



Conference Abstract

Estimates of catchment area of pitfall traps for carabids

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Received: 24 Jul 2019 | Published: 29 Jul 2019

Citation: Bergeron C (2019) Estimates of catchment area of pitfall traps for carabids. ARPHA Conference Abstracts 2: e38518. <https://doi.org/10.3897/aca.2.e38518>

Abstract

Relationships between beetle abundance in the field and data collected from pitfall traps has generated much interest from several generations of carabidologists. Despite the argument and controversy about this relationship, pitfall data remain the main source of knowledge about carabid populations and assemblages in nature. In order to estimate the relationship between pitfall catches of carabids and catchment area in a homogenous deciduous forest, we constructed circular field enclosures of three sizes (radii: 2.5m, 5m and 10m) and sampled carabids using single pitfall traps located in the centre of each enclosure over 3 seasons (2014-2016). We found that overall beetle catches increased linearly with enclosure area during all three years, and the linear models were nearly identical for the two years (2014 and 2016) in which the data were comparable. We then extrapolated the relationship to predict the catchment area using unenclosed traps run simultaneously. For data from both 2014 and 2016, the catchment area for the assemblage is predicted to be 620-640 m², representing a radius of c. 14.3 m. Interestingly, this value is consistent with the published inter-trap distance required for independence of trap captures at the same site. Unfortunately, but as expected, calibration of pitfall data at the species level is challenging because the best linear model fits vary considerably among species. Trap catchment area also increased during breeding season. Clearly, pitfall traps need to be set at least c. 30 meters apart to ensure independence of samples in mixedwood boreal forest.

Keywords

Pitfall traps, catchment area, carabids, boreal mixedwood

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Presented at

19th European Carabidologists Meeting