

## DISEASES OF CONCERN IN NORTH CAROLINA FOR HUMANS AND ANIMALS

**April Is Tick and Mosquito Awareness Month in North Carolina**

1. Governor McCrory has declared April 2014 as "Tick and Mosquito Awareness Month" and issued a proclamation that can be viewed here: <http://www.governor.state.nc.us/newsroom/proclamation/20140401/tick-and-mosquito-awareness-month>.
2. The NC DHHS has issued a press release to remind people to take actions to prevent vectorborne diseases and highlights the proclamation. If you are interested in issuing a local press release and would like a template please contact Jodi Reber or Carl Williams at 919-733-3419.
3. The Division of Public Health has issued the 2014 surveillance memoranda for arboviral, lyme, and tickborne rickettsial diseases. These memos are available at: <http://epi.publichealth.nc.gov/cd/diseases/vector.html>.

**2014 U.S. Public Health Service Annual Conference in Raleigh, June 10-12**

A truly One Health Conference is coming to Raleigh that will provide an excellent opportunity for continuing education and the opportunity to interact with a broad range of health professionals from physicians and nurses to engineers, environmental health officers and veterinarians. The 2014 U.S. Public Health Service Scientific and Training Symposium will be held at the Raleigh (NC) Convention Center on June 10-12. The theme for this year's conference is "**Public Health Today: Prevention, Innovation, Progress.**"

The conference will feature a wide range of pre-conference training opportunities on June 10, followed by two days of cutting-edge continuing education programs, including tracks on emergency preparedness, prevention, clinical services, pharmacy, innovation, and epidemiology. June 12 is Category Day, where there will be a full day of CE programming for each of the 11 professional categories: physicians, nurses, pharmacists, scientists, therapists, veterinarians, dentists, environmental health officers, health services officers, dieticians, and engineers. Highlights of the conference will include an Anchor and Caduceus Dinner on June 11 to celebrate the 125<sup>th</sup> Anniversary of the USPHS Commissioned Corps, and keynote presentations by: **Rear Admiral Boris Lushniak**, the Acting U.S. Surgeon General; **RADM Fitzhugh Mullan**, USPHS (Ret), Professor of Pediatrics, George Washington University; **Dr. Arthur Kellerman**, Dean, F. Edward Hebert School of Medicine, Uniformed Services University of the Health Sciences; and **Dr. William Lanier**, Mayo Clinic. The conference is organized by the USPHS Commissioned Officers Foundation for the Advancement of Public Health. The USPHS Commissioned Corps is one of the seven uniformed services and is commanded by the U.S. Surgeon General. The Corps consist of over 6800 active duty officers in eleven professional categories assigned to over 30 different agencies, including NIH, FDA, CDC, EPA, USDA, NPS, and DHS. Officers work in 700 geographic locations to protect, promote, and advance the health and safety of our nation. Information about career opportunities in the USPHS can be found at <http://www.usphs.gov>.

The conference is open to all interested individuals and students. Full conference and one-day registrations are available. For more information and to register, visit <http://symposium.phscof.org/>.



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Estimated first onset	Estimated end date	Jurisdiction affected	Species affected	Diagnosis	Estimated # of cases to date	Lead agency	Comment
October 2013	Ongoing	North Carolina	Humans	Influenza A	96	NC DHHS	
February 2011	Ongoing	Western NC counties: Avery, Haywood, McDowell, Buncombe, Rutherford, Yancy, Transylvania	4 bat species: tricolored, Northern long-eared, big brown, little brown	White-Nose Syndrome	Thousands	NC Wildlife Resources Commission	

**Table 1. New or Ongoing Morbidity or Mortality Events in Humans and Animals.**

### **Influenza Season Winding Down (contributed by Brian Keith, Biological Sciences, Class of 2016, North Carolina State University)**

The 2013-2014 human influenza season continues to decline nationally although influenza-like illnesses continue to be reported in certain parts of the country. North Carolina's seasonal peak occurred in late December and early January. Since October 1, 2013, laboratory-confirmed [influenza-associated hospitalizations](#) translated to a cumulative overall rate of 31.7 hospitalizations per 100,000 people in the United States. The cumulative hospitalization rate for the same week last season (week 13) was 42.5 per 100,000. More than 60% of hospitalizations have been in people 18-64 years old. The circulating strains of influenza viruses this season are 2009 H1N1, H3N2 and B. The predominant virus is 2009 H1N1, which was the strain that emerged in the 2009-1010 pandemic. All three viruses are in the North American trivalent and quadrivalent vaccines. Interim results for the 2013-14 season indicate that vaccination has reduced the risk for influenza-associated medical visits by approximately 60% (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6307a1.htm>).

Influenza A is a quintessential One Health disease because so many species can be infected and develop respiratory signs ranging from mild to fatal. The influenza A viruses circulate in aquatic birds and domestic poultry can maintain the viruses without proper surveillance and husbandry to minimize spread. Currently, H5N1, H7N9, H10N8, H6N1, and H5N8 are globally emerging avian influenza viruses in Asia that have caused limited and sporadic human infections. In contrast to strains responsible for seasonal influenza, these do not spread efficiently between people. Pigs can also be infected with avian influenza viruses and when they infect people they are designated as variant. Influenza A H3N2 variant (H3N2v) was first detected in people (n=12, in Indiana, Iowa, Maine, Pennsylvania, and West Virginia) in 2011 after the virus was first recognized in pigs in 2010. Cases have been reported in 2012 and 2013 primarily from people with prolonged exposure to pigs at agricultural fairs. And be aware that humans can transmit certain strains of influenza to their pet cats and ferrets as occurred during the 2009-2010 pandemic with H1N1, which is currently in circulation.

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### White-Nose Syndrome in Bats (contributed by Sarah Blau, Mac Harris, Class of 2017 and Adam Werts, Class of 2015, NC State University College of Veterinary Medicine)

White-nose syndrome has been devastating bat populations in western North Carolina since the first case in the state was reported in February 2011. White-nose syndrome (WNS) is the result of an infection of the fungus *Pseudogymnoascus (Geomyces) destructans* that presents as white fungus often found on the muzzle of infected bats. This fungus causes skin lesions, weakens the bat during hibernation, and makes it susceptible to secondary infection. Since 2006, when it was first introduced into the United States, *P. destructans* has killed just under 6 million bats across 22 states. The fungus has roughly a 95% mortality rate reflected in the falling numbers of bats in North Carolina caves known to be infected sites.

Although *P. destructans* has not been documented to infect humans, the effect of WNS on bat populations may have severe consequences for the agricultural industry in affected areas, and subsequently, on the economy and people dependent upon that industry. Bats eat an enormous amount of insects, many of which are pests of croplands. A sharp decline in bat populations across the country, including thousands of bats lost in North Carolina, means an increase in crop-feeding insects. A 2011 study published in the journal *Science* estimates that “the value of bats to the agricultural industry [nationwide] is roughly \$22.9 billion/year” based on their contribution to crop pest suppression. The estimated value of bats to North Carolina was found to be \$310,379,558/year or 12% of the overall market value of marketable crops (Boyles, J.G. et al. *Science*, 332:41-41 (2011)).

Currently, there is no cure for WNS. However, since European bats living in areas where *P. destructans* is indigenous are resistant to WNS, this suggests that bats are capable of amounting defenses against and living with this pathogen. Thus, there is hope that the WNS will select for resistant individuals in bat populations in North America too. In the meantime, individuals can help prevent “adding insult to injury” by following several steps to minimize possible spread of the fungus. First, avoid entering areas of known bat roosts such as caves or mines. If visiting bat habitats open to tourism, be sure to follow all guidelines and ranger directions regarding clothing decontamination. Finally, if you find a bat that you suspect could have WNS, do not touch the bat. Instead, take a photograph and alert your local US Fish and Wildlife Service biologist (find contact information here). Together we can help minimize the impacts of this novel pathogen on bats and our economy.

For more information on white-nose syndrome, current research, and state and federal response plans, visit the US Fish and Wildlife Service’s White-Nose Syndrome Coordinated Response Webpage: <http://www.whitenosesyndrome.org/>.

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### North Carolina Well Water Quality and Testing (contributed by Carly Dohse, Katie McCallion, and Jennifer Stiles, Class of 2017, NC State University College of Veterinary Medicine)

Over three million North Carolinians have a private well as their primary source of water, but only 200,000 of these wells have been tested for more than bacteria. Microbiological, inorganic, and organic contaminants from human and animal sources, as well as natural sources, can seep into the ground to impact the water supply. Contaminants enter groundwater by flooding, run-off, overgrazing, pesticides, fertilizers, erosion, toxic spills, construction, decomposing waste and landfills. Groundwater flow can change over time, thus contaminants from near and far can have wide range effects. So why exactly is it important to test for well water contamination? Many contaminants pose a health threat to humans, domestic animals, and wildlife. The effects of contaminants range in severity. Some contaminants if ingested can induce an acute effect such as gastrointestinal irritation in humans and animals; while others, over long periods of time, can increase the risk of chronic diseases. Contaminants in drinking water for livestock have been shown to decrease appetite, affect skin and hair condition, decrease milk yield, and decrease productivity. Pregnant women and infants are often at higher risk for health issues as a result of water quality contamination. Nationally, a specific contaminant of concern in water well testing is lead. Lead has become a highly regulated heavy metal due to its known toxicological characteristics. In the past, lead was commonly used in paints, batteries, gasoline additives, ammunition, and piping and is thus still present in residual form in the environment and can leach into groundwater. Lead concentrations in private wells in North Carolina have declined over the past decade, however due to its residual nature, routine well testing is still recommended. Mild exposure to lead at levels above the US Environmental Protection Agency (EPA) standard of 1.5ppb can lead to nervous system disorders.

Chronic or acute exposure may cause severe brain and kidney damage in both children and adults, reproductive disorders, and can lead to miscarriage in pregnant women. The EPA has also classified lead as a probable human carcinogen. Testing for lead and various other contaminants is available to the general public through county governments at various fees. Private well owners are responsible for regular testing of their water supply in North Carolina. It is recommended to test for coliform bacteria annually. Every two years heavy metals, nitrates, nitrites, and volatile organic compounds should be tested. Every five years pesticide levels should be tested. Check with your county to determine their fee schedule and collection requirements. More information on well water contaminants is available through the NC Public Health Epidemiology website <http://testyourwell.nc.gov>.

## DISEASES OF CONCERNS IN NORTH CAROLINA FOR HUMANS AND ANIMALS

The *North Carolina One Health Bulletin* is coordinated through the North Carolina One Health Collaborative (NC OHC: <http://nconehealthcollaborative.weebly.com>). The *Bulletin* reflects the NC OHC mission to create a network of diverse health professionals, scientists, interested public, and students working to understand the interconnectedness of people, animals, and the environment in order to promote health and well-being of all species. Students from the area universities contribute the articles with oversight by members of the NC OHC. All information in the *Bulletin* is in the public domain, but can be challenging to access and assimilate across multiple platforms and disciplines that span One Health. Reports are intentionally brief, with links and references to more detailed discussions for further information.

**Julie Casani, MD, MPH**

PH Preparedness Director

NC Division of Public Health

NC OHC Health Steering Committee

**Suzanne Kennedy-Stoskopf, DVM, PhD, DACZM**

Research Professor

North Carolina State University

College of Veterinary Medicine

NC OHC Steering Committee

To report cases of disease in:	Contact Information:
Domestic animals	North Carolina Department of Agriculture & Consumer Services Veterinary Division, Animal Health Program  (919) 733-7601
Humans	Your Local Health Department: find it here <a href="http://www.ncalhd.org/county.htm">http://www.ncalhd.org/county.htm</a> or NCDHHS, NC Division of Public Health, Epidemiology Section, Communicable Disease Branch (919) 733-3419 <a href="http://epi.publichealth.nc.gov/cd/">http://epi.publichealth.nc.gov/cd/</a>

## NORTH CAROLINA ANIMAL RABIES CASES, 2013

**Table 2. Total Rabies Cases for 2013, Week Ending (As of January 1, 2014)**

Jurisdiction	Bat Total	Cat Total	Cow Total	Dog Total	Fox Total	Goat Total	Raccoon Total	Skunk Total	Other Total	Total
Alamance	2	0	0	0	0	0	5	1	0	8
Alexander	0	0	0	0	0	0	1	0	0	1
Alleghany	0	0	0	0	0	0	0	0	0	0
Anson	0	0	0	0	0	0	0	3	0	3
Ashe	0	0	0	0	0	0	1	1	0	2
Avery	0	0	0	0	0	0	0	0	0	0
Beaufort	0	0	0	0	0	0	2	0	0	2
Bertie	0	0	0	0	0	0	1	0	0	1
Bladen	0	0	0	0	0	0	7	0	0	7
Brunswick	0	0	0	0	1	0	3	0	0	4
Buncombe	0	0	0	0	1	0	3	0	0	4
Burke	0	1	0	0	0	0	0	0	0	1
Cabarrus	1	0	0	0	3	0	2	1	0	7
Caldwell	0	0	0	0	0	0	0	1	0	1
Camden	0	0	0	0	0	0	1	0	0	1
Carteret	0	0	0	0	0	0	0	0	0	0
Caswell	0	0	0	0	0	0	3	2	0	5
Catawba	0	0	0	0	0	0	1	1	0	2
Chatham	0	0	0	0	1	0	3	1	0	5
Cherokee	0	0	0	1	0	0	2	1	0	4
Chowan	0	0	0	0	0	0	0	0	0	0
Clay	0	0	0	0	0	0	0	0	0	0
Cleveland	0	0	0	0	1	0	4	2	0	7
Columbus	0	1	0	0	1	0	1	0	0	3
Craven	0	0	0	0	0	0	0	0	0	0
Cumberland	6	0	0	0	1	0	3	0	0	10
Currituck	0	1	0	0	1	0	0	0	0	2
Dare	0	0	0	0	0	0	0	0	0	0
Davidson	0	1	0	0	2	0	1	4	0	8
Davie	0	0	0	0	0	0	1	0	0	1
Duplin	0	0	0	1	1	0	5	0	0	7
Durham	1	0	0	0	1	0	9	1	0	12
Edgecombe	0	0	0	0	0	0	0	0	0	0
Forsyth	1	1	0	0	0	0	11	0	0	11
Franklin	0	0	0	0	0	0	3	1	0	3
Gaston	0	1	0	0	0	0	0	0	0	1
Gates	0	0	0	0	0	0	0	0	0	0

## NORTH CAROLINA ANIMAL RABIES CASES, 2013

**Table 2 (continued). Total Rabies Cases for 2013, Week Ending (As of January 1, 2014)**

Jurisdiction	Bat Total	Cat Total	Cow Total	Dog Total	Fox Total	Goat Total	Raccoon Total	Skunk Total	Other Total	Total
Graham	0	0	0	0	0	0	0	0	0	0
Granville	0	0	0	0	0	0	0	0	0	0
Greene	0	0	0	0	0	0	0	0	0	0
Guilford	2	2	0	0	5	0	10	0	0	19
Halifax	0	0	0	0	0	0	1	3	0	4
Harnett	2	0	0	0	1	0	0	0	0	3
Haywood	0	0	0	0	0	0	0	0	0	0
Henderson	0	0	0	0	1	0	0	0	0	1
Hertford	0	0	0	0	0	0	0	0	0	0
Hoke	0	0	0	0	0	0	2	0	0	2
Hyde	0	0	0	0	0	0	0	0	0	0
Iredell	0	0	2	0	0	0	3	2	0	7
Jackson	0	0	0	0	0	0	0	0	0	0
Johnston	0	0	0	0	0	0	2	0	0	2
Jones	0	0	0	0	0	0	0	0	0	0
Lee	0	0	0	0	0	0	0	0	0	0
Lenoir	0	0	0	0	0	0	1	0	0	1
Lincoln	0	0	0	0	1	0	3	0	0	4
Macon	0	0	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0	0	0
Martin	0	0	0	0	0	0	0	0	0	0
McDowell	0	0	0	0	0	0	0	0	0	0
Mecklenburg	1	2	0	0	2	0	15	0	0	20
Mitchell	0	0	0	0	0	0	0	0	0	0
Montgomery	0	0	0	0	1	0	2	0	0	3
Moore	1	1	0	0	2	0	0	1	0	5
Nash	0	0	0	1	1	0	1	1	0	4
New Hanover	1	1	0	0	1	0	6	0	0	9
Northampton	0	0	0	0	1	0	0	0	0	1
Onslow	0	0	0	0	1	0	0	0	0	1
Orange	2	0	0	0	2	2	5	2	0	13
Pamlico	0	0	0	0	0	0	0	0	0	0
Pasquotank	0	0	0	0	0	0	1	0	0	1
Pender	0	0	0	0	1	0	4	0	0	5
Perquimans	0	0	0	0	0	0	0	0	0	0
Person	0	0	0	0	0	0	3	1	0	4
Pitt	0	0	0	0	0	0	0	1	0	1

## NORTH CAROLINA ANIMAL RABIES CASES, 2013

**Table 2 (continued). Total Rabies Cases for 2013, Week Ending (As of January 1, 2014)**

Jurisdiction	Bat Total	Cat Total	Cow Total	Dog Total	Fox Total	Goat Total	Raccoon Total	Skunk Total	Other Total	Total
Polk	0	0	0	0	0	0	0	0	0	0
Randolph	0	1	0	0	5	0	5	0	0	11
Richmond	0	0	0	0	0	0	1	0	0	1
Robeson	0	2	0	0	3	0	12	0	0	17
Rockingham	1	0	0	0	2	0	3	5	0	11
Rowan	0	0	0	0	3	0	6	2	0	11
Rutherford	0	1	0	0	0	0	2	1	0	4
Sampson	0	0	0	0	2	0	3	0	0	5
Scotland	0	0	0	0	1	0	0	0	0	1
Stanly	0	0	1	1	1	0	1	3	0	7
Stokes	1	1	0	0	0	0	3	1	0	6
Surry	0	0	0	1	1	0	3	3	0	8
Swain	0	0	0	0	0	0	0	0	0	0
Transylvania	1	0	0	0	0	0	0	0	0	1
Tyrrell	0	0	0	0	0	0	0	0	0	0
Union	0	0	0	0	1	0	5	2	0	8
Vance	0	0	0	0	0	0	3	0	0	3
Wake	4	1	0	0	5	0	5	0	0	15
Warren	0	0	1	0	0	0	0	1	0	2
Washington	0	0	0	0	0	0	0	0	0	0
Watauga	0	0	0	0	1	0	2	1	0	4
Wayne	0	2	0	0	0	0	3	0	0	5
Wilkes	0	0	0	0	3	0	5	5	0	13
Wilson	0	0	0	0	0	0	0	0	0	0
Yadkin	1	0	0	0	0	0	6	1	0	8
Yancey	0	0	0	0	0	0	3	0	0	3
<b>Total</b>	<b>28</b>	<b>20</b>	<b>4</b>	<b>5</b>	<b>62</b>	<b>2</b>	<b>204</b>	<b>55</b>	<b>0</b>	<b>380</b>

Source: North Carolina State Laboratory of Public Health

Rabies-positive mammals by species in North Carolina (2012):

<http://epi.publichealth.nc.gov/cd/rabies/figures/rabiesstats4.pdf>

Map of rabies in raccoons by county in North Carolina (1991-2012):

[http://epi.publichealth.nc.gov/cd/rabies/figures/map\\_raccoons\\_since91.pdf](http://epi.publichealth.nc.gov/cd/rabies/figures/map_raccoons_since91.pdf)

U.S. Livestock and Poultry Disease Events and Trends:

[http://www.aphis.usda.gov/animal\\_health](http://www.aphis.usda.gov/animal_health)

National Wildlife Health Center New and Ongoing Wildlife Mortality Events:

[http://www.nwhc.usgs.gov/mortality\\_events?ongoing.jsp](http://www.nwhc.usgs.gov/mortality_events?ongoing.jsp)