

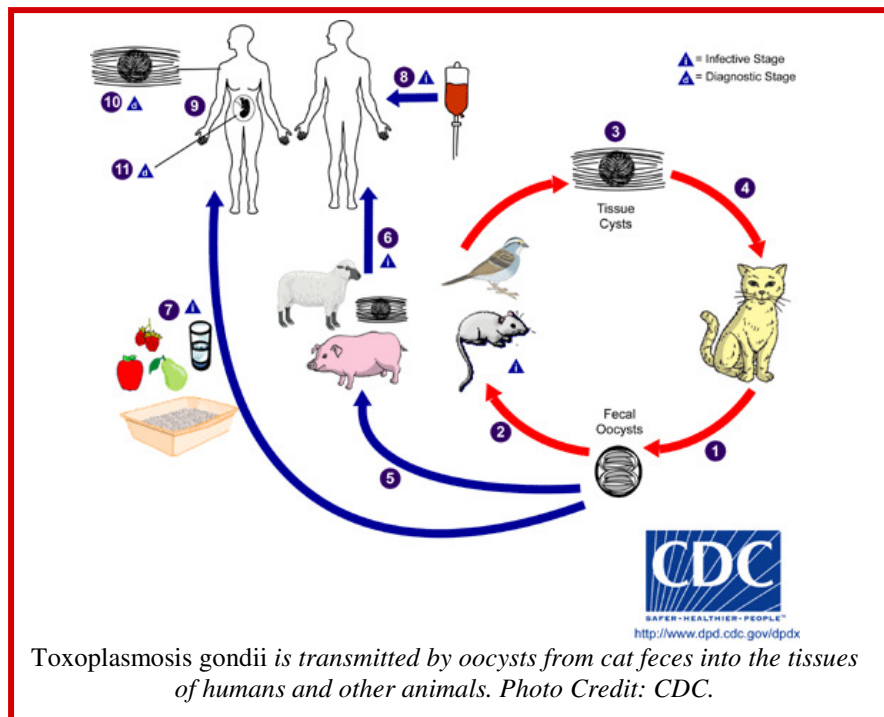


Toxoplasmosis in Feral Cats: Health Risks to Humans and Wildlife

Toxoplasmosis is a disease caused by a protozoan parasite (*Toxoplasma gondii*) that poses serious health risks to humans and wildlife alike. One of the most common vectors of this parasite is the domestic cat. Feral cat colonies provide a reservoir for this infection and an opportunity for transmission between animals and humans.

Cats are the primary host of *T. gondii*. The parasite can only reproduce by forming oocysts, the egg-like structure that allows the parasite to spread beyond its host into the environment outside. These oocysts can only be formed within the digestive system of cats. Birds, rodents, and other mammal species, including humans, can ingest oocysts of *T. gondii* which can then form tissue cysts.¹ After a cat is infected with the parasite, often by ingesting these tissue cysts, it begins to shed oocysts in its feces. Hundreds of millions of oocysts are released for days or weeks, and can persist in the soil for up to 18 months.^{2,3} The persistence of oocysts in the environment increases the probability of transmission to humans or wildlife. Cats with toxoplasmosis typically show no signs that they carry the disease.⁴

Humans can contract toxoplasmosis through contaminated soil or direct contact with cat feces. Oocysts can also make their way into the water supply: Feral cats and cougars were implicated in a water-borne outbreak of toxoplasmosis in British Columbia.⁵ Today, many people cite rodent control as one reason to keep a cat, but may not know that infected rodents can bring *T. gondii* into their cats, homes, and bodies.



In rodents, the parasite can form cysts in the muscle and other tissues. When cysts form in the brain, the cat urine is transformed from a repellent to an attractant. This switch produces abnormal behaviors that make rodents more likely to be preyed upon by cats, transferring the parasite to the cat where it can reproduce.

The fetal nervous system suffers when exposed to *T. gondii*: Neurological and ocular diseases are common outcomes of congenital infection with *T. gondii* in humans. People infected after birth, especially those with weakened immune systems, can also develop serious complications.⁶ Although many people and animals infected with *T. gondii* do not exhibit the symptoms associated with acute toxoplasmosis, the latent form of the disease can also have behavioral effects in humans. The parasite has been linked to higher rates of car accidents, schizophrenia, and altered personality in affected humans.⁷

Toxoplasmosis from cats, both domestic and feral, can have negative impacts on native wildlife. Cats were implicated in outbreaks of toxoplasmosis among southern sea otters (*Enhydra lutris*) in California, where contaminated freshwater flows into marine habitats.⁸

Resistance to euthanasia of feral cats by some groups has led to growing populations and could result in more oocysts in the environment, raising the risk of transmission to humans. Oocysts are likely to be more concentrated around feral cat colonies or residences with outdoor cats. Elmore et al. (2010) cited a North Carolina study that found that toxoplasmosis is more common in feral than pet cats. Although cats are typically only infected once before gaining immunity, the huge number of outdoor cats is enough to maintain a large volume of oocysts in the environment.⁹ Reducing the number of feral cats is an important step in toxoplasmosis prevention.¹⁰

¹ Centers for Disease Control and Prevention. 2010. Parasites and Health: Toxoplasmosis. Available from: <http://www.dpd.cdc.gov/dpdx/HTML/Toxoplasmosis.htm>.

²Dabritz, H.A., and P. A. Conrad. 2010. Cats and *Toxoplasma*: implications for public health. *Zoonoses and Public Health*. 57: 34-52.

³ Frenkel, J.K. 2000. Biology of *Toxoplasma gondii*. Pages 9-25 in P. Ambroise-Thomas and E. Petersen, editors. *Congenital toxoplasmosis: scientific background, clinical management and control*. Springer-Verlag, Paris.

⁴ Elmore, S.A., J.L. Jones, P.A. Conrad, S. Patton, D.S. Lindsay, and J.P. Dubey. 2010. Toxoplasma gondii: epidemiology, feline clinical aspects, and prevention. *Trends in Parasitology* 26(4): 190-196.

⁵ Bowie, W.R., A.S. King, D.H. Werker, J.L. Isaac-Renton, A. Bell, S.B. Eng, S.A. Marion. 1997. Outbreak of toxoplasmosis associated with municipal drinking water. *The Lancet*. 350:173-177.

⁶ Dabritz and Conrad 2010.

⁷ Elmore et al. 2010.

⁸ Miller, M.A., W.A. Miller, P.A. Conrad, E.R. James, A.C. Melli, C.M. Leutenegger, H.A. Dabritz, A.E. Packham, D. Paradies, M. Harris, J. Ames, D.A. Jessup, K. Worcester, and M.E. Grigg. 2008. Type X *Toxoplasma gondii* in a wild mussel and terrestrial carnivores from coastal California: new linkages between terrestrial mammals, runoff and toxoplasmosis of sea otters. *International Journal for Parasitology* 38(11):1319-28.

⁹ Dabritz, H.A., E.R. Atwill, I.A. Gardner, M.A. Miller, and P.A. Conrad. 2006. Outdoor fecal deposition by free-roaming cats and attitudes of cat owners and nonowners towards stray pets, wildlife and water pollution. *Journal of the American Veterinary Medicine Association* 229: 74–81.

¹⁰Dabritz and Conrad 2010.