

TOPIC:

2) Mosquito-borne diseases (dengue, malaria, fiebre amarilla, zika, chikungunya)

APPROACH:

2. Vector biology and eco-epidemiology

Effect of detritus decomposition time on *Aedes aegypti* oviposition site selection and immature developmental success

Keywords: mosquito-borne diseases; vector biology; eco-epidemiology; detritus decomposition; oviposition site; *Aedes aegypti*; immature development.

ARNALDO, Candela M¹, MONTINI, Pedro¹ & FISCHER, Sylvia¹

¹ Departamento de Ecología, Genética y Evolución and IEGEBA (UBA-CONICET), Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires. Buenos Aires City, Argentina
E-mail address: candetita89@gmail.com

The abundance of the mosquito *Aedes aegypti* in larval habitats (containers with water) depends on the selection of oviposition sites by the females and on the subsequent survival of the immatures. Both can be affected by factors such as the decomposition time of the detritus, which determines the number of microorganisms (larval food) in the habitat. Females would be expected to select sites where larvae have the best performance to maximize their fitness. The aim of this work is to study the relationship between the selection of oviposition sites in response to detritus age, and the survival of immatures in these sites. To achieve this, an oviposition study and an immature development study were performed. In both studies, three treatments with different decomposition times of detritus in water (3, 15, and 45 days) were used. The oviposition study was carried out in different locations (n=18) within Buenos Aires city. In each location, three ovitraps (black plastic containers with a detritus infusion) were exposed simultaneously, one for each treatment. After one week, the eggs per ovitrap were counted and compared between treatments. In the development study, larvae were reared in 200 ml plastic containers with 20 larvae each, in the same three treatments (n=6). Development time was recorded for each individual, and survival per container was calculated. Development time and survival were compared among treatments. The results showed a higher oviposition in the 14 and 42-days treatments (mean: 65 and 62 eggs respectively), as compared to the 3-days treatment (mean: 16 eggs). Larval survival was high in all three treatments (>90%). An effect of detritus decomposition time on the development time was observed, with shorter development times in the 3-days treatment (mean: 10 days), intermediate development times in the 14-days treatment (mean: 11 days), and longer development times in the 42-days treatment (mean: 13 days). Also a higher variability in the development times of individuals of the same treatment was observed for increasing decomposition times. The higher oviposition in sites with long decomposition times could be due to the accumulation of more microorganisms, which produce attractive chemical signals for females. The better performance of the larvae (represented by their shorter development time) in containers with shorter decomposition time could be associated with higher rates of reproduction of the microorganisms that constitute the larval food. These hypotheses, which should be addressed in future studies, might explain the lack of consistency between oviposition site selection and larval performance of *Ae. aegypti* observed in our study.