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Investigating the effects of summer 2016 floods on mosquito density in West Virginia and the potential relationship between flooding and West Nile Virus transmission in mosquito pools.

A major flooding event occurred in West Virginia in June 2016. Multiple counties in central and southern WV (classified in this study as Group I) were hit by this disaster while several others were unaffected (Group II). Given these conditions, we decided to conduct an observational field study aimed at identifying the potential effects of flooding on mosquito abundance and West Nile Virus (WNV) transmission rate. The counties selected for this study have consistently monitored and reported mosquito surveillance data to the WV Department of Health over that past four years, which gave us the unique opportunity to evaluate this data before and after the flood in order to identify potential trends at the county and collection site level. We used descriptive statistics and a G-test of independence to decide on our null hypothesis. Our findings suggest that the flooding event is strongly associated with a significant variation in average annual mosquito abundances pre- and post-flooding for our affected counties, with Kanawha county showing a sharp increase in mosquito activity and WNV transmission rate (MIR) over this period. However, we were unable to identify a linear relationship in all Group I counties and Cabell County, which was unaffected (Group II) also presented significant variations pre- and post-flooding.