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*

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine

WILDLIFE RESTORATION

Zoonoses

Terminology

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 are diseases that can be transmitted between animals and people.

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

Zoonoses

Transmission

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

Like fine wine, diseases have common pairings:

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

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 mosquitos.

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

Zoonoses

Personal Protection

Like your mama said:

“Wash your hands.”

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

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.

WILDLIFE RESTORATION

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?

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)

Handling mammals

Rabies

Always think of rabies when you handle ANY mammals.

Rabid animals can look pretty ordinary and rabies can't be diagnosed without laboratory testing.

Red flag: Rabid animals have poor judgement – porcupine quills are a frequent finding in rabies cases!

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!

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

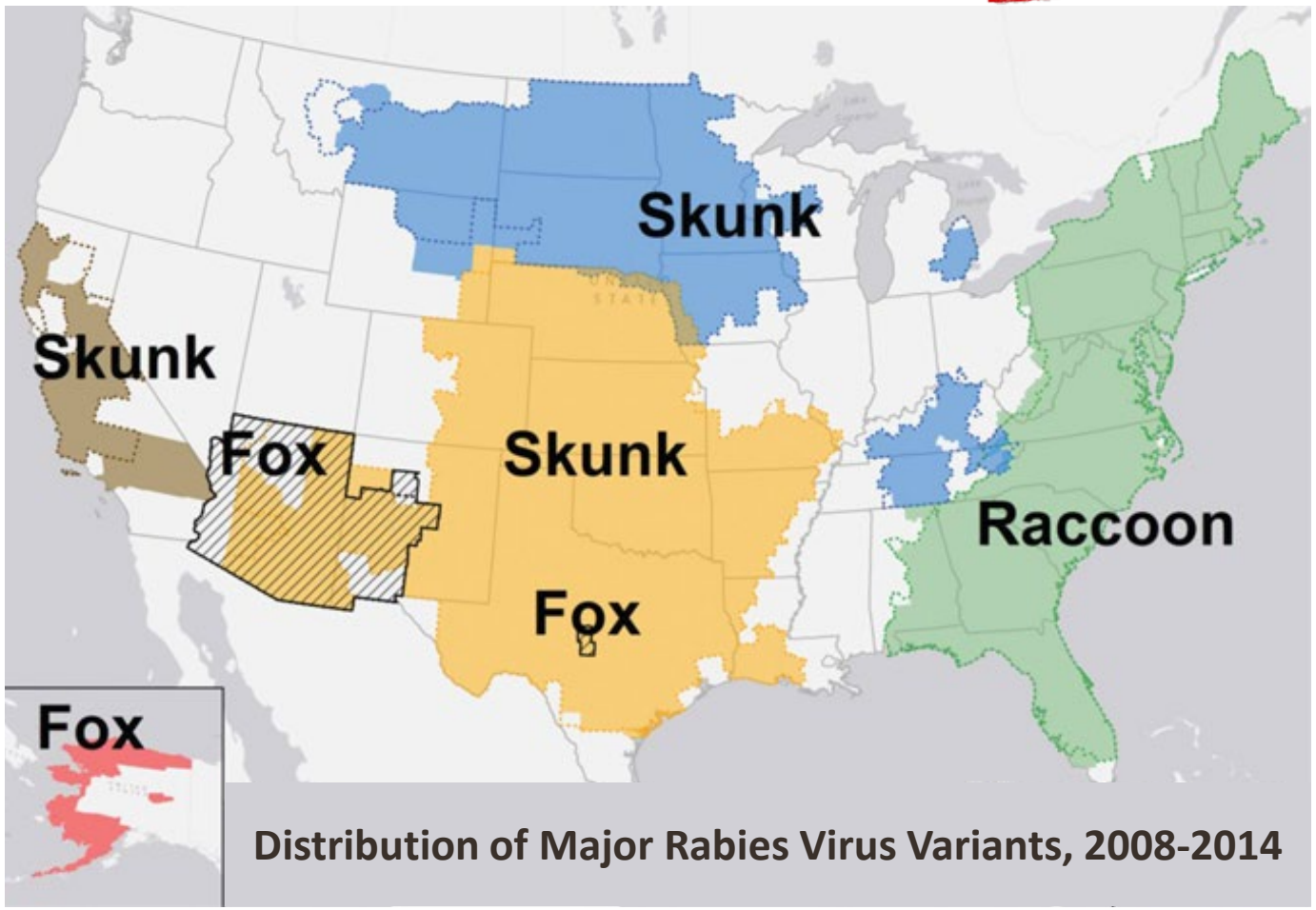
Handling mammals

Rabies

Rabies vector species are species that sustain the infection within the population. In NY, that includes bats, skunks and raccoons.

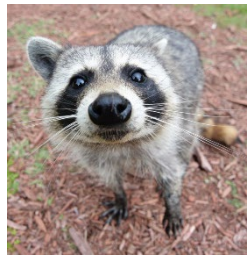
Foxes, skunks and raccoons also get distemper, which can look the same as rabies. Distemper is not a human disease risk, but they have to be tested to be sure.

Common Carriers in US



Distribution of Major Rabies Virus Variants, 2008-2014




NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

Handling mammals

Rabies

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

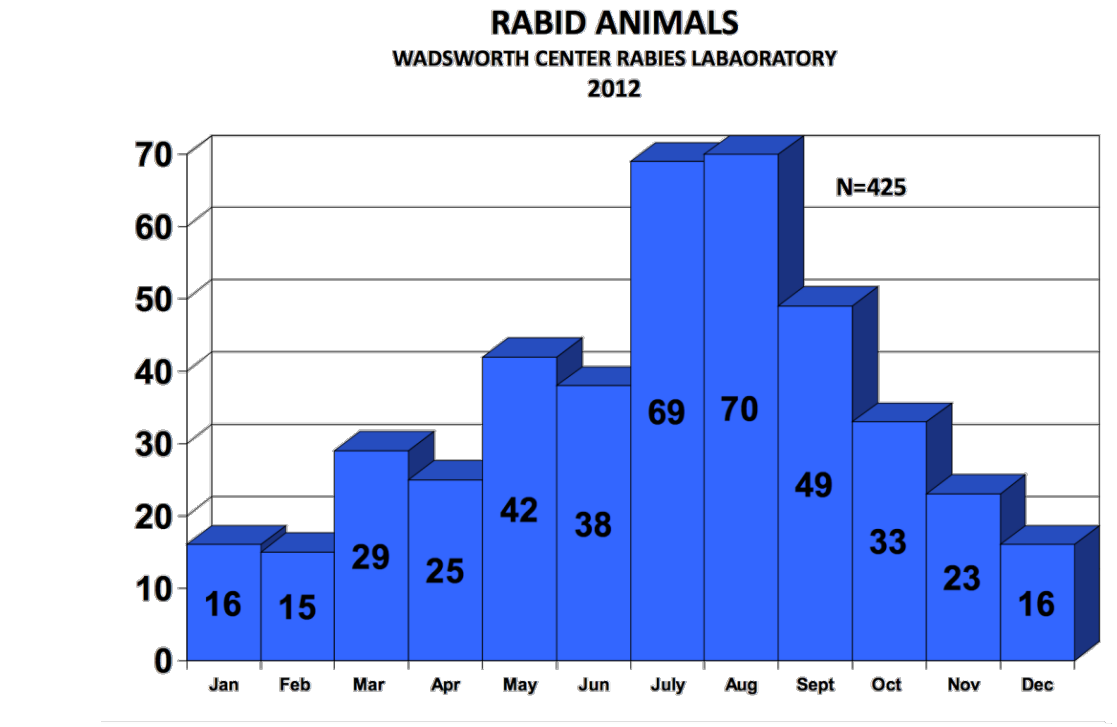
Don't forget about deer, woodchucks and mustelids – while they are lower risk, we see at least a few cases every year.

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

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

Rabies in New York State



WILDLIFE RESTORATION

Handling mammals

Rabies

Take care when handling any mammal.

Bites or splashes to your head and neck are the most serious- it's a short trip for the virus to get to the brain from there.

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…..

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

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.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

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.

WILDLIFE RESTORATION

Handling mammals

Hantavirus

While hantavirus is rare in the northeast, be aware of the risks and common means of transmission.

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!**

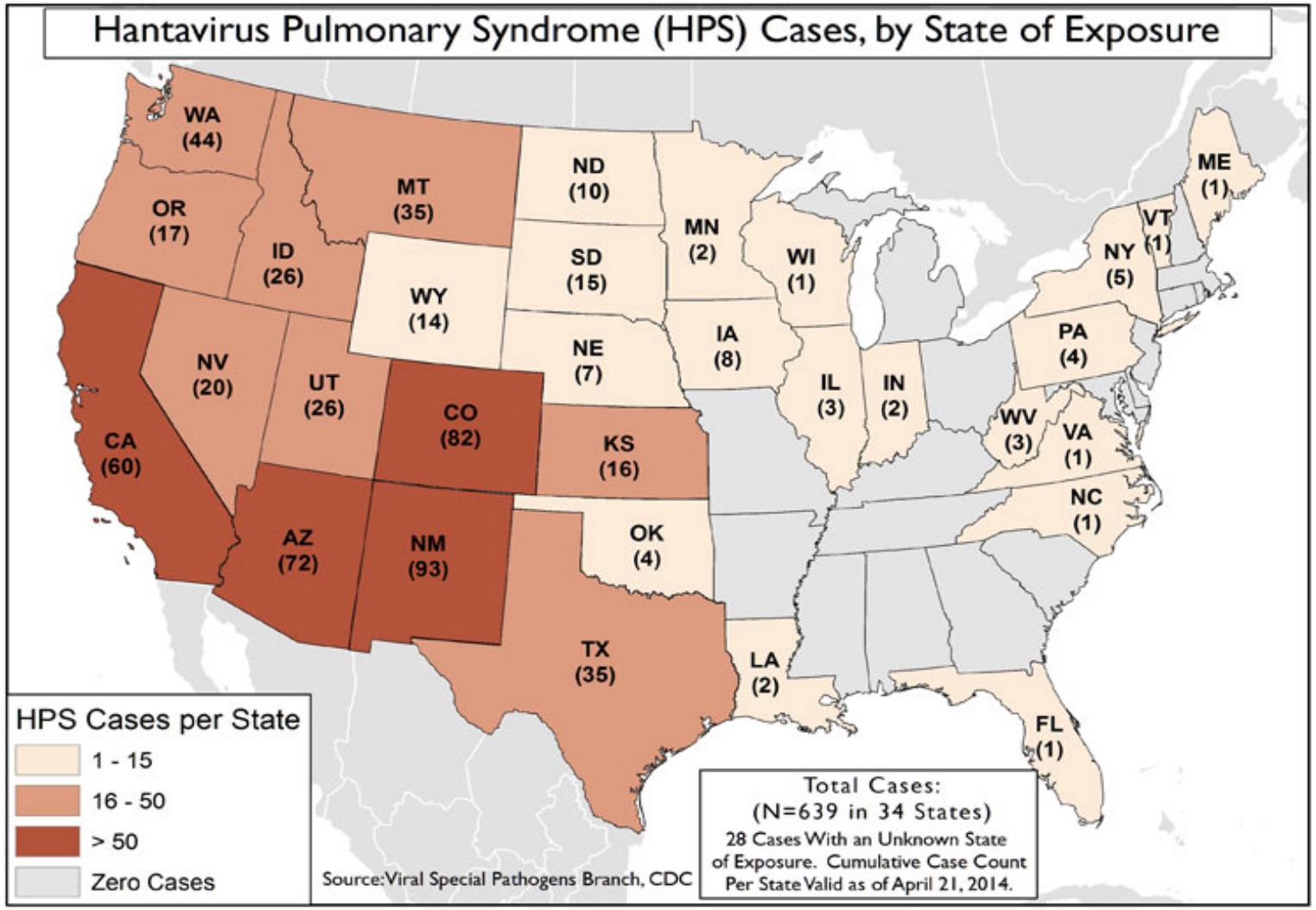
NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

Handling mammals

Hantavirus

Hantavirus is much more common in the southwest US.

Hantavirus



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.

Hantavirus

Basic PPE + Respiratory protection

Gloves
Handwashing
Avoid contamination

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

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

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

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

Handling mammals

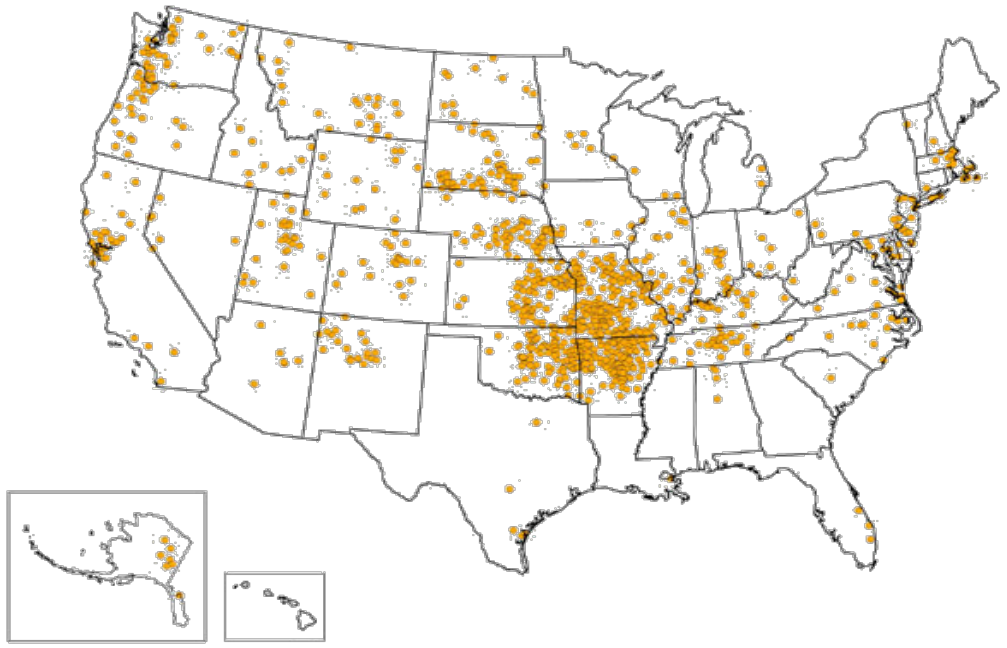
Tularemia

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.

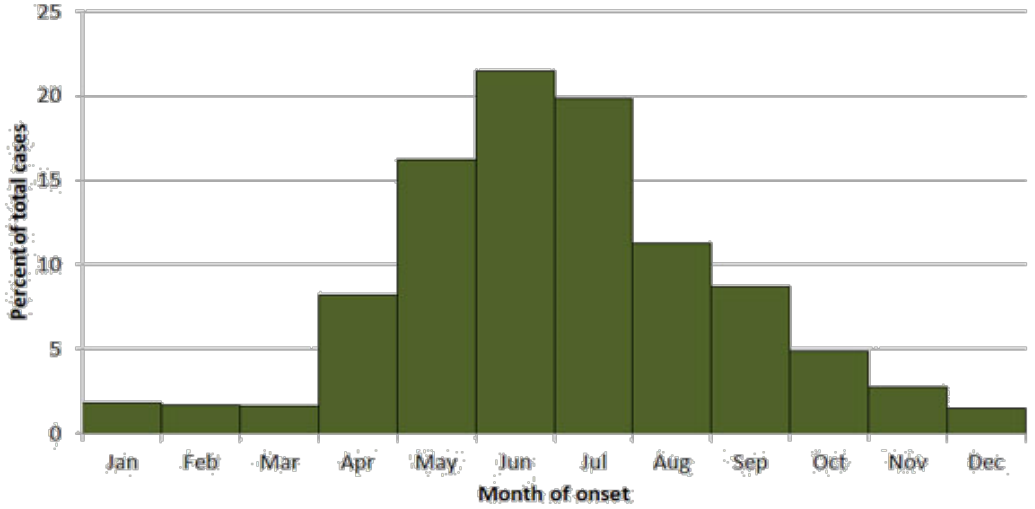
Tularemia

Geography



1 dot placed randomly within county of residence for each reported case

Seasonality



Handling mammals

Tularemia

Tularemia is rare but serious.

Treatable with antibiotics if diagnosed correctly.

Reportable to the federal government when confirmed.

Tularemia

PPE

Wear Gloves when handling rodents & rabbits

Check for ticks after working outside

Monitor tick bites for redness, swelling or signs of infection

Handling mammals

Leptospirosa

“Lepto” is treatable with antibiotics.

It is transmissible to domestic animals, particularly dogs and cattle.

It is a serious public health issue in urban areas world wide.

Routine PPE is sufficient protection.

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.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

WILDLIFE RESTORATION

Handling mammals

Parasites

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)

Basic PPE

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

Handling mammals

Parasites

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

Regularly.

gloves
handwashing
avoid contamination

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.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

Handling mammals

Parasites

Again with the worms…..

gloves
handwashing
avoid contamination

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.

Handling mammals

Parasites

Very, very itchy……

gloves
handwashing
avoid contamination

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.

Handling birds

Viruses

Avian Influenza transmission to people is rare and usually from close and prolonged contact with infected birds……

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center

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.

WILDLIFE RESTORATION

Handling birds

Viruses

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.

Viruses of special concern

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

PPE

Always

Wear gloves
Wash hands
Avoid contamination

Suspected outbreak

Additional protective equipment including protective masks and clothing

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

Handling birds

Viruses

Crows and raptors are the most likely species to have WNV

Human cases of EEE are extremely rare. Most human cases in NY have occurred in the Oneida County region.

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 mosquitos 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.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation
Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
WILDLIFE RESTORATION

Handling birds

Viruses

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.

Viruses of special concern

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

PPE

Always

Wear gloves
Wash hands
Avoid contamination

Bug Repellent

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

Handling ANY Animals

Parasites

Again with the gloves and washing of hands…

Waterborne parasites of special concern

- Giardia
- Cryptosporidia

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!!

Handling ANY Animals

Bacteria

You know what to do…….

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!

PPE Recap

Take Home Message

Routine precautions and good hygiene can prevent a lot of unpleasantness.

Practice good biosecurity for you and the animals.

PPE

ALWAYS Wear Gloves & Wash Hands

Protect your eyes, mouth, and nose

Wear Protective Clothing

Decontaminate Gear