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BOOK OF ABSTRACTS

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Quantifying the incidence and seroprevalence of West Nile virus in the avian population in Northern Italy

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West Nile virus (WNV) is one of the most threatening mosquito-borne pathogens in Italy where hundreds of human cases were recorded during the last decade. Here, we estimated the WNV incidence in the avian population in the Emilia-Romagna region (northern Italy) through a modelling framework which enabled us to eventually assess the fraction of birds that present anti-WNV antibodies at the end of each epidemiological season.

We fitted an SIR model to ornithological data, consisting of 18,989 specimens belonging to *Corvidae* species collected between 2013 and 2022: every year from May to November birds are captured or shot and tested for WNV genome presence. We found that the incidence peaks between mid-July and late August, infected corvids seem on average 17% more likely to be captured with respect to susceptible ones and seroprevalence was estimated to be larger than other years at the end of 2018, consistently with the anomalous number of recorded human infections.

Thanks to our modelling study we quantified WNV infection dynamics in the host community, which is still poorly investigated despite being its importance for virus persistence. To the best of our knowledge, this is among the first studies providing quantitative information on infection and immunity in the bird population, yielding new important insights on WNV transmission dynamics.