

New threat closes in on iconic Galapagos wildlife

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Renewed vigilance over the biosecurity of the Galápagos Islands is needed, based on new research on the risk posed by West Nile virus.

Scientists from the Zoological Society of London (ZSL), the University of Leeds and the New York State Department of Health, together with the Galapagos National Park Service and University of Guayaquil, have been studying the disease threat posed by Islands' mosquito populations. They have discovered that a [species](#) of these biting insects is capable of transmitting West Nile virus, a potentially dangerous disease for the archipelago's unique wildlife.

West Nile virus (WNV) most commonly affects birds, but can infect mammals, including humans, and reptiles. Previous studies of West Nile virus impact in the USA have linked the virus to declines in several bird populations, demonstrating the high risk it poses to the Galápagos' endemic species. The virus recently invaded South America, but has yet to reach the Galapagos.

Recent studies on tourist boats and planes have shown that the mosquito species *Culex quinquefasciatus* (also known as the Southern house mosquito) is hitching a ride onto the Galápagos on airliners. *Culex* species are well-known vectors of WNV elsewhere in the world, so their presence on the Islands has caused concern amongst the scientific community.

The ability of mosquitoes to transmit particular disease agents

effectively often varies between species, or between populations within species. Therefore to understand the risk posed by *C. quinquefasciatus* in Galápagos, the research team measured the ability of Galapagos *C. quinquefasciatus* to pick up and transmit WNV in the lab, under conditions that simulated those in the wild. They found that Galapagos *C. quinquefasciatus* were indeed effective vectors for the virus.

Prof Andrew Cunningham from ZSL says: "We now know that mosquitoes capable of carrying West Nile virus have a route onto the Galápagos, and once there, the virus could also spread into the local mosquito population. This means there is potential for large impacts on endemic species. There is no doubt that West Nile virus poses a serious threat to the survival of the Galapagos' iconic wildlife."

In order to reduce the chances of West Nile virus reaching the islands, the authors suggest further research to determine the presence of WNV in the mainland Ecuador, plus strict enforcement insect control measures on aircraft and ships moving between the mainland and islands.

Dr Simon Goodman from the University of Leeds says: "Piece by piece we are building up a comprehensive picture of the disease ecology in Galápagos and what could happen if WNV were to reach the islands. Once WNV has been introduced onto the Galápagos, it would be much harder to contain. Therefore the best strategy is to have strict preventive measures to reduce the chance of the disease reaching the islands in the first place."

Lead author PhD student Gillian Eastwood says: "Whilst WNV does not yet exist in Galapagos, it is important to envisage what future disease scenarios could be by looking at how this particular [virus](#) would interact within this unique ecosystem. Evaluating the role that mosquitoes could play is therefore vital. This recent part of our work is however only one aspect to understanding potential WNV transmission on the [Islands](#); it

remains to see how severely Galapagos wildlife might be affected but all precautions should be taken."

More information: The research is published in the current edition of the *American Journal of Tropical Medicine Hygiene*.

Provided by University of Leeds

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