



Animals play essential roles in the environment and provide many important benefits to ecosystem health. One Health is this recognition that animal health, human health, and environmental health are all linked. Similar to people, wild and domestic animals can be victims of disease. The information presented here is intended to promote awareness and provide background for certain diseases that wildlife may get.

See the **Guidance for Park Visitors** section below for tips to safely enjoy your national park trip.

Disease Background:

- ❖ Rabies is a viral disease of mammals that infects nerve tissue causing neurologic illness that inevitably leads to death of the infected animal.
- ❖ Transmission often occurs from the bite or scratch of an infected animal and less commonly by exposure of wounds or breaks in the skin to infectious saliva.

Geographic Range:

- ❖ Rabies is found worldwide, with the exception of certain islands.
- ❖ In developing countries, dogs are the main source of human rabies.
- ❖ In the U.S., rabies primarily circulates among wildlife including bats, raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), coyotes (*Canis latrans*), and several species of fox due to robust vaccination programs in dogs and cats.
- ❖ Rabies can still spillover from wildlife into domestic animals (unvaccinated dogs and cats).

Wildlife Health Implications:

Species Affected:

- ❖ Omnivores and carnivores are most commonly infected and serve as disease reservoirs. However, all mammals are susceptible to infection.
- ❖ Raccoons are the most common terrestrial reservoir in the eastern U.S. while skunks and foxes are reservoirs of disease in the central and western parts of the country ([CDC Wildlife Reservoirs for Rabies](#)).¹
- ❖ Rabies has been found in bats throughout the U.S. (except HI).
- ❖ Birds and reptiles do not normally become infected with the rabies virus.

Clinical Signs:

- ❖ Rabies causes neurologic signs like behavior changes (dumb or furious forms).
- ❖ Dumb rabies is characterized by wobbly gait, incoordination, weakness, wandering, loss of awareness, and salivation; death from respiratory failure occurs in 2-6 days.
- ❖ The furious form may cause loss of fear, self-mutilation, swallowing objects, salivation, howling, incoordination, and attacks on people, animals, or objects; death occurs in 4-8 days.
- ❖ **Any animal displaying neurological signs should be considered a rabies suspect.**

¹ http://www.cdc.gov/rabies/exposure/animals/wildlife_reservoirs.html

Course of Disease:

- ❖ Once reaching the central nervous system, the virus replicates in the salivary glands.
- ❖ Depending on severity and location of bite wounds in relation to the brain, the disease may take as little as a few days or as long as months to years to cause symptoms.
- ❖ Once an animal begins showing clinical signs, death occurs within 10 days. Like human infections, infections in animals invariably result in death regardless of species.

Prevention:

- ❖ An oral rabies vaccine has been used successfully in some terrestrial wildlife species, especially carnivores, when baited and placed strategically on the landscape.
- ❖ No vaccine currently exists for bat rabies.

Public Health Implications:

If you or a pet has come in contact with an animal that may have been infected with rabies (an animal that is behaving abnormally; had contact or woken up in a room with a bat) seek medical attention and tell your physician or veterinarian that you or your pet may have been exposed to rabies.

Human Exposure and Transmission:

- ❖ All instances of suspected or potential exposure should be taken very seriously as rabies is fatal without proper vaccination or post-exposure prophylaxis (PEP).
- ❖ Exposure to rabies occurs from a bite or scratch containing saliva from an infected animal.
- ❖ Any contact with a raccoon, skunk, fox or bat including a bite or scratch, a bat flying into a person, or waking up with a bat in the room should be treated as a potential exposure.

Bat Reservoir Importance:

- ❖ Most human rabies cases in the United States currently involve untreated or unnoticed bites or scratches from infected bats.
- ❖ Bat rabies has been documented in every state except Hawaii.
- ❖ Any contact with a bat should be evaluated by a public health professional; when appropriate and available, the bat involved should be euthanized and tested for rabies.
 - Situations that might qualify as exposures include finding a bat in the same room as a person who might be unaware that a bite or contact had occurred (a sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with an unattended child, mentally disabled person, or intoxicated person).
- ❖ Learn more about living with bats and the 4 Cs of rabies prevention:
<https://www.nps.gov/subjects/bats/bats-and-people.htm>

Clinical Signs:

- ❖ Clinical signs of rabies in humans start as non-specific (fever, headache, discomfort, neck and shoulder pain) and progress to insomnia, abnormal behavior, hypersensitivity, difficulty swallowing, partial paralysis, and convulsions with death occurring in 2-10 days.
- ❖ Once the virus reaches the central nervous system or symptoms develop, there is no effective treatment and survival is rare.

Rabies Prevention (Prophylaxis):

- ❖ Following suspected exposure, any wounds should be immediately and thoroughly cleaned/disinfected AND post-exposure prophylaxis (PEP) should be administered ASAP.
- ❖ PEP typically involves a series of rabies vaccinations and may include administration of human rabies immunoglobulin depending on prior vaccination status. PEP is effective when instituted immediately following exposure and up until symptoms occur.
- ❖ Individuals that frequently handle wildlife species known to be reservoirs in areas with terrestrial rabies should receive pre-exposure vaccination and titer checks every two years.

Epidemiology (Incidence of Disease):

- ❖ Human cases of rabies in the U.S. (0-3 annually) are rare. Cases typically occur in individuals that did not realize they were exposed (most commonly unknown contact with a bat) or did not seek medical attention.²

Guidance for Park Visitors:

The guidelines below can be followed to ensure you and your family safely enjoy the wonderful natural and cultural resources protected by the NPS.

- ❖ If you see any sick or dead wildlife, notify a Park Service employee as soon as possible and avoid contact with the animal.
 - Most wild animals in parks are healthy and thrive in their natural environment, but sometimes wildlife can get sick just like people.
 - Some disease-causing organisms can be passed between wild animals and people. Therefore, always avoid touching or handling sick or dead wild animals.
 - Park Service employees trained in wildlife health use specific protective measures to safely deal with a wild animal that may have died of disease.
- ❖ Pets should be kept up-to-date on rabies virus vaccination by a licensed veterinarian. Keep dogs leashed, cats indoors, and all pets supervised to reduce risks of contact with wildlife.
- ❖ Report observations of common reservoir species (bat, raccoon, skunk, and fox) displaying abnormal behavior and any sick or dead wildlife.
 - Avoid approaching wild animals and their carcasses.
- ❖ If any person is exposed to a potential rabies suspect animal, inform a Park Service employee or local health department immediately.

² <https://www.cdc.gov/rabies/>