

# Otters show disease could be in our rivers

June 6 2013, by Harriet Jarlett

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For the first time scientists have shown that the disease Toxoplasmosis is widespread in animals found in the UK's water systems. If the disease is common in our rivers it could mean that humans are at a high risk of infection.

The researchers conducted post mortems on dead otters –mostly road-kills– found around England and Wales to assess whether any of the animals contained [antibodies](#) for the disease, which is caused by the parasite Toxoplasmosis Gondii. The scientists were surprised to find almost half of the otters examined had been exposed to the disease – a high rate of prevalence considering otters eat fish, which don't carry the parasite.

'40 per cent were carrying antibodies for the disease, although Toxoplasmosis was never shown to be the cause of death. This is higher

than we might have expected given their mainly fish diet,' says Dr Elizabeth Chadwick of Cardiff University, lead author on the study.

'On the other hand it may be that otters are being infected by [cysts](#) in the water containing a reproductive form of the parasite – the oocysts. If otters are picking it up directly from water it suggests there is an environmental risk to humans, as current screening and water treatments don't get rid of oocysts.'

The parasite can only complete its life cycle and produce oocysts when it is hosted by a cat. The oocysts can enter the cat's [faeces](#) and eventually, either from people flushing [cat litter](#) down their toilets, or from the faecal matter draining off of gardens and streets, get into our waterways.

While around 30 per cent of humans carry the [Toxoplasma gondii parasite](#), only 10-20 per cent of these – 3-6 per cent of the total population – will show symptoms. These are flu-like, so most people never realise they are infected. Once the flu-like illness ends, the parasite forms cysts in the body's tissues - although largely inactive, these stay in the tissues for the lifetime of the host, and some think they may have an effect on behaviour.

'In mice *Toxoplasma gondii* has been shown to manipulate behaviour. It makes them take risks that increase their chances of being eaten by cats, which are the only host in which *Toxoplasmosis. Gondii* can sexually reproduce. The parasite manipulates its mouse host in order to ensure it eventually gets into the cat, and thereby complete its life cycle,' explains Chadwick.

While humans are unlikely to be eaten by cats this risk taking behaviour is also seen in humans who have contracted the disease, such as a higher number of road traffic accidents.

'More serious health effects occur in people with weakened immune systems, like those with AIDS, or following transfer from mother to foetus during pregnancy,' says Chadwick. 'In healthy people, chronic infection has such subtle effects they're hard to pin down, but links have been made not only to behavioural changes but also to serious psychiatric disorders including depression and schizophrenia.'

As populations of both humans and animals grow, the team think the impacts of faecal contamination on public and wildlife health is only likely to increase. But regular screening for *Toxoplasma gondii* in dead animals collected across the country could provide valuable information about the risks posed to human health.

**More information:** Chadwick, E. et al. (2013) Seroprevalence of *Toxoplasma gondii* in the Eurasian otter (*Lutra lutra*) in England and Wales, *Parasites & Vectors* 6:75. [doi:10.1186/1756-3305-6-75](https://doi.org/10.1186/1756-3305-6-75)

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