# West Nile virus detected in UK mosquitoes for first time amid climate change concerns



A recent discovery in Nottinghamshire has raised awareness about a significant public health concern as the West Nile virus has been detected in mosquitoes for the first time in the UK. Samples collected in July 2023 yielded viral genetic material, although the UK Health Security Agency (UKHSA) has asserted that the public risk remains very low due to the lack of evidence suggesting local circulation of the virus among birds or mosquitoes. This finding has prompted increased surveillance and control measures aimed at understanding mosquito activity across Britain, particularly in wetland areas like those in Retford.

Prof Jonathan Ball, a prominent virologist and director of the Centre for Global Virus Research at the University of Nottingham, has indicated that climate change is likely to contribute to an expansion of tropical diseases further north. He highlighted that as temperatures rise, the habitats and active seasons for disease-carrying mosquitoes such as Aedes albopictus are enlarging. In the context of heightened temperatures, there has been a notable increase in mosquito-borne illnesses in various regions, including significant rises in cases of dengue and Zika across Europe. Notably, the United States recently reported its first locally transmitted malaria cases in two decades, underscoring a worrying trend in infectious diseases linked to climate variations.

Despite the detection of the West Nile virus, Prof Ball advised that the public should not be too alarmed but should remain informed. He mentioned, “We need to be aware” as these viruses, collectively known as flaviviruses, are primarily adapted to tropical regions but are gradually expanding due to climate factors. It is crucial to prevent mosquito bites by employing protective measures such as wearing appropriate clothing and using insect repellents. The ongoing surveillance project in Gamston, conducted in collaboration with local councils, aims to enhance monitoring along the River Idle, a key area for mosquito population control.

Researchers assert that the ramifications of climate change on mosquito behaviour are profound. While some insect populations are declining due to changing climate conditions, those that act as vectors for diseases are thriving, complicating efforts to manage public health. With an estimated increase in mosquito activity by 39% in certain low-income countries, understanding these dynamics is vital for mitigating potential health crises. The emergence of such diseases, previously limited to specific geographies, poses challenges that architects of public health policy must urgently address.

Furthermore, a study developed by the UK Centre for Ecology & Hydrology has modelled the risks associated with West Nile virus outbreaks in the UK, indicating that while immediate risks are low, the likelihood of future outbreaks will rise with increasing temperatures over the next two to three decades. This consideration underlines the importance of preparing healthcare systems and raising public awareness about symptoms and risk factors for those most vulnerable to severe illness.

With climate change continually altering ecosystems and food chains, the future landscape of infectious diseases in the UK and beyond will likely be shaped by these changes. As global temperatures rise, ensuring robust public health measures and fostering interdisciplinary cooperation to study pathogen behaviours will be essential in navigating this evolving threat.

A proactive approach that includes education on prevention, increased surveillance, and timely responses will be vital in safeguarding against the repercussions of climate-induced disease patterns that threaten human health and ecological balance.

## Reference Map:

* Paragraph 1 – [[1]](https://www.bbc.com/news/articles/c75341zkgd9o), [[2]](https://www.ft.com/content/9d2319b1-ce8f-4466-895c-a5e26495a023)
* Paragraph 2 – [[2]](https://www.ft.com/content/9d2319b1-ce8f-4466-895c-a5e26495a023), [[4]](https://time.com/6204356/infectious-disease-outbreaks-climate-change/)
* Paragraph 3 – [[1]](https://www.bbc.com/news/articles/c75341zkgd9o), [[2]](https://www.ft.com/content/9d2319b1-ce8f-4466-895c-a5e26495a023), [[5]](https://www.ceh.ac.uk/press/climate-change-makes-west-nile-virus-outbreaks-plausible-uk)
* Paragraph 4 – [[3]](https://time.com/7287025/climate-change-summer-bugs-insects/), [[4]](https://time.com/6204356/infectious-disease-outbreaks-climate-change/), [[6]](https://www.gov.uk/guidance/west-nile-virus)
* Paragraph 5 – [[5]](https://www.ceh.ac.uk/press/climate-change-makes-west-nile-virus-outbreaks-plausible-uk), [[6]](https://www.gov.uk/guidance/west-nile-virus)

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## Bibliography

1. <https://www.bbc.com/news/articles/c75341zkgd9o> - Please view link - unable to able to access data
2. <https://www.ft.com/content/9d2319b1-ce8f-4466-895c-a5e26495a023> - This article reports that West Nile virus has been detected in mosquitoes in the UK for the first time, specifically in samples collected in Nottinghamshire in July 2023. The UK Health Security Agency (UKHSA) found viral genetic material in two of 200 mosquito samples and is increasing surveillance and control measures, while maintaining that the public risk remains very low. There is no current evidence of viral circulation among local birds or mosquitoes, and researchers note that infected mosquitoes may have migrated from other regions or fed on infected birds arriving from abroad. The virus, primarily transmitted between birds by mosquitoes, can occasionally infect humans and horses, leading to fever in around 20% of cases and severe illness in about 1 in 150. Experts attribute this emergence to climate change, which is expanding the habitats and active seasons of disease-carrying mosquitoes like Aedes albopictus. Similar increases in mosquito-borne illnesses like dengue and Zika have occurred across Europe, and the U.S. reported its first locally transmitted malaria cases in two decades in 2023. Scientists warn that global warming will likely facilitate further spread of such diseases in previously unaffected regions.
3. <https://time.com/7287025/climate-change-summer-bugs-insects/> - This article discusses how climate change is significantly altering insect behavior, populations, and ecological impacts, particularly during warmer months when bugs are more active. While overall global insect numbers may decline and some may face extinction, certain pests like mosquitoes and ticks are thriving as warmer temperatures extend their active seasons and broaden their habitats. This poses increasing health risks, such as the wider spread of mosquito-borne illnesses including malaria and West Nile virus, and potentially more Lyme disease from expanding tick populations. Additionally, shifting seasonal patterns are affecting the timing of insect life cycles, which can disrupt ecosystems and food production, since over 80% of flowering plants and more than 35% of global crop production depend on pollinators. Experts warn that while insects may be bothersome, they are vital to food chains and ecological stability. The consequences of insect loss and behavioral shifts due to climate change could have profound implications for human health, agriculture, and biodiversity.
4. <https://time.com/6204356/infectious-disease-outbreaks-climate-change/> - This article highlights how rising global temperatures and greenhouse gas emissions are leading to an increase in infectious disease outbreaks such as SARS, MERS, Zika, West Nile, COVID-19, monkeypox, and polio. A study in Nature Climate Change found that 58% of 375 human infectious diseases were exacerbated by climate change. Scientists indicate that climate change affects host animals, expanding the geographic range of pathogens and enabling more opportunities for viruses to jump from animals to humans. Examples include the spread of tick-borne Lyme disease to new regions, the increase of flesh-eating bacteria in warmer ocean waters, and the wider range of mosquitoes carrying diseases like dengue and Zika. The Lancet reported an increase in mosquito activity by 39% in some low-income countries. Understanding these dynamics requires interdisciplinary cooperation to better study pathogen behaviors and impacts on human health.
5. <https://www.ceh.ac.uk/press/climate-change-makes-west-nile-virus-outbreaks-plausible-uk> - This press release from the UK Centre for Ecology & Hydrology discusses how climate change will make outbreaks of West Nile virus more likely in the UK within the next 20-30 years. Scientists from the UKCEH, Biomathematics and Statistics Scotland (BioSS), and the University of Glasgow developed a model to determine the risk of a West Nile virus outbreak in the UK. They found the risk is low for the next two to three decades but will increase as temperatures rise. The model shows that the risk will steadily increase and that future outbreaks are plausible in the UK. The study suggests that while there’s relatively little immediate danger, steps can be taken to prepare for future outbreaks, such as ensuring doctors are aware of the symptoms and who’s most at risk of becoming seriously ill.
6. <https://www.gov.uk/guidance/west-nile-virus> - This UK government guidance document provides information on the epidemiology, diagnosis, and prevention of West Nile virus (WNV). WNV is a mosquito-borne virus that can cause serious neurological disease in humans. The document outlines the symptoms, laboratory diagnosis, treatment, and prevention measures for WNV. It also discusses the risk to the UK, noting that while locally acquired WNV infection has not been reported in the UK, there have been occasional cases of travel-associated infection. The document highlights the detection of the mosquito species Culex modestus in the UK in 2010, which may increase the risk of WNV being transmitted in the UK.
7. <https://www.theguardian.com/global-development/2018/aug/23/tropical-disease-outbreaks-are-growing-threat-in-europe-as-temperatures-rise> - This article discusses how Europe is facing a growing threat of tropical disease outbreaks as rising temperatures linked to climate change cause illnesses brought by travelers to spread more easily. The article highlights a sharp spike in West Nile virus infections in Europe during the summer, following soaring temperatures, compared with the past four years. By mid-August, 400 cases of the disease, which is carried by mosquitoes, were recorded in Europe, with 22 fatalities, according to the European Centre for Disease Prevention and Control (ECDC.