ABSTRACT

Macroinvertebrate drift is a phenomenon that has fascinated and occupied ecologists for a longtime and has produced varied results. Drift samples were collected in a riffle and pool biotopes in the Njoro River between 3rd January and 28th March 2017 with a sole objective of determining whether drift net mesh size, positioning and variation in exposure time could have significant influence on drift densities. Purposive systematic random sampling was employed to collect samples using six nets of 100 ìm, 250 ìm and 500 ìm mesh sizes for three consequent days always alternating the nets at the right, middle and left banks respectively, during seven sampling occasions. The nets were emptied at intervals of 5, 10, 15, 20, 25 and 120 minutes. Benthic samples were also collected during each sampling for quantification of the proportions of benthos that drifted. The mean drift densities (pooled data) between the pool (20.73 ± 0.10 ind.m-3) and riffle (38.79 ± 5.15 ind.m-3) was statistically significant (t-value = 2.821, d.f = 754, $P < 0.05$). The difference in drift densities among the 100 ìm, 250 ìm and 500 ìm nets was very highly significant ($P < 0.001$). The 500 ìm net collected the lowest drift densities, followed by the 250 ìm net Tukey's Honestly Significance Difference (HDS) test, ($P < 0.001$). Drift densities decreased significantly with increase in exposure time in all the three nets in both biotopes ($P < 0.001$). Drift densities differed significantly with the net positions at the riffle (One – way ANOVA, $F (2,375) = 11.43$, $P < 0.001$) with the left bank having significantly higher densities than the mid-stream and the right bank. One – way ANOVA indicated insignificant difference in mean drift densities among the three positions in the pool ($F (2,375) = 0.839$, $P > 0.05$). There was no significant interaction observed among drift net mesh size, drift net position and exposure time in the riffle (Three way-ANOVA, $F(20,324) = 0.375$, $P > 0.05$) and pool (Three way- ANOVA, $F(20,324) = 0.374$, $P > 0.05$) biotopes. Mean proportion of benthos differed significantly between the riffle and pool biotopes ($t = -9.473$, $d.f = 106$, $P < 0.001$) with the pool having higher proportions than the riffle. This study demonstrates that drift net mesh size, position and exposure time should be taken into account when characterizing invertebrate drift in streams. Maximum drift densities can be obtained by sampling for 5 minutes irrespective of the mesh size used. Future drift studies should consider reduction of sampling time below five minutes as this was omitted in this study. Future studies should also consider drift sampling as a standard complementary tool to benthic sampling in bioassessment protocols of tropical streams.

Keywords

Egerton University