Estimation of intergenerational drift dispersal distances and mortality risk for aquatic macroinvertebrates

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ABSTRACT: Estimates of the total lifetime dispersal capacity of individuals comprising invertebrate drift in streams and rivers have proved very difficult to determine empirically. Here we use recent data on dispersal in the amphipod *Gammarus pulex* L. to illustrate a method for estimating the total distance an individual is likely to travel downstream during the period between hatching and its first reproductive episode. For the system we consider, this estimate is on the order of 1.5 km. This method may be useful in future explorations of the ecological relevance of within-stream displacement and population persistence. Furthermore, we are able for the first time to estimate an upper bound for the mortality risk associated with entering the drift, which, for the *G. pulex* population under consideration, is less than 1% for individual drift events. We suggest that this risk may not be nearly as high as had previously been thought. These mortality and distance estimates may illustrate a fundamental difference between dispersal in lotic systems and those in other habitats, in that the mean dispersal distance is of much higher ecological relevance than that of rare long-distance events.

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