Domestic cats drive spread of Toxoplasma parasite to wildlife

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Dr. Amy Wilson. Credit: Dr. Amy Wilson

New UBC research suggests free-roaming cats are likely to blame in the spread of the potentially deadly *Toxoplasma gondii* parasite to wildlife in densely populated urban areas.

The study—the first to analyze so many wildlife species over a global scale—also highlights how healthy ecosystems can protect against these types of pathogens.

The researchers, led by UBC faculty of forestry adjunct professor Dr. Amy Wilson, examined 45,079 cases of toxoplasmosis in wild mammals—a disease that has been linked to nervous system disorders, cancers and other debilitating chronic conditions—using data from 202 global studies.

They found wildlife living near dense urban areas were more likely to be infected.

"As increasing human densities are associated with increased densities of domestic cats, our study suggests that free-roaming domestic cats —whether pets or feral cats—are the most likely cause of these infections," says Dr. Wilson.

"This finding is significant because by simply limiting free roaming of cats, we can reduce the impact of *Toxoplasma* on wildlife."

One infected cat can excrete as many as 500 million *Toxoplasma* oocysts (or eggs) in just two weeks. The oocysts can then live for years in soil and water with the potential to infect any bird or mammal, including humans. Toxoplasmosis is particularly dangerous for pregnant people.

If an animal is healthy, the parasite remains dormant and rarely causes direct harm. However, if an animal's immune system is compromised, the parasite can trigger illness and potentially death.

The study also highlights the way healthy forests, streams and other ecosystems can filter out dangerous pathogens like *Toxoplasma*, notes Dr. Wilson.

"We know that when wetlands are destroyed or streams are restricted, we are more likely to experience runoff that carries more pathogens into the waters where wild animals drink or live," she says. "And when their habitats are healthy, wildlife thrives and tends to be more disease-resistant."

Research results like these remind us that all ecosystems, forested or other, are intrinsically linked.

"There is a growing recognition among forest science professionals and other groups that protecting biodiversity and the ecosystems it supports is an efficient and economical approach to reducing disease transfer between wildlife, domestic animals and humans. Conservation is really preventative medicine in action," says Dr. Wilson.

More information: Amy G. Wilson et al, Human density is associated with the increased prevalence of a generalist zoonotic parasite in mammalian wildlife, *Proceedings of the Royal Society B: Biological Sciences* (2021). DOI: 10.1098/rspb.2021.1724

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