

# ZOO NOTIC & VECTOR-BORNE

## Public Health Newsletter

June 2011

Vol.7 No. 1

The New York City Department of Health and Mental Hygiene publishes this newsletter to provide local animal health professionals with summaries of recent investigations by the Department and important current events in the field of zoonotic and vector-borne diseases. The mission of the Zoonotic, Influenza and Vector-Borne Disease Unit (ZIVDU) is the detection, prevention and control of zoonotic, influenza and vector-borne diseases in New York City. Please visit our website for more information at [www.nyc.gov/html/doh/html/zoo/zoo.shtml](http://www.nyc.gov/html/doh/html/zoo/zoo.shtml).

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### Contact us:

Bureau of Communicable Disease  
347-396-2600

Zoonotic, Influenza and Vector-Borne Disease Unit (ZIVDU)  
Scott Harper, MD, MPH, Director  
347-396-2673

Sally Slavinski, DVM, MPH, Assistant Director  
347-396-2672

Marilyn Campbell, Research Scientist  
374-396-2659

Brooke Bregman, Research Scientist  
347-396-2617

Asha Abdool, Epidemiologist  
347-396-2615

Veterinary Public Health Services  
212-676-2483

Norma Torres, Director  
212-676-2118

## Raccoon Rabies Epizootic in Manhattan, Part 2

In our last issue we introduced the raccoon trap-vaccinate-release (TVR) program used to control the rabies epizootic that emerged in and around Central Park in December 2009. This was the first outbreak of raccoon rabies in Manhattan since rabies arrived in NYC in 1992 and the enclosed but high-traffic environment of Central Park provided a unique setting for a somewhat atypical control program. The highly collaborative effort involved representatives from the U.S. Department of Agriculture (USDA), New York State Department of Environmental Conservation, New York State Department of Health, NYC Department of Health and Mental Hygiene (DOHMH), NYC Parks and Recreation, and the Central Park Conservancy.

The TVR program involved setting humane traps throughout Central, Morningside, and Riverside Parks in locations partially hidden from public view. Trapped raccoons were vaccinated with a parenteral vaccine, ear-tagged for identification, and re-released at the trap site. Two eight-week rounds were conducted in 2010: the first from Feb. 16 – April 9 and the second from Sept. 20 – Nov. 5, 2010 to vaccinate the newly born juveniles. Raccoons recaptured in the second round of TVR were also re-vaccinated.

During the last round, we had the opportunity to observe the daily operations of the TVR program, giving us a new appreciation of the work involved. Early on a chilly October morning when only a handful of runners and dog walkers were to be seen, we met our USDA host in Central Park to check the traps set the previous night. Reaching some of the traps involved hopping fences and venturing deep into areas of the park that only visitors seeking a secluded spot are likely to come across. Several of the traps remained

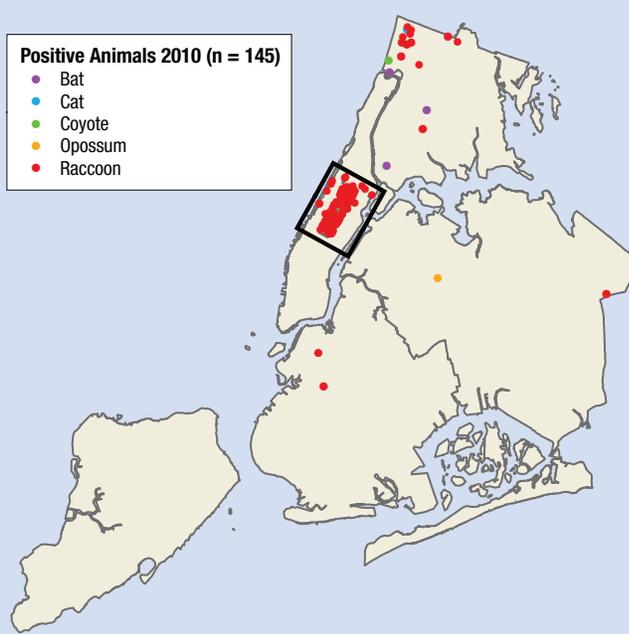
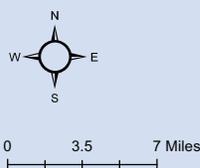
empty, although some were missing the strawberry marshmallow used as bait while others caught unwanted subjects such as squirrels and rats. The first occupied trap we encountered had caught a feisty juvenile raccoon, hissing and snarling. A metal comb was inserted into the trap to force the animal into a corner and immobilize it for safe ear tag placement and vaccination. The younger raccoons were noticeably more agitated and more difficult to properly position, often growling in protest, while the larger adults seemed almost indifferent to the process. Upon release, most of the raccoons quickly scampered away, although some needed a little prodding and encouragement before realizing they were free to go. We and the raccoons were both glad to continue on our way but having observed their behavior up close, one can imagine the fear of being in the path of a rabid animal. Fortunately, the Central Park rabies epizootic has since abated.



### Animal Rabies in New York City

January 1, 2010 - December 31, 2010

The City of New York  
Department of Health and Mental Hygiene



Raccoon Rabies Epizootic in Manhattan, Part 2—continued on page 2

The TVR program was successful in vaccinating nearly 400 raccoons. Since the program ended, one additional raccoon from Central Park tested positive for rabies on February 2, 2011. Continued surveillance in the months ahead will help to determine the overall success of the program and whether additional rounds of TVR may be warranted.

Raccoons are the most commonly reported rabid animal in New York City. Vaccinating raccoons in the Central Park area against rabies has helped protect additional raccoons from rabies infection and prevent further spread of the virus in the city. The TVR program has also helped decrease the chance that a person or a pet is bitten by a rabid raccoon. Though these types

of occurrences are rare in the city, five people were bitten or otherwise exposed to rabid or potentially rabid raccoons since the outbreak began in December 2009. All received rabies postexposure prophylaxis and are doing fine. In addition, two dogs were exposed to rabid raccoons. Both were current on their rabies vaccines, treated by veterinarians and are also doing fine. ■



## Other Rabies News

### Rabid Opossum in Queens

In October 2010, an electrician arrived at his work site in Maspeth, Queens and grabbed his tool bag. While reaching into the bag he felt a sharp pain on his left finger, at which point he looked into the bag and found an opossum. The opossum was submitted to the Public Health Rabies Laboratory, where it tested positive for rabies. Additional testing at Wadsworth Rabies Laboratory found the opossum had been infected with the raccoon variant of the rabies virus.

Opossums tend to be naturally resistant to rabies infection, but on occasion they will succumb. This usually only happens in the midst of a large rabies epizootic, when there is increased opportunity for a rabid raccoon to bite an opossum. This was the third opossum to test positive for rabies in NYC since 1992 (the other two were from Staten Island in 1992 and 1994). What makes this case unique is that there have been very few rabid raccoons identified in Queens in the past few years (approximately one per year) and none in the Maspeth area. It is not clear how or where this opossum was bitten. One theory was the opossum may have been transported from another area by vehicle, as the worksite was at the junction of the Long Island Expressway and the Brooklyn-Queens Expressway. While we will never know the full story, it does offer a reminder to treat opossum bites as a potential rabies exposure.

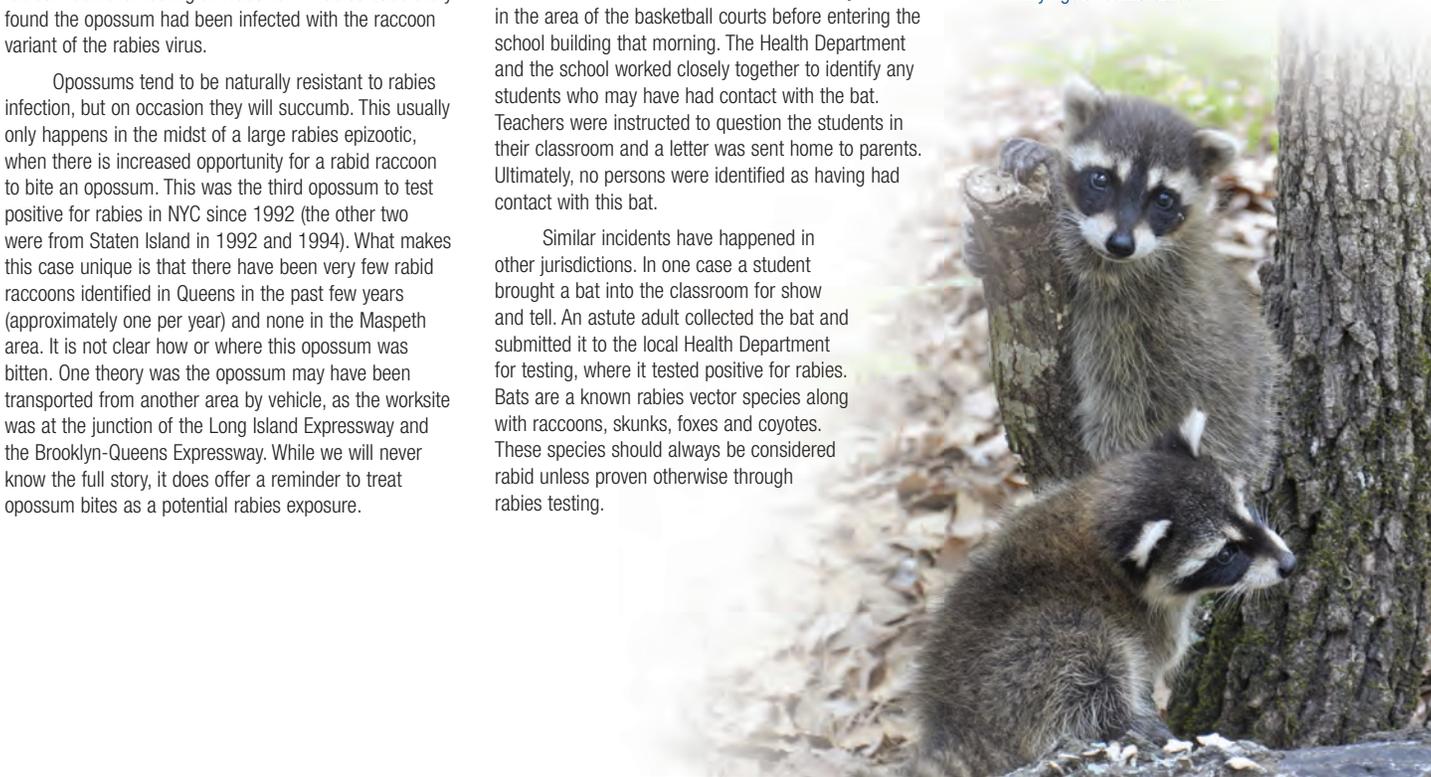
### Rabid Bat Found on Basketball Court Next to School

In November 2010, an injured bat found on the basketball courts adjacent to a high school in the South Bronx tested positive for rabies at the New York City Public Health Rabies Laboratory. The bat was found by a teacher in the morning, soon after the students started classes. There was concern that students may have been in the area of the basketball courts before entering the school building that morning. The Health Department and the school worked closely together to identify any students who may have had contact with the bat. Teachers were instructed to question the students in their classroom and a letter was sent home to parents. Ultimately, no persons were identified as having had contact with this bat.

Similar incidents have happened in other jurisdictions. In one case a student brought a bat into the classroom for show and tell. An astute adult collected the bat and submitted it to the local Health Department for testing, where it tested positive for rabies. Bats are a known rabies vector species along with raccoons, skunks, foxes and coyotes. These species should always be considered rabid unless proven otherwise through rabies testing.

### Animal Rabies Testing 2011

To date in 2011, four animals in NYC have tested positive for rabies at the Public Health Rabies Laboratory. These include 2 raccoons and 1 bat from the Bronx and 1 raccoon from Manhattan. The Health Department's rabies surveillance reports and updated rabies information and maps are available on our website at [www.nyc.gov/health/rabies](http://www.nyc.gov/health/rabies). ■



## Canine Leptospirosis Surveillance Update, 2009–2010

The DOHMH conducts active laboratory surveillance for canine leptospirosis from one large veterinary lab as a supplement to reporting by veterinarians. In 2009–2010, 30 cases of leptospirosis were identified in NYC, mostly in Manhattan (n=11, 37%) and Brooklyn (n=7, 23%). A typical seasonal pattern was seen, with most cases reported between May and November, and peaking in October–November. Eighty percent of cases were hospitalized, including 7 deaths. The most commonly reported signs and symptoms were anorexia (73%), vomiting (70%), icterus (40%), lethargy (33%), polyuria/polydipsia (27%), and diarrhea (17%), and the most common complications were renal failure (50%) and liver failure (23%). No clusters of cases were detected, although 2 cases were in dogs from the same household.

Dogs were most often infected with the serovars *Leptospira icterohaemorrhagiae*, *L. bratislava*, and *L. grippityphosa*, which is consistent with the wildlife found in urban NYC. The first 2 serovars are associated with rodent reservoir hosts, while *L. grippityphosa* is associated with raccoons, opossums, and other small mammal hosts. Risk factors for exposure to potential sources of leptospirosis included seeing rodents, raccoons, or other wildlife in the dog's environment, and exposure to puddles of water, particularly after extended rainy periods. Further analysis showed a statistically significant association between the infecting serovar and reported exposure to the associated animal hosts.

A more detailed report of the 2009–2010 canine leptospirosis surveillance findings was distributed in a veterinary alert on 4/28/11 and is available on the web at [www.nyc.gov/html/doh/html/zoo/zoo-pub.shtml](http://www.nyc.gov/html/doh/html/zoo/zoo-pub.shtml).

If you would like to receive DOHMH Veterinary Alerts, please email [aabdool@health.nyc.gov](mailto:aabdool@health.nyc.gov) with your name, organization, and fax number and/or email address.

## 2010 ACVIM Small Animal Consensus Statement on Leptospirosis: Diagnosis, Epidemiology, Treatment, and Prevention

The American College of Veterinary Internal Medicine (ACVIM) released a consensus statement on leptospirosis last October entitled "2010 ACVIM Small Animal Consensus Statement on Leptospirosis: Diagnosis, Epidemiology, Treatment, and Prevention" by J.E. Sykes, K. Hartmann, K.F. Lunn, G.E. Moore, R.A. Stoddard, and R.E. Goldstein. It can be found online on the ACVIM website along with other consensus statements at [www.acvim.org/websites/acvim/index.php?p=22](http://www.acvim.org/websites/acvim/index.php?p=22).

As stated by the authors, this report offers a consensus opinion on the diagnosis, epidemiology, treatment, and prevention of leptospirosis in dogs, an important zoonosis. Clinical signs of leptospirosis in dogs relate to development of renal disease, hepatic disease, uveitis, and pulmonary hemorrhage. Disease may follow periods of high rainfall, and can occur in dogs roaming in proximity to water sources, farm animals, or wildlife, or dogs residing in suburban environments. Diagnosis is based on acute and convalescent phase antibody titers by the microscopic agglutination test (MAT), with or without use of polymerase chain reaction assays. There is considerable interlaboratory variation in MAT



results, and the MAT does not accurately predict the infecting serogroup. The recommended treatment for optimal clearance of the organism from renal tubules is doxycycline, 5 mg/kg PO q12h, for 14 days. Annual vaccination can prevent leptospirosis caused by serovars included in the vaccine and is recommended for dogs at risk for infection. ■



## Changes to the New York City Animal Population Control Program

New York State's Agricultural & Markets Law was amended in 2010, significantly changing the Animal Population Control Program (APCP). In June 2010, Chapter 59 amended the New York City Administrative Code to authorize the Department of Health and Mental Hygiene to establish and implement an animal population control program and fund in New York City. The differential fee charged for an unaltered dog license now goes to the NYC Animal Population Control Fund (APCF) and will be used for low cost spay and neuter services to help reduce the population of unwanted stray dogs and cats in New York City.

On February 1, 2011 the Mayor signed into effect the new law, raising the license fee differential for dogs that are not spayed or neutered from \$3.00 to \$25.50.

As a result, each dog license for an unaltered dog now costs \$34.00, of which \$25.50 goes to the APCF.

New York State and City Dog License Laws require all dogs to be licensed, and the City Health Code requires every dog to have a dog license tag attached to its collar when out in public. Additionally, a NYC dog license helps reunite owners with lost pets that end up in city shelters. Violations of these laws may result in fines for pet owners.

Please encourage pet owners to license their dogs and to renew their dog license each year. Owners can renew or purchase a new dog license online at [www.nyc.gov/doglicense](http://www.nyc.gov/doglicense). Dog owners can also visit NYC Animal Care & Control or call 311 to obtain a paper license. ■

## Ticks in New York City

The New York City Department of Health and Mental Hygiene (DOHMH) conducts surveillance for tick-borne diseases in humans. Patients with acute Lyme disease, Rocky Mountain spotted fever, babesiosis, human granulocytic anaplasmosis (HGA) and human monocytic ehrlichiosis (HME) are interviewed by DOHMH staff to assess possible exposures to ticks. Overall, tick-borne diseases have been rising. While there may be an increased incidence of disease, this may also be due to the 2006 requirement for all laboratories to report positive laboratory results for all notifiable diseases electronically to the DOHMH. As a result, many more reports are received and investigated, leading to the identification of more cases.

The hard bodied ticks of importance found in the Northeast include *Ixodes scapularis*, *Dermacentor variabilis*, *Amblyomma americanum* and *Rhipicephalus sanguineus*. Several years' worth of tick surveillance data has helped determine which ticks are present in NYC. Together, human and tick surveillance have helped characterize tick-borne diseases in NYC.

In 2008, the DOHMH began surveillance for one tick-borne disease in pets, Rocky Mountain spotted fever. Only two cases have been identified to date. No surveillance exists for other tick-borne diseases in pets, but because many diseases affect animals and humans, human surveillance data may offer useful information to veterinarians. When used together, human surveillance and tick data may aid in assessing the risk for various tick-borne illnesses among patients.

The following provides a list of the diseases transmitted by each tick, and findings from tick and human surveillance in NYC:

***Ixodes scapularis*** (the deer tick or blacklegged tick) can carry the agents of Lyme disease (*Borrelia burgdorferi*), human babesiosis (*Babesia microti*), and human (HGA) and canine granulocytic anaplasmosis, both of which are caused by *Anaplasma phagocytophilum*. Based on limited surveys conducted in NYC, there is no evidence that the blacklegged tick is widely established in NYC. However, surveillance done in 2009 and 2010 identified *Ixodes scapularis* ticks in small numbers in Pelham Bay Park in the Bronx (2009 = 48, 2010 = 83) and Clay Pit Pond Park in Staten Island (2009 = 5, 2010 = 21). Approximately half of the ticks collected from these areas tested positive

for *Borrelia burgdorferi*, suggesting that local transmission of Lyme disease could occur in these focal areas. To date in 2011, surveillance has also identified very small numbers of ticks (less than 10 in each park) in Queens, Brooklyn, and Staten Island (Alley Pond Park, Highland Park, Floyd Bennett Field, and Wolfe's Pond Park). Ticks collected in 2011 have not yet been tested. However, significantly higher numbers of *Ixodes* ticks have been reported in counties surrounding NYC.

Lyme disease is the most commonly reported tick-borne disease among humans in NYC. In 2010, 413 Lyme disease, 37 babesiosis and 11 HGA cases were reported. Almost all patients with acute Lyme disease, babesiosis, or HGA infection likely acquired their infection outside of NYC. Over 95% reported traveling during the time they were likely exposed, most frequently to Long Island, upstate NY (particularly the Hudson Valley), MA and CT, all areas known to be endemic for tick-borne diseases.

***Dermacentor variabilis*** (the American dog tick) is the vector for Rocky Mountain spotted fever (RMSF), caused by *Rickettsia rickettsii*. It has been detected in great abundance in all boroughs of NYC. There were 11 human cases of RMSF in 2010. Rates are typically highest in the Bronx and Manhattan. Fewer than 50% of RMSF human cases reported travel outside of NYC, supporting the idea that the disease is transmitted locally. Recent reports suggest that dogs may act as a vehicle for the ticks that transmit RMSF by bringing them into the home; therefore, tick prevention measures are recommended for all pets spending time outdoors in NYC.

***Amblyomma americanum*** (the lone star tick) is the vector of human monocytic ehrlichiosis (HME).

Surveillance suggests this tick is also not established in NYC. There were 5 human cases in 2010. Similar to Lyme disease and HGA, the majority of HME cases (85%) reported a history of travel outside of NYC during the exposure period.

***Rhipicephalus sanguineus*** (the brown dog tick) is a vector for canine monocytotropic ehrlichiosis (caused by *Ehrlichia canis*), and was recently identified as a vector for RMSF on an Arizona Indian reservation. It has not been captured during NYC tick surveillance but is likely present in NYC as it is typically found indoors near pet bedding and in kennels.

Surveillance findings suggest that RMSF can be acquired locally, while Lyme, HME and HGE are likely acquired during travel to endemic areas outside of NYC. However the recent presence of the blacklegged tick in focal areas may result in local transmission of these diseases. Rates of Lyme disease, anaplasmosis and HME are significantly higher in Manhattan than in the other NYC boroughs. Since we think these diseases are primarily acquired outside NYC, this may be a reflection of socioeconomic factors and the higher likelihood of travel to areas near the city where the blacklegged tick is present.

Although the prevalence of tick-borne disease in pets is unknown, veterinarians should consider pursuing diagnostic testing for anaplasmosis, ehrlichiosis, Lyme disease, RMSF, and babesiosis in dogs with a history of tick exposure or presenting with non-specific clinical signs of malaise, stiff gait, fever, and lethargy. In addition, neorickettsial disease, leishmaniasis, hepatozoonosis, and bartonellosis can cause non-specific clinical signs in dogs on the East Coast. ■



***Dermacentor variabilis***  
(American dog tick)



***Ixodes scapularis***  
(blacklegged tick)



***Amblyomma americanum***  
(lone star tick)

Source: Centers for Disease Control and Prevention

## Animal Disease Reporting

The following animal diseases are reportable by law in NYC:

- If **diagnosed**: leptospirosis, psittacosis, Rocky Mountain spotted fever, salmonellosis, tuberculosis, and arboviral encephalitides
- If **suspected**: anthrax, brucellosis, glanders, monkeypox, plague, Q fever, rabies, tularemia, severe acute respiratory syndrome (SARS), and novel influenza virus with pandemic potential
- Any outbreak of a disease or condition that may pose a danger to public health

To report to the Department of Health and Mental Hygiene:

- Call the Bureau of Communicable Disease at 347-396-2600 during business hours. For urgent matters after business hours, call the Poison Control Center at 212-764-7667 (212-POISONS).
- Complete an Animal Disease Case Report Form, available at <http://www.nyc.gov/html/doh/downloads/pdf/zoo/zoo-disease-report-form.pdf>, and fax to 347-396-2753 or mail to Zoonotic, Influenza and Vector-Borne Disease Unit, Bureau of Communicable Disease, 42-09 28th Street, Box 22A, Long Island City, NY 11101.

Please note we've relocated to Queens but mail, faxes, and calls directed to our old address and contact numbers will be forwarded.