Ticks carrying Lyme disease found in South London parks

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Visitors to two popular parks in South London are at risk of coming into contact with ticks that can transmit Lyme disease to humans, according to new research published in *Medical and Veterinary Entomology*.

Researchers at the London School of Hygiene & Tropical Medicine studied four London parks to see whether ticks were present, and if they carried the *Borrelia burgdorferi* bacterial pathogen that causes Lyme borreliosis (Lyme disease). The team found *Ixodes ricinus* ticks in Richmond and Bushy parks, but reported no evidence of the arthropod pests in Wimbledon Common or Hampton Court.

A total of 1,109 ticks (532 larvae, 568 nymphs, nine adults) were collected at Richmond Park, and nine ticks (nymphs) were collected at Bushy Park. Of these, 280 randomly selected ticks were analysed using molecular techniques to determine whether they were infected with the Lyme disease bacteria, which can be transferred to humans during a tick bite.

No infected ticks were found in Bushy Park; however, six nymphs (immature ticks) from Richmond Park carried the bacteria, with 2.14% of nymphs in this park likely to be infected at a given time. Most humans are infected through the bites of nymphs. None of the adults or larvae analysed were infected. Five of the six infected ticks in Richmond Park were found in bordering woodland, and one in open grassland, which are the types of vegetation most frequented by the public.

Dr James Logan, Senior Lecturer in Medical Entomology at the London School of Hygiene & Tropical Medicine, senior author of the study said: "The overall risk of Lyme disease in London parks is very low, but precautions should be taken. Check yourself and your pets after frequenting parkland areas, and remove any ticks as quickly as possible using a tick removal tool. To minimise the risk stick to footpaths and wear an insect repellent."

Early signs of Lyme disease include a distinctive circular "bulls-eye" rash at the site of the tick bite around three to 30 days after being bitten, although only one in three people develop this rash. Some people also experience flu-like symptoms including tiredness, joint pain, muscle pain, headaches, fever, chills and neck stiffness. Lyme disease can progress to cause severe health problems affecting the heart, joints and nervous system.

Using the ticks' 'questing' behaviour in which they wave their forelegs to attach to passing hosts, the researchers collected ticks from material moved through the vegetation in three ways: by hand, attached to their heels and on easily-removable leggings of the same fabric. Environmental factors such as soil moisture, vegetation depth, relative humidity and temperature were also measured, since the presence of ticks in Richmond Park is thought to be due to the park's well-known deer population, as these animals provide a host for the tick to blood-feed which is crucial for its lifecycle. Although deer are present in Hampton Court, the authors comment that ticks might find it difficult to survive at this location due to unfavourable environmental conditions including lower soil moisture and relative humidity, which may explain why no ticks were found in this park. The authors note that although they did not find any ticks in Wimbledon Common, its favourable conditions for ticks and close proximity to Richmond Park imply a need for continued surveillance in the area.

Due to the short study period from June to July 2013, which was chosen to coincide the end of the peak in tick abundance and the beginning of the peak in summer recreational use of the park, this research does not provide conclusive evidence that ticks are not present in Hampton Court and Wimbledon Common.

More information: Clive Nelson, Sarah Banks, Claire Jeffries, Tom Walker, James G Logan. Tick abundance in South London parks and the potential risk of Lyme borreliosis to the general public. *Medical and Veterinary Entomology*. DOI: 10.1111/mve.12137