

2012 Rabies Summary
Massachusetts Department of Public Health

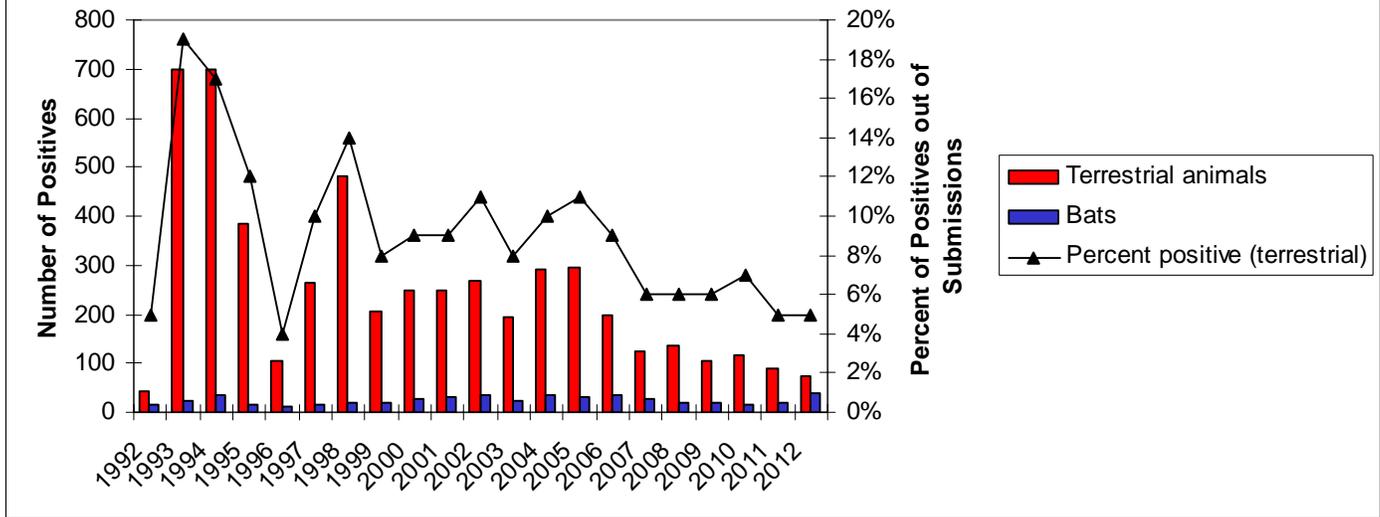
The following summarizes data collected on animal specimens from Massachusetts sent to the William A. Hinton State Laboratory Institute (HSLI) for rabies testing from January to December 2012. Cumulative reports summarizing rabies testing from 1992-2002 and annual reports from 2003 to 2011 are available on the MDPH website and can be found at www.mass.gov/dph/rabies.

Number of Submissions and Positive Results by Year

The number of terrestrial animals that tested positive in 2012 was the lowest recorded number and percent positive since 1996 (see **Table 1 and Figure 1**). The number of bats submitted for rabies testing increased by 37% between 2011 and 2012, despite documented population losses, primarily in little brown bats, due to white-nose syndrome. Virtually every month saw significantly more bats submitted for testing as compared to the same month in 2011 (see **Table 3**). At least part of the reason for this is the elevated temperatures that occurred throughout 2012 which may have resulted in abnormal behavior patterns in bat populations. In addition, the occurrence of a human case of bat strain rabies in Massachusetts at the end of 2011 and the news coverage it generated may have raised general awareness of bats and rabies, and also contributed to the increased number of submissions. Despite a large increase in the total number of rabid bats identified, the proportion of bats that tested positive for rabies remained the same from 2011 to 2012.

TABLE 1. Number of Submissions, Positive Results and Percent Positive by Year and Type of Animal						
	TERRESTRIAL ANIMALS			BATS		
Year	Number Submitted	Number Positive	% Positive	Number Submitted	Number Positive	% Positive
1992	926	42	5%	143	15	10%
1993	3660	698	19%	289	22	8%
1994	4119	700	17%	391	34	9%
1995	3175	383	12%	241	17	7%
1996	2701	103	4%	277	12	4%
1997	2771	264	10%	334	17	5%
1998	3483	480	14%	439	18	4%
1999	2643	205	8%	595	21	4%
2000	2666	247	9%	611	29	5%
2001	2615	248	9%	710	32	4%
2002	2505	267	11%	613	36	6%
2003	2358	193	8%	602	23	4%
2004	2842	291	10%	600	34	6%
2005	2653	296	11%	708	33	5%
2006	2122	197	9%	756	34	5%
2007	1988	123	6%	787	29	4%
2008	2298	135	6%	748	19	3%
2009	1747	106	6%	696	21	3%
2010	1740	117	7%	678	14	2%
2011	1700	90	5%	753	20	3%
2012	1594	73	5%	1196	38	3%
Total	52,306	5,258	10%	12,167	518	4%

Figure 1: Numbers of Animals Positive for Rabies and Percent Positive by Year: Massachusetts, 1992-2012



Notable Rabies Situations

In 2012, 2,790 specimens were submitted to the Hinton State Laboratory Institute (HSLI) for rabies testing. Of these specimens, 111 tested positive for rabies. **Table 2** shows data on positive animals in 2012.

Only two domestic animals tested positive for rabies in 2012, the lowest number since 1992 when raccoon rabies was first detected. Both were cats identified in the fourth quarter of 2012. The first was from Worcester County. A family took in a 5 week-old kitten that had a wound on a hind leg. Six days after acquiring the kitten, it scratched two adults and two children in the household. Two days later, the kitten developed neurologic symptoms and was euthanized and tested positive for rabies. Both adults and both children received post-exposure prophylaxis (PEP). One unvaccinated dog in the household was placed under six month quarantine. An investigation by local public health and animal control personnel identified a second family that was also exposed to the kitten. Two adults in that family received PEP and their two vaccinated dogs received boosters and were placed under 45 day quarantine. Animal control identified the kitten’s mother, which was found to be exhibiting neurologic symptoms. It was euthanized and submitted for rabies testing and was found to be negative. The animal hospital that cared for the kitten before it was euthanized, reported three personnel with exposures to its saliva requiring PEP.

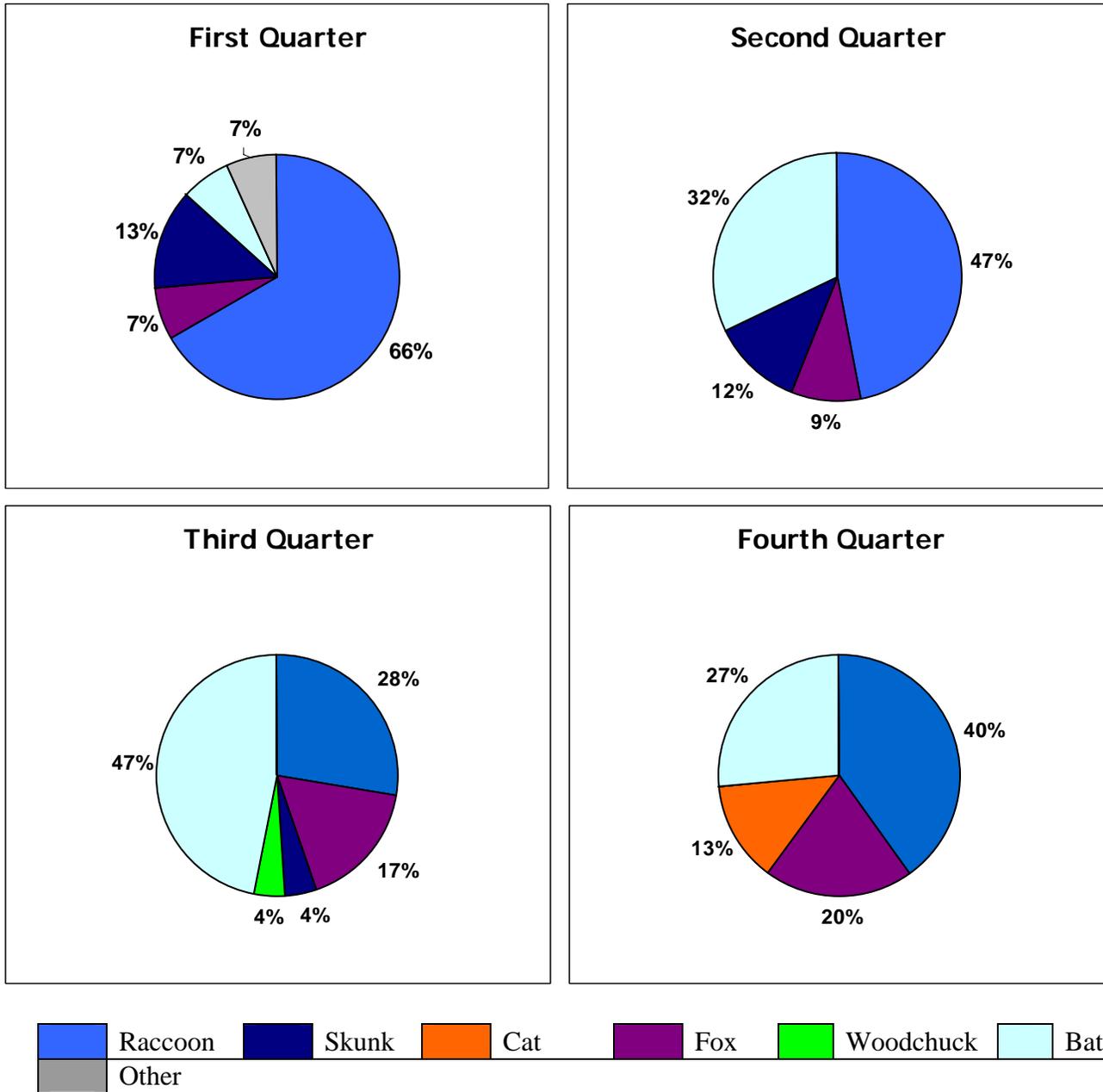
The second positive cat was from Middlesex County. A resident noticed an ill-appearing stray cat near her home. While placing it in an animal carrier to bring it to a veterinarian, it bit her. The cat was exhibiting signs of neurologic illness and was euthanized and tested positive for rabies. The exposed resident received PEP. No other individuals or domestic animals were known to have any exposure to the cat.

Number of Submissions and Positive Results by Species

Raccoons, skunks and bats together, accounted for the large majority of rabies positive animals in Massachusetts (45.9%, 19.2% and 3.2% respectively), although the proportion of all rabies positive animals that they represent varied by quarter. (See **Figure 2**)

Table 2. Number of Animals Positive for Rabies/Animals Submitted (%), 2012					
Animal	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2012
Raccoon	10/22 (45.5%)	16/34 (47.1%)	13/27 (48.1%)	6/15 (40.0%)	45/98 (45.9%)
Skunk	1/11 (9.1%)	3/11 (27.3%)	8/48 (16.7%)	3/8 (37.5%)	15/78 (19.2%)
Cat	0/161 (--)	0/198 (--)	0/250 (--)	2/173 (1.2%)	2/782 (.3%)
Fox	2/9 (22.2%)	4/10 (40.0%)	2/4 (50.0%)	0/8 (--)	8/31 (25.8%)
Woodchuck	0/2 (--)	0/20 (--)	2/30 (6.7%)	0/0 (--)	2/52 (3.8%)
Bat	1/123 (.8%)	11/223 (4.9%)	22/780 (2.8%)	4/70 (5.7%)	38/1196 (3.2%)
Cow	0/1 (--)	0/1 (--)	0/3 (--)	0/1 (--)	0/6 (--)
Coyote	1/4 (25.0%)	0/0 (--)	0/1 (--)	0/1 (--)	1/6 (16.7%)
Dog	0/107 (--)	0/120 (--)	0/107 (--)	0/89 (--)	0/423 (--)
Other*	0/22 (--)	0/28 (--)	0/41 (--)	0/27 (--)	0/118 (--)
TOTAL	15/462 (3.2%)	34/645 (5.3%)	47/1291 (3.6%)	15/392 (4.1%)	111/2790 (4.0%)

Figure 2. Proportion of All Positive Results Represented by Each Species, by Quarter, 2012



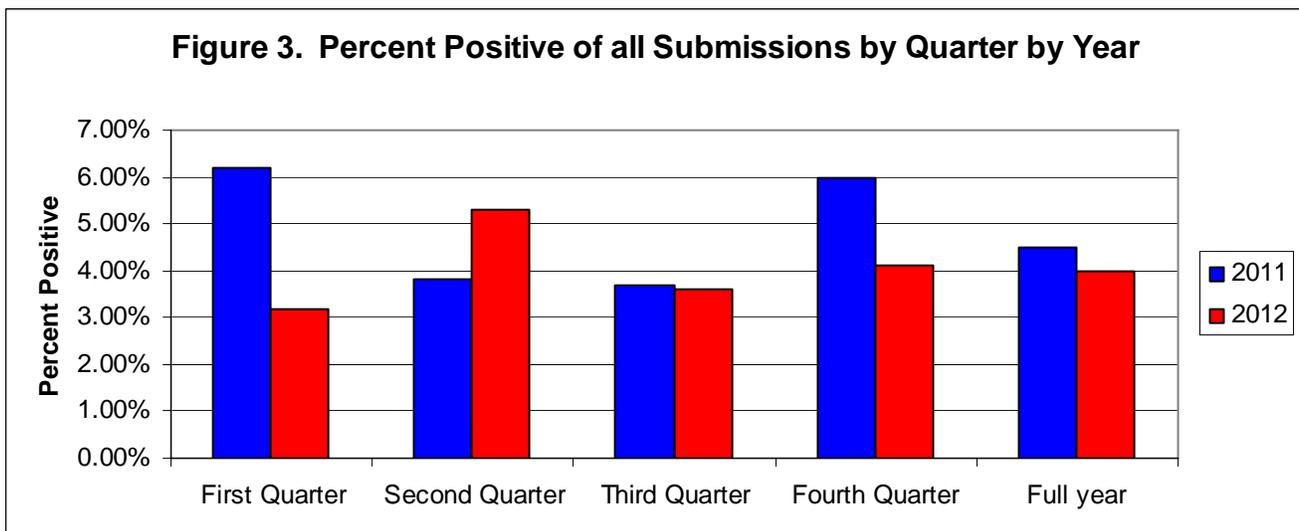
Cumulative Submissions and Positive Results by Month

Animal submission numbers fluctuated throughout the year. As expected, the highest number of submissions occurred during June, July and August (see **Table 3**). The lowest number of submissions occurred during the winter months of December, January, and February. This same trend is seen annually and is due to the greater activity of wildlife species during the spring and summer months, coinciding with the time that humans increase their outdoor activity level. These simultaneous events result in more frequent contact between humans and wildlife, and lead to more animal rabies testing.

Table 3. Submissions, Number Positive for Rabies, and Percent Positive by Month and Animal Type, 2011 and 2012

Month	TERRESTRIAL ANIMALS						BATS								
	Submitted 2011		Positive 2011		Submitted 2012		Positive 2012		Submitted 2011		Positive 2011		Submitted 2012		Positive 2012
January	107	7	7%	108	5	5%	13	0	0%	43	1	2%			
February	91	6	7%	113	5	4%	12	0	0%	38	0	0%			
March	144	11	8%	118	4	3%	20	0	0%	42	0	0%			
April	121	5	4%	121	7	6%	28	0	0%	17	3	18%			
May	146	10	7%	134	9	7%	29	0	0%	103	6	6%			
June	205	7	3%	167	7	4%	98	2	2%	103	2	2%			
July	176	5	3%	199	11	6%	131	0	0%	233	5	2%			
August	208	9	4%	179	8	4%	341	5	1%	510	12	2%			
September	151	13	9%	133	6	5%	25	6	24%	37	5	14%			
October	122	7	6%	130	7	5%	18	6	33%	19	2	11%			
November	124	6	5%	101	1	1%	17	1	6%	28	1	4%			
December	105	4	4%	91	3	3%	21	0	0%	23	1	4%			
TOTAL	1700	90	5%	1594	73	5%	753	20	3%	1196	38	3%			

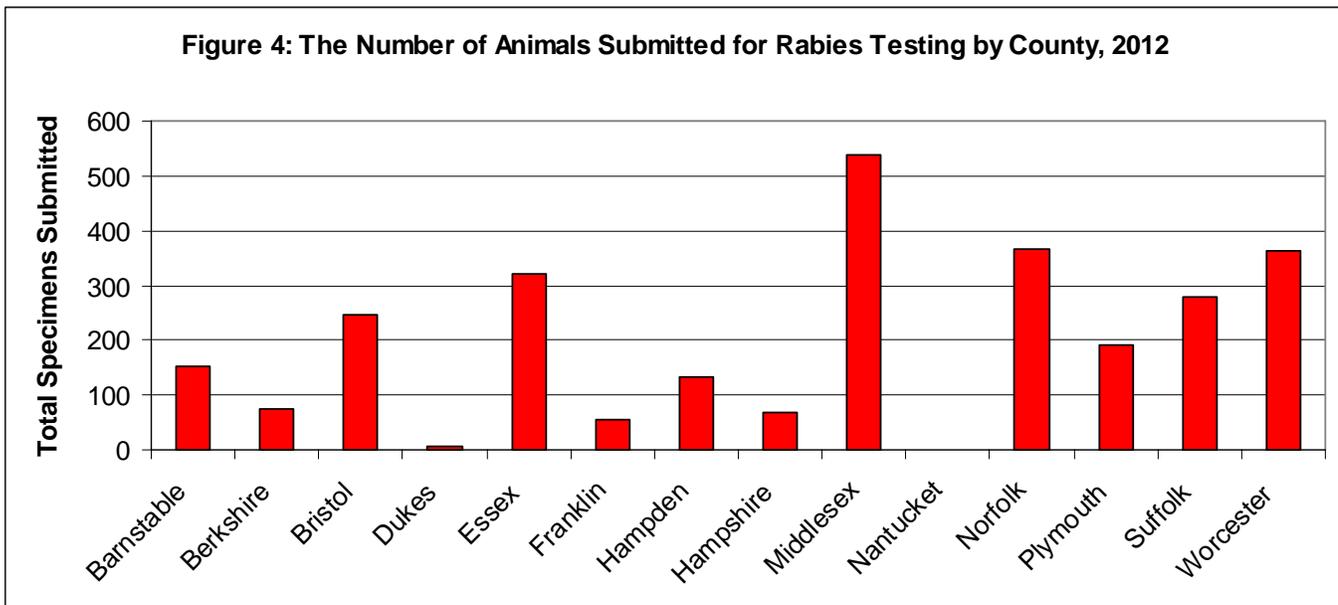
The proportion of animals testing positive for rabies also varies throughout the year, generally showing a consistent pattern from year-to-year (see **Figure 3**). The change in the percent positive is normally small between quarters and significant departures from this seasonal pattern can be used to detect alterations in the intensity of virus circulation in an area. The percent positive was generally lower in 2012 than in 2011 with the exception of the second quarter.



Submissions and Positive Results by County

In 2012, 13 of the 14 counties in Massachusetts submitted at least one animal for rabies testing, and all counties, except Nantucket and Dukes, had at least one animal that tested positive (see **Table 4** below). Middlesex, Norfolk and Worcester counties submitted the highest number of animals (n = 538, n = 365, n = 362, respectively). Worcester County had the highest number of animals that tested positive (n = 21) and Franklin County had the highest proportion of submitted animals that tested positive (7.4%).

County	1st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	Cumulative
Barnstable	1/25 (4%)	1/33 (3%)	3/81 (3.7%)	0/13 (--)	5/152 (3.3%)
Berkshire	0/14 (--)	4/21 (19%)	5/29 (17.2%)	0/11 (--)	9/75 (12%)
Bristol	3/42 (7.1%)	3/42 (7.1%)	9/134 (6.7%)	1/29 (3.5%)	16/247 (6.5%)
Dukes	0/0 (--)	0/0 (--)	0/5 (--)	0/0 (--)	0/5 (--)
Essex	2/49 (4.1%)	3/86 (3.5%)	3/140 (2.1%)	3/45 (6.7%)	11/320 (3.4%)
Franklin	1/8 (12.5%)	0/15 (--)	2/24 (8.3%)	1/7 (14.3%)	4/54 (7.4%)
Hampden	0/28 (--)	3/25 (12%)	3/57 (5.3%)	3/24 (12.5%)	9/134 (6.7%)
Hampshire	0/18 (--)	1/12 (8.3%)	1/31 (3.2%)	0/7 (--)	2/68 (2.9%)
Middlesex	2/78 (2.6%)	6/122 (4.9%)	5/257 (2%)	2/81 (2.5%)	15/538 (2.8%)
Nantucket	0/0 (--)	0/1 (--)	0/0 (--)	0/0 (--)	0/1 (--)
Norfolk	4/55 (7.3%)	3/84 (3.6%)	2/182 (1.1%)	1/44 (2.3%)	10/365 (2.7%)
Plymouth	1/28 (3.6%)	3/48 (6.6%)	3/81 (3.7%)	2/34 (5.9%)	9/191 (4.7%)
Suffolk	0/59 (--)	0/63 (--)	0/109 (--)	0/47 (--)	0/278 (--)
Worcester	1/58 (1.7%)	7/93 (7.5%)	11/161 (6.8%)	2/50 (4%)	21/362 (5.8%)



Mapping

MDPH maps rabies-positive terrestrial animals on an annual basis (see **Figure 5**).

Three positive animals, tested for surveillance purposes from Barnstable County by the United States Department of Agriculture (USDA), are included. The USDA continues to conduct an oral rabies vaccine baiting program in multiple towns in the county in an effort to reduce the number of rabies positive animals.

Figure 5.

Terrestrial Animals Positive for Rabies

By Receipt Year

