

Effect of larval nutritional stress on wing morphology in *Culex pipiens*

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Culex pipiens complex plays an important role in the transmission of numerous pathogens, such as avian malaria parasites (*Plasmodium* spp.). The transmission potential of mosquito-borne pathogens is influenced by mosquito life-history traits, such as survival, size, and fecundity. Previous studies have shown that some life-history traits depend on environmental conditions, such as nutritional status of the adults and larvae. Here, we evaluated the effect of food deprivation at larval stage on mosquito wing morphology, using morphometric techniques. We compared the geometric patterns of wing venation of adults whose larvae were reared under five concentrations of *ad libitum* (ADL) food (commonly used in our colony maintenance): 100%, 50%, 25%, 10%, and 5% ADL. Nineteen-landmarks were digitalized on wings of 201 females and 145 males. Wing size decreased significantly with the reduction of the food concentration in both sexes, mosquitoes whose larvae were reared in poor food concentration were smaller. Only the shape of female wings was significantly different among treatments, females of high regimen food have slender wings. Variance of size and shape was larger in mosquitoes from low food regimens. Sexual dimorphism of size and shape occurred in all the nutritional treatments. Males have smaller and slender wings; however, the sex-related differences in size decrease with food reduction. These findings showed how larval conditions influence adult wing morphology (size and shape) and, due to the wing ecological functions in flight and mating communication (buzz of flying), mosquitoes' vectorial capacity and the dynamic of pathogen transmission.

Keywords. Avian malaria, *Culex pipiens*, geometric morphometrics, larval food regimen, wings.

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