

Regardless the wings and active flight are recognized as one of the most iconic innovations in insects, a great number of their representatives exhibit wing reduction. In many cases only females lose the wings while males not. It is usually believed that lower investments into wings and wing muscles save energy for reproductive gain in females. Cockroaches are the insect order with one of the highest occurrence of forms with reduced wings and species exhibiting sexual wing dimorphism, and thus are a good model group for testing the hypotheses concerning the wing reduction. For our experiments we chose macropterous cockroach *Eublaberus distanti* and manipulated with the length of its wings. Contrary to common assumption, we did not find any significant difference in fecundity between apterous and macropterous females. So we conclude that wing presence or absence has no effect on reproduction success of cockroach females. Surprisingly, we have found out that male wings play a substantial role in the courtship ritual of *E. distanti*. Our results reveal that partial or complete loss of wings severely decreases reproductive success of *E. distanti* males compared to macropterous conspecifics. We thus conclude that the reason why cockroach males keep their wings while females not is because of their fundamental role in successful mating. We hypothesise that wing reduction in cockroach females is not due to positive selection but rather a consequence of neutral selection.