Don't eat food if a fly lands on it, as they carry more dangerous bacteria than previously thought, warn scientists

A close up of a housefly

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Most picnicians would brush away flies from food, thinking nothing of bugs briefly landing on their sandwiches.

But a new study suggests the insects carry far more dangerous bacteria than previously thought, meaning sandwiches are best avoided if they have been contaminated by flies.

Researchers at Penn State Eberly College of Science [http://science.psu.edu/] in the United States found that common houseflies carry salmonella, e-coli and even bacteria which lead to stomach ulcers and deadly sepsis.

The researchers say flies may have been overlooked by public health officials as a source of disease outbreaks.

Flies in urban areas were found to carry more bacteria than the countryside leading scientists to suggest avoiding city parks for a picnic, and eating food into more rural locations.

"People had some notion that there were pathogens that were carried by flies but had no idea of the extent to which this is true and the extent to which they are transferred," said Dr Donald Bryant, Professor of Biotechnology at Penn State University.

"We believe that this may show a mechanism for pathogen transmission that has been overlooked by public health officials.

"It will really make you think twice about eating that potato salad that's been sitting out at your next picnic.

"It might be better to have that picnic in the woods, far away from urban environments, not a central park."

Cover food to avoid flies and head to the countryside

DNA sequencing techniques were used to study the collection of microbes found in and on the bodies of the house fly (Musca domestica) and the blowfly (Chrysomya megacephala).

The house fly, which is ubiquitous around the world, was found to harbour 351 types of bacteria. The blowfly, which is found in warmer climates, carried 316. A large number of these bacteria were carried by both types of fly.

The team even investigated the microbes on individual fly body parts including legs and wings.

Flies probably pick up the bacteria from faeces and decaying organic matter which they use to nurture their young, the study indicated.

Scientists found 15 instances of the human pathogen Helicobacter pylori - which causes ulcers in the human gut - on Brazilian blowflies.
Dr Stephan Schuster, research director at Nanyang Technological University (http://www.ntu.edu.sg/Pages/home.aspx), Singapore, found that the legs transferred most of the microbial organisms from one surface to another, suggesting even a brief step onto food by the bugs could leave behind bacteria.

"The legs and wings show the highest microbial diversity in the fly body, suggesting that bacteria use the flies as airborne shuttles," said Dr Schuster.

"It may be that bacteria survive their journey, growing and spreading on a new surface. In fact, the study shows that each step of hundreds that a fly has taken leaves behind a microbial colony track, if the new surface supports bacterial growth."

However, the researchers believe flies could have their uses - acting as early warning systems for disease or even living drones sent into tight spaces to search for microbes.

"In fact, the flies could be intentionally released as autonomous bionic drones into even the smallest spaces and crevices and, upon being recaptured, inform about any biotic material they have encountered," added Dr Schuster.

The research was published in the journal Scientific Reports.