



Potential Zoonoses Associated with Wild Mammals

The intent of this Information Sheet is to describe the most common zoonotic agents seen in wild mammals and the safe work practices suggested to mitigate the exposure to these pathogens.

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- 1. Introduction:** This document provides information about potential zoonotic exposure while working with wild mammals or their products (e.g. fecal sample). The infectious agents listed here are not all inclusive, but provide the most common zoonotic agents associated with wild mammals. The safe work practices are provided as suggestions for staff and researchers who work with animals, in animal facilities, or with animal products.

NOTE: For zoonoses information regarding wild rodents, see [ACUP 710 Working with Wild Rodents](#).

2. Zoonotic Pathogens

- a. Rabies
 - i. Organisms: Rabies virus
 - ii. Clinical Signs
 1. Animals - depression or aggression, generalized neurological signs
 2. Humans - local pain at site of inoculation; headache, malaise, fever; anxiety, agitation, paralysis, coma, death
 - iii. Transmission: Saliva (via bites or open wounds), aerosolization in certain circumstances (e.g., within bat caves), contamination of mucous membranes with saliva or central nervous system tissue
- b. Leptospirosis
 - i. Organisms: *Leptospira* spp.

- ii. Clinical Signs
 1. Animals - Asymptomatic to decreased weight gain, anorexia, abortion, fever, diarrhea, and generalized neurological signs.
 2. Humans - Flu-like symptoms (fever, chills, headache, muscle ache, vomiting); liver and kidney failure.
 - iii. Transmission: Ingestion, direct abraded skin, or mucous membrane contact with contaminated water, urine, aborted fetus, or vaginal discharge from infected animals; aerosolization can occur.
- c. Gastrointestinal Infection
 - i. Organisms: *E. coli*, *Salmonella spp.*, *Cryptosporidium spp.*, *Giardia spp.*, *Yersinia spp.*
 - ii. Clinical Signs
 1. Animals – Asymptomatic or Diarrhea.
 2. Humans – Nausea, vomiting, diarrhea, abdominal pain.
 - iii. Transmission: Fecal-oral route; handling contaminated objects; contact with contaminated surfaces
- d. Tularemia
 - i. Organisms: *Francisella tularensis*
 - ii. Clinical Signs
 1. Animals – most commonly affects rabbits, hares, and rodents; fever, lethargy, weight loss
 2. Humans – flu-like symptoms (fever, chills, muscle aches, etc), conjunctivitis or swelling on skin, weight loss
 - iii. Transmission: Direct skin or mucosal contact with infected animals or tissues (also bites from infected insects, accidental inhalation of contaminated dust)
- e. Tuberculosis
 - i. Organisms: *Mycobacterium spp.*
 - ii. Clinical Signs
 1. Animals – chronic lethargy, cough, weight loss
 2. Humans – asymptomatic, cough, difficulty breathing, lethargy, fever, weight loss
 - iii. Transmission: Inhalation of the organism within aerosolized droplets
- f. Dermatophytosis (Ringworm)
 - i. Organisms: *Microsporum nanum*, *Microsporum canis*, *Trichophyton mentagrophytes* and *T. verrucosum*
 - ii. Clinical Signs
 1. Animals - Crusty, dark, hairless patches; common on the skin around the head and neck; thorax, flank, behind the ears, on the legs.
 - iii. Humans - Local itching; red or scaly patch of skin, often with central clearing; may have areas of hair loss.
 - iv. Transmission: Direct contact with skin lesions of infected animal. Can also be contracted via contaminated equipments and environmental objects.

- g. Other field-associated disease risks
 - i. Arthropod-borne infections (e.g., encephalitis, Lyme disease, tularemia, ehrlichiosis): Infectious agents may be mechanically transmitted through bites by arthropods (e.g., fleas, mosquitos, midges, sandflies, mites)
 - ii. Helminth infections (e.g., tapeworms, larval migrans): Accidental ingestion of ova by fecal-oral route; handling contaminated objects; contact with contaminated surfaces
 - iii. Fungal infections (e.g., Histoplasmosis, Coccidiosis) – Accidental inhalation of fungal spores within the environment, especially soil contaminated with bird and bat feces

3. Safe Work Practices

- a. Good Personal Hygiene
 - i. Practice proper hygiene after handling animals or other items that are contaminated with their dander, feces, or body fluids.
 - ii. Clean and sanitize hands after working with animals and equipment and especially prior to eating, drinking, using tobacco products, or applying makeup/contact lenses.
 - 1. In a laboratory setting, refer to [ACUP 713 Hygiene-Hand Washing](#) for more information.
 - 2. In a field setting, remove gross debris with cleansing wipes and sanitize with an alcohol-based product.
- b. Personal Protective Equipment (PPE)
 - i. Follow any recommendations addressed by Cornell's Animal Users Health and Safety Program (AUHSP) for project-specific PPE requirements.
 - ii. Don proper PPE (e.g., gloves) before beginning the fieldwork.
 - iii. Use protective equipment for direct handling of any animal that presents a significant health risk to the handler because of the potential risks from the animal (e.g. protective leather gloves for fractious or aggressive animals, snake-proof chaps or leggings in regions with high venomous snake concentrations).
 - iv. Utilize greater levels of PPE when there is a higher potential of exposure to zoonotic agents. For example, use mucous membrane protection (e.g., safety glasses, face mask) when there is a risk for fluid contact with eyes, nose, or mouth or respiratory protection (e.g., N95 mask) when there is a risk of inhalation.
 - 1. Prior to using a respiratory protection device, the user must be enrolled in the University respiratory protection program. See Cornell's [Environmental Health and Safety Respiratory Protection](#) website for more information.
 - v. For further instruction refer to [ACUP 718 Safety Guidelines for Field Work](#).

- c. Proper Sharps Handling
 - i. Work only with one uncapped needle or sharp at a time and immediately dispose of after use in a portable sharps receptacle.
 - ii. Avoid recapping needles whenever possible.
 - iii. For further guidelines refer to [ACUP 711 Sharps Precautions](#).
- d. Medical Attention
 - i. Contact Gannett Occupational Medicine office (607-255-6960) or a nearby medical facility (if out of town) for medical evaluation if you suspect any exposure, or if you develop any symptoms associated with infection with zoonotic agents (e.g., fever, malaise, diarrhea, abdominal pain).
 - ii. Since wild mammals will have unknown rabies status, contact Gannett Occupational Medicine (607-255-6960) or a nearby medical facility for immediate medical evaluation if a bite wound occurs.
 - iii. Notify the principal investigator or supervisor and complete an [accident and injury report](#).

4. References

- a. ACUP 711 Sharps Precautions: <http://www.research.cornell.edu/care/documents/ACUPs/ACUP711.pdf>
- b. ACUP 713 Hygiene-Hand Washing: <http://www.research.cornell.edu/care/documents/ACUPs/ACUP713.pdf>
- c. ACUP 718 Safety Guidelines for Field Work: <http://www.research.cornell.edu/care/documents/ACUPs/ACUP718.pdf>
- d. Gannett Health Services: (607) 255-5155 or www.gannett.cornell.edu/
- e. EH & S Respiratory Protection Program: <http://sp.ehs.cornell.edu/osh/occupational-health/respiratory-protection/Pages/default.aspx>
- f. EH & S Accident Report: <https://cfp-rmps.hosting.cornell.edu/accinj/>
- g. Cornell University Occupational Health and Safety: <http://www.research.cornell.edu/care/OHS.html>
- h. A-Z Index for Foodborne, Bacterial, and Mycotic Diseases. CDC, NCZVED, 2010. <http://www.cdc.gov/nczved/divisions/dfbmd/diseases/index.html>
- i. Acha, PN and B Szyfres. *Zoonoses and Communicable Diseases Common to Man and Animals*, 3rd ed. Washington, DC: Pan American Health Organization, 2001.
- j. Colville, J and Berryhill, D. *Handbook of Zoonoses: Identification and Prevention*. St Louis: Mosby Elsevier, 2007.