2014 TEXAS PLAGUE SURVEILLANCE REPORT

Each year the Texas Department of State Health Services (DSHS), in conjunction with Texas AgriLife Extension/Wildlife Services and occasionally other agencies, collects samples from wildlife for plague (the bacterium *Yersinia pestis*) testing. Samples are collected primarily from carnivores using Nobuto blood filter strips in the course of predator control actions or as part of targeted surveillance efforts for plague and other zoonotic diseases. Although most carnivores are resistant to plague, they develop antibodies when exposed to *Y. pestis*, thereby making them good indicators of plague activity within their territories. Animal and arthropod surveillance results indicate that there are natural reservoirs for the plague organism in much of the state.

Plague, which occurs naturally in Texas, can cause severe human disease and death and clinically or laboratory-confirmed cases in animals or humans are reportable to DSHS. Surveillance for plague enables DSHS to alert physicians and veterinarians to be vigilant for signs of the disease in their patients when increased plague activity is detected in wildlife. *Y. pestis* is also an organism that can be used as a bioterrorism weapon. Unusual plague activity related to its use as a weapon can be recognized more easily if natural disease occurrence is well known.

Plague in Humans

There were no reported human cases of plague in Texas during 2014.

Plague in Animals

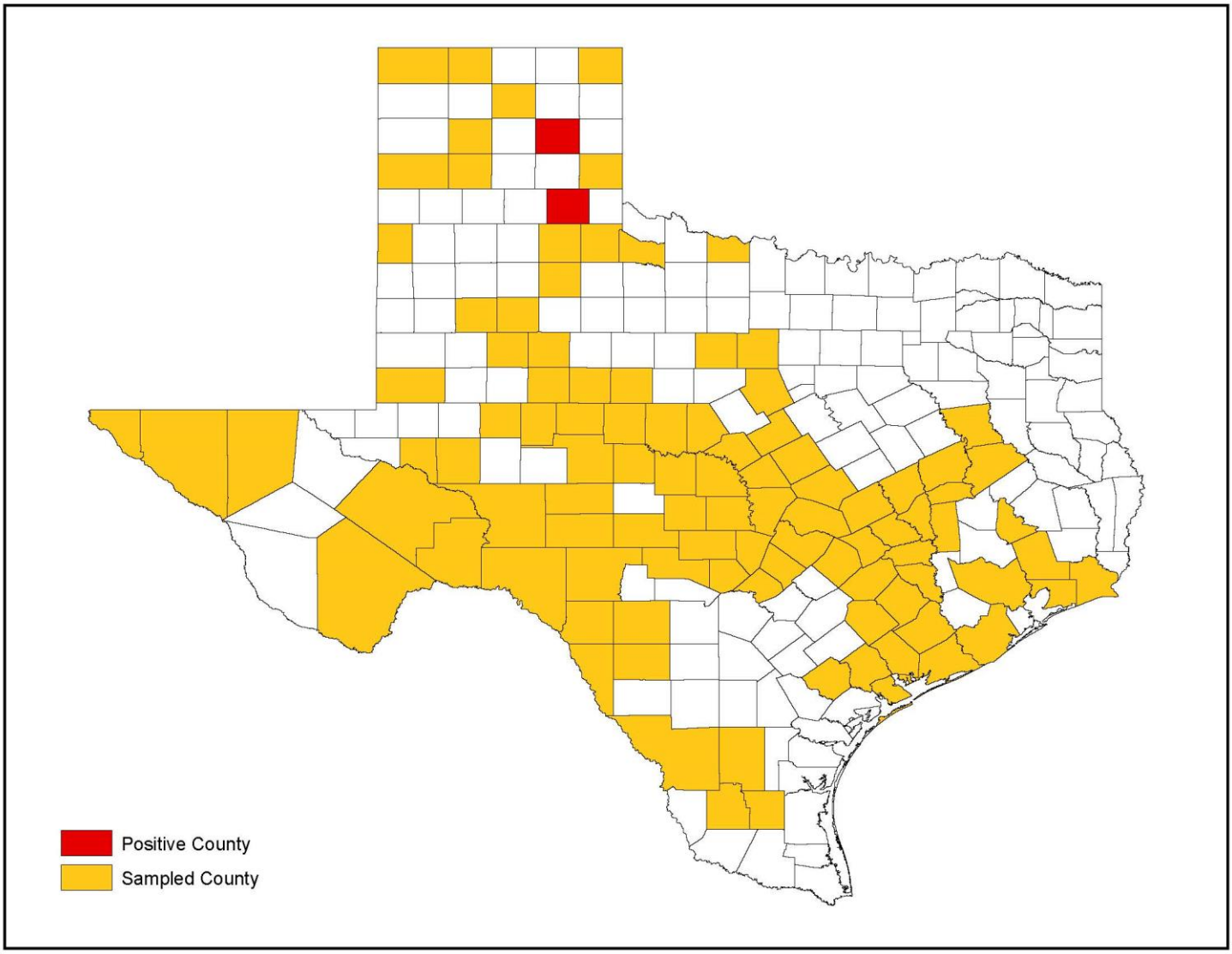
The DSHS Laboratory Services Section received submissions from 1,297 animals collected during calendar year 2014 from 108 counties, of which 1,184 from 103 counties were tested; 113 submissions were not tested due to specimen damage, insufficient specimen quantity, missing specimen, or limited supplies of laboratory reagents. Plague antibodies at a titer of ≥ 1:32, which indicates probable exposure to *Y. pestis*, were reported for 2 samples (0.2% of all samples tested) collected from 2 counties (Table 1); 1,182 samples (99.8% of samples tested) were negative at a titer of <1:32 (Table 2).

Table 1. Animals Positive for Plague by County and Titer, 2014

County	Result	Coyote	Number Tested (County, All Species)	Percent Positive (County, All Species)
Gray	1:64	1	3	33.3%
Hall	1:1024	1	4	25.0%
Total		**2**	**7**	28.6%
Number Tested (Statewide, Listed Species Only)		**703**		
Percent Testing Positive		**0.3%**		

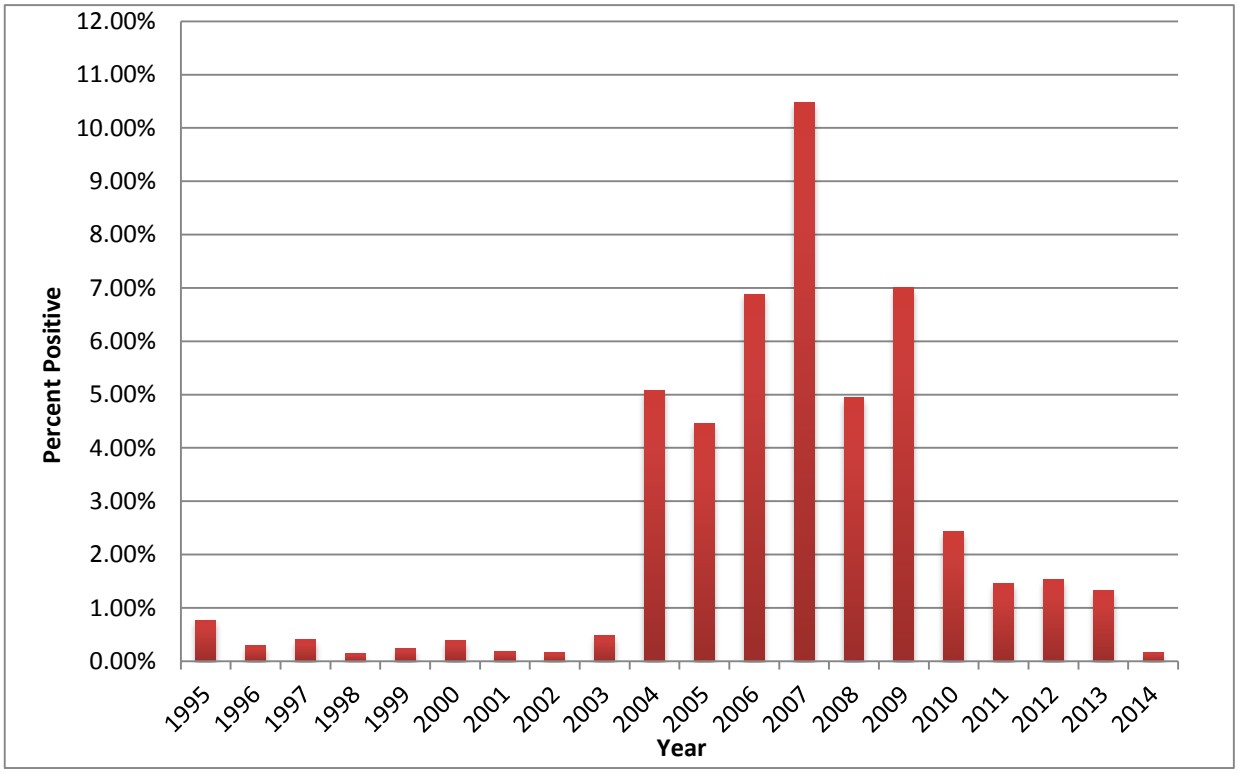
The geographic distribution by county of specimens tested and specimens testing positive for *Yersinia pestis* in 2014 is illustrated in Figure 1. A 20-year comparison of annual percent positivity is illustrated in Figure 2.

Figure 1. Counties Sampled and Counties Positive for Plague, 2014



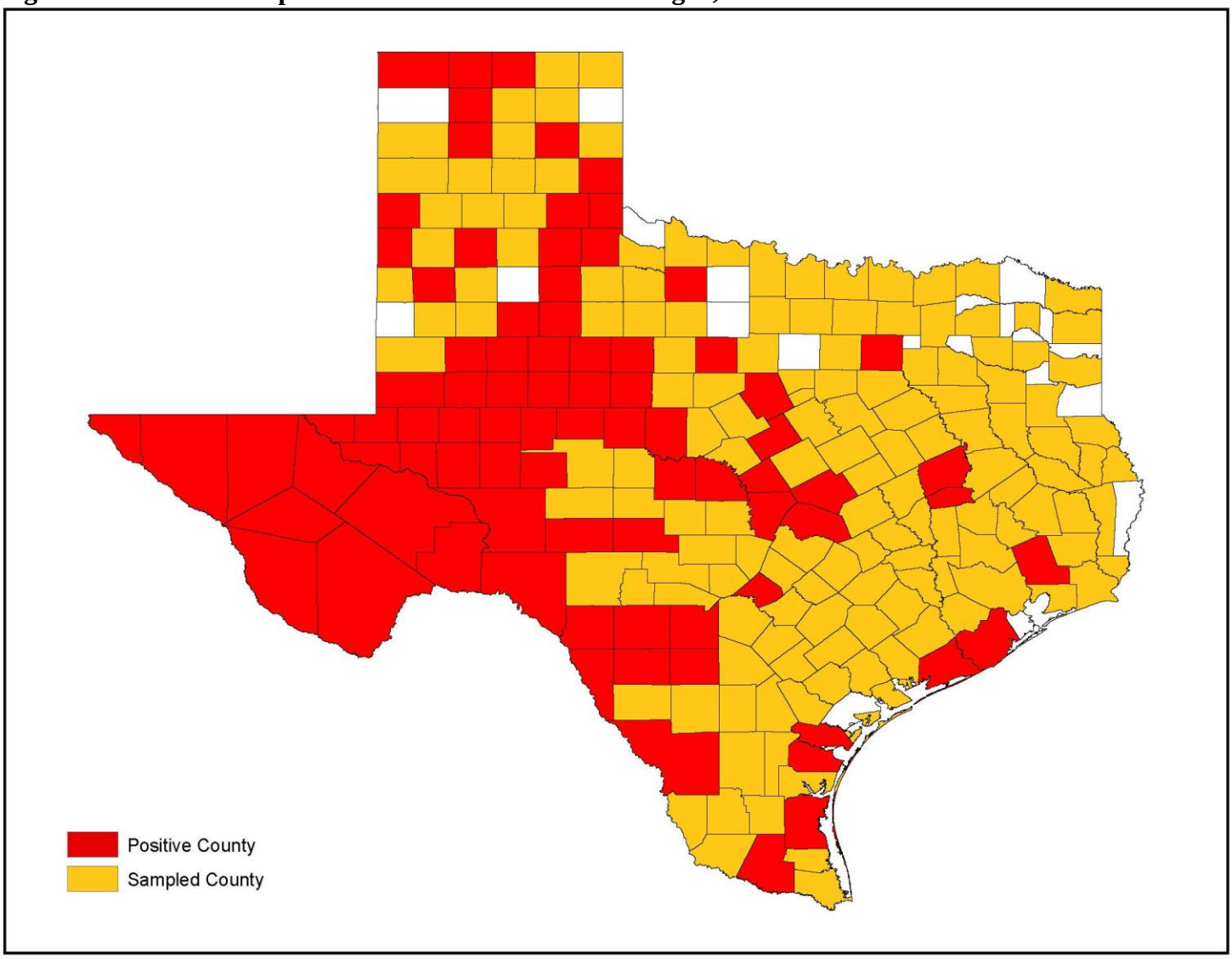
Comparing the percent of surveillance samples positive for plague during 2014 to the percent positive in the previous 19 years indicates a continuing declining level of plague activity since 2010 following a notable increase for the 2004-2009 period, as compared to the 1995-2003 period (Figure 2). Factors such as climate, changing ecosystems, predator activity, and host and flea population size and dynamics may affect the extent of plague transmission within wildlife populations. Differences in sampling rates and the species and locations sampled may also affect the detection of plague activity within wildlife populations.

Figure 2. Percent of Surveillance Samples Positive for Plague, 1995-2014



The historic distribution of plague surveillance and detection in Texas is shown in Figure 3 on the following page. While plague is considered endemic in far west Texas and the Panhandle region, the surveillance results demonstrate that there may be naturally occurring risk in all but the extreme eastern part of the state.

Figure 3. Counties Sampled and Counties Positive for Plague, 1976-2014



By using educational materials, news releases, a public-access website, and conference presentations, DSHS personnel keep veterinarians, physicians, and the general public aware of the plague risk in Texas. Even in areas with historically low plague activity, infections may occur in hunters or campers who visit plague-endemic areas or in pets and wildlife transported from those areas. There is also a risk that new areas of infection may be established by moving animals across the state.

Table 2, beginning on the next page, shows the complete listing by county and species of samples that tested negative for plague in 2014.

Table 2. Animals Negative for Plague by County, 2014

County	American Badger	American Hog-Nosed Skunk	Black-Tailed Prairie Dog	Bobcat	Common Hog-Nosed Skunk	Coyote	Eastern Spotted Skunk	Feral Pig	Gray Fox	Raccoon	Red Fox	Ringtail	Striped Skunk	Total
Anderson									1	1				**2**
Andrews						1								**1**
Austin													20	**20**
Bailey						6								**6**
Bastrop													12	**12**
Bell						3		1						**4**
Blanco						1			2					**3**
Borden	1					12		1						**14**
Brazoria						11								**11**
Brazos													1	**1**
Brewster						16			7					**23**
Brooks						1								**1**
Brown						2			1					**3**
Burleson						4	1						4	**9**
Burnet						13								**13**
Calhoun						6								**6**
Chambers						19								**19**
Coke						1			1					**2**
Coleman						7				1				**8**
Collingsworth						3								**3**
Colorado						10			1				71	**82**
Comal						8								**8**
Concho		1							1	2			3	**7**
Coryell						19		3						**22**
Cottle						4								**4**
Crane						57								**57**
Crockett									2	1				**3**
Culberson												1		**1**
Dallam			2						1					**3**

County	American Badger	American Hog-Nosed Skunk	Black-Tailed Prairie Dog	Bobcat	Common Hog-Nosed Skunk	Coyote	Eastern Spotted Skunk	Feral Pig	Gray Fox	Raccoon	Red Fox	Ringtail	Striped Skunk	Total
Deaf Smith						2								**2**
Dickens						3				1				**4**
Duval						7								**7**
Edwards						6			5	1				**12**
El Paso						2			18	9			24	**53**
Erath						9		6						**15**
Fayette									1				1	**2**
Foard						2								**2**
Garza						6				2				**8**
Gillespie				1		1			16	2				**20**
Glasscock						2			2					**4**
Goliad						4								**4**
Gray				1		1								**2**
Grimes													2	**2**
Hall						2				1				**3**
Hamilton						6								**6**
Harris						1								**1**
Hays						22								**22**
Houston						3								**3**
Hudspeth						1								**1**
Hutchinson						2				1				**3**
Jackson						1								**1**
Jefferson						26								**26**
Jim Hogg						10								**10**
Kendall				1					5					**6**
Kerr									3					**3**
Kimble				1		11			2	7	1			**22**
Kinney				1					19					**20**
Lampasas				1		20			9	9	1			**40**
Lavaca						10							2	**12**
Lee													3	**3**

County	American Badger	American Hog-Nosed Skunk	Black-Tailed Prairie Dog	Bobcat	Common Hog-Nosed Skunk	Coyote	Eastern Spotted Skunk	Feral Pig	Gray Fox	Raccoon	Red Fox	Ringtail	Striped Skunk	Total
Leon						13								**13**
Liberty						1				1				**2**
Lipscomb						13								**13**
Llano									1	8				**9**
Lynn						5								**5**
Madison						8							20	**28**
Mason						1			1				1	**3**
Matagorda						8								**8**
Maverick						34				1				**35**
McCulloch					2				44	3			18	**67**
Milam						1								**1**
Mills				1		26		2	1					**30**
Mitchell						4								**4**
Motley						15								**15**
Nolan						5								**5**
Palo Pinto						1		1						**2**
Pecos				1					6	1				**8**
Potter						4								**4**
Randall				1		24								**25**
Robertson						2								**2**
Runnels						9								**9**
San Jacinto						2								**2**
San Saba						11		4	1	4				**20**
Schleicher									1					**1**
Scurry						2								**2**
Sherman						19								**19**
Stephens						2		2						**4**
Sterling				1		25			2	3	1			**32**
Sutton		1				1			1	2			7	**12**
Taylor						2								**2**
Terrell									4	5				**9**

County	American Badger	American Hog-Nosed Skunk	Black-Tailed Prairie Dog	Bobcat	Common Hog-Nosed Skunk	Coyote	Eastern Spotted Skunk	Feral Pig	Gray Fox	Raccoon	Red Fox	Ringtail	Striped Skunk	Total
Tom Green						2				1			1	**4**
Travis						2								**2**
Upton						2								**2**
Uvalde				1		5								**6**
Val Verde						2			5	1			1	**9**
Victoria						12		1		1				**14**
Washington													5	**5**
Webb						61								**61**
Wharton													8	**8**
Wichita						3								**3**
Williamson						9								**9**
Zavala						1								**1**
Total	**1**	**2**	**2**	**11**	**2**	**701**	**1**	**21**	**164**	**69**	**3**	**1**	**204**	**1182**