

2020 Rabies Annual Summary
Wadsworth Center Rabies Laboratory
New York State Department of Health
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Introduction

Rabies is a single stranded RNA virus that can cause fatal neurological disease in all mammals. There are several species known to be vectors of rabies including dogs, raccoons, mongoose, bats, skunks, and foxes. Rabies is one of the oldest diseases identified, first described 2000 BCE. Paradoxically, rabies has one of the highest fatality rates of any virus yet is considered a preventable disease when treated prior to the appearance of symptoms. Classical rabies is found worldwide with few exceptions being in island states or nations. Both terrestrial and bat rabies are present in the US the former first reported in 1983 and latter in 1953.

In New York State, raccoon rabies was first identified in 1990 and remains endemic throughout the state apart from Suffolk and Nassau counties on Long Island. Between 150 and 400 rabid raccoons have been submitted to the NYSDOH rabies laboratory annually since 2005. Although over a hundred non-raccoon terrestrial animals are also diagnosed as rabies positive each year, they are most commonly the result of raccoon rabies virus variant. The infections demonstrate a spill over infection between a common rabies vector species and non-target species including domestic animals such as cats, horses, and cattle. Rabies in bats found in New York State was first identified in 1956. Since then, rabies has been identified in all bat species found in New York State and resulted in at least one human fatality.

2020 Rabies Laboratory data

The Rabies Laboratory tested a total of 6,787 samples in 2020, 5,936 of which were submitted from around New York State, including 20 from 3 of the 5 boroughs of New York City. The percentage of rabies positive samples submitted from within NYS was slightly lower than the previous year (5.8%, n=347). Of the 868 samples submitted from our out of state cooperators, 156, (18.0%) were positive for rabies.

The data presented in this report is based on specimens received from New York State unless otherwise noted. The numbers may not add up to 100% as a result of no or unknown response on sample submission demographic information.

As in previous years, the majority of 5936 specimens submitted from throughout the state were bats, 2635 (44%), followed by raccoons, 1023 (17%), cats, 795 (13%), dogs, 549 (9%), skunks, 272 (5%), other “wild” animal, 265 (4%), gray and red foxes, 157 (3%), rodents/lagomorphs, 116 (2%), other domestic, 69 (1%) and cattle, 54 (1%). A complete list of animals submitted to the rabies laboratory can be found on page 17.

In 2020, the animals included in the other wild animal category are deer (138), coyote (11), fishers (21), bobcats (20), opossum (22) bears (8), otters (10) and porcupines (7). Other

domestic animals include horses (26), goats (26), sheep (8), ferrets (4) pigs (1) alpacas (2) and llamas (2). The rodent/lagomorph group is comprised of woodchucks (56), rabbits (3) muskrats (10), beavers (1), and chipmunks (9).

In New York State during 2020, rabies virus infection was diagnosed in 347 animals including but not limited to 159 raccoons, 71 bats, 28 skunks, 31 cats, 34 foxes, 4 horses, 4 woodchucks, 4 deer, 3 bobcat, 3 cattle, 2 fishers, 2 dogs, and 1 ferret.

The number of rabies positive samples received in 2020 was 8% less than in 2019. The incidence was lower in all categories in 2020 except cats, which demonstrated a 29% increase and dogs, representing a 100% increase. The number of rabid dogs in New York State has ranged from 0-1 since 2008 and the diagnosis of a second rabid dog at the end of 2020 was statistically significant yet is not indicative of an outbreak as both were the results of raccoon rabies. Cats remain one of the highest submitted animals for rabies testing. Cats are the most common domestic animal diagnosed with rabies in NY and are the 4th most common animal species in New York diagnosed with rabies overall. The majority of the cats submitted for rabies testing were reported as owned (54%), followed by wild/feral/barn cats (40%), and an unknown ownership status (5%). An ownership status for remaining cats was not provided.

In total, only 12% of cats submitted for rabies testing were current on rabies vaccine of which 20% were reported as owned. Most owned cats were reported as not current with rabies vaccine (29%), followed by unknown vaccine history (25%), and unvaccinated (20%). Of the cats that were diagnosed as rabid, 22 were reported as wild, 6 as owned, and 2 with unknown ownership. None of the cats diagnosed rabies positive were current with rabies vaccination, 3% reported as not current, 29% as unvaccinated, and 61% had an unknown vaccination history. The majority (90%) of rabid cats had a history of biting and/or scratching a human and 4 of the rabid cats (13%) had also bitten another animal.

Unlike cats, 95% of the dogs were owned. Forty-three percent of dogs submitted for rabies testing were described as owned and vaccinated whereas 25% of the owned dogs had an unknown vaccination history, 15% were not current, and 7% were unvaccinated. This was the first time since 2002 that more than one dog was positive for rabies in New York State. Both dogs were reported as owned, one as unvaccinated, the other as not current on rabies vaccine.

Over half (61%) of the bats submitted for testing had a history of human contact. Two hundred (8%) of the bats with a history of human contact were either rabies positive or unsatisfactory for testing, both of which may justify the use of rabies prophylaxis.

There were 54 people bitten by raccoons in 2020 and in 26 (48%) of those cases, the raccoons were positive for rabies. Eighty-one of the 159 rabid raccoons (51%) had contact with a domestic animal. Of the domestic animals with rabid raccoon exposure, 89% were dogs.

Of the dogs exposed to a rabid animal during 2020, the majority were exposed by raccoons (67%), followed by skunks (13%), bats (10%), foxes (7%), bobcats (2%), and woodchucks (<1%). Conversely the most common rabid animals to which cats were exposed were bats (45%), followed by other cats (20%), raccoons (20%), foxes (10%) and skunks (5%).

All rabies positives specimens were variant typed during 2020. All but one of the rabid terrestrial animals were infected with the raccoon variant; one skunk was infected with a big brown bat rabies virus variant. All bat species were infected with a homologous rabies virus variant with the exception of a little brown bat that was infected with a big brown bat rabies virus variant.

COVID-19 and the NYSDOH Rabies Laboratory

Between March 2020 and June 2020, and October and December 2020, several rabies laboratory employees were reassigned full or part time to the COVID response team to assist with diagnostics and data management. During that time the NYSDOH rabies laboratory continued to maintain all diagnostic testing and provide same day results.

Overall, the year 2020 was an unusual one for rabies testing, possibly the result of the COVID-19 outbreak. The number of submissions was noticeably decreased in the early part of the year as compared to 2019 but rebounded in May and June, potentially the result of children out of school and more people spending time outdoors. Additionally, some state laboratories had reduced their non-COVID-19 testing capacities and counties may have mistakenly believed this was the case with the Wadsworth Center Rabies laboratory. However, we remained open and continued to test. There was a significant difference when comparing 2020 to 2019 ($p < 0.5$, students t test) but not when taking 2015 and 2016 into account. The years 2017 and 2018 were not included in the comparison as we performed testing for other state laboratories.

Laboratory operational data 2004-2020

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Specimens Received																	
Animal specimens	8459	8318	8928	9730	9345	7275	6642	6430	6657	5689	6710	6055	7200	9235	7974	7224	6787
Human Sera	2258	2179	2000	2167	1529	1272	1042	694	1086	877	885	830	1227	1087	849	1072	684
Animal Sera-serum neutralization	2108	2806	1290	1389	3003	1503	1815	753	1080	2524	8486	7238	4966	4481	2,890	3,522	2987
Animal-variant typing	160	17	138	132	88	92	82	83	31	64	89	207	553	611	622	573	533
Human-Diagnostic testing	6	8	8	3	4	2	4	10	0	1	1	2	1	2	3	1	0
Specimens Tested																	
Direct Flourescent Antibody	8459	8318	8928	9730	9345	7275	6642	6430	6657	5689	6710	6055	7200	9235	7947	7224	6800
Neutralization for rabies antibody	4366	4985	3290	3556	4532	2775	2857	1717	2166	3401	9371	8789	5797	4256	5697	4036	2587
Cell culture virus isolation	177	152	151	128	116	110	104	104	110	135	110	53	79	2	0	0	0
Variant Typing	160	17	138	132	88	91	82	83	200	64	56	53	553	611	622	573	533
PCR/cell culture parallel testing	0	0	0	0	0	0	0	0	1500	0	220	0	760	1292	0	0	0
PCR only for backup testing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	79	104	1267	1188	1177
Human Diagnostic Testing													4	8	12	4	0
Workload Performed																	
Direct Flourescent Antibody	18200	17500	17225	16450	15525	11449	10398	20138	24429	17352	25840	30378	19317	24939	16639	20481	17808
Neutralization for rabies antibody	5842	6949	4193	4528	6634	3827	4128	2244	2922	4359	14987	14057	6456	6326	6563	5094	4040
Cell culture virus isolation	800	85	690	660	440	460	410	415	2000	135	220	265	1	2	3	1	0
Monoclonal Antibody Testing	160	17	138	132	88	92	82	83	400	174	N/A	N/A	1	N/A	N/A	N/A	N/A
Human Diagnostic Testing	54	72	72	27	36	18	36	90	0	78	25	27	29	20	84	28	0
PCR variant typing									31	64	89	207	685	835	622	573	533
PCR testing									9576	648	916	2463	2280	3876	4530	4250	3921
WGS testing									N/A	N/A	N/A	N/A	N/A	3	46	41	32
DFAT Positive screening procedure									735	805	759	636	714	727	719	205	703
Non-Specific Staining Procedure.									75	46	60	65	77	158	161	152	216
Canine Distemper testing in Wildlife															54	30	57

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01/01/2020 to 12/31/2020

Number examined ... Number positive

COUNTY	Dogs		Cats		Cattle		Other Domestic		Skunk	Fox	Bats	Raccoons		Rodents Lagamorphs		Other Wild	Total Rcvd	Total Positive				
Albany	20	0	27	1	0	0	2	0	19	0	2	0	114	2	24	5	10	1	9	0	227	9
Allegany	3	0	1	0	0	0	1	0	0	0	1	0	20	0	2	0	0	0	1	0	29	0
Bronx	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0	0	0	12	0
Broome	14	0	11	0	0	0	2	0	1	0	3	2	49	1	4	1	2	0	4	0	90	4
Cattaraugus	2	0	8	0	3	0	1	0	0	0	2	0	40	1	19	0	1	0	5	1	81	2
Cayuga	6	0	10	1	2	0	0	0	1	1	5	4	42	1	13	7	0	0	3	1	82	15
Chautauqua	1	0	7	1	0	0	1	0	0	0	5	0	20	1	18	3	1	0	3	0	56	5
Chemung	2	0	7	0	1	0	0	0	1	0	1	0	27	0	2	1	0	0	4	0	45	1
Chenango	6	0	8	0	0	0	0	0	2	0	0	0	13	0	2	1	0	0	5	0	36	1
Clinton	10	0	5	0	0	0	1	0	30	0	0	0	11	1	25	0	0	0	4	0	86	1
Columbia	3	0	14	0	4	0	4	0	2	1	2	0	30	0	12	7	5	0	4	1	80	9
Cortland	4	0	5	0	1	0	0	0	0	0	1	1	7	0	3	3	2	0	2	1	25	5
Delaware	0	0	5	0	2	0	0	0	0	0	0	0	10	0	0	0	0	0	7	0	24	0
Dutchess	6	0	21	1	0	0	0	0	0	0	4	2	52	1	8	4	3	0	5	0	99	8
Erie	115	0	120	0	0	0	1	0	85	2	18	1	504	19	158	3	17	0	3	0	1021	25
Essex	5	0	6	0	1	0	2	1	1	0	1	0	13	0	5	1	0	0	4	0	38	2
Franklin	2	0	4	0	3	0	1	0	0	0	1	0	15	0	10	0	1	0	1	0	38	0
Fulton	2	0	2	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	8	0
Genesee	1	0	8	1	0	0	0	0	4	1	3	1	12	0	20	3	0	0	3	0	51	6
Greene	2	0	4	0	0	0	1	0	0	0	0	0	15	0	5	1	0	0	5	0	32	1
Hamilton	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0	3	0	7	0
Herkimer	4	0	9	1	0	0	2	0	3	3	2	2	24	4	3	1	0	0	5	1	52	12
Jefferson	10	0	11	0	3	0	4	0	51	1	13	1	47	3	128	6	1	0	7	0	275	11
Kings	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	3	0
Lewis	1	0	5	0	2	0	3	0	9	1	6	0	22	1	22	2	2	0	1	0	73	4
Livingston	7	0	10	1	2	0	0	0	0	0	0	0	17	1	3	3	2	0	12	0	53	5
Madison	2	0	16	1	0	0	0	0	0	0	1	1	26	0	10	4	0	0	8	0	63	6
Monroe	15	0	18	1	0	0	0	0	2	2	2	0	94	2	14	5	0	0	9	0	154	10
Montgomery	0	0	4	0	0	0	0	0	2	1	1	0	5	0	1	1	1	0	0	0	14	2
Nassau	13	0	30	0	0	0	1	0	0	0	1	0	4	0	10	0	3	0	1	0	63	0
New York	5	0	2	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	9	1
Niagara	19	0	17	0	4	0	1	0	8	0	13	1	48	1	141	6	4	0	5	0	260	8
Oneida	16	0	21	3	3	1	3	0	7	1	2	2	45	1	9	5	1	0	2	0	109	13
Onondaga	46	1	42	2	0	0	0	0	6	2	2	1	225	4	13	6	0	0	4	0	338	16
Ontario	5	1	9	0	0	0	0	0	1	0	2	1	35	0	2	1	1	0	9	1	64	4
Orange	22	0	27	2	0	0	3	0	1	0	2	0	35	1	5	1	2	0	7	1	104	5
Orleans	3	0	9	3	1	0	0	0	1	0	2	0	15	0	30	3	1	0	4	1	66	7
Oswego	13	0	7	0	0	0	2	1	4	2	14	3	66	1	49	21	2	0	4	1	161	29
Otsego	5	0	10	0	1	0	1	0	2	1	0	0	68	4	2	1	1	0	6	0	96	6
Out-Of-State	3	0	11	1	0	0	4	0	231	17	31	7	3	1	506	113	28	1	34	7	851	147
Putnam	2	0	11	0	0	0	1	0	2	1	0	0	58	0	3	3	2	0	2	0	81	4
Queens	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	1	0	5	0
Rensselaer	12	0	9	1	0	0	1	0	0	0	2	1	27	0	13	6	3	0	6	0	73	8
Rockland	9	0	19	2	0	0	0	0	2	0	2	0	24	0	6	1	6	0	0	0	68	3
Saratoga	14	0	23	0	0	0	2	0	1	1	4	1	42	3	10	5	6	1	8	0	110	11
Schenectady	8	0	16	0	0	0	1	0	0	0	2	0	22	1	3	0	2	0	2	0	56	1
Schoharie	8	0	14	0	2	0	1	0	0	0	0	0	5	0	6	3	0	0	0	0	36	3
Schuyler	2	0	1	0	3	0	2	0	0	0	1	0	2	0	5	2	1	0	2	0	19	2
Seneca	1	0	5	0	0	0	2	0	0	0	1	1	11	0	3	0	0	0	3	0	26	1
St. Lawrence	1	0	5	0	2	0	1	0	10	0	11	0	49	3	97	0	2	0	14	0	192	3
Steuben	6	0	11	1	4	0	3	1	1	1	2	1	8	0	3	1	1	0	17	1	56	6
Suffolk	18	0	34	0	1	0	1	0	1	0	2	0	41	2	33	0	4	0	16	0	151	2
Sullivan	4	0	9	1	1	0	1	0	1	0	1	0	4	0	5	1	1	1	1	0	28	3
Tioga	5	0	3	0	1	0	0	0	0	0	1	1	24	1	2	1	1	1	8	0	45	4
Tompkins	10	0	15	0	1	0	3	0	0	0	6	3	146	3	9	4	3	0	6	0	199	10
Ulster	13	0	20	1	0	0	1	0	1	0	2	0	74	1	7	4	0	0	6	1	124	7
Warren	8	0	3	0	0	0	1	0	0	0	3	2	20	0	1	1	0	0	1	0	37	3
Washington	12	0	4	1	4	1	2	0	0	0	0	0	23	2	2	2	0	0	6	0	53	6
Wayne	4	0	10	2	0	0	1	0	1	1	0	0	14	1	3	3	0	0	6	0	39	7
Westchester	17	0	49	2	0	0	0	0	5	2	1	0	247	3	20	12	10	0	2	0	351	19
Wyoming	1	0	0	0	2	1	2	1	2	2	1	0	12	0	19	4	0	0	4	0	43	8
Yates	3	0	8	1	0	0	0	0	1	1	1	1	5	0	0	0	0	0	2	0	20	3
Total	552	2	805	32	54	3	67	4	503	45	188	41	2639	72	1529	272	144	5	306	18	6,787	494

Any unlisted county had no specimens processed during the reporting period.

Report of N.Y. State Dept. of Health Rabies Laboratory

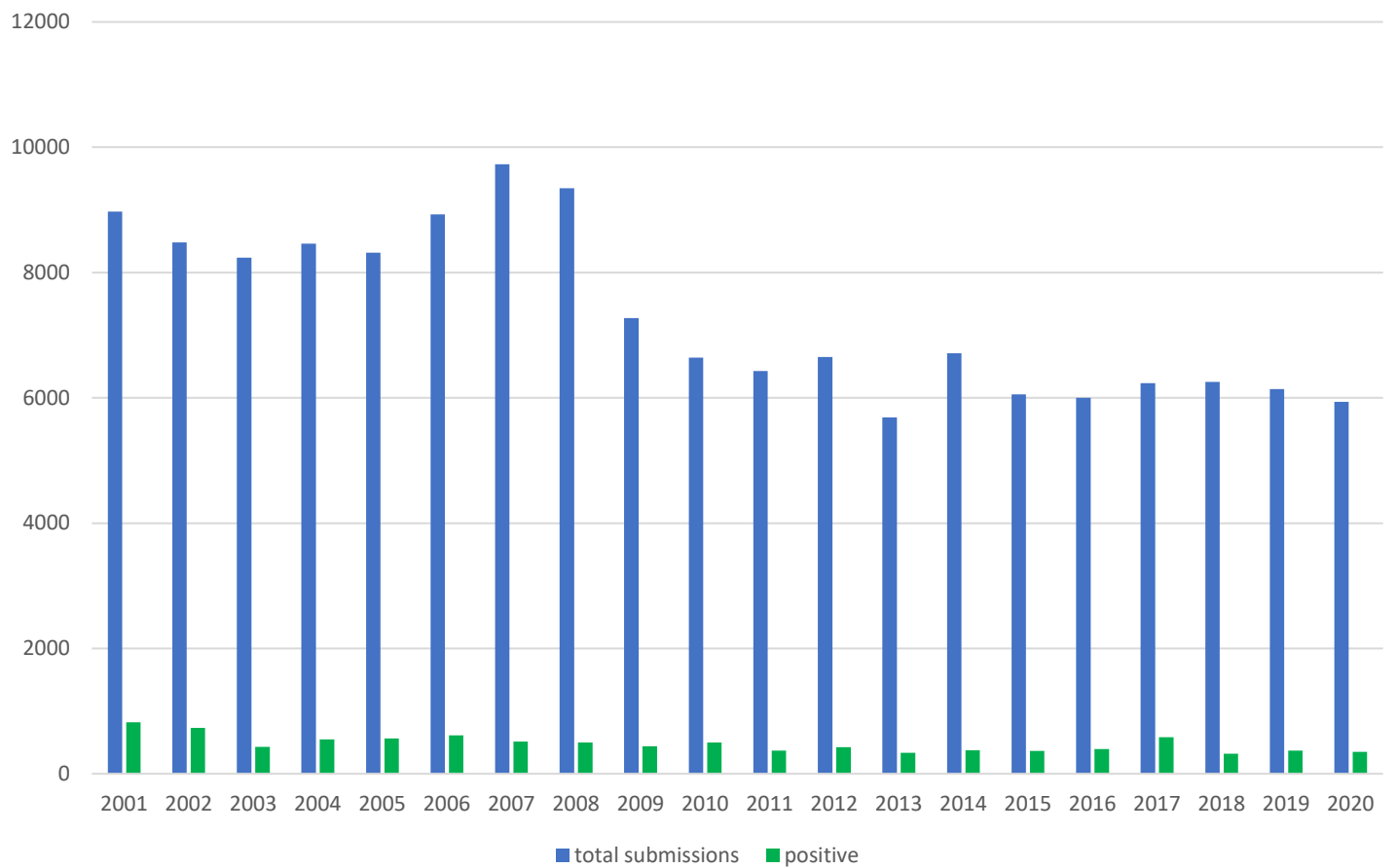
01/01/2020 to 12/31/2020

Number examined ... Number positive

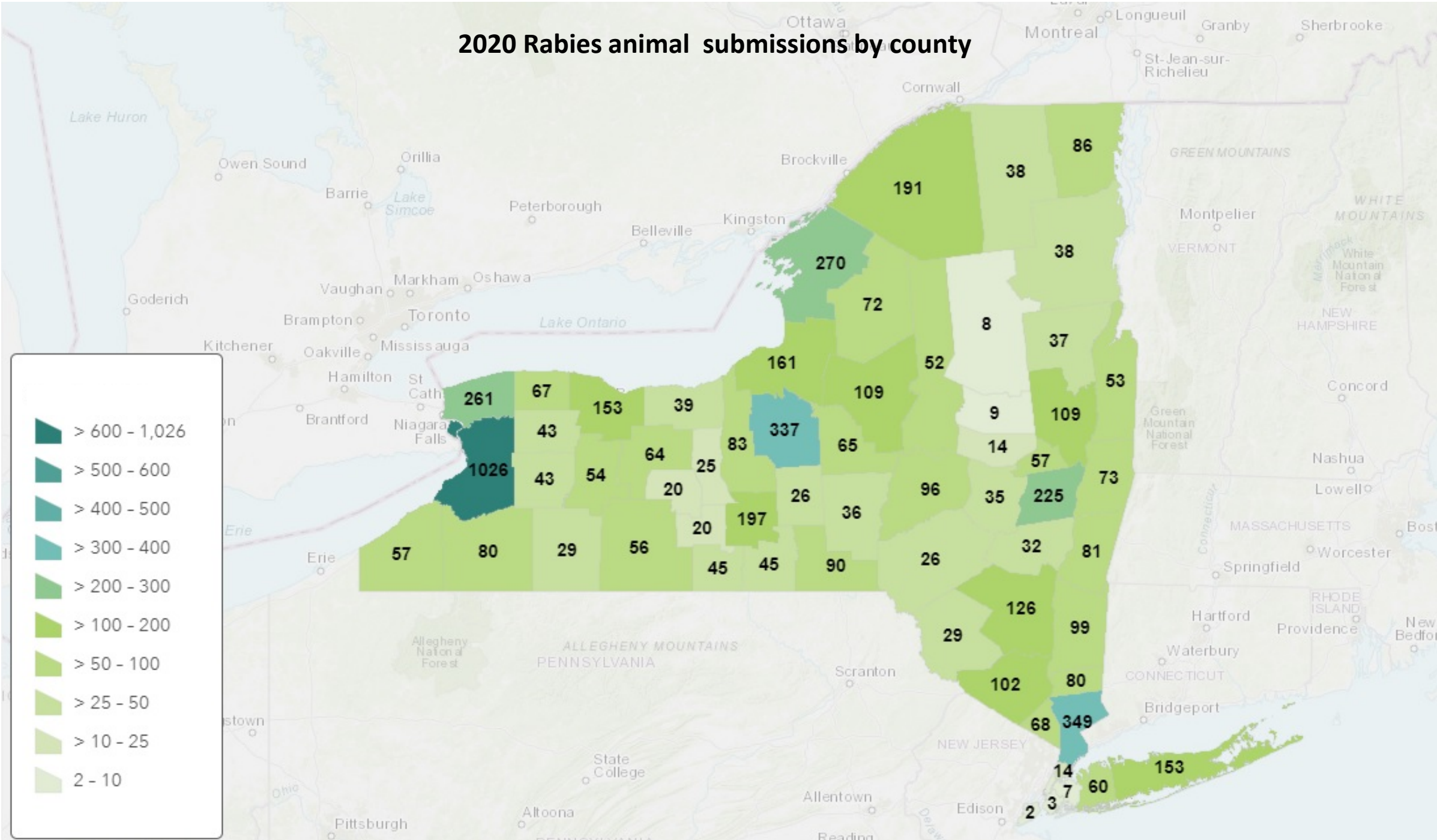
COUNTY	Dogs		Cats		Cattle		Other Domestic		Skunk		Fox		Bats		Raccoons		Rodents Lagamorphs		Other Wild		Total Rcvd	Total Positive
Albany	20	0	27	1	0	0	2	0	19	0	2	0	114	2	24	5	10	1	9	0	227	9
Allegany	3	0	1	0	0	0	1	0	0	0	1	0	20	0	2	0	0	0	1	0	29	0
Bronx	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	7	0	0	0	12	0
Broome	14	0	11	0	0	0	2	0	1	0	3	2	49	1	4	1	2	0	4	0	90	4
Cattaraugus	2	0	8	0	3	0	1	0	0	0	2	0	40	1	19	0	1	0	5	1	81	2
Cayuga	6	0	10	1	2	0	0	0	1	1	5	4	42	1	13	7	0	0	3	1	82	15
Chautauqua	1	0	7	1	0	0	1	0	0	0	5	0	20	1	18	3	1	0	3	0	56	5
Chemung	2	0	7	0	1	0	0	0	1	0	1	0	27	0	2	1	0	0	4	0	45	1
Chenango	6	0	8	0	0	0	0	0	2	0	0	0	13	0	2	1	0	0	5	0	36	1
Clinton	10	0	5	0	0	0	1	0	30	0	0	0	11	1	25	0	0	0	4	0	86	1
Columbia	3	0	14	0	4	0	4	0	2	1	2	0	30	0	12	7	5	0	4	1	80	9
Cortland	4	0	5	0	1	0	0	0	0	0	1	1	7	0	3	3	2	0	2	1	25	5
Delaware	0	0	5	0	2	0	0	0	0	0	0	0	10	0	0	0	0	0	7	0	24	0
Dutchess	6	0	21	1	0	0	0	0	0	0	4	2	52	1	8	4	3	0	5	0	99	8
Erie	115	0	120	0	0	0	1	0	85	2	18	1	504	19	158	3	17	0	3	0	1021	25
Essex	5	0	6	0	1	0	2	1	1	0	1	0	13	0	5	1	0	0	4	0	38	2
Franklin	2	0	4	0	3	0	1	0	0	0	1	0	15	0	10	0	1	0	1	0	38	0
Fulton	2	0	2	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	8	0
Genesee	1	0	8	1	0	0	0	0	4	1	3	1	12	0	20	3	0	0	3	0	51	6
Greene	2	0	4	0	0	0	1	0	0	0	0	0	15	0	5	1	0	0	5	0	32	1
Hamilton	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0	3	0	7	0
Herkimer	4	0	9	1	0	0	2	0	3	3	2	2	24	4	3	1	0	0	5	1	52	12
Jefferson	10	0	11	0	3	0	4	0	51	1	13	1	47	3	128	6	1	0	7	0	275	11
Kings	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	3	0
Lewis	1	0	5	0	2	0	3	0	9	1	6	0	22	1	22	2	2	0	1	0	73	4
Livingston	7	0	10	1	2	0	0	0	0	0	0	0	17	1	3	3	2	0	12	0	53	5
Madison	2	0	16	1	0	0	0	0	0	0	1	1	26	0	10	4	0	0	8	0	63	6
Monroe	15	0	18	1	0	0	0	0	2	2	2	0	94	2	14	5	0	0	9	0	154	10
Montgomery	0	0	4	0	0	0	0	0	2	1	1	0	5	0	1	1	1	0	0	0	14	2
Nassau	13	0	30	0	0	0	1	0	0	0	1	0	4	0	10	0	3	0	1	0	63	0
New York	5	0	2	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	9	1
Niagara	19	0	17	0	4	0	1	0	8	0	13	1	48	1	141	6	4	0	5	0	260	8
Oneida	16	0	21	3	3	1	3	0	7	1	2	2	45	1	9	5	1	0	2	0	109	13
Onondaga	46	1	42	2	0	0	0	0	6	2	2	1	225	4	13	6	0	0	4	0	338	16
Ontario	5	1	9	0	0	0	0	0	1	0	2	1	35	0	2	1	1	0	9	1	64	4
Orange	22	0	27	2	0	0	3	0	1	0	2	0	35	1	5	1	2	0	7	1	104	5
Orleans	3	0	9	3	1	0	0	0	1	0	2	0	15	0	30	3	1	0	4	1	66	7
Oswego	13	0	7	0	0	0	2	1	4	2	14	3	66	1	49	21	2	0	4	1	161	29
Otsego	5	0	10	0	1	0	1	0	2	1	0	0	68	4	2	1	1	0	6	0	96	6
Putnam	2	0	11	0	0	0	1	0	2	1	0	0	58	0	3	3	2	0	2	0	81	4
Queens	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	1	0	5	0
Rensselaer	12	0	9	1	0	0	1	0	0	0	2	1	27	0	13	6	3	0	6	0	73	8
Rockland	9	0	19	2	0	0	0	0	2	0	2	0	24	0	6	1	6	0	0	0	68	3
Saratoga	14	0	23	0	0	0	2	0	1	1	4	1	42	3	10	5	6	1	8	0	110	11
Schenectady	8	0	16	0	0	0	1	0	0	0	2	0	22	1	3	0	2	0	2	0	56	1
Schoharie	8	0	14	0	2	0	1	0	0	0	0	0	5	0	6	3	0	0	0	0	36	3
Schuyler	2	0	1	0	3	0	2	0	0	0	1	0	2	0	5	2	1	0	2	0	19	2
Seneca	1	0	5	0	0	0	2	0	0	0	1	1	11	0	3	0	0	0	3	0	26	1
St. Lawrence	1	0	5	0	2	0	1	0	10	0	11	0	49	3	97	0	2	0	14	0	192	3
Steuben	6	0	11	1	4	0	3	1	1	1	2	1	8	0	3	1	1	0	17	1	56	6
Suffolk	18	0	34	0	1	0	1	0	1	0	2	0	41	2	33	0	4	0	16	0	151	2
Sullivan	4	0	9	1	1	0	1	0	1	0	1	0	4	0	5	1	1	1	1	0	28	3
Tioga	5	0	3	0	1	0	0	0	0	0	1	1	24	1	2	1	1	1	8	0	45	4
Tompkins	10	0	15	0	1	0	3	0	0	0	6	3	146	3	9	4	3	0	6	0	199	10
Ulster	13	0	20	1	0	0	1	0	1	0	2	0	74	1	7	4	0	0	6	1	124	7
Warren	8	0	3	0	0	0	1	0	0	0	3	2	20	0	1	1	0	0	1	0	37	3
Washington	12	0	4	1	4	1	2	0	0	0	0	0	23	2	2	2	0	0	6	0	53	6
Wayne	4	0	10	2	0	0	1	0	1	1	0	0	14	1	3	3	0	0	6	0	39	7
Westchester	17	0	49	2	0	0	0	0	5	2	1	0	247	3	20	12	10	0	2	0	351	19
Wyoming	1	0	0	0	2	1	2	1	2	2	1	0	12	0	19	4	0	0	4	0	43	8
Yates	3	0	8	1	0	0	0	0	1	1	1	1	5	0	0	0	0	0	2	0	20	3
Total	549	2	794	31	54	3	63	4	272	28	157	34	2636	71	1023	159	116	4	272	11	5,936	347

Any unlisted county had no specimens processed during the reporting period.

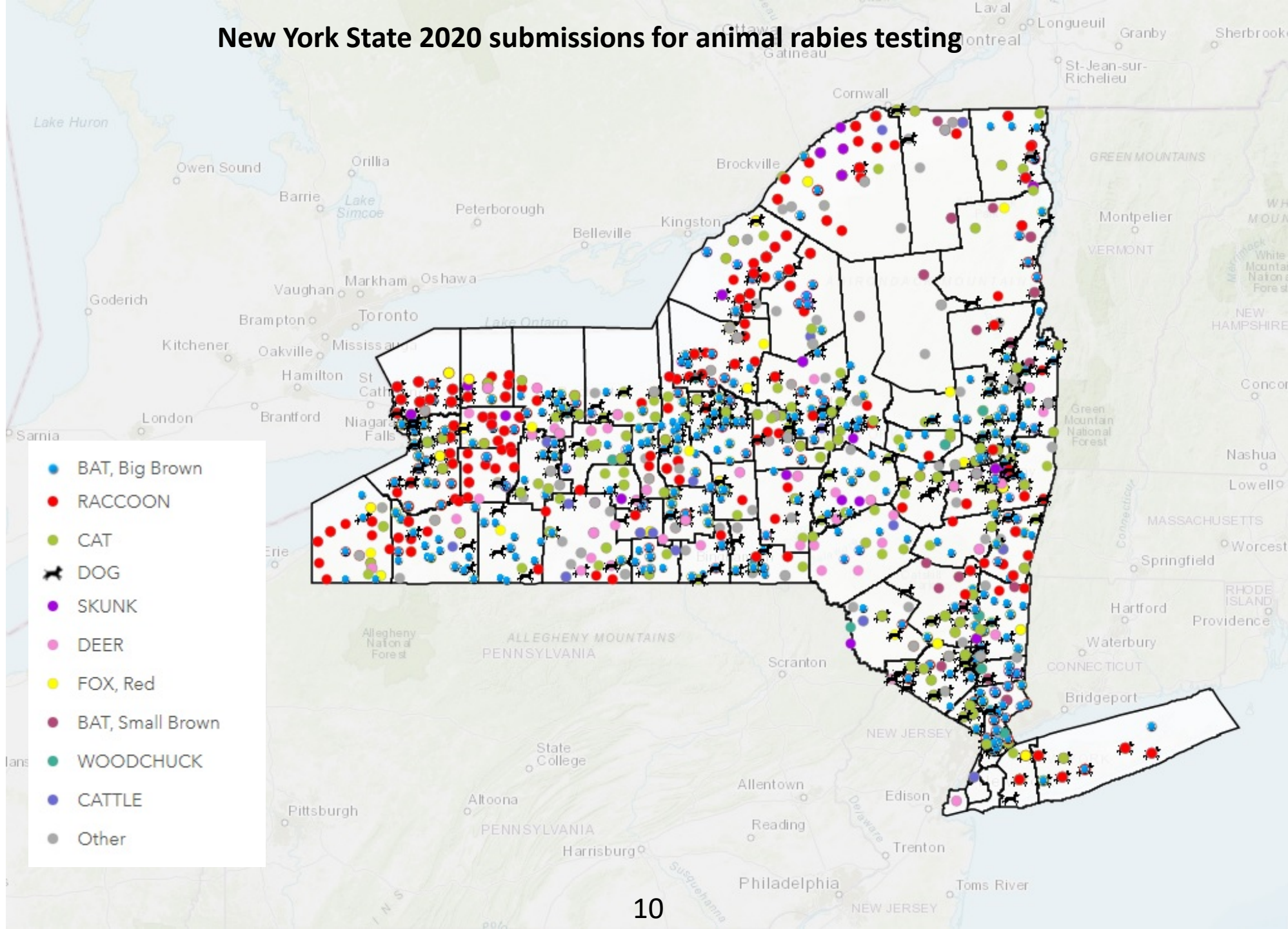
New York State Rabies Laboratory Animals Examined/ Positive Specimens 20 years



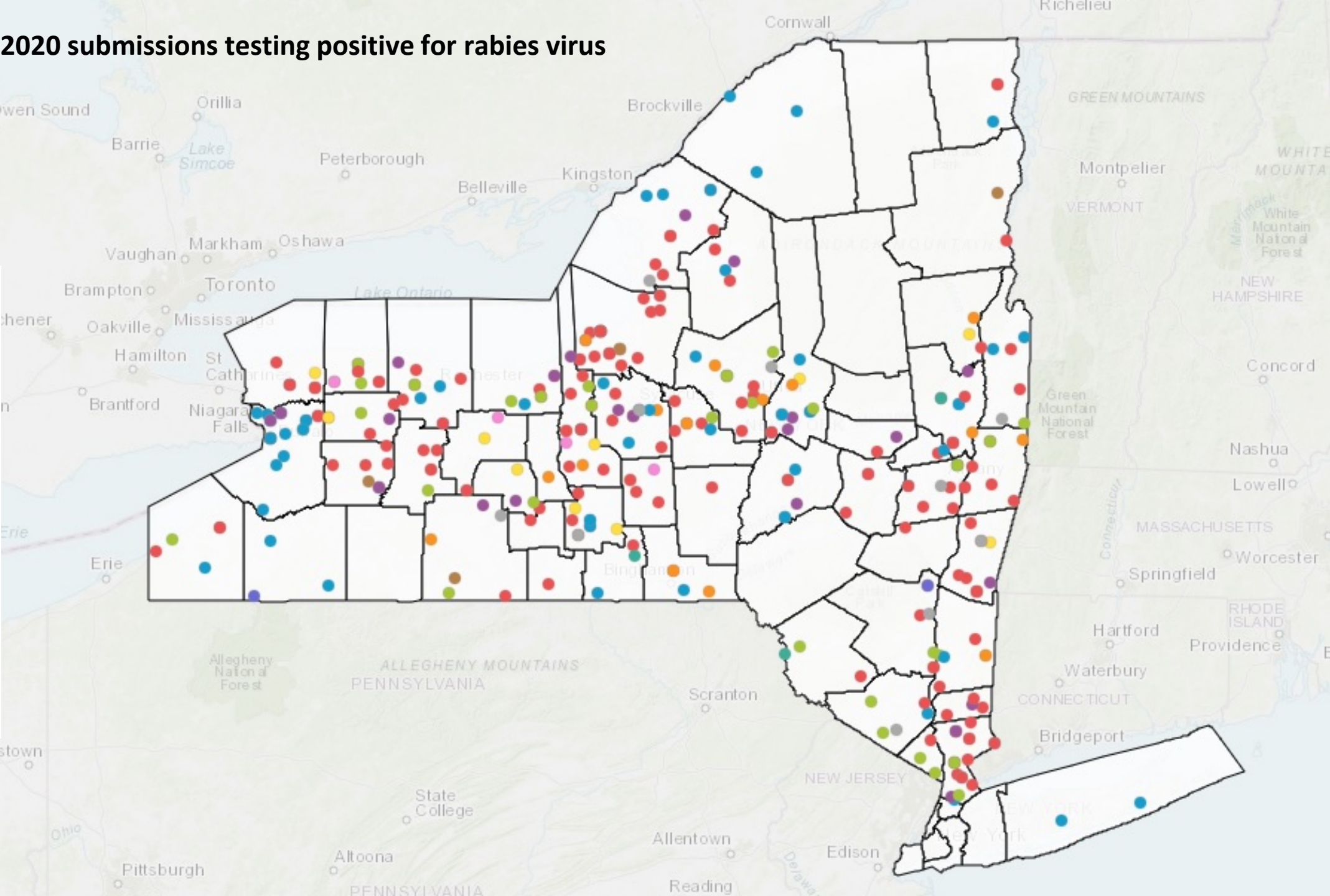
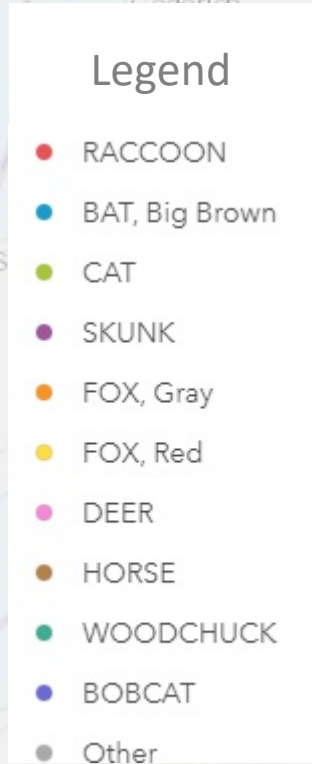
2020 Rabies animal submissions by county



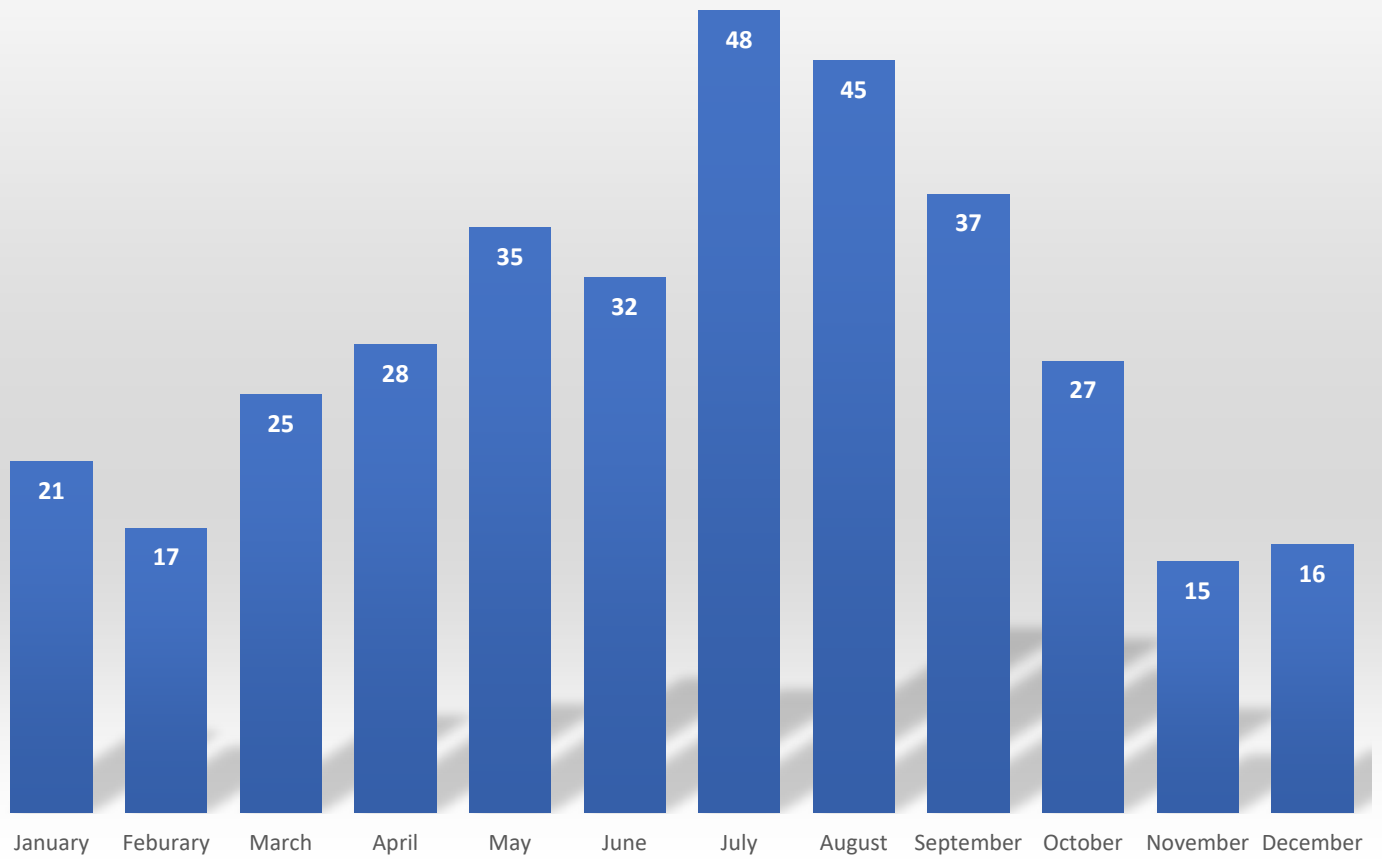
New York State 2020 submissions for animal rabies testing



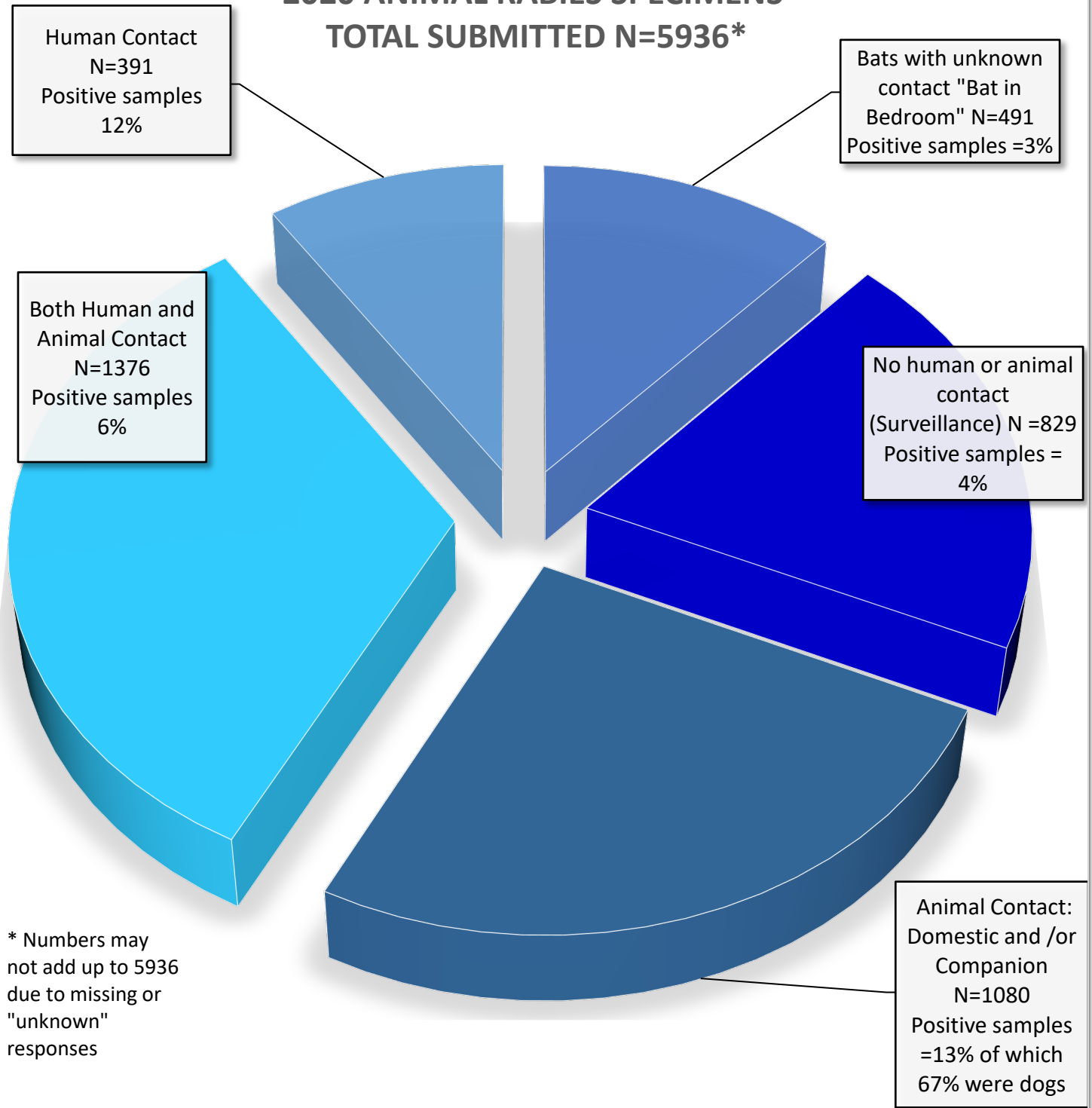
New York State 2020 submissions testing positive for rabies virus



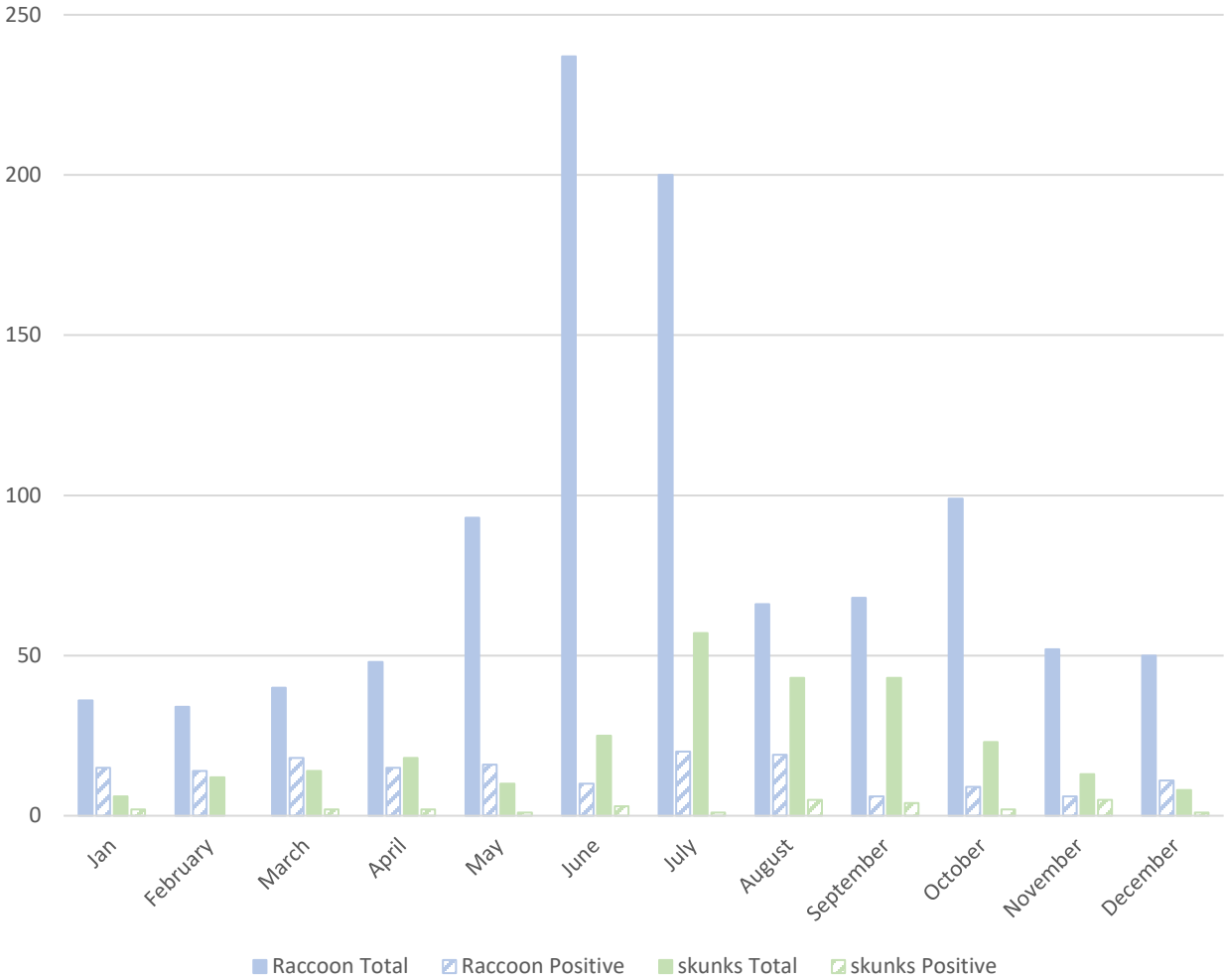
Rabies positive samples by month, 2020



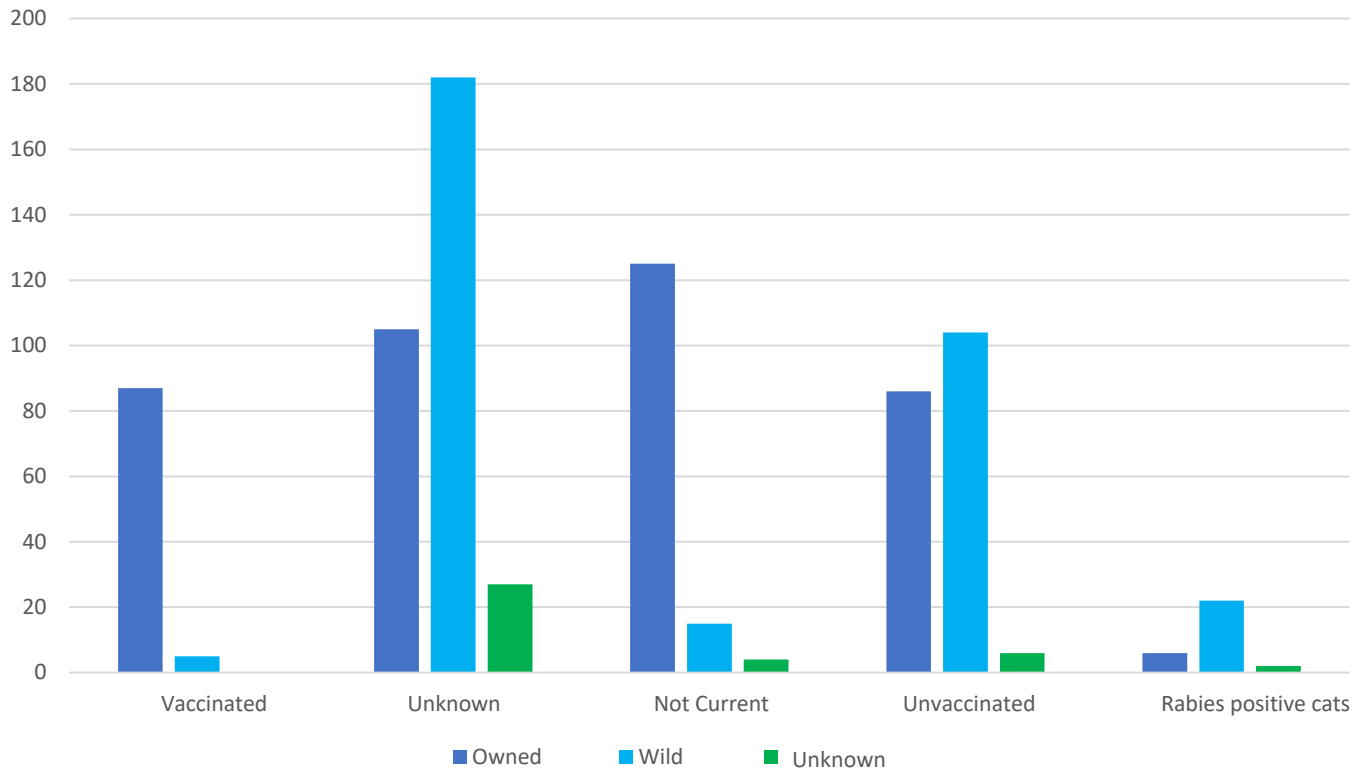
2020 ANIMAL RABIES SPECIMENS TOTAL SUBMITTED N=5936*



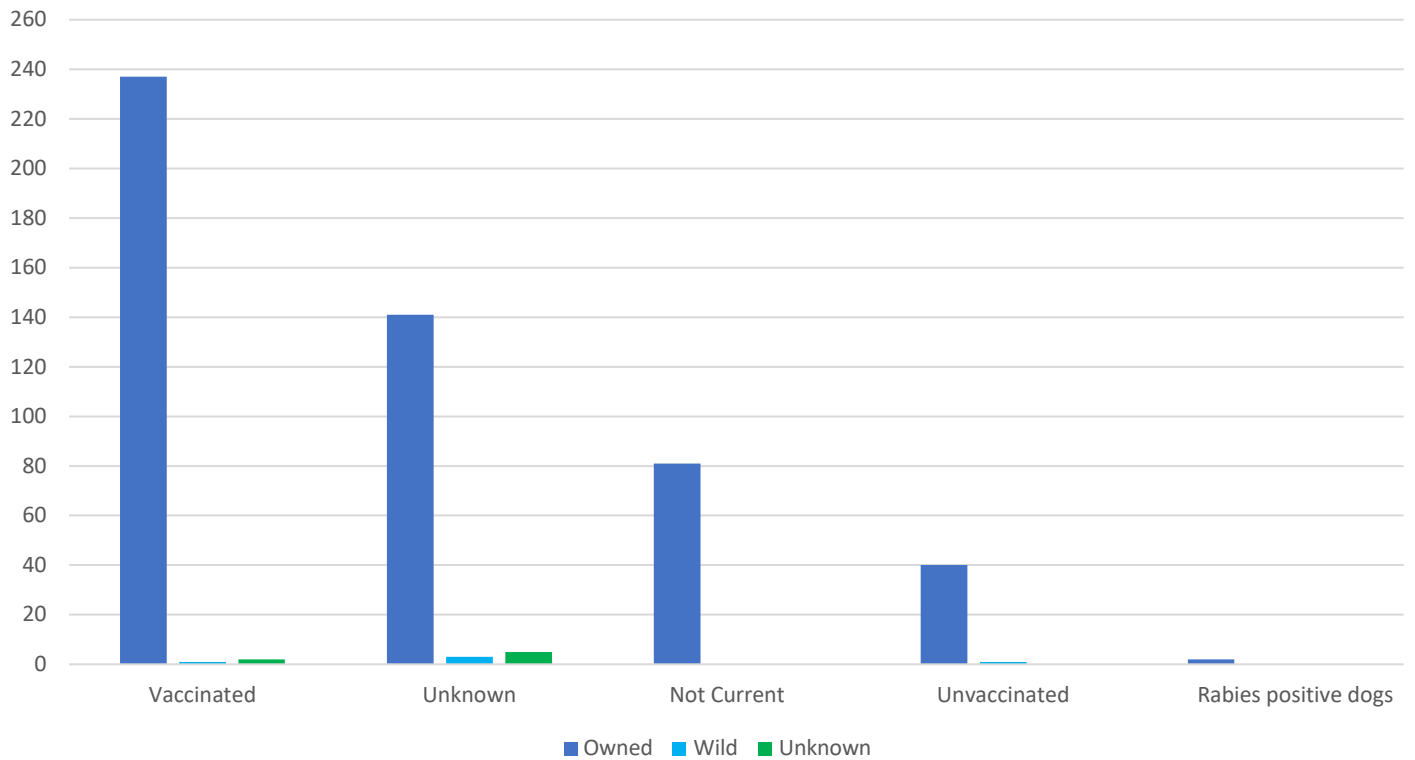
Commonly submitted terrestrial animals during 2020



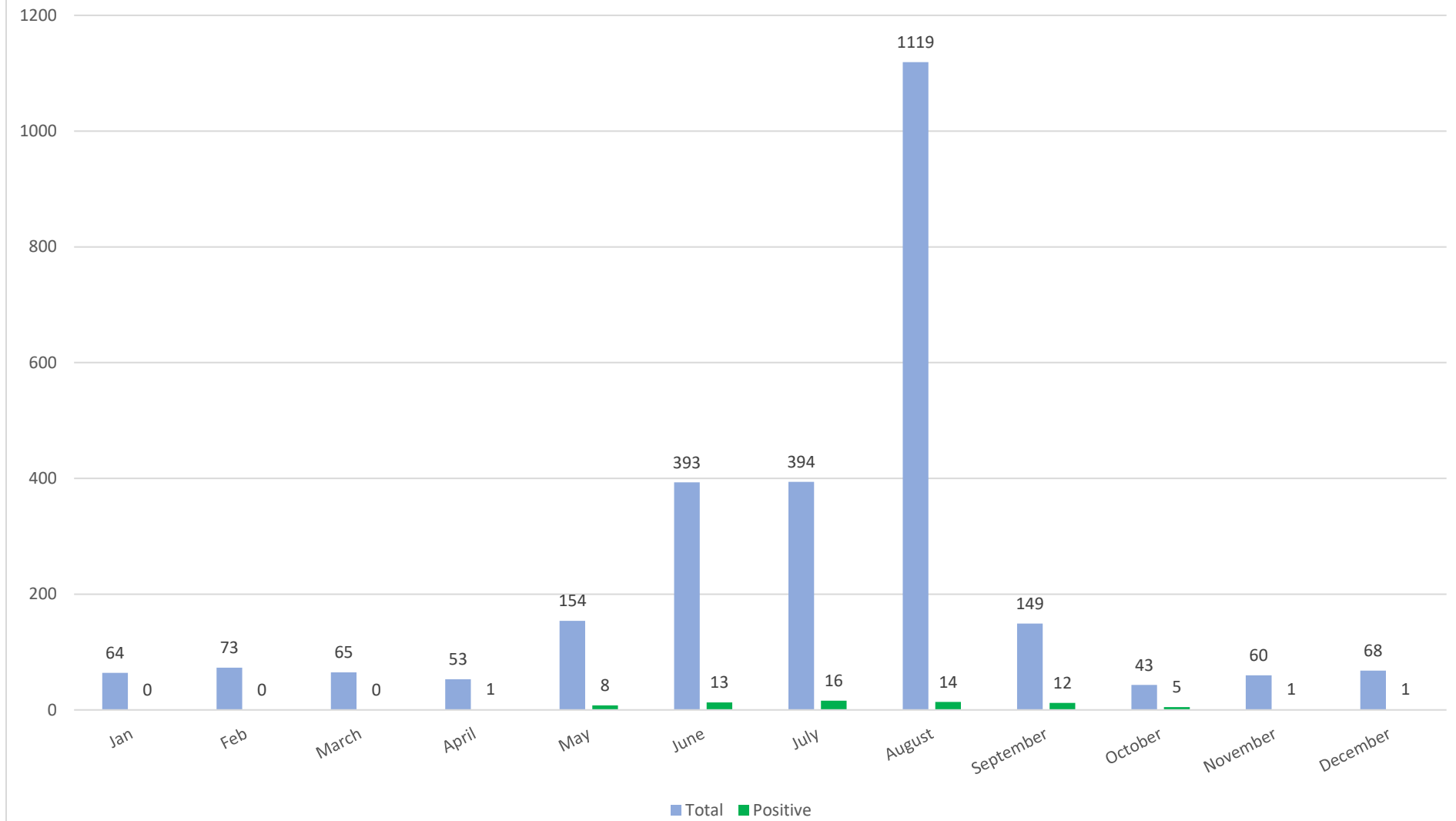
Vaccination and ownership status of cats submitted for rabies testing 2020



Vaccination and ownership status of dogs submitted for rabies testing 2020



Total bat submissions and the number of positive bats by month, 2020



Positive animal specimens received at the NYSDOH Rabies Laboratory 2005-2020

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016*	2017	2017*	2018	2018*	2019	2019*	2020	2020*
Bat	81	127	104	112	79	68	64	114	83	98	102	81	34	73	58	106	17	94	5	71	1
Beaver	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	-	-
Bobcat	-	-	-	-	1	-	-	-	2	1	-	2	-	-	2	2	1	1	2	3	-
Cat	21	25	17	24	27	43	38	22	9	25	23	25	1	28	14	20	9	24	-	31	1
Cattle	9	6	-	6	3	6	7	5	6	5	5	6	-	1	1	1	-	4	-	3	-
Coyote	1	-	-	1	-	2	-	-	-	1	2	2	1	1	-	2	2	-	-	-	-
Deer	2	-	2	2	-	2	1	5	2	-	2	2	-	1	1	4	-	2	-	4	-
Dog	1	1	1	1	-	1	1	-	-	-	-	-	-	1	-	1	-	1	-	2	-
Donkey	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Elk	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Fisher	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Fisher	-	-	1	-	2	-	-	-	1	-	-	3	-	-	-	-	-	1	-	2	-
Fox	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-
Fox, Gray	21	25	17	12	14	31	21	21	27	17	17	18	1	21	18	21	39	29	10	19	6
Fox, Red	3	6	8	7	10	3	5	7	4	6	10	5	3	2	6	8	-	6	2	13	1
Goat	-	-	-	-	1	-	1	1	-	-	-	1	-	1	-	1	-	-	-	-	-
Horse	2	2	2	1	1	2	-	1	-	1	1	1	-	1	-	1	-	5	-	4	-
Mink	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mule	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Opossum	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Otter	-	1	-	-	-	-	1	1	2	-	-	-	-	1	-	-	-	-	-	-	1
Pig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Rabbit	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Raccoon	357	320	282	263	226	250	162	186	147	166	133	156	37	113	165	125	141	172	102	159	113
Sheep	-	-	-	-	1	1	-	-	-	1	-	2	-	1	-	1	-	-	-	-	-
Skunk	89	95	75	63	72	85	62	53	50	45	66	79	66	38	52	26	45	40	32	28	17
Woodchuck	3	4	6	4	3	5	7	7	3	4	3	8	1	4	2	2	3	4	2	4	1
	592	612	515	498	440	499	370	425	336	372	365	536		608		579		538		487	

* denotes out of state samples

Bats submitted during 2020 with human, dog, or cat contact

Bat Submissions	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	3298	2886	2791	3544	2697	3380	3081	2729	3629	2958	2750	2635
Positive	79	69	64	114	83	98	102	81	73	106	94	71
Negative	3035	2601	2521	3202	2433	3137	2811	2501	2700	2701	2472	2435
Unsatisfactory	184	196	206	228	183	145	168	147	100	151	184	129

Contact with Humans	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	1925	1883	1762	2318	1718	1959	2954	1556	1610	1688	1537	1773
Positive	41	39	43	56	48	53	93	39	32	58	53	42
Negative	1795	1726	1603	2121	1573	1827	2701	1455	1511	1547	1398	1636
Unsatisfactory	89	119	116	141	97	79	160	74	62	83	86	95

Contact with Cats	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	726	359	506	608	305	419	646	400	424	411	410	499
Positive	14	7	11	20	6	19	16	8	8	13	13	9
Negative	665	341	450	548	274	368	596	370	400	375	386	446
Unsatisfactory	46	11	45	40	24	32	34	18	17	23	11	17

Contact with Dogs	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	339	169	201	451	221	271	349	143	189	224	158	188
Positive	14	4	10	22	8	18	13	13	15	15	9	12
Negative	303	149	177	40	196	230	307	117	166	194	135	167
Unsatisfactory	22	16	14	26	16	23	29	13	11	15	14	9

Bat in the bedroom	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	Previously not counted					1971	1674	1639	1757	1891	1627	1767
Positive						54	55	37	36	66	42	46
Negative						1857	1534	1516	1651	1731	1481	1637
Unsatisfactory						30	84	86	70	94	104	84

Animal specimens received at the NYSDOH Rabies Laboratory 2002-2020

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Alpaca	0	0	0	0	0	0	9	5	6	6	4	11	9	4	6	7	8	7	2	84
Bat spp	65	52	32	50	49	125	176	39	16	10	20	10	16	18	15	22	21	19	27	782
Bat, Big Brown	2703	2993	2510	2819	2919	2958	3158	2685	2537	2573	3299	2521	3239	2977	2581	2707	2801	2588	2498	53066
Bat, Hoary	10	5	1	6	43	159	6	9	5	6	4	5	6	7	5	0	6	1	4	288
Bat, N Long Ear	50	44	57	55	43	46	64	37	29	15	0	8	5	12	2	5	4	0	0	476
Bat, Pipistrelle	43	47	6	5	1	5	8	4	6	0	17	3	1	2	0	2	2	3	1	156
Bat, Red	38	25	13	24	50	61	15	27	16	11	31	35	20	9	10	16	12	18	13	444
Bat, Silverhaired	12	17	9	14	54	103	13	14	12	17	24	18	25	23	24	14	35	52	17	497
Bat, Small Brown	906	832	967	883	986	888	917	483	245	159	150	97	68	83	92	145	81	69	74	8125
Bat, Small footed	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Bear	10	6	6	12	17	19	12	7	8	2	8	11	15	18	20	15	12	13	8	219
Beaver	3	1	4	2	6	5	6	4	2	1	2	7	3	7	5	10	5	7	1	81
Bobcat	0	5	1	4	3	4	1	2	0	2	9	14	1	5	5	18	22	25	20	141
Cat	1675	1669	1560	1440	1502	1662	1478	1397	1331	1250	1107	1035	1134	1014	1000	1009	1011	1067	795	24136
Cattle	114	109	86	91	97	73	62	80	70	70	64	71	86	79	83	71	54	59	54	1473
Chipmunk	16	14	21	7	6	14	9	9	6	5	3	4	5	6	8	7	5	5	9	159
Coyote	14	23	21	15	18	12	12	12	9	7	11	12	8	15	20	10	29	51	11	310
Deer	82	103	87	124	106	126	103	61	41	48	111	107	65	63	74	119	97	140	138	1795
Dog	767	827	759	706	695	715	708	658	651	719	660	601	660	599	635	634	599	653	549	12795
Donkey	0	1	0	1	1	0	0	4	2	7	5	2	1	4	2	1	3	3	2	39
Elk	0	0	0	0	0	0	8	1	1	0	1	0	2	1	0	2	0	0	0	16
Ferret	18	13	23	19	8	9	20	7	15	2	7	3	3	5	3	6	2	6	4	173
Fisher	2	1	5	3	9	6	0	2	2	2	15	22	7	6	18	11	25	22	21	179
Fox	1	1	2	3	3	3	5	2	2	3	1	3	5	2	2	2	1	2	5	48
Fox, Gray	80	50	68	124	112	33	41	43	91	46	38	48	41	29	41	51	55	60	43	1094
Fox, Red	108	58	66	57	57	71	63	45	34	62	66	43	69	50	43	47	55	73	109	1176
Gemsbok	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Gerbil	1	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	6
Goat	25	36	33	32	36	24	31	27	32	27	34	32	22	25	32	37	29	37	26	577
Guinea Pig	5	1	0	1	2	0	0	0	0	1	0	1	0	0	0	0	0	0	1	12
Hamster	6	1	10	9	1	0	6	1	4	1	0	1	0	1	0	0	1	0	0	42
Horse	40	49	39	49	40	28	38	30	40	33	36	45	38	43	36	28	42	52	26	732

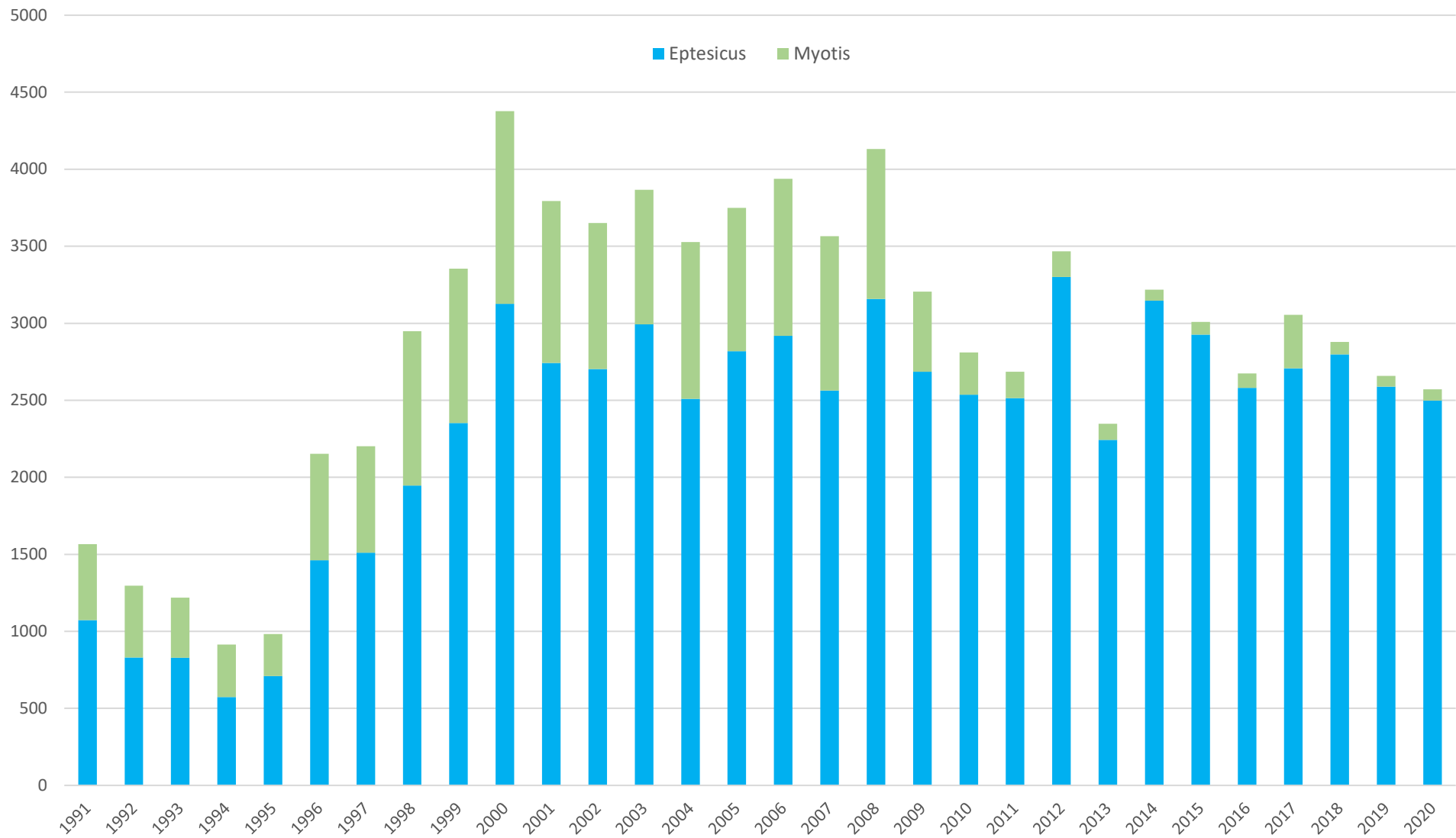
Llama	5	6	11	10	7	10	0	4	3	1	3	1	1	0	0	0	1	1	2	66
Mink	5	4	7	4	2	6	2	0	6	4	5	1	2	4	4	3	6	4	6	75
Mole	3	2	4	2	2	0	2	2	1	0	0	0	1	0	1	0	0	0	0	20
Monkey	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	1	5
Moose	1	13	1	3	8	3	6	3	6	0	5	2	3	4	14	1	9	7	8	97
Mouse	19	0	14	17	14	9	6	2	4	1	2	2	2	4	4	3	6	5	3	117
Mule	0	10	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Muskrat	13	10	15	18	14	19	15	14	10	6	6	5	6	12	6	5	2	9	10	195
Opossum	71	71	89	85	132	150	140	70	49	34	23	39	41	35	27	42	25	27	22	1172
Otter	0	3	2	1	1	1	1	0	1	1	13	12	0	1	4	2	7	4	10	64
Pig	2	2	2	0	4	1	3	2	4	2	3	3	2	1	5	5	2	9	1	53
Porcupine	8	5	6	4	7	4	5	6	1	2	4	6	7	0	7	7	2	3	7	91
Rabbit	24	11	19	15	9	9	3	8	3	3	2	1	13	2	6	5	2	0	4	139
Rabbit, Domestic	26	26	14	17	10	7	14	13	9	2	9	3	1	2	5	3	4	9	0	174
Rabbit, Wild	7	5	6	4	5	5	3	3	3	2	1	2	2	2	0	4	2	3	4	63
Raccoon	803	562	1321	1127	1349	1820	1720	1063	954	876	522	575	702	623	784	820	873	925	1023	18442
Rat	6	4	6	8	4	5	3	4	1	1	1	3	2	20	5	3	5	2	3	86
Rat, Domestic	3	1	4	1	3	1	5	4	1	0	0	0	0	0	4	0	0	2	3	32
Rat, Wild	12	13	3	5	3	5	2	3	4	0	1	0	0	1	0	7	4	0	0	63
Sheep	12	16	15	16	10	9	15	11	13	10	9	15	16	8	12	15	12	16	8	238
Shrew	3	1	0	1	0	1	0	1	0	0	0	0	0	0	0	3	0	1	0	11
Skunk	40	260	337	279	303	319	260	224	194	290	206	176	218	171	219	199	180	242	272	4389
Squirrel	11	11	14	3	10	16	10	6	6	2	10	4	3	3	6	0	2	3	7	127
Squirrel, Flying	5	16	4	0	8	5	6	5	1	4	5	2	0	3	0	3	3	4	1	75
Squirrel, Grey	100	85	54	35	41	35	50	29	24	19	17	18	32	28	30	29	31	18	17	692
Squirrel Red	3	2	4	2	8	4	2	2	3	0	4	0	1	0	0	1	2	0	0	38
Vole	4	6	3	2		7	6	3	4	1	0	0	0	0	2	0	0	0	0	38
Weasel	4	6	10	2	8	12	3	1	5	2	4	3	1	4	1	1	3	9	5	84
Woodchuck	119	90	99	93	93	107	95	83	77	78	69	42	81	52	88	73	56	51	56	1502
Other wild	15	12	9	9	6	12	2	4	6	4	2	0	5	7	5	3	1	1	5	108
total	8118	8236	8459	8320	8926	9731	9352	7268	6609	6430	6653	5685	6696	6094	6001	6233	6256	6387	5936	137391

Common species submitted for testing 2003-2020

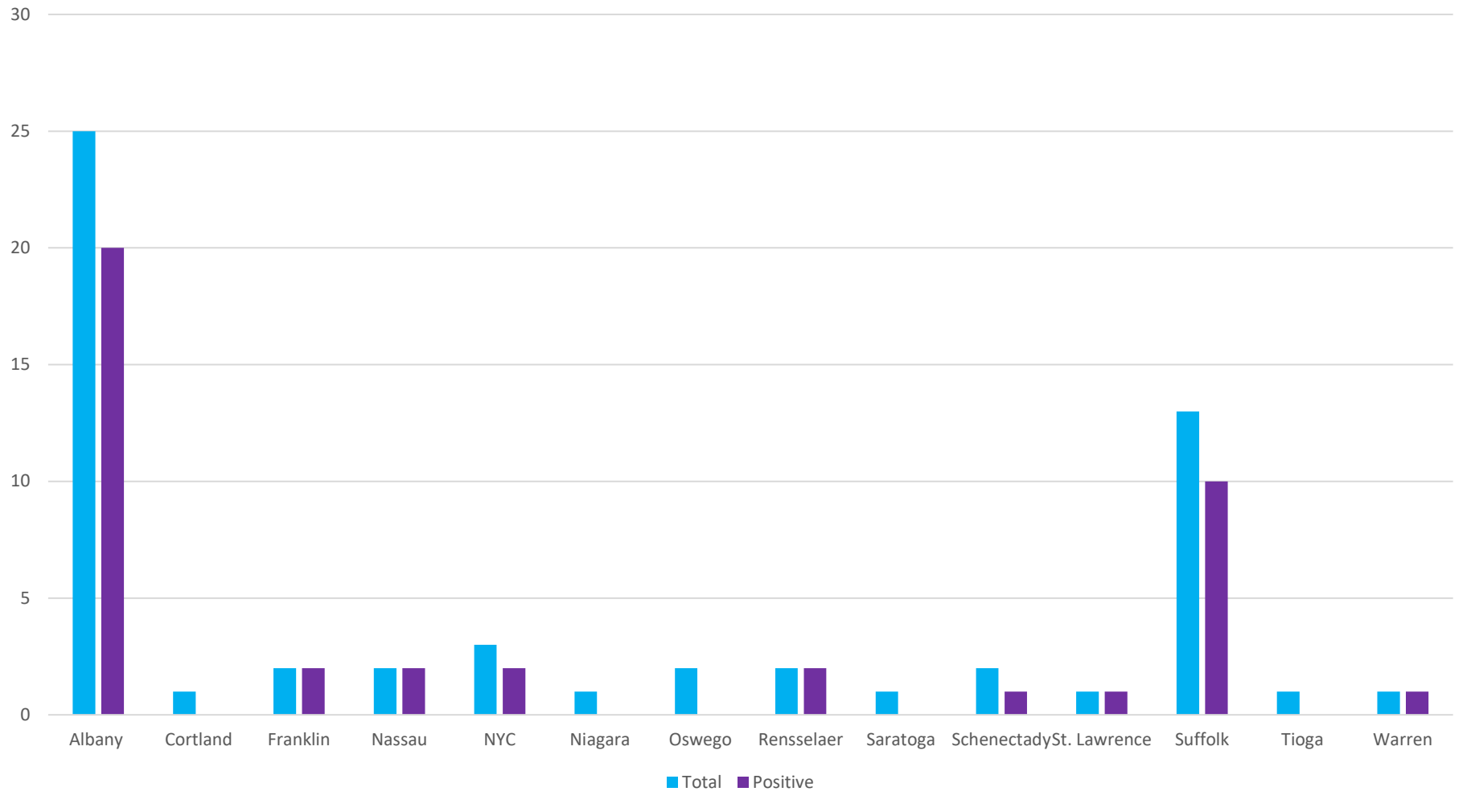
CATS	POSITIVES	TOTAL	% POSITIVE	DOGS	POSITIVES	TOTAL	% POSITIVE
2003	27	1669	1.62%	2003	1	827	0.12%
2004	18	1560	1.15%	2004	1	759	0.13%
2005	21	1440	1.46%	2005	1	706	0.14%
2006	25	1502	1.66%	2006	1	695	0.14%
2007	17	1662	1.02%	2007	1	715	0.14%
2008	24	1478	1.62%	2008	1	708	0.14%
2009	27	1397	1.93%	2009	0	658	0.00%
2010	43	1331	3.23%	2010	1	651	0.15%
2011	38	1250	3.04%	2011	1	719	0.14%
2012	22	1107	1.99%	2012	0	660	0.00%
2013	9	1035	0.87%	2013	0	601	0.00%
2014	25	1135	2.22%	2014	0	660	0.00%
2015	23	1041	2.20%	2015	0	599	0.00%
2016	25	999	2.50%	2016	0	635	0.00%
2017	28	1001	2.80%	2017	1	625	0.10%
2018	20	1011	1.97%	2018	1	599	0.17%
2019	24	1067	2.20%	2019	1	653	0.15%
2020	31	759	4.10%	2020	2	549	0.36%

SKUNK	POSITIVES	TOTAL	% POSITIVE	RACCOON	POSITIVES	TOTAL	% POSITIVE
2003	74	260	28.46%	2003	195	562	34.70%
2004	103	337	30.56%	2004	253	1321	19.15%
2005	86	279	30.82%	2005	334	1127	29.64%
2006	95	303	31.35%	2006	320	1349	23.72%
2007	75	319	23.51%	2007	282	1820	15.49%
2008	63	260	24.23%	2008	263	1720	15.29%
2009	72	224	32.14%	2009	226	1063	21.26%
2010	85	194	43.81%	2010	250	654	26.21%
2011	62	290	21.38%	2011	162	876	18.49%
2012	53	206	35.73%	2012	186	522	36.63%
2013	50	176	28.41%	2013	147	575	25.57%
2014	45	218	20.60%	2014	166	702	23.60%
2015	66	172	38.38%	2015	133	622	21.30%
2016	79	219	36.07%	2016	156	783	19.92%
2017	35	187	18.72%	2017	104	804	12.94%
2018	26	180	14.44%	2018	125	873	14.30%
2019	40	242	9.90%	2019	172	925	18.60%
2020	28	272	10.30%	2020	159	1023	15.50%

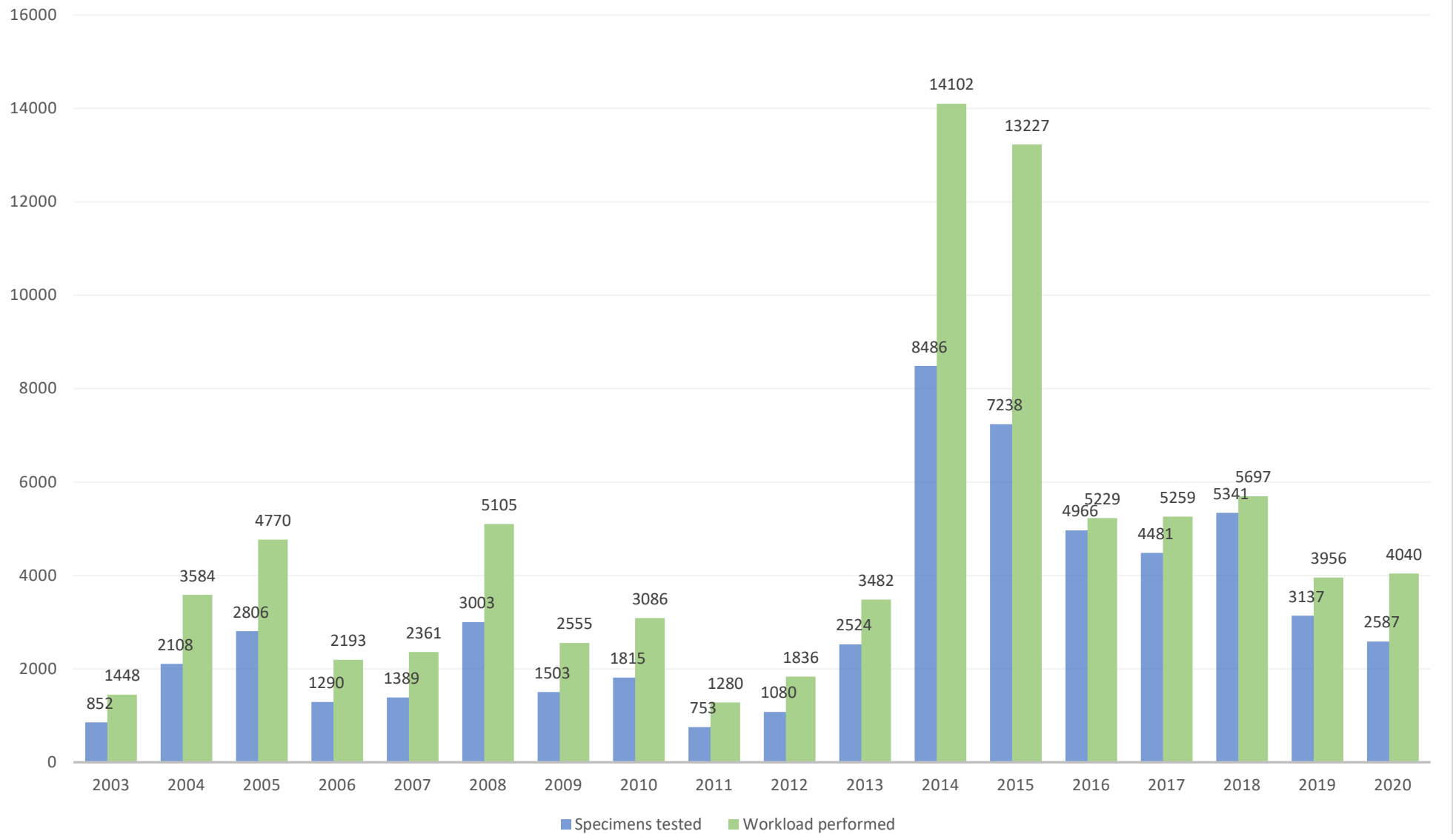
1991-2020 *Eptesicus* and *Myotis spp* bats submitted to the New York State Rabies laboratory



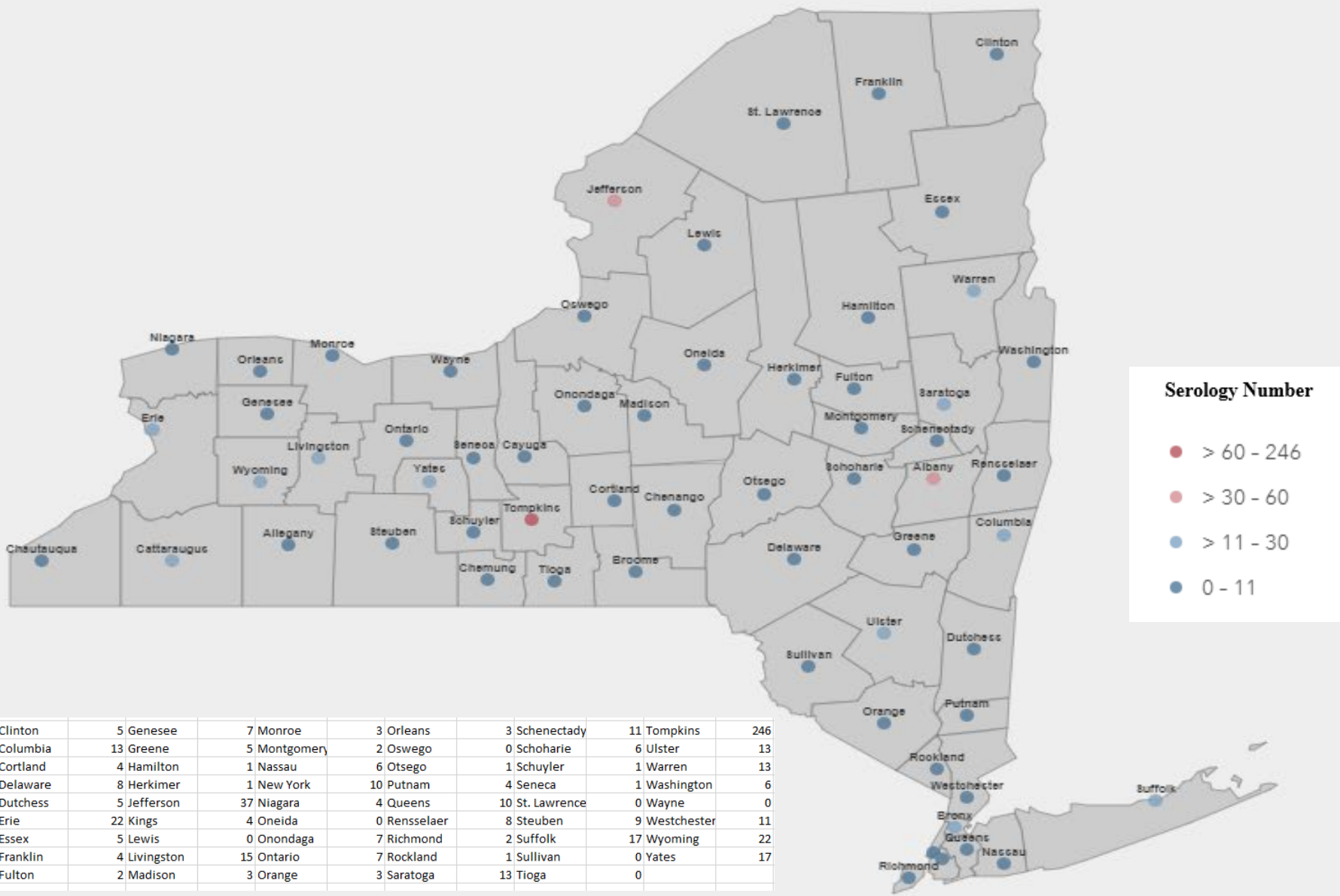
CANINE DISTEMPER SUBMISSIONS, 2020



Wild Animal Serology 2020

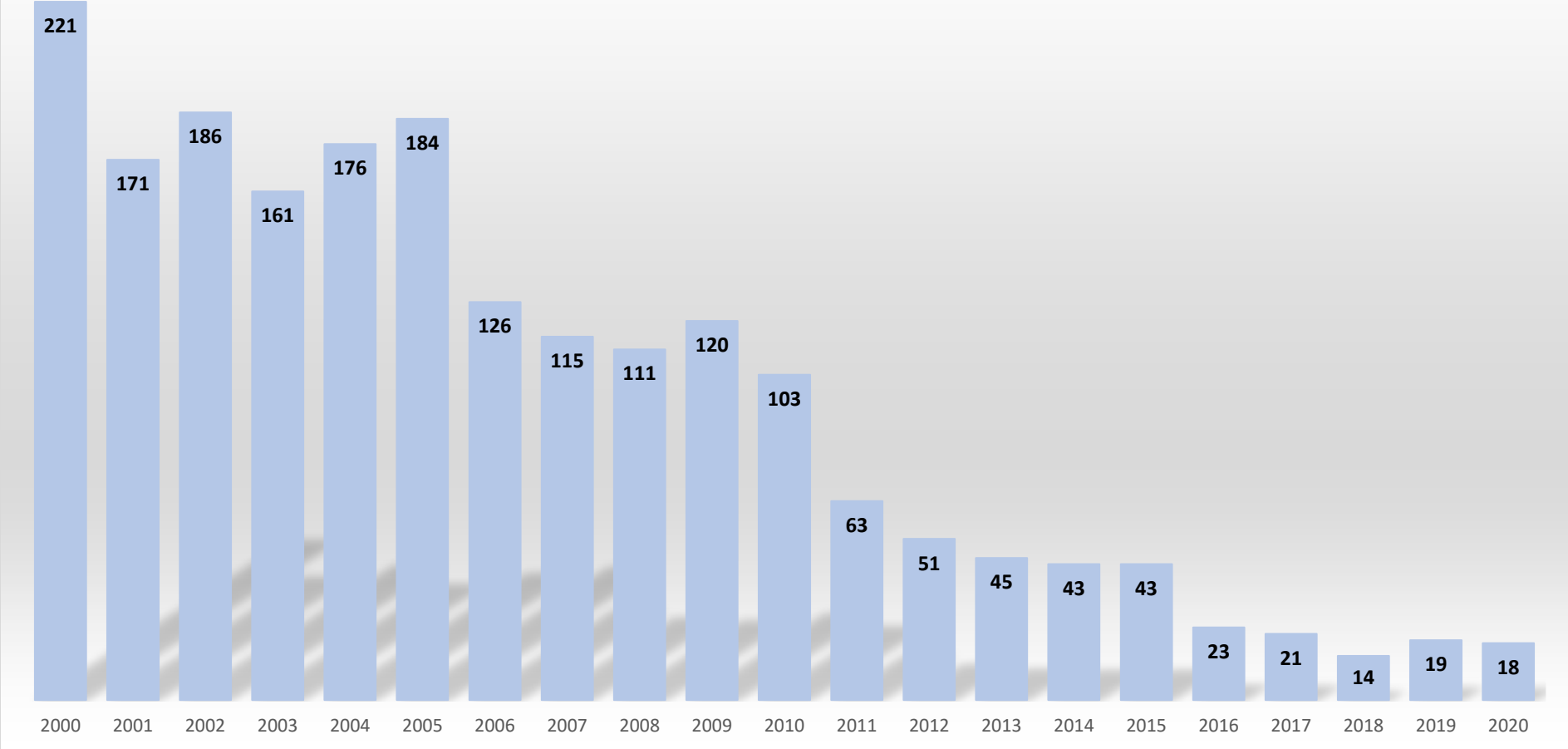


2020 Human Rabies serology samples received by NYSDOH Rabies Lab, by county



Albany	36	Clinton	5	Genesee	7	Monroe	3	Orleans	3	Schenectady	11	Tompkins	246
Allegany	8	Columbia	13	Greene	5	Montgomery	2	Oswego	0	Schoharie	6	Ulster	13
Bronx	13	Cortland	4	Hamilton	1	Nassau	6	Otsego	1	Schuyler	1	Warren	13
Broome	5	Delaware	8	Herkimer	1	New York	10	Putnam	4	Seneca	1	Washington	6
Cattaraugus	17	Dutchess	5	Jefferson	37	Niagara	4	Queens	10	St. Lawrence	0	Wayne	0
Cayuga	5	Erie	22	Kings	4	Oneida	0	Rensselaer	8	Steuben	9	Westchester	11
Chautauqua	0	Essex	5	Lewis	0	Onondaga	7	Richmond	2	Suffolk	17	Wyoming	22
Chemung	1	Franklin	4	Livingston	15	Ontario	7	Rockland	1	Sullivan	0	Yates	17
Chenango	1	Fulton	2	Madison	3	Orange	3	Saratoga	13	Tioga	0		

Emergency Testing 2000-2020



Summary of NYC Animals Rabies Testing by County and Animal, 2020

Tested at NYC Public Health Lab (PHL) or NY Wadsworth Center*

ANIMAL	BRONX			KINGS (BROOKLYN)			NEW YORK (MANHATTAN)			QUEENS			RICHMOND (STATEN ISLAND)			OUT OF TOWN (tested at PHL)			NYC Total (excludes out of town)		
	# tested	# pos	% pos	# tested	# pos	% pos	# tested	# pos	% pos	# tested	# pos	% pos	# tested	# pos	% pos	# tested	# pos	% pos	# tested	# pos	% pos
BAT	6	0	0.0	7	0	0.0	14	0	0.0	6	0	0.0	5	1	20.0	0	0	0.0	38	1	2.6
CAT	16	1	6.3	19	0	0.0	16	0	0.0	18	1	5.6	14	3	21.4	2	0	0.0	83	5	6.0
DOG	6	0	0.0	6	0	0.0	6	0	0.0	3	0	0.0	4	0	0.0	2	0	0.0	25	0	0.0
GROUNDHO	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	0	0.0	0	0	0.0	2	0	0.0
OPOSSUM	2	0	0.0	5	0	0.0	1	0	0.0	9	0	0.0	2	0	0.0	0	0	0.0	19	0	0.0
RACCOON	28	10	35.7	29	1	3.4	20	2	10.0	112	2	1.8	63	13	20.6	0	0	0.0	252	28	11.1
SKUNK	11	3	27.3	2	0	0.0	2	0	0.0	1	0	0.0	5	1	20.0	0	0	0.0	21	4	19.0
OTHER	7	0	0.0	1	0	0.0	2	0	0.0	4	0	0.0	0	0	0.0	0	0	0.0	14	0	0.0
TOTAL	76	14	18.4	69	1	1.4	61	2	3.3	153	3	2.0	95	18	18.9	4	0	0.0	454	38	8.4

Notes:

There were 38 positive animals: 10 raccoons and 1 cat, and 3 skunks in the Bronx, 1 raccoon in Brooklyn, 2 raccoons in Manhattan, 2 raccoons and 1 cat in Queens, and 13 raccoons, 1 skunk, 1 bat and 3 cats in Staten Island





*2 positive cats from the Bronx and Staten Island were tested at the NJ Dept. of Health Lab

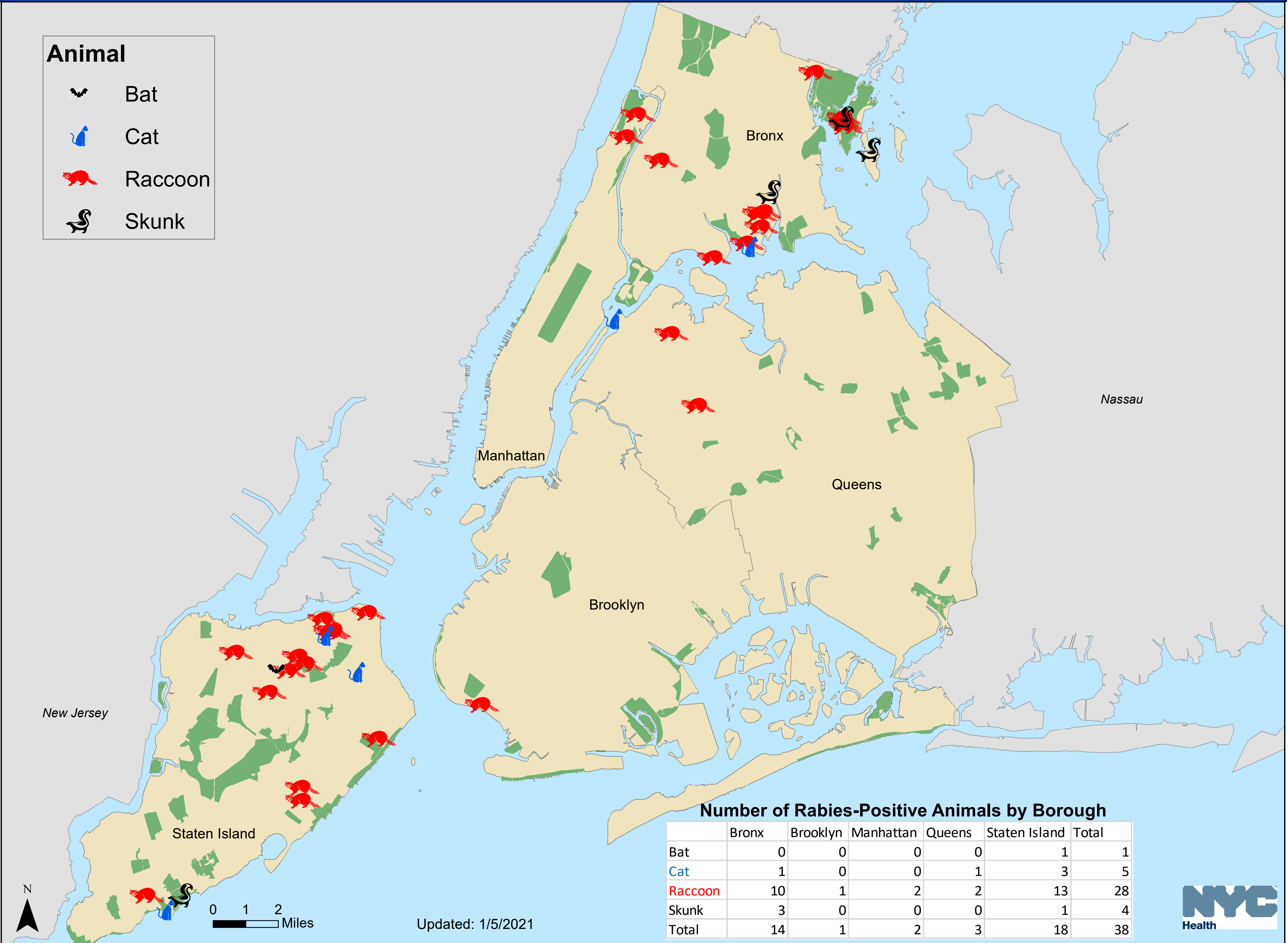
1 bat from Manhattan was inconclusive

Other includes 7 squirrels, 3 mice, and 1 each chipmunk, fox, rabbit, and rat

Animal Rabies in New York City, 2020

Animal

-  Bat
-  Cat
-  Raccoon
-  Skunk



Number of Rabies-Positive Animals by Borough

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Total
Bat	0	0	0	0	1	1
Cat	1	0	0	1	3	5
Raccoon	10	1	2	2	13	28
Skunk	3	0	0	0	1	4
Total	14	1	2	3	18	38

Updated: 1/5/2021

