second highest number of cases (109) with bats (78) being the predominant rabid species. Cases of rabies were confirmed in 137 of the 254 Texas counties (**Figure 2**), compared with 148 counties with reported cases in 2005. Harris County had the highest number of reported rabies cases per county statewide with 146 cases in 2006, 145 of which were bats. In 2005, Travis County had the highest number of

Figure 1. Positive rabies cases: Texas 1994 – 2006

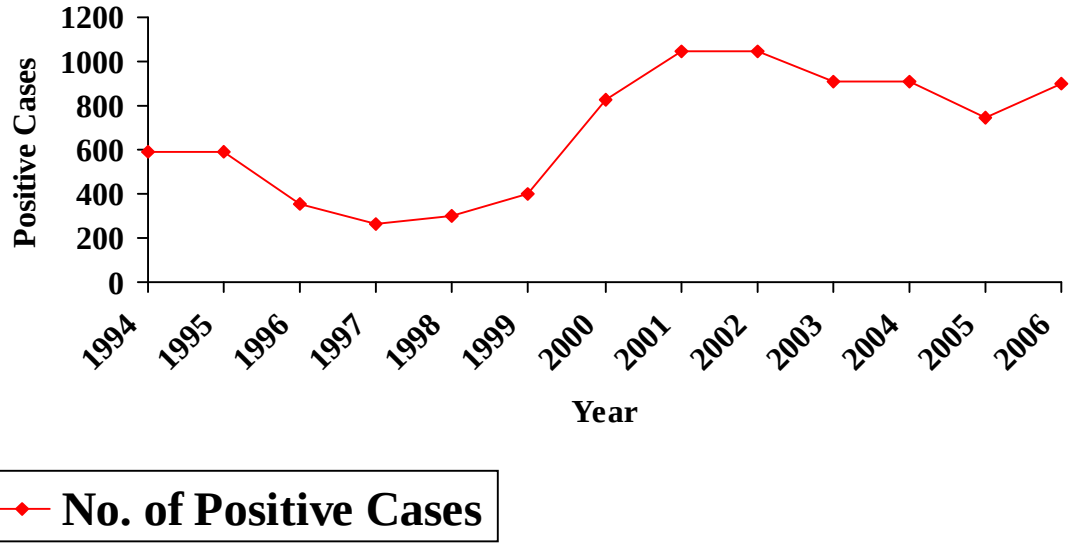
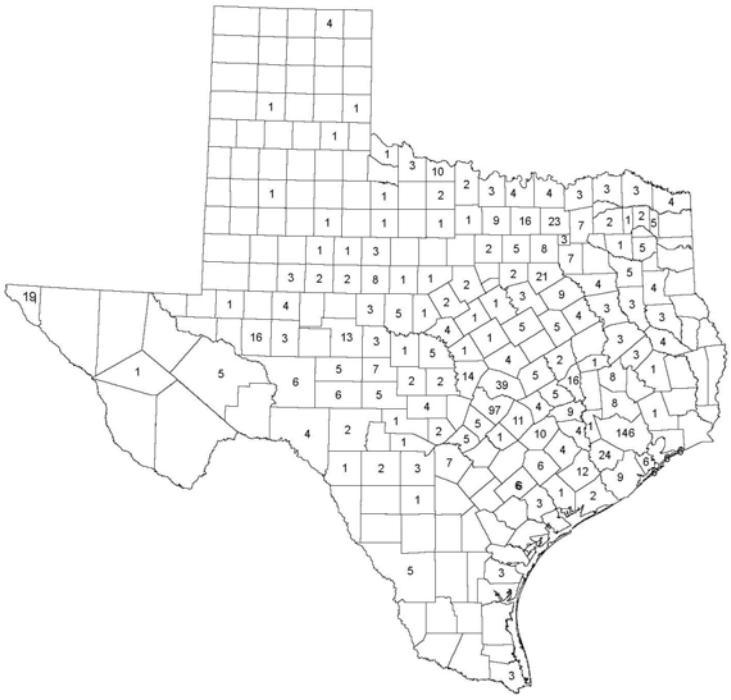


Figure 2. Confirmed Cases of Animal Rabies (all species) by County, 2006



reported cases with 60 (59 of which were bats).

Rabid wildlife accounted for 844 (95%) of the confirmed cases throughout the state in 2006. In 2005, rabid wildlife accounted for 700 (94%) of the confirmed cases (**Table 1**). Bats were the primary source of positive cases reported in 2006, 431 (49% of all positive cases), compared with 257 (35% of all positive cases) in 2005. Of all bats tested for rabies, 10% were positive in 2006 and 13% were positive in 2005. Rabies in bats is enzootic in Texas; there are numerous bat variants of rabies virus throughout the state. In 2006, there was 1 reported case in which there was spillover of a bat rabies virus variant to a terrestrial animal (a ringtail).

Skunks had the second highest number of confirmed rabies cases with 351 (40% of all positive cases) in 2006 compared with 392 (53% of all positive cases) in 2005. Of all skunks tested for rabies, 32% were positive in 2006 and 46% were positive in 2005. For the 5-year period from 1995 through 1999, the average number of skunks that were confirmed positive for rabies was 110 cases per year with a range of 69 to 192; for 2000 through 2006, the average number of confirmed cases of rabies in skunks per year was 566 with a range of 351 to 778.

There were 44 reported rabies cases in domestic animals (5% of all positive cases) (**Table 2**). Rabies in domestic animals continues to be a concern because they are more likely to have contact with humans than are rabid wildlife. Dogs represented 1% (13) of all positive cases in 2006; 10 rabid cats were reported. In 2005, there were 41 reported rabies cases in domestic animals (6% of all positive cases); of

Table 1. Confirmed cases of rabies in wild animal species: Texas 2005 and 2006

Species	2005	2006
Bats	257	431
Bobcats	1	10
Coyote	0	1
Foxes	23	31
Raccoons	27	19
Ringtail	0	0
Skunks	392	351
Total	700	844

Table 2. Confirmed cases of rabies in domestic animal species: Texas 2005 and 2006

Species	2005	2006
Cats	12	10
Cattle	11	7
Dogs	8	13
Goats	3	2
Horses	7	12
Total	41	44

these rabies cases, 12 were cats, and 8 were dogs.

Twenty-one counties have been involved in the South Texas canine rabies epizootic since it began in 1988. Statewide there were no reported cases with the domestic dog-coyote variant of the rabies virus in 2006 as well as in 2005.

Fifty counties have been involved in the West-Central Texas gray fox rabies epizootic since it began in 1988. Thirteen of these 50 counties recorded cases of the gray fox variant of the rabies virus in 2006 compared with 5 counties with reported cases in 2005. Of all positive cases statewide in 2006, 45 (5%) were infected with the gray fox variant of the rabies virus compared with 8 (1%) in 2005. The 45 rabies cases with the gray fox variant in 2006 included 28 foxes, 7 bobcats, 5 dogs, 4 raccoons, and 1 cow.

In response to the canine and gray fox rabies epizootics, the Oral Rabies Vaccination Program (ORVP) for coyotes in South Texas was initiated in February 1995, and the ORVP for gray foxes in West-Central Texas was initiated in January 1996. The programs have continued annually. These programs target reservoir species for the domestic dog-coyote and gray fox variants of the rabies virus, specifically coyotes and gray foxes, respectively. Immunization is accomplished by aerial distribution of edible bait containing oral rabies vaccine. The goal of the ORVP has been to create zones of vaccinated coyotes and gray foxes along the leading edges of the areas where these rabies variants are located in order to eventually eliminate the epizootics.

Currently, there are no oral or parenteral rabies vaccines approved for use in skunks to address the ongoing skunk rabies epizootic, which began in 2000. The south-central skunk variant of rabies virus is the most prevalent skunk variant in Texas. Rabies cases in 2006 in which the south-central skunk variant could be confirmed included 339 skunks, 15 raccoons, 10 cats, 12 horses, 6 cattle, 6 dogs, 3 bobcats, 3 foxes, 2 goats, and 1 coyote.

Prepared by the Zoonosis Control Branch, (512) 458-7255

West Nile Virus in Texas, 2006

The year 2006 marked the fifth season of West Nile virus (WNV) transmission in Texas and the eighth year it has been tracked nationally since WNV was identified in the New York City area in 1999. After making a steady and progressive westward continental advance, WNV infections in animals or people have now been documented in all 48 contiguous states, Canada, and Mexico. In 2006, a total of 1,459 human cases of West Nile Neuroinvasive Disease (WNND) and 177 associated deaths (national WNND case fatality rate = 12.3%) and 2,616 cases of West Nile Fever (WNF) were reported to the Centers for Disease Control and Prevention by 43 states and the District of Columbia. This represents a 42% increase from 2005. Nationally, the states with the highest number of cases reported in 2006 were Idaho (996), Texas (354), Colorado (345), California (278), and Nebraska (264).

In 2006, Texas had an 81.5% increase in WNV activity compared to 2005, nearly doubling the national trend. The state's 2006 incidence of human WNV disease was second highest since WNV was first identified in 2002. (**Table 1**) These cases were distributed across 55 of Texas' 254 counties and in all 11 DSHS Public Health Regions (**Figure 1**).

For the WNND cases, males outnumbered females 61% to 39%. The age range of WNND cases was 8-99 years. The mean age was 57.6 years and the median age was 59.0 years. There were 33 WNV-associated deaths for an overall WNND case fatality rate of 14.2%, the highest case fatality rate since WNV was first introduced into Texas in 2002. In 2006, the age range of the fatalities was 19 to 99 years. The average age was 72.8 years. Individuals over 50 years of age who were infected with WNV were twice as likely to develop WNND (OR 2.08, range = 1.28 – 3.37, p=0.001).

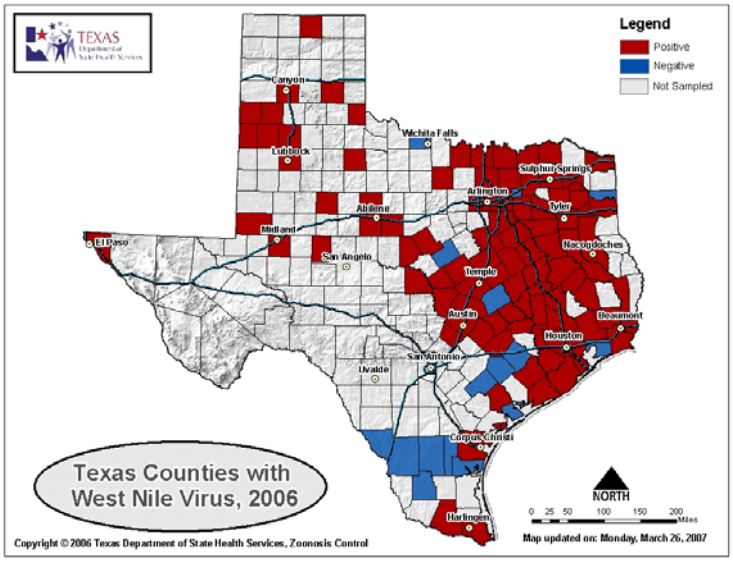
The ages of WNF cases ranged from 5 to 90 years. The average age was 51.5 years. Gender for these cases was similarly divided, 61% to 39% male to female respectively.

The most common symptoms reported for all cases included fever (93.5%), headache (73.1%), nausea/vomiting (63.5%), chills (55.5%), severe malaise (53.8%), altered mental status (45.6%), muscle weakness (45.0%), confusion

Table 1. West Nile Virus in Texas, 2002-2006

Year	West Nile Neuroinvasive Disease (WNND)	West Nile Fever (WNF)	Total	Deaths
2006	233	121	354	33
2005	128	67	195	11
2004	119	58	177	8
2003	439	297	736	40
2002	202	51	253	12

Figure 1. Texas counties with WNV activity – 2006



(44.5%), drowsiness (42.8%), anorexia (41.4%), and stiff neck (41.4%).

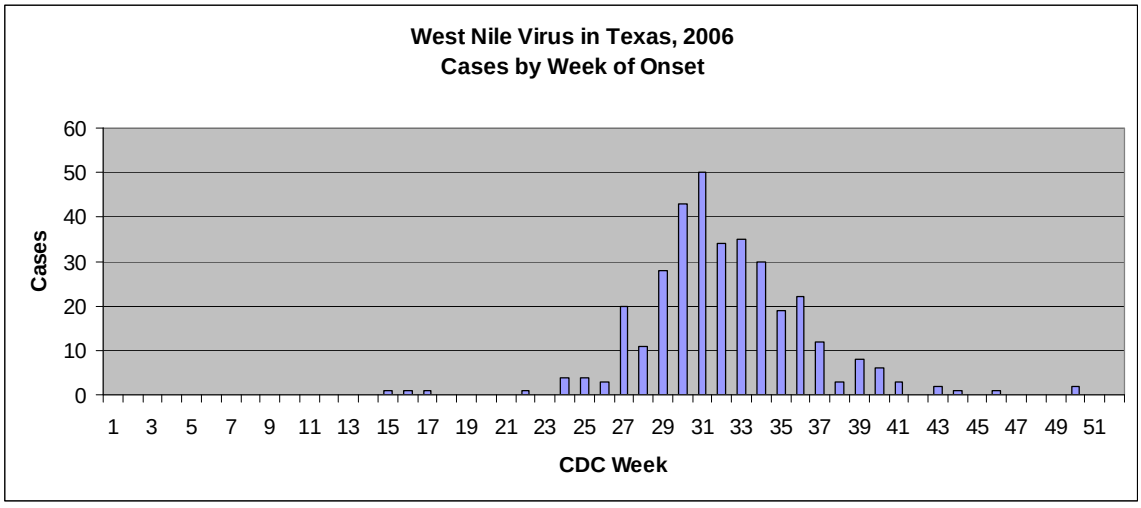
Texas recorded its longest WNV season in 2006. Dates of onset for all cases of WNV illness ranged from April 9 to December 15, 2006. Peak activity occurred in the first week of August, 1 to 2 weeks earlier than previous years (**Figure 2)**. Dates of onset ranged from early July to mid-November for 2002, mid-June to end of November for 2003, early May to end of November in 2004, and early June to mid-November for 2005.

WNV will remain a consistent mosquito-borne threat in Texas in the years to come. Although there is some seasonal variation, 5 years of surveillance activities have consistently shown that the WNV season begins in the spring and lasts through the rest of the year with the peak number of new cases occurring in the period between mid July and early September.

In the absence of a licensed vaccine for human use, the most important way for individuals to reduce their risk of infection is consistent use of insect repellents that contain an effective ingredient such as DEET, picaridin, or oil of lemon eucalyptus when participating in outdoor activities. Surveys of the 2006 cases indicated that compliance with this guidance is very low.

Responses concerning insect repellent usage were collected from 285 of the 354 cases (80.5%). Of the individuals

Figure 2. West Nile Virus cases by week of onset



who responded, nearly 70% stated that they never used repellents, and 86% reported using repellents 25% of the time or less spent outside.

Throughout the mosquito season, Texas physicians are urged to consider the diagnosis of WNV in patients with compatible clinical presentations for either WNF or WNND and to submit specimens to the Texas Department of State Health Services Laboratory for testing. Recent medical studies have shown that even patients who have WNF may experience lasting and prolonged sequelae. In a study of long-term functional outcomes of WNF cases, many patients commonly reported persistent problems such as fatigue (96%), headaches (71%), and concentration problems (53%).

Like human WNV cases, the number of cases in Texas horses also increased in 2006. There were 111 equine cases reported in 2006 compared to 61 in 2005. Horse owners are encouraged to include WNV vaccination in their routine equine herd health programs.

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