The 411 on Wildlife Diseases

What you need to know to stay safe when handling wildlife

brought to you by:

Cornell Wildlife Health Lab

a New York State Wildlife Health Program partner
Zoonoses are diseases that can be transmitted between animals and people.

Zoonotic pathogens are the viruses, bacteria, parasites, or prions that cause those diseases.

Sometimes even healthy wildlife can harbor parasites or bacteria that cause problems for people.

Avoid an unpleasant surprise by maintaining good hygiene whenever handling animals.
Zoonoses

**Transmission** usually occurs when body fluids or feces from an infected animal get in your eyes, are inhaled, get in your mouth, or contact broken skin (such as a cut).

Some pathogens are transmitted by **vectors** like ticks and mosquitoes.

Some **common pathogens** can also be found on the fur, on the ground, or in water where the animal spends time.

It can help to know **who carries what**.

Like fine wine, diseases have common pairings:

- Beavers and cryptosporidia
- Reptiles and salmonella
- Waterfowl and influenza
Zoonoses

Personal Protection

Like your mama said:

“Wash your hands.”

Basic Precautions

- Wear gloves
- Wash hands frequently, particularly after removing gloves
- Don’t contaminate items like your phone, pen, or car door by handling them with dirty gloves.
- Avoid eating, drinking or touching your eyes and mouth when handling wildlife.
Zoonoses

Personal Protection

• Changing clothes and leaving work shoes at the office before heading home leaves the bugs behind.

• Do it for the animals too! Good hygiene also reduces the chances that you will accidentally spread animal diseases around.

Consider additional precautions

Dedicated clothes

Face Shield/Face Mask

Plastic Boots

Coveralls
Zoonoses

What, me worry?

Let's talk about some of the more common diseases, and how you can reduce your risk of exposure.

Important Zoonoses to Know

All Animals
- Salmonella (bacteria)
- Cryptosporidia (parasites)
- Giardia (parasites)

Mammals
- Rabies (virus)
- Hantavirus
- Leptospirosa (bacteria)
- Tularemia (bacteria)
- Echinococcus and Baylisascaris (parasites)

Birds
- Avian Influenza (virus)
- West Nile Virus
- Eastern Equine Encephalitis (virus)
Rabies is a virus that can infect any mammal. Birds, reptiles and amphibians do NOT get rabies.

Don’t be fooled!! Rabid animals can have all kinds of different symptoms depending on the species and the stage of infection.

Common Signs & symptoms
Aggression
Lethargy
Circling or Wandering
Unusually tame behavior
Weak or off balance hind legs
Porcupine quills!
**Rabies vector species** are species that sustain the infection within the population. In NY, that includes bats, skunks and raccoons.

Foxes, skunks and raccoons also get distemper, which can look the same as rabies. Distemper is not a human disease risk, but they have to be tested to be sure.
Rabies in New York State

Rabies cases tend to spike in the summer months as activity increases.

Don't forget about deer, woodchucks and mustelids – while they are lower risk, we see at least a few cases every year.

Most rodents, rabbits and opossums are very low risk, but use standard precautions when handling anyway.
Handling mammals

Rabies Transmission
Usually occurs from a bite BUT can also happen if you get saliva, brain, or fluid from the brain or spinal cord in your eyes, mouth or on broken skin.

Wear that PPE

Basic PPE + Extra Face Protection

Gloves
Handwashing
Avoid contamination

Be careful to avoid splashes when handling or euthanizing mammals.....
Handling mammals

Rabies

If you can avoid it, don’t use euthanasia methods that damage the brain or penetrate the skull—follow DEC guidelines for safe and humane handling.

Vaccination does not guarantee immunity: Err on the side of caution when reporting potential exposures.

Rabies Prevention and Response

Vaccination

- Get vaccinated!!!
- Have your antibody titer checked every 2 years.

Response

- REPORT any potential human or domestic animal exposure to the Wildlife Health Program AND to the local county health department for appropriate follow up.

Follow-up

- Rabies results are generally available within 24 hours of the necropsy.
- The local county health department determines risk & need for treatment in all cases of human or domestic animal exposure.
Handling mammals

Hantavirus

Hantavirus is carried by deer mice and white footed mice and can cause a deadly pneumonia in humans.

Transmission

Inhalation of dust from droppings of infected animals

Signs and Symptoms

In humans, severe pneumonia called hantavirus pulmonary syndrome (HPS) which can be fatal!

While hantavirus is rare in the northeast, be aware of the risks and common means of transmission.
Hantavirus is much more common in the southwest US.
Handling mammals

Hantavirus

Worry about this when you open up that shed, barn or cabinet after a long winter.

Use at least a surgical mask for occasional protection.

CDC recommends getting fitted for a specialized mask if you have frequent exposure risk.

Basic PPE

Gloves

Handwashing

Avoid contamination

Respiratory protection

Use an appropriate mask when cleaning or working in sheds, barns, tents or enclosed areas with accumulated rodent feces.
Handling mammals

Tularemia

Highly infectious- only 10 bacteria are needed to cause disease.

Handling and reporting for this disease is taken very seriously because it is listed as a potential bioweapon by the federal government.

**Tularemia** ("Rabbit Fever") is caused by the bacteria *Francisella tularensis* and is found in rabbits and rodents, particularly beaver. This is a RARE but important disease.

**Transmission**

People get exposed by handling infected rabbits or rodents and from **tick bites**.

**Signs & Symptoms**

chronic non-healing wounds or tick bites, sore throat, mouth ulcer, enlarged lymph nodes, severe pneumonia
Handling mammals

Tularemia

Geography

Rare in general in the northeast, but recurs in some limited areas. Cases are seen every few years around the NYC area in wild rabbits, and are more likely in summer.

Seasonality
Handling mammals

Tularemia

Tularemia is rare but serious.

Treatable with antibiotics if diagnosed correctly.

Reportable to the federal government when confirmed.

Wear Gloves when handling rodents & rabbits

Check for ticks after working outside

Monitor tick bites for redness, swelling or signs of infection
Leptospirosa ("Lepto") is caused by different strains of the bacteria Leptospirosa which can be carried by many wildlife species but is most problematic for people when transmitted from rodents.

Transmission
People get exposed by handling infected animals, or coming in contact with their urine or urine contaminated water.

Signs & Symptoms
Flu like symptoms in people include fever and muscle aches, and can progress to jaundice and kidney failure. Most wildlife are asymptomatic.
Handling mammals

Parasites of special concern
- Baylisascaris (Raccoon Roundworm)
- Echinococcus (Hydatid Disease)
- Sarcoptes (Mange)

Basic PPE
- Wear gloves
- Wash hands
- Avoid eating, drinking, touching face or handling phones, pens etc. with dirty hands or gloves

The thought of worms migrating through your body should inspire you to wash your hands. Regularly.
Parasites of special concern

Baylisascaris (Raccoon Roundworm)
Echinococcus (Hydatid Disease)
Sarcoptes (Mange)

Transmission
Worm eggs are shed in raccoon feces. It takes 30 days in the environment for the infectious larvae to develop inside the egg.

If ingested, these parasitic larvae hatch from the eggs and damage organs by migrating throughout the body--including the brain.

Signs & Symptoms
Human cases are rare but potentially serious.
Treatment doesn’t always reverse brain damage.

The thought of worms migrating through your body should inspire you to wash your hands. Regularly.
Handling mammals

Parasites of special concern
- Baylisascaris (Raccoon Roundworm)
- Echinococcus (Hydatid Disease)
- Sarcoptes (Mange)

Transmission
Ingestion (hopefully accidental) of tapeworm eggs from canid feces, contaminated food or water, or from fur or pelt.

Worms form large “hydatid” cysts in the liver of non-canid hosts.

Signs & Symptoms
Human cases are rare but potentially serious and may require surgery to remove.

Parasites
Again with the worms.....

Precautions
- Gloves
- Handwashing
- Avoid contamination
Handling mammals

Parasites of special concern

Baylisascaris (Raccoon Roundworm)
Echinococcus (Hydatid Disease)
Sarcoptes (Mange)

Transmission
Caused by the burrowing mite *Sarcoptes Scabei*.
Easily transmitted between animals sharing dens and through close contact with an affected animal.
Common in red fox and black bear in some areas.

Signs & Symptoms
Animals have thick, crusty skin with hair loss.
Causes a generally limited (but unpleasant) skin infection in humans.

Very, very itchy......

Gloves
Handwashing
Avoid contamination
Viruses of special concern in birds

Avian Influenza (AI)
West Nile Virus (WNV)
Eastern Equine Encephalitis (EEE)

Avian Influenza virus is carried by waterfowl and rarely raptors.

Strains are constantly mixing and evolving and are named by their H and N virus protein types: H5N1, H1N1 etc.

Mild or “Low Path” AI strains may cause minimal or no disease and are common in waterfowl.

Severe or “High Path” AI strains are rare but more serious. They are sometimes seen in waterfowl or raptors and may cause severe mortality in domestic poultry.

Transmission

Wild birds shed virus in feces and may not appear sick but can be a source of infection for poultry.

Raptors may be infected by ingestion of sick waterfowl.
Handling birds

Viruses of special concern
- Avian Influenza (AI)
- West Nile Virus (WNV)
- Eastern Equine Encephalitis (EEE)

PPE

For routine waterfowl handling, gloves are sufficient PPE.

In case of a suspected outbreak, you may be advised to use additional protective equipment including fitted respirator masks and clothing.

Always

Wear gloves
Wash hands
Avoid contamination

Suspected outbreak

Additional protective equipment including protective masks and clothing
Viruses of special concern

- Avian Influenza (AI)
- West Nile Virus (WNV)
- Eastern Equine Encephalitis (EEE)

**WNV and EEE are viruses** that cause neurologic disease in humans and horses. EEE is usually more serious, but more rare.

**Transmission**

Spread when mosquitoes bite an infected bird and then a human, usually in summer and fall. Rarely, infection can come from contaminated instruments via a puncture wound.

**Signs & Symptoms**

Most infected people will have few symptoms and not even know they are infected, but a small percent will develop neurologic disease including fever, disorientation, seizures and coma.
Viruses of special concern

Avian Influenza (AI)
West Nile Virus (WNV)
Eastern Equine Encephalitis (EEE)

PPE

Routine precautions are fine for handling sick or dead crows or raptors during the summer season since these diseases are not transmitted through casual contact with infected birds.

Always

Wear gloves
Wash hands
Avoid contamination

Bug Repellent

Mike Mozart, https://www.flickr.com/photos/jeepersmedia/26537443760
Handling ANY Animals

Waterborne parasites of special concern

- Giardia
- Cryptosporidiosis

Transmission
Caused by small protozoa that are shed in the feces of infected animals. Easily transmitted through accidental ingestion of feces or contaminated water.

Signs & Symptoms
Very unpleasant gastrointestinal upset that can persist for several weeks. Cryptosporidia (crypto) can be hard to treat. Most infected wildlife will be asymptomatic.

Also: DON’T DRINK THE (untreated) WATER!!
Bacteria of special concern

Salmonella

Transmission
Salmonella bacteria are shed in the feces of infected animals. Easily transmitted through close contact with an infected animal, or from contaminated surfaces.

Scavenging birds and reptiles are frequently carriers.

Signs & Symptoms
Very unpleasant GI upset that can persist. Most infected wildlife will be asymptomatic.

WASH YOUR HANDS!
Routine precautions and good hygiene can prevent a lot of unpleasantness. Practice good biosecurity for you and the animals.

**PPE Recap**

**PPE**

**Always Wear Gloves & Wash Hands**

**Wear Protective Clothing**

**Protect your eyes, mouth, and nose**

**Decontaminate Gear**