



# Feral cats and the risk to hunters

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**T**he damage to native wildlife populations caused by feral cats is well known but there are two other concerns to be considered by hunters. Firstly, cats pose a risk of transmitting disease directly to those involved in culling and handling the animals. Secondly, harvesting wild game meat means an increased risk of germs being transmitted from feral cats to wild animals and from them to the hunter. Cats are hosts and spread a parasite and illness known as toxoplasmosis which can infect most game including rabbits, goats and deer and can also be transmitted to humans.

## What is toxoplasmosis?

A cat-borne parasite/disease which produces initial symptoms then cysts in the second host which can be humans, these cysts are reasonably large and often visible to the naked eye. The parasite is known as *toxoplasma gondii* but will be referred to here simply as toxoplasmosis.

Toxoplasmosis has a two-host life cycle, the

first host the cat (feral or domestic) where the parasite reproduces (sexual reproduction) in the animal's digestive tract. A cat can produce millions of microscopic oocysts (cysts containing a zygote) which can be considered like an egg. Cat faeces spread the eggs (oocysts) which can survive for more than a year on the ground, in water or on grass.

The second host eats the grass or drinks the water and becomes infected. In this part of the life cycle the eggs develop into a stage of the parasite which rapidly divide (asexual reproduction) and spread throughout the body, at which point the majority of symptoms appear.

Toxoplasmosis can infect most warm-blooded animals. The second hosts don't produce or spread oocysts but are themselves infected. The true life cycle of toxoplasmosis is for non-infected cats to consume the infected second host animal - mice, rats, bilbies etc - for the parasite's life cycle to start over.

Larger animals such as sheep, goats,

deer, kangaroos and humans are not normal prey for cats but may become hosts in the life cycle of the parasite. After the initial infection in the second host, the parasites enter a latent period where they form cysts protected by a membrane not responsive to antibiotics and resistant to the body's immune system. In humans the cysts can form in the muscles, tongue, esophagus, diaphragm, heart, brain and spinal cord. When detected in sheep, toxoplasmosis cysts are trimmed from the meat or, in highly infected cases, the carcass is deemed unfit for human consumption. South Australia employs a slaughterhouse surveillance program to reduce the risk of toxoplasmosis.

In many cases the original animal may not have any obvious signs or symptoms of the illness, so deciding whether or not an animal is 'sick' is impossible when looking through a rifle scope and deciding whether to harvest it or not.

## Symptoms

According to Tasmania's Department of



## Feral cats - the risk to hunters

Primary Industries, toxoplasmosis spread by cats has taken a massive toll on local wildlife. Apart from a high death rate, indications of infection include neurological signs such as blindness, altered behaviour and unsteady gait.

In humans, initial symptoms are usually stated as flu-like illnesses, nausea, vomiting, stomach ache and diarrhoea. Sometimes there are muscle aches and tender lymph nodes which can last for months though in healthy adults there are often no initial symptoms. In a few cases eye problems such as blurred vision, inflammation of the retina, seizures, lung problems (which resemble tuberculosis) and poor coordination have been reported. Toxoplasmosis has been associated with birth defects, foetal deaths and abortions as well as neurological deficits and neurocognitive deficits in infants.

Portugal, France, Austria, Uruguay, Italy, Germany, Switzerland and Belgium routinely screen pregnant women for toxoplasmosis. Several biologists have a theory of toxoplasmosis affecting human behaviour, which is supported by research linking it to schizophrenia, high incidents of motor accidents, impaired psychomotor performance and risk-taking. Obviously cysts in the heart, brain or in a foetus can be fatal and those in the lungs or other vital organs can cause serious consequences. In people with a compromised immune system the risk is higher.

Arthur Ashe, the renowned former tennis player who won three Grand Slam titles, is reported to have suffered neurological problems from toxoplasmosis and died aged 49. Merritt Buttrick who featured in two *Star Trek* movies died aged 29 from the disease.

### Diagnosis

Toxoplasmosis mimics several other diseases, making diagnosis difficult. The presence of the parasite may be detected in the blood, amniotic fluid and cerebrospinal fluid if a test is conducted for toxoplasmosis antibodies.

### How caught

Exposure to cat faeces or eating undercooked meat containing cysts are the most recorded means of infection in humans. However, humans can also become a host for this parasite from drinking raw milk (cow or goat), ingesting its eggs on unwashed salad or vegetables, having contaminated hands from handling feral cats (dead or alive), contaminated game animals, gardening or cleaning cat litter trays.



### Prevalence

Prior to the Kangaroo Island bushfires, a far higher density of toxoplasmosis was detected there compared to mainland South Australia. Factors affecting the prevalence include cat density, type of soil and environment. A 2019 study identified an 11 times greater feral cat abundance on Kangaroo Island compared with the Adelaide Hills and Fleurieu Peninsula areas.

### Prevention

Person-to-person spread of toxoplasmosis normally does not occur. As cat's fur or faeces may contain toxoplasmosis eggs so when handling feral cats or cat bodies, gloves should be worn or hands washed thoroughly immediately after handling. Washing to remove possible eggs is more effective than using hand sanitiser.

Meat must be thoroughly cooked to kill parasites inside the cysts if present in the animal, while freezing for 24 hours at -20C or for 48 hours at -4C has also been found to kill parasites and render the meat safe to eat. This may be nothing new for some people as reptile owners regularly freeze rats and mice for 48 hours before feeding to their pets to prevent transmission of parasites. For human consumption all meat should be cooked thoroughly though this may be an issue for those who enjoy their meat rare or medium-rare, especially with venison which often goes dry when fully cooked. The Quality Deer Management Association (US) issued a recommendation for cooking venison if you insist in a pink centre. The safest way is to fully cook the venison but treat the meat at high temperature (at least 145 degrees F) then allow it to rest for three minutes before carving,

which should produce enough heat to kill parasites. Of course if previously frozen for the required period and temperature (see above) the meat doesn't need to be thoroughly cooked to be safe.

Water can also be contaminated so should be boiled, filtered or treated with UV such as a Steripen when drinking from a potentially suspect source. Chlorination has been found to be less effective and requires more time and free chlorine to kill parasites, so if using chlorine-based water purification tablets, ensure the chlorine added to your water bottle is of the right concentration to guarantee the water safe to drink.

Vegetables should be properly washed before eating with all soil removed. Hands and cooking utensils should be washed after handling raw products and gloves worn when emptying cat litter trays. Pregnant women or immune compromised people should avoid changing cat litter trays.

Children's sandpits should be covered when not in used. A few years ago child care centres removed these or covered them at night after a reported increase in toxoplasmosis in children, traced to such areas contaminated by stray cats. Wear gloves when gardening, especially if the area is visited by cats, and if you own cats don't allow them to hunt or roam. RSPCA Australia policy encourages the containment of cats at least from dusk to dawn.

### Summary

During initial infection in humans, if correctly diagnosed, treatments are available in the form of combinations of drugs. There is currently no vaccine to prevent toxoplasmosis and no drug has been confirmed effective for the parasite once the cysts have formed.

This article is merely a summary of known information on toxoplasmosis and not written as a medical observation or advice. It is of general information on the illness spread by feral cats. Emphasis is on safety when handling feral cats, prevention of illness, care of field harvested game and in supporting the removal of feral cats from Australia. Further advice on toxoplasmosis should be obtained from medical specialists if needed. ●