

[Dispersal capacity shapes responses of river island invertebrate assemblages to vegetation structure, island area, and flooding \(Vanbergen et al 2017\) \[1\]](#)

Riparian invertebrate communities occupy a dynamic ecotone where hydrogeomorphological (e.g. river flows) and ecological (e.g. succession) processes may govern assemblage structure by filtering species according to their traits (e.g. dispersal capacity, niche). We surveyed terrestrial invertebrate assemblages (millipedes, carabid beetles, spiders) in 28 river islands across four river catchments over 2 years.

We predicted that distinct ecological niches would produce taxon-specific responses of abundance and species richness to: (i) disturbance from episodic floods, (ii) island area, (iii) island vegetation structure, and (iv) landscape structure. We also predicted that responses would differ according to species' dispersal ability (aerial vs. terrestrial only), indicating migration was sustaining community structure.

Invertebrate abundance and richness was affected by different combinations of vegetation structure, island area, and flood disturbance according to species' dispersal capacity. Carabid abundance related negatively to episodic floods, particularly for flightless species, but the other taxa were insensitive to this disturbance. Larger islands supported greater abundance of carabids and all invertebrates able to disperse aerially. Vegetation structure, particularly tree canopy density and plant richness, related positively to invertebrate abundance across all taxa and aerial dispersers, whereas terrestrial disperser richness related positively to tree cover. Landscape structure did not influence richness or abundance.

Multiple ecological processes govern riparian invertebrate assemblages. Overall insensitivity to flood disturbance and responses contingent on dispersal mode imply that spatial dynamics subsidise the communities through immigration. Particular habitat features (e.g. trees, speciose vegetation) may provide refuges from disturbance and concentration of niches and food resources.

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