

ZOO NOTIC & VECTOR-BORNE

Public Health Newsletter

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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 <http://www.nyc.gov/html/doh/html/diseases/zoo.shtml>.

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Rabies Resurgence in Staten Island

This year most of the rabid animals identified through routine surveillance at the New York City Department of Health and Mental Hygiene (DOHMH) have come from Staten Island. To date, 43 raccoons, 2 skunks, 1 bat and 1 cat have tested positive for rabies, compared to just 6 raccoons from the borough in 2012. Additional rabies-positive animals collected in 2013 were 2 bats from Manhattan, 2 skunks and a bat from the Bronx, and recently, 2 raccoons from Brooklyn (see [2013 Veterinary Alert #5](#) on our website). The rabid animals from Staten Island have been found throughout most of the borough with the exception of a few neighborhoods on the western side.

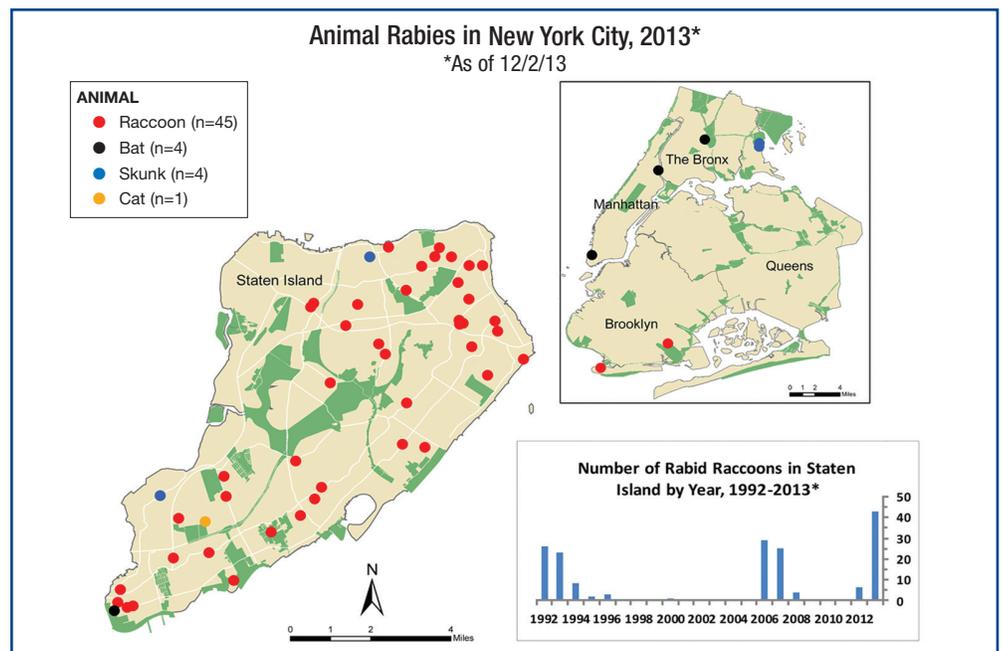
Raccoon rabies epizootics have occurred in Staten Island since raccoon rabies was first identified in NYC in 1992. The first epizootic lasted from 1992-1996, the next from 2006-2008, and the current outbreak began last year. Other animals that have tested positive for rabies on Staten Island since 1992 have included 1 groundhog, 2 skunks, 2 opossums, 5 bats and 8 cats. Since 1992 in all of NYC, 14 cats have tested positive for rabies, 12 of which were strays. There has not been a rabid dog reported in NYC in over 55 years.

Three rabid animals from Staten Island were involved in exposure incidents with pets. A dog scratched by a raccoon and three dogs that attacked a sick raccoon



were put under a 45-day observation period at home as per the rabies protocol for vaccinated animals. Two dogs that were not currently vaccinated against rabies killed a rabid skunk and were consequently quarantined for 6 months at a veterinary facility for observation. In addition, a Staten Island resident and veterinarian were exposed to a rabid stray cat found in a park and are receiving rabies postexposure prophylaxis (see [2013 Veterinary Alert #6](#)).

The 2006 rabies epizootic in Staten Island is thought to have subsided due to a concurrent distemper outbreak that killed off much of the borough's raccoon population. Although it is not clear how long the current epizootic will last, surveillance efforts will continue to monitor the situation. For more information about rabies, including updated surveillance data and provider resources, visit our website at <http://www.nyc.gov/health/rabies>.



Tularemia in Wild Rabbits in Brooklyn

In July, three Eastern cottontail rabbits (*Sylvilagus floridanus*) collected from Prospect Park in Brooklyn tested positive for *Francisella tularensis*, the bacteria that causes tularemia. The first two rabbits were juveniles found dead on the same day in the eastern section of the park and appeared to be from the same nest. They were submitted for testing by an astute veterinarian familiar with tularemia. Necropsy showed necrotizing/fibrinous hepatitis, splenitis, and mild pneumonia, and both rabbits were laden with ticks. The third rabbit was found four days later in the same area of the park. Further surveillance was conducted by DOHMH and the NYC Parks Department, but no additional infected animals were found, and no known cases were identified in humans or domestic pets. Tick surveillance did not reveal any ticks, though tick bite prevention signs were posted in the park.

F. tularensis is maintained and amplified in nature in a cycle involving vertebrate hosts (most commonly rabbits and wild rodents) and arthropod vectors. Tularemia in the United States is most often transmitted to humans by ticks and biting flies. Other routes of transmission include touching or eating an infected animal, contact with contaminated water or soil, a bite from an infected animal, or inhalation of contaminated particles. Tularemia is not spread directly from person to person. In the US, approximately 100-200 cases are reported annually, with most occurring in the south central and western states. In some instances, small animal die-offs have preceded outbreaks.

Although tularemia has been identified among wildlife in the Gateway National Recreation Area, which spans parks in Staten Island, southern Brooklyn and Queens, and New Jersey, cases in NYC are extremely rare. Tularemia has sporadically been found among wildlife and people in all boroughs except the Bronx. Since 1965, there have been 16 human cases, one of which was associated with a rabbit from the Gateway Area in Staten Island caught by the dog of the patient. The most recent case was in 2008 in Brooklyn.



Photo: Homanid.com

In animals, disease has been associated with tick infestation. Signs may include high fever, anorexia, lethargy and death. Dogs are resistant to the disease. Cats are more susceptible to *F. tularensis*, and may develop signs clinically similar to feline infectious peritonitis (FIP), plague, or other diseases. Affected animals may develop abscesses at the site of the arthropod bite with progression to regional or generalized lymphadenopathy, hepatosplenomegaly, pneumonia, or enterocolitis. At necropsy, lesions include multifocal or disseminated necrosis (white or red/white spots) in the liver, spleen, lungs, lymph nodes, and possibly the gastrointestinal tract. Puppies and kittens are often more severely affected than older animals. Tick control can help diminish arthropod borne transmission of tularemia as well as other infectious diseases associated with ticks. Use gloves when handling potentially infectious fluids and tissues and disinfect equipment after use on suspect animals.

For more information about tularemia, visit our website at <http://www.nyc.gov/html/doh/html/diseases/cttul.shtml>.

Middle East Respiratory Syndrome (MERS)

Middle East Respiratory Syndrome (caused by MERS-CoV, a novel coronavirus) is a viral respiratory illness first reported in Saudi Arabia in 2012. It is not caused by the same coronavirus that caused severe acute respiratory syndrome (SARS) in 2003. However, like the SARS virus, MERS-CoV is most similar to coronaviruses found in bats. Most people who have been confirmed to have MERS-CoV infection developed severe acute respiratory illness. They had fever, cough, and shortness of breath. About half of the cases were fatal.

So far, all the cases have been linked to six countries in or near the Arabian Peninsula. No cases have been identified in the U.S. This virus has spread from ill people to others through close contact. However, the virus has not been shown to spread in a sustained way in communities. Transmission from infected patients to healthcare personnel has also been observed. Clusters of cases in Saudi Arabia, Qatar, Jordan, Kuwait, Oman, the United Arab Emirates (UAE), the United Kingdom (UK), Tunisia, France, and Italy are being investigated.

The source of the virus has not yet been identified, although experts are looking at possible animal reservoirs. One study found a matching gene

sequence in the guano of an Egyptian tomb bat with that of a human viral isolate, although this was only a small and highly conserved sequence, and has not been replicated. Another study found neutralizing serum antibodies in a sampling of dromedary camels, but this only offers evidence that the camels were exposed to the virus. More recently, a sick camel owned by a MERS case-patient was PCR positive for a coronavirus. More testing needs to be done to determine if it is MERS-CoV or a related coronavirus.



Photo: Egyptian tomb bat: Jakob Fahr

The Centers for Disease Control and Prevention (CDC) is closely monitoring the MERS situation and working with the World Health Organization and other partners to understand the risks of this virus. CDC has developed molecular diagnostic testing and assays to detect MERS-CoV antibodies. These test kits have been made available to state health departments to allow for testing of suspect cases.

Notes from the Field: Ascariasis Associated with Pig Farming – Maine, 2010–2013

Reprinted from Centers for Disease Control and Prevention, *MMWR* 2013 May 24;62(20):413.

During April 2010–March 2013, the Maine Department of Health and Human Services investigated multiple cases of ascariasis that had been reported by health-care providers, veterinarians, and patients. All of the cases were in persons who had lived or worked on Maine farms and had frequent exposure to pigs. Ascariasis, a parasitic roundworm infection caused by *Ascaris* species, is the most common human intestinal worm infection globally.* However, because ascariasis is not a reportable disease, limited data exist regarding the incidence of this infection in the United States¹, and the number of annual cases in Maine is unknown. After investigation, 14 persons on seven farms in Maine were identified with *Ascaris* infection.

To better assess the extent of the ascariasis problem, state health officials conducted field investigations at four of the seven farms with reported cases and collected worms from humans and pigs and from pooled pig feces. Human worm and pig worm specimens were sent to CDC for identification and analysis. Confirmed cases were among persons who had excreted in stool at least one worm laboratory-identified as *Ascaris* species. Probable cases were among persons who reported excreting at least one worm in stool and who were epidemiologically associated with a confirmed case. Suspected cases were among persons with symptoms consistent with larval migration (e.g., coughing up larvae) and who were epidemiologically associated with a confirmed case or who had excreted at least one worm in stool without laboratory confirmation or epidemiologic association with a confirmed case.

A total of 14 patients aged 1–53 years (median: 25 years) from seven farms in six Maine counties had an *Ascaris* infection (eight confirmed, four probable, and two suspected) during 2010–2013. Thirteen (93%) patients were female. Ten (71%) patients reported no international travel history; of the four patients with a history of international travel, two reported previous treatment for parasites, and two reported no previous screening or treatment.

Reported by:

Kate Colby, Stephen Sears, Elizabeth McEvoy, Don Hoenig, Blaine Mathison, Marcos de Almeida, Alexandre J. da Silva, Henry Bishop, Susan P. Montgomery, Susan Manning, Leigh Ann Miller.

References:

1. Starr MC, Montgomery SP. Soil-transmitted helminthiasis in the United States: a systematic review—1940–2010. *Am J Trop Med Hyg* 2011;85:680–4.
2. Zhou C, Min L, Yuan K, Deng S, Peng W. Pig *Ascaris*: an important source of human ascariasis in China. *Infect Genet Evol* 2012;12:1172–7.

*Additional information available at <http://www.cdc.gov/parasites/ascariasis/index.html>.

All patients sought medical care and were prescribed anthelmintic medication (e.g., albendazole).

Private reference and university laboratories confirmed *Ascaris* species in human samples from three farms and in pooled pig feces from two farms. CDC confirmed as *Ascaris* species four worms collected from humans at four different farms and worms collected from pigs at one of those farms. Transmission from pigs to humans has been reported in other countries and likely occurred on the seven farms in Maine². Occurrence of infections among persons with no other likely source of infection and common exposure to pigs suggests that pigs were the source of human infections.

Ascariasis is transmitted by the fecal-oral route. *Ascaris* eggs and adult worms are excreted in stool. *Ascaris* infections often are asymptomatic among humans, but symptoms can include gastrointestinal discomfort and cough. Adverse health outcomes can include lung inflammation, intestinal obstruction, and growth delays.

The seven implicated farms grew either organic or conventional produce and raised livestock for household consumption and/or local sale. This unusual disease cluster holds implications for limited-scale agriculture with respect to farming practices and concern over foodborne transmission. Investigators recorded field notes from each of the four farm visits and conducted case investigation interviews regarding international travel history, farming practices, animal husbandry, and hand hygiene. Recommendations to prevent human illness at farms where *Ascaris* infection has been confirmed include improved hand hygiene, growing vegetables away from areas where pigs are penned, discontinuing use of pig manure as fertilizer, and thoroughly washing produce.



Image: Left/Right: Fertilized eggs of *A. lumbricoides* in unstained wet mounts of stool. Center: Adult female *A. lumbricoides*. Credit: DPDx, Orange County Public Health Laboratory, Santa Ana, CA.

Animal Disease Reporting

The following animal diseases are reportable in New York City:

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

To report animal diseases to the NYC DOHMH:

Complete a NYC Animal Disease 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 or

> Call the Bureau of Communicable Disease at 347-396-2600 during business hours. For urgent matters after hours, call the Poison Control Center at 212-764-7667 (212-POISONS).

To report animal bites:

> Call the Animal Bite Unit at 646-632-6074 during business hours or submit an Animal Bite Report Form online, available at <http://www.nyc.gov/html/doh/html/environmental/animals-bite-rpt.shtml>.

> For animal rabies testing and other issues related to animal bites, call the Bureau of Veterinary Public Health Services at 646-632-6604.

FDA Pet Food Recalls and Reporting Adverse Events

The US Food and Drug Administration (FDA) is an agency within the Department of Health and Human Services. The FDA is responsible for overseeing the safety, effectiveness, quality and security of human and veterinary food (except meat and egg products, which are regulated by USDA), drugs, vaccines and other biological products, medical devices, cosmetics, dietary supplements and radiation emitting devices. It also regulates tobacco products and assures that cosmetics and dietary supplements are safe and properly labeled.

Pet Food Recall Notification and Reporting

Pet foods are required to be safe for consumption and properly labeled. If an FDA regulated product is found to be contaminated the manufacturer will typically issue a recall notice. Recently, the FDA has issued several pet food recalls, primarily due to contamination with *Salmonella*. The FDA publishes these recalls. You can sign up to receive recall notifications by email online at <http://www.fda.gov/Safety/Recalls/default.htm> or via twitter at <https://twitter.com/FDArecalls>.

Pet owners and veterinarians should be aware that dry dog and cat food can be contaminated with *Salmonella* and should not be handled or stored in areas where human food is prepared or consumed. Washing hands is the most important step to prevent illness, especially right after handling pet food and treats or cleaning up after pets.

Veterinarians can help make FDA aware of potentially contaminated products by making reports. Veterinarians and clients alike can report cases of animal illness associated with pet food to

the FDA in two ways: (1) call the FDA Consumer Complaint Coordinator in New York at 866-446-9055 (toll-free), or (2) report electronically through the Safety Reporting Portal at <https://www.safetyreporting.hhs.gov/>. Reports should include product details such as brand name, production code (Example: BDR0105E2XJW), expiration date (Example: Best by 3-APRIL-2013), manufacturer or distributor, and location of purchase. Reports should also include medical information, including a veterinarian's report. FDA will review the consumer complaint and determine next steps, including whether a sample collection (diagnostic and/or finished product) is necessary.

Veterinary Adverse Event Voluntary Reporting

Veterinarians and animal owners are encouraged to report adverse experiences and product failures to the government Agency that regulates the product. After the product is marketed, data from the adverse experience reports are used to maintain safety surveillance of these products. For approved products, FDA encourages you to contact the manufacturer of the suspect product. To report adverse events associated with animal drugs and devices, veterinarians and/or animal owners may call the FDA Center for Veterinary Medicine at 1-888-FDA-VETS.

The identities of all persons and animals are held in strict confidence and protected by law. The reporter's identity may be shared with the manufacturer or distributor unless otherwise requested. However, FDA will not disclose the reporter's identity to a request from the public, pursuant to the Freedom of Information Act. You



Photo: Omniphot Communications Inc.

will be asked to leave your name, address, phone number and the brand name of the drug involved. Ask to have a 1932a form sent, or ask for the phone number of the drug company you should call to report the problem.

To report adverse events associated with animal Biologics (such as vaccines, bacterins and diagnostic kits), contact the US Department of Agriculture (USDA) at (800) 752-6255. For pesticides, such as topically applied external parasiticides, contact the US Environmental Protection Agency (EPA) at (800) 858-PEST.

For more information:

- <http://www.fda.gov/Safety/Recalls/default.htm>
- <http://www.fda.gov/AnimalVeterinary/SafetyHealth/RecallsWithdrawals/default.htm>
- <http://www.fda.gov/AnimalVeterinary/SafetyHealth/ReportProblem/ucm055305.htm>

Educational Resources Available Online

NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
CANINE LEPTOSPIROSIS
 Factsheet for Dog Owners

What is leptospirosis?
 Leptospirosis is a bacterial disease that affects humans and animals, including dogs. It is caused by *Leptospira*, a spiral-shaped bacterium that is found in the urine of infected animals. In some cases, dogs may develop severe kidney and liver disease that may result in death.

Is leptospirosis found in New York City?
 Leptospirosis has been found in the boroughs of New York City, including Manhattan, Bronx, Richmond, Westchester, and Dutchess counties. It is most commonly found in dogs that have been in contact with water, such as swimming pools, lakes, and streams.

How do dogs get leptospirosis?
 Dogs can become infected with leptospirosis through contact with water contaminated with the bacteria. This can occur when a dog drinks from a contaminated water source, such as a stream or lake, or when it swims in contaminated water. Dogs can also become infected by drinking from a contaminated water source, such as a stream or lake, or when it swims in contaminated water.

What are the signs and symptoms of leptospirosis in dogs?
 Signs and symptoms of leptospirosis in dogs include fever, lethargy, loss of appetite, and muscle pain. In severe cases, dogs may develop kidney and liver disease, which can be fatal.

How can I prevent leptospirosis in my dog?
 To prevent leptospirosis in your dog, avoid letting your dog drink from or swim in contaminated water. Keep your dog's water supply clean and fresh. If your dog has been in contact with contaminated water, contact your veterinarian for more information.

What if I need to test?
 If you suspect your dog has leptospirosis, contact your veterinarian for a blood test. The test results will tell you if your dog has the disease. If your dog has leptospirosis, your veterinarian will prescribe antibiotics to treat the infection.

For more information:
 Contact the NYC Department of Health and Mental Hygiene at (212) 242-2424. Contact the NYC Department of Health and Mental Hygiene at (212) 242-2424. Contact the NYC Department of Health and Mental Hygiene at (212) 242-2424.

NYC
 Department of Health and Mental Hygiene
 Thomas F. Kelly, MD, MPH
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NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
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LEPTOSPIROSIS

Fact sheets for Veterinarians and Dog Owners
http://www.nyc.gov/html/doh/downloads/pdf/zoo/lepto_providers.pdf
http://www.nyc.gov/html/doh/downloads/pdf/zoo/lepto_owners.pdf

READY NEW YORK: PETS GUIDE

Preparedness Guide from NYC Office of Emergency Management
www.nyc.gov/html/oem/html/ready/pets_guide.shtml

READY NEW YORK
MY PET'S EMERGENCY PLAN

READY NEW YORK: PETS GUIDE
 Preparedness Guide from NYC Office of Emergency Management