

Spanish ecologists discover a novel route of viral transmission

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In a paper published in PLoS ONE on December 5, a group of avian ecologists, led by Jaime Potti, at the Estación Biológica de Doñana-CSIC (Sevilla, Spain) reports on the discovery that avian polyomaviruses, known potential pathogens producing disease in a number of vertebrate species, follow an 'upwards vertical' route of contagion throughout their studied host population of pied flycatchers, a small migrant songbird breeding in forests in central Spain near Madrid.

The blood-sucking, parasitic fly larvae which infest their nests almost invariably transmit polyomaviruses to nestlings, which in turn pass them on to their parents throughout the latter's disposal of nestling faeces. Viral transmission thus follow an inverse vertical route, from offspring to parents, instead of the more usual vertical transmission from mothers to offspring, which was experimentally discarded by exchanging clutches among nests.

The study is the first known natural example of a primary, rather than sporadic, route of upward transmission of a potential pathogen from offspring to adult individuals. The infection route, the authors hypothesize, could be a common mechanism used by viruses to disperse across generations in the many animals, both invertebrate and vertebrate, that exert parental care and/or feed and preen their offspring.

Therefore, the study highlights a potentially hitherto unnoticed cost of parental care, which may entail differences between the sexes depending on their roles in breeding tasks. The findings of the study may open new

research agendas on the evolution of virulence and joint coevolution of vectors, viruses and vertebrate hosts in the wild.

Citation: Potti J, Blanco G, Lemus JA', Canal D (2007) Infectious Offspring: How Birds Acquire and Transmit an Avian Polyomavirus in the Wild. PLoS ONE 2(12): e1276. doi:10.1371/journal.pone.0001276 (www.plosone.org/doi/pone.0001276)

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