Bacterial supergroup specific "Cost" of Wolbachia infections in Nasonia vitripennis

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Abstract

The maternally-inherited endosymbiont, Wolbachia, is known to alter the reproductive biology of its arthropod hosts for its benefit and can induce both positive and negative fitness effects in many hosts. Here we describe the effects of the maintenance of two distinct Wolbachia infections, one each from supergroups A and B, on the parasitoid host Nasonia vitripennis. We compare the effect of Wolbachia infections on various traits between the uninfected, single A infected, single B infected, and the double infected strains with their cured versions. Contrary to the previous reports, our results suggest that there is a significant cost associated with the maintenance of Wolbachia infections where traits like family size, fecundity, longevity, and rates of male copulation are compromised in Wolbachia infected strains. The double infected and supergroup B infection strains show higher Wolbachia titer than supergroup A. The double infected Wolbachia strain has the most detrimental impact on the host as compared to single infections. Moreover, there is a supergroup-specific negative impact on these wasps as the supergroup B infections elicit the most pronounced negative effects. These findings raise important questions on the mechanism of survival and maintenance of these reproductive parasites in arthropod hosts.

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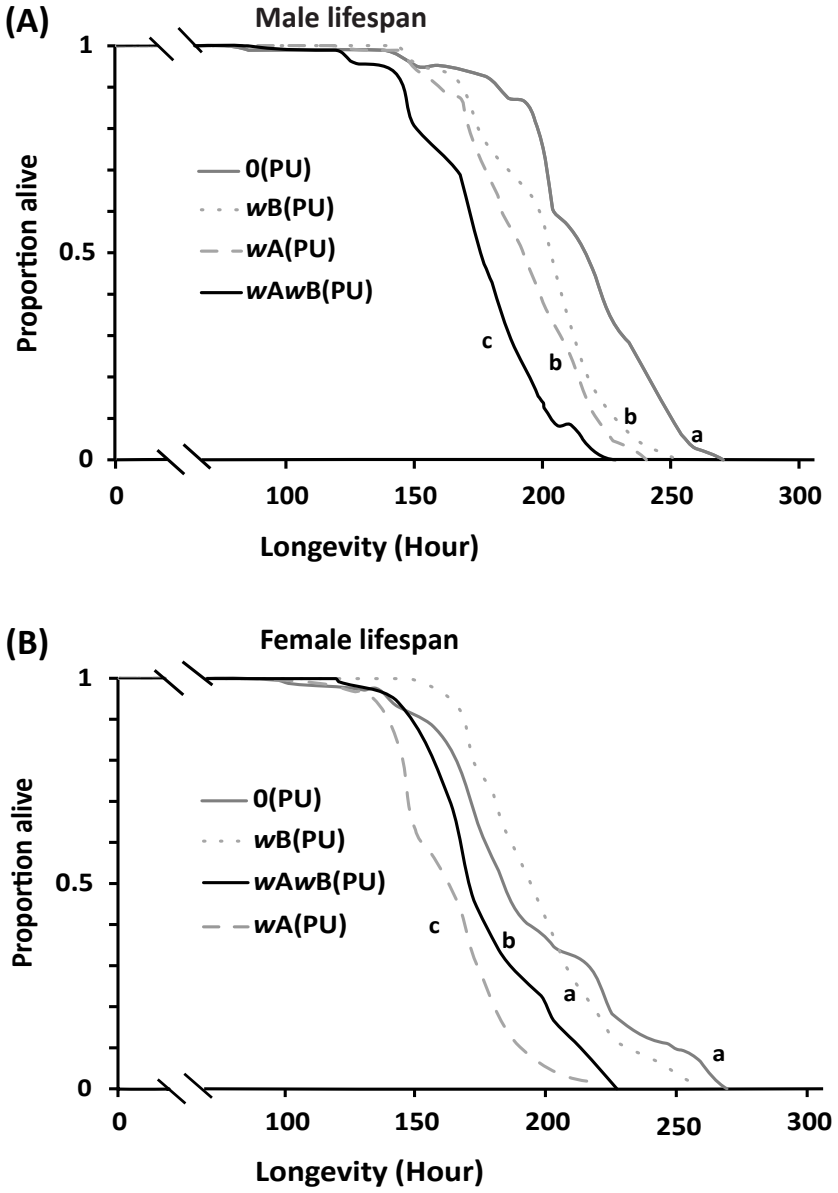

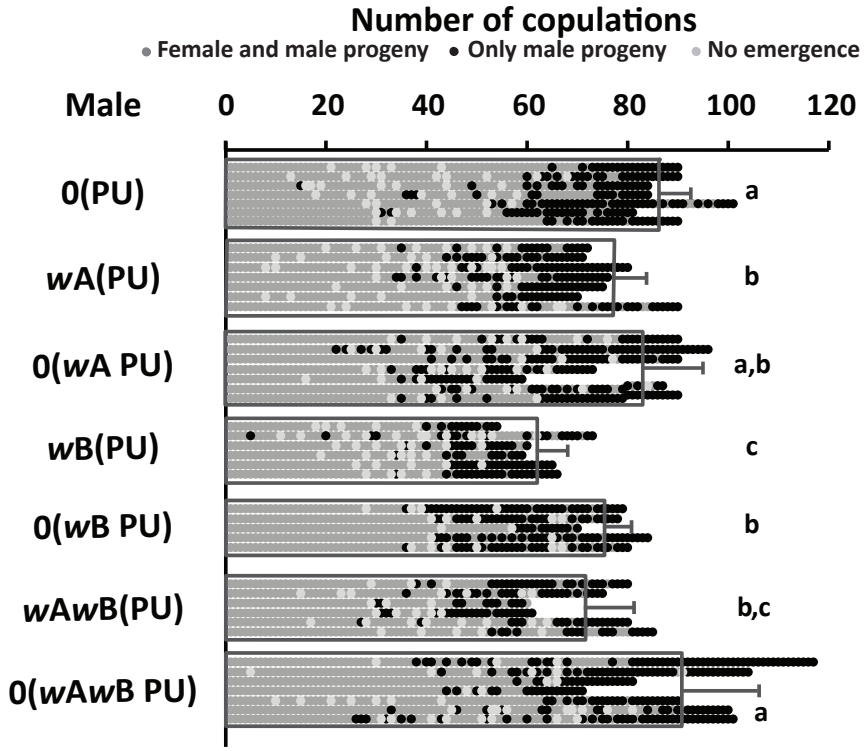

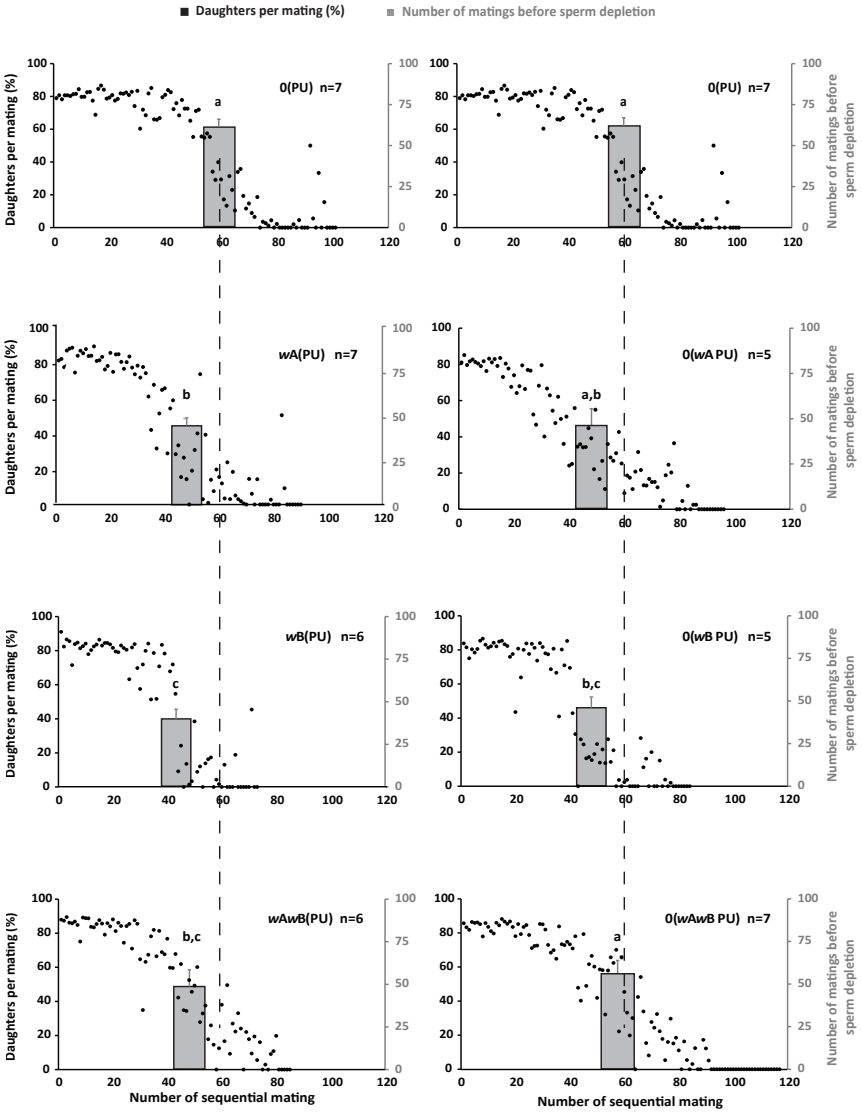

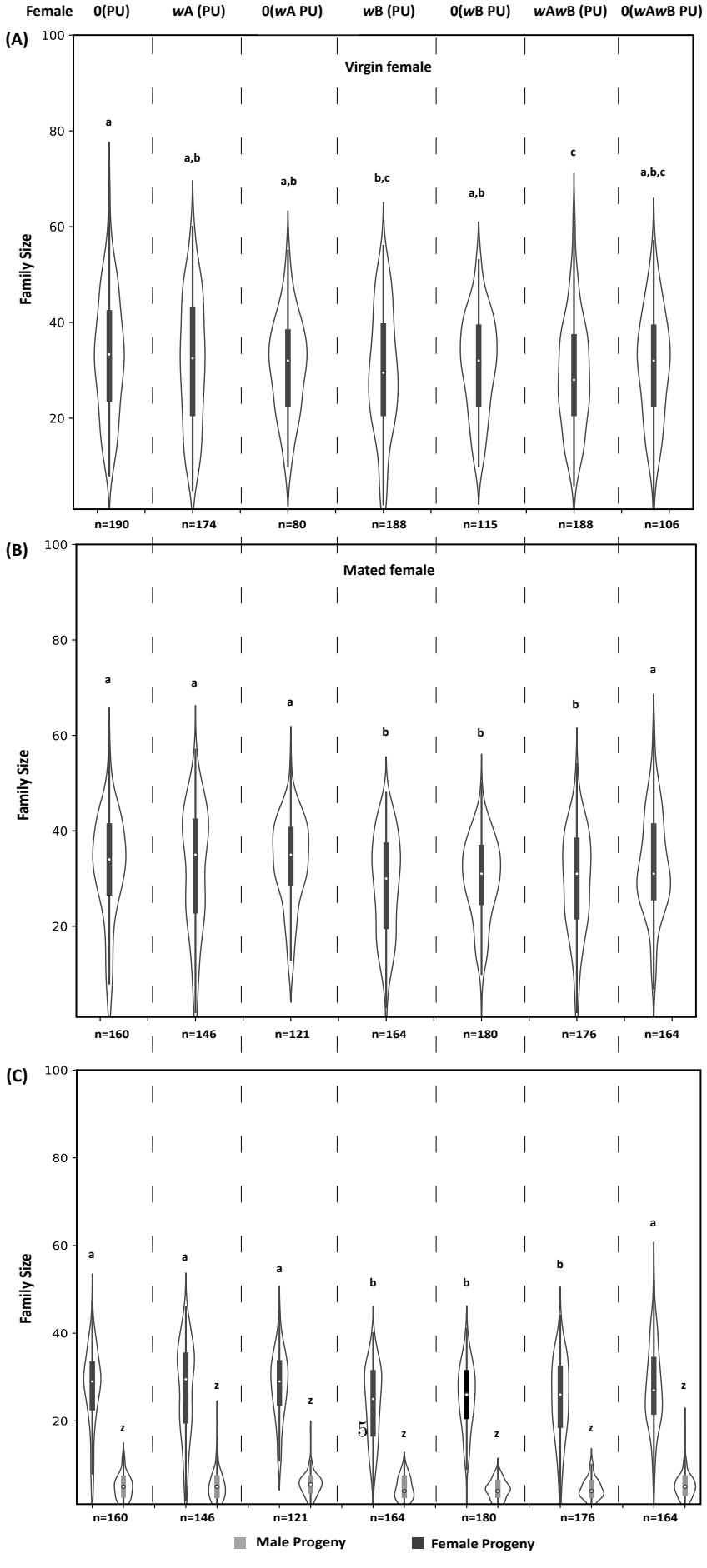

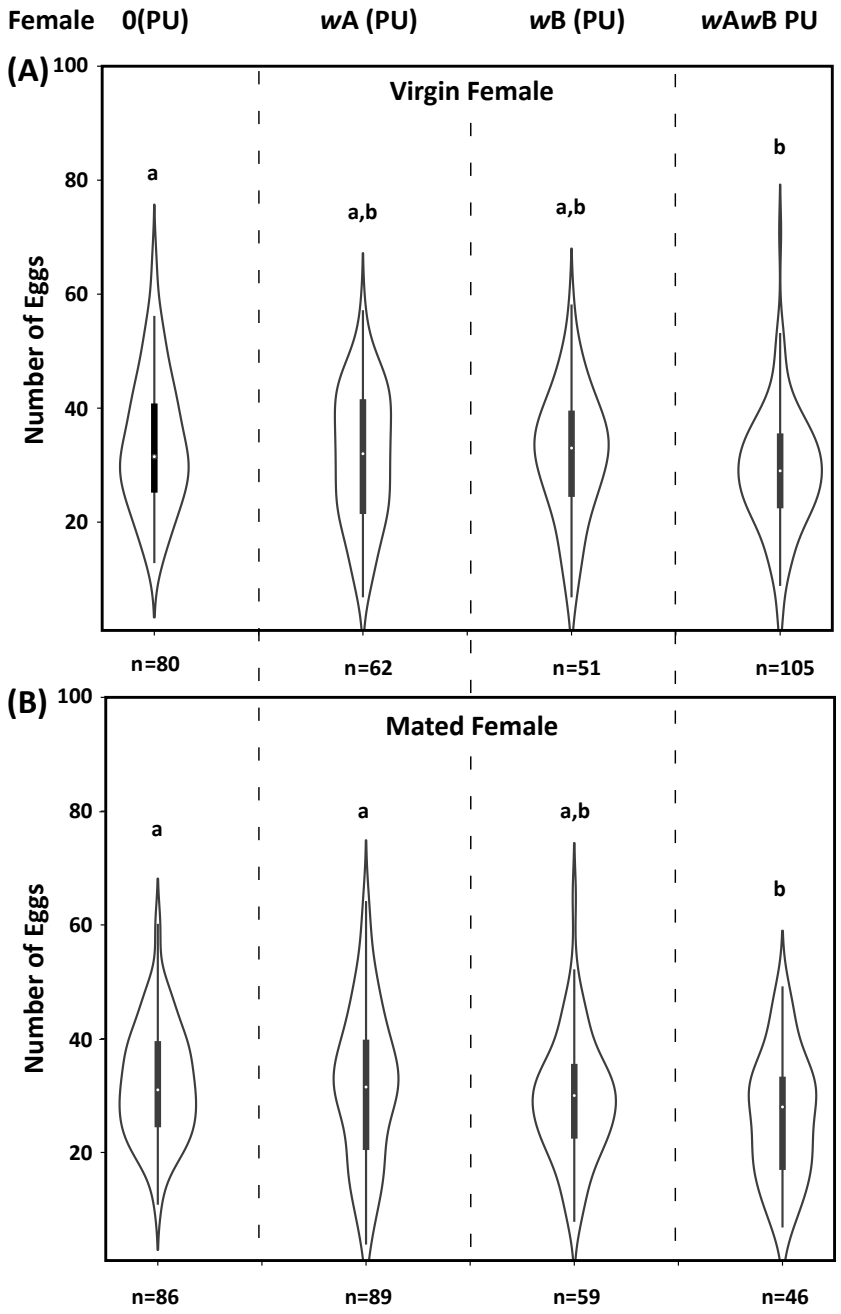

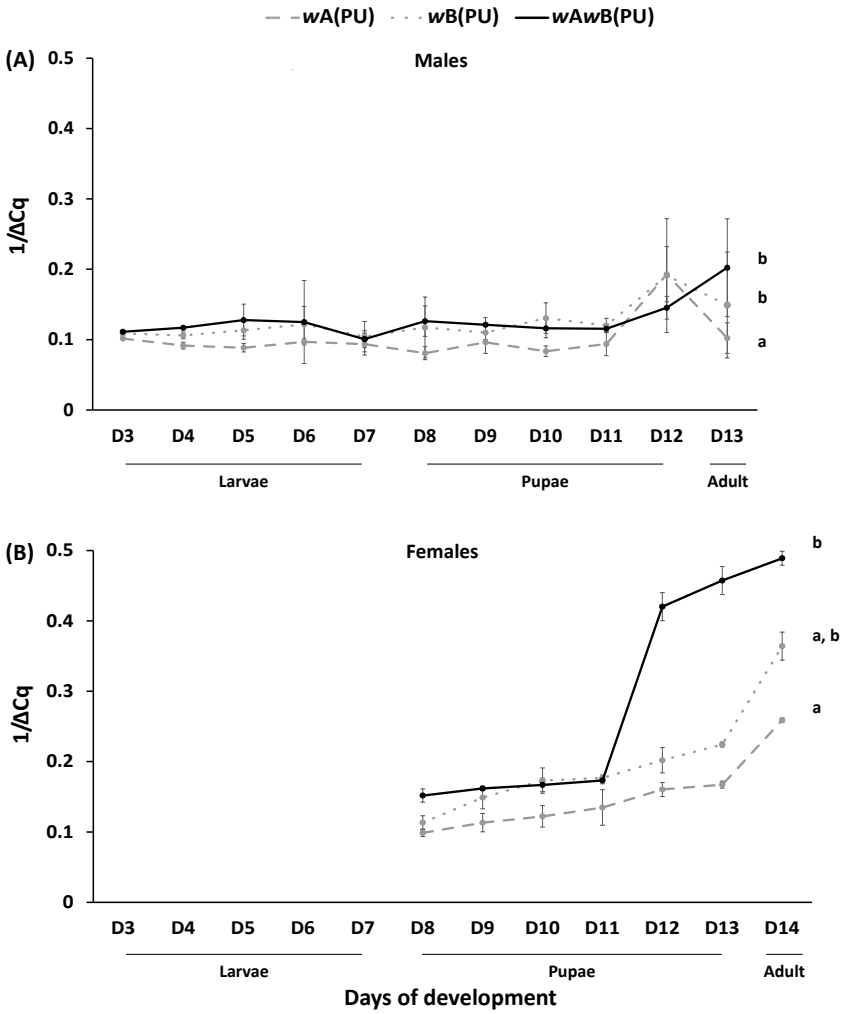

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