

SUPPORTING INFORMATION

Table S1 | Overview of studies comparing how human impacts may, or may not, differ in type or severity among terrestrial vs freshwater ecosystems, organized by the process which humans impact

Process	Human impact	Effects in freshwater ecosystems	Effects in terrestrial ecosystems
<i>Dispersal</i>	Habitat fragmentation	Fragmentation in freshwater systems creates smaller and less uniform patches (Fagan 2002; Fuller <i>et al.</i> 2015)	Extrinsic features of terrestrial systems (e.g., more topological linkages) favor more dispersal (Srivastava & Kratina 2013; Fuller <i>et al.</i> 2015)
		Freshwater organisms have more intrinsic adaptations to disperse in fragmented habitats (Boedeltje <i>et al.</i> 2003)	
	Climate change		To track changing climates, species disperse and alter habitat structure and diversity (Lurgi <i>et al.</i> 2012; Travis <i>et al.</i> 2013; Steinbauer <i>et al.</i> 2018)
<i>Speciation</i>	Habitat loss	Because of the smaller existing area of freshwaters (Wiens 2015), effect of habitat destruction on speciation may be stronger	
	Eutrophication	Eutrophication in freshwaters can cause stronger changes (e.g., depletion of oxygen) and a greater reduction in speciation (Vonlanthen <i>et al.</i> 2012; Frei <i>et al.</i> 2022)	
	Climate change		Shifts in elevation could separate previously connected terrestrial populations, leading to increased speciation (Hua & Wiens 2013)
<i>Ecological selection</i>	Climate change	Due to buffering capacity of water, warming may be less severe in freshwater systems (Steele 1985; Vasseur & Yodzis 2004)	Selection regimes may be altered via novel competitors moving across elevation in response to climate change (Alexander <i>et al.</i> 2015)
			Increased species sorting (selection) along shifting terrestrial gradients (Loarie <i>et al.</i> 2009)
	Invasive species	Because of more complex freshwater interactions, invasions may have more complex effects on freshwater systems (Moorhouse & Macdonald 2015)	
		Higher naivete of prey populations to exotic predators in freshwater systems (Cox & Lima 2006; Anton <i>et al.</i> 2016, 2020)	
<i>Ecological drift</i>	Habitat loss	Decrease in population sizes (Pereira <i>et al.</i> 2010)	Decrease in population sizes (Pereira <i>et al.</i> 2010)