



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:**

- ❖ Tularemia is a disease caused by the bacterium, *Francisella tularensis*, that can infect a wide variety of species from multiple continents and which can be transmitted between animals and people (zoonotic disease).
- ❖ The most common wildlife hosts are lagomorphs (cottontail rabbit, jackrabbit, hare) and rodents (primarily vole, beaver and muskrat; many other rodents are highly susceptible).
- ❖ Many animals with tularemia are found dead as clinical signs are rapid and often severe.

### **Transmission:**

- ❖ *F. tularensis* is most commonly transmitted through the bite of infected ticks and biting flies.
- ❖ Tularemia is also transmitted by inhalation of aerosolized bacteria from landscaping activities, contact with broken skin, and ingestion of infected meat or contaminated water.
- ❖ The most common wildlife hosts and tick vectors are widely distributed throughout the U.S.

### **Disease Ecology:**

- ❖ *F. tularensis* is capable of surviving in the environment for long periods of time and is highly resistant to freezing temperatures. Infected animal carcasses/hides, dust, hay, water, and soil may harbor viable bacteria for weeks to months.
- ❖ *F. tularensis* is thought to be continuously exchanged and maintained in a cycle between tick species (serving as a disease reservoir) and wildlife species.
- ❖ Disease may be more likely during years of heavy rainfall and increased rodent populations.

### **Wildlife Health Implications:**

- ❖ Outbreaks impact prairie dogs, rabbits, squirrels, chipmunks, voles, mice, and lemmings.
- ❖ Tularemia primarily affects mammals, but there have been rare cases of disease in birds.
- ❖ Rabbits and rodents exhibiting clinical signs may be depressed, anorexic, easy to capture, and have a wobbly gait. Some may have roughened coat and a tendency to huddle.
- ❖ There are no vaccines available for tularemia.

## **Public Health Implications:**

- ❖ Suspect or potential infection in humans should be taken seriously.
- ❖ Human cases of tularemia are seen in the south central U.S. and the Pacific Northwest.<sup>1</sup>

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<sup>1</sup> <https://www.cdc.gov/tularemia/>

### **Transmission to Humans:**

- ❖ Humans are most commonly exposed to tularemia by bites from ticks and deer flies, inhalation of contaminated dust particles (mowing over infected carcass), contact with sick or dead wildlife, or ingestion of undercooked meat/game and contaminated water.
- ❖ Tularemia commonly presents as a skin ulcer at the site of an infected insect bite.
- ❖ Hunters, trappers, and others who handle or work with wildlife and their carcasses (especially rabbits and rodents) may be exposed when proper protection is not worn.

### **Clinical Signs:**

- ❖ Tularemia can present as a mild or life-threatening illness with signs appearing in 3-5 days.
- ❖ Common symptoms of infection include fever and flu-like symptoms including chills, lethargy, headaches, muscle aches, chest pain, and swollen regional lymph nodes.
- ❖ Other symptoms vary depending on the route of infection.

### **Treatment:**

- ❖ With early antibiotic treatment, tularemia is curable.
- ❖ Without treatment, death rates can be as high as 30%.

**If you or a pet becomes ill with any of the described symptoms within two weeks of being in an affected area, seek medical attention and tell your physician or veterinarian that you or your pet may have been exposed to tularemia.**

## **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.

- ❖ Notify a Park Service employee as soon as possible and avoid contact with the animal if you see any sick or dead wildlife.
  - 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.
- ❖ Protect yourself from bug bites:
  - Wear insect repellent containing 20-30% DEET or other EPA approved repellent when spending time outdoors in flea and tick habitat.
  - Consider wearing permethrin treated clothing to provide additional protection.
  - Wear long pants and long-sleeved shirts when weather permits.
  - Check yourself for ticks when returning from hiking or working outdoors and shower within two hours if possible.
- ❖ Keep dogs leashed, cats indoors, and all pets supervised to reduce risk of contact with wildlife. Pets should be kept up-to-date on flea/tick preventatives and vaccinations by a licensed veterinarian.