

[Species traits reveal effects of land use, season and habitat on the potential subsidy of stream invertebrates to terrestrial food webs \(McKie et al. 2018\) \[1\]](#)

Adult aquatic insects with a terrestrial life-stage are important vectors transferring resources assimilated in freshwater environments to terrestrial consumers. Research on this linkage has focused particularly on how terrestrial environmental features affect dispersal of adult aquatic insects, and on the responses of terrestrial consumers. However, both the timing and extent of dispersal by adult aquatic insects are further regulated by their species-specific life history traits. We sampled aquatic invertebrates from nine streams in central Sweden, and assessed how the composition of key traits related to dispersal and life history varied between in-stream habitats (riffles, pools), seasons (autumn, spring), and among streams differing in catchment land use (forested, agriculture).

Traits indicative of more limited adult dispersal (e.g. small adult size and weak flying strength), along with traits indicative of strongly pulsed peaks in emergence (e.g. univoltinism and well-synchronised emergence) were all more abundant in the agricultural than forested streams in the autumn. However, these differences had disappeared by late spring, possibly reflecting early emergence by the univoltine taxa that dominated the agricultural stream communities and/or elevated mortality in the agricultural streams. Riffles supported higher abundances of insects with strongly flying adults, whereas traits associated with more limited dispersal were characteristic of insect assemblages in pools, which also supported the highest proportion of invertebrates completely lacking an adult flying stage. This result is likely to have implications at larger scales, given the dominance of soft-bottomed pool habitats and scarcity of riffles in many agricultural landscapes. Overall, our analysis indicates that while overall production of aquatic invertebrates with a winged adult was greater in agricultural streams, availability of this productivity for terrestrial consumers is more likely to be spatially restricted closer to the stream channel, and potentially also more temporally pulsed .

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