

Hypothesis	Response variable(s)	Explanatory variable (Effect)	Mechanism(s)	Examples of supporting literature	Results
(1) Anthropogenic pressures					
Human disturbances extirpate species richness	$S_i, S_p, S_{tot}$	HII (-)	Habitat destruction/degradation Agrochemical pollution	Aguilar <i>et al.</i> 2006; Ricketts <i>et al.</i> 2008; Winfree <i>et al.</i> 2009; Brittain <i>et al.</i> 2010; Burkle <i>et al.</i> 2013; Weiner <i>et al.</i> 2014	Not detected
Human disturbances promote species richness	$S_i, S_p, S_{tot}$	HII (+)	Landscape heterogeneity Invasion of alien species	Aizen 2007, 2008; Winfree <i>et al.</i> 2007, 2008; Carré <i>et al.</i> 2009; Stouffer <i>et al.</i> 2014; Vanbergen <i>et al.</i> 2017; Wenzel <i>et al.</i> , 2020	Not detected
Human distrubances favor generalist species	$C, G_i, G_p$	HII (+)	Specialization-disturbance Theory (Vazquez & Simberloff 2002) "Spreading the risk" (Den Boer 1968) Secondary extinction cascades (Dunne 2002a; Memmott <i>et al.</i> 2004) Super-generalists invasion ( <i>sensu</i> Olesen <i>et al.</i> 2002)	Biesmeijer <i>et al.</i> 2006; Steffan-Dewenter <i>et al.</i> 2006; Aizen <i>et al.</i> 2008; Aizen <i>et al.</i> 2012; Burkle <i>et al.</i> 2013; Spiesman & Inoue, 2013; Albrecht <i>et al.</i> 2014; Stouffer <i>et al.</i> 2014; Weiner <i>et al.</i> 2014; Tylianakis & Morris 2017; Redhead <i>et al.</i> 2018	<b>Detected</b> for complete networks and Hymenoptera, not Diptera
(2) Climate effects					
Pollinators tend to favor hot and dry environment	$S_i, S_{tot}$	$P_{tot}$ (-) $T_{mean}$ (+)	Poor flying conditions under rainfall (Cruden 1972) Metabolic activity (Turner <i>et al.</i> 1987)	Arroyo <i>et al.</i> 1982; Wolda 1987; Devoto <i>et al.</i> 2005; Martin Gonzalez <i>et al.</i> 2009	<b>Opposite results</b> $T_{mean}$ (-) on $S_i, S_{tot}$
Productive environments favor specialization	$C, G_i$	$P_{tot}$ (-) $T_{mean}$ (-)	Resources abundance and Optimal Foraging Theory (MacArthur & Pianka 1966)	Dalgaard <i>et al.</i> 2013; Takemoto <i>et al.</i> 2014; Takemoto & Kajihara 2016 Petanidou <i>et al.</i> 2018	Not detected
Diverse environments favor generalism	$C, G_i$	$P_{tot}$ (+) $T_{mean}$ (+)	Resources dilution and Optimal Foraging Theory (MacArthur & Pianka 1966)	Schleuning <i>et al.</i> 2012	Not detected
Climate seasonality limits species richness	$S_i, S_p, S_{tot}$	$P_{var}$ (-) $T_{var}$ (-)	Unfavorableness of unstable environments (Brown 1988) Diversity-stability (Pianka 1966)	Arroyo <i>et al.</i> 1982	<b>Detected</b> only for $P_{var}$ on $S_i$ for Diptera
Climate seasonality promotes species richness	$S_i, S_p, S_{tot}$	$P_{var}$ (+) $T_{var}$ (+)	Climatic niche diversity	Petanidou <i>et al.</i> 2018; Takemoto <i>et al.</i> 2014	<b>Detected</b> only for $T_{var}$ on $S_i$ for Hymenoptera
Climate seasonality favors generalist species	$C, G_i, G_p$	$P_{var}$ (+) $T_{var}$ (+)	Optimal Foraging Theory under fluctuating environment (May & MacArthur 1972) Diversity-stability (Pianka 1966)	Arroyo <i>et al.</i> 1982; Devoto <i>et al.</i> 2005; Dalsgaard <i>et al.</i> 2017	Not detected
Climate seasonality increases phenological mismatches	$C, G_i, G_p$	$P_{var}$ (-) $T_{var}$ (-)	Forbidden links ( <i>sensu</i> Olesen <i>et al.</i> 2011)	Vazquez <i>et al.</i> 2009b; CaraDonna <i>et al.</i> 2017; Petadinou <i>et al.</i> 2018; Takemoto <i>et al.</i> 2014	Not detected
(3) Sampling effects					
Connectance decreases with network size	$C$	Network size = $S_{tot}$ (-)	Link-species scaling law (Winemiller <i>et al.</i> 2001)	Jordano 1987; Olesen & Jordano 2002; Thébault & Fontaine 2010	<b>Detected</b>
Link density of species increases with available partners	$G_i, G_p$	Partner pool = $S_i$ or $S_p$ (+)	More potential partners allow more interactions (Relative specialization: Armbruster 2017)		<b>Detected</b>
Sampling effort inflates the number of interactions & species recorded	$C, G_i, G_p, S_{tot}, S_p, S_i$	SE (+) or stdSE (+)	Completeness of the survey (Blüthgen <i>et al.</i> 2008; Dormann <i>et al.</i> 2009; Rivera-Hutinel <i>et al.</i> 2012)	Ollerton & Cranmer 2002; Chacoff <i>et al.</i> 2012; Vizentin-Bugoni <i>et al.</i> 2014; Traveset <i>et al.</i> 2016; Dalsgaard <i>et al.</i> 2017; Zanata <i>et al.</i> 2017	<b>Detected</b>
Richness increases with temporal extent	$S_{tot}, S_p, S_i$	ATS (+)	Completeness of the survey	Sajjad <i>et al.</i> 2017; Swartz <i>et al.</i> 2020	<b>Detected</b>
Connectance decreases with temporal extent	$C, G_i, G_p$	ATS (-)	Increase of forbidden links ( <i>sensu</i> Olesen <i>et al.</i> 2011)	Sajjad <i>et al.</i> 2017; Swartz <i>et al.</i> 2020	<b>Detected</b>
T-O sampling decreases richness detection	$S_{tot}, S_p, S_i$	Sampling method (-) <sup>a</sup>	Completeness of survey		<b>Detected</b>
T-O sampling increases interaction detection	$C, G_i, G_p$	Sampling method (+) <sup>a</sup>	Evenness of observation effort allocated among plant species	Gibson <i>et al.</i> 2011	<b>Detected</b>
Low taxonomic resolution hides real richness	$S_{tot}, S_i, S_p$	Taxonomic resolution (+)	Lumping of species in morphospecies		<b>Opposite results</b> Taxo (-) on $S_{tot}$ and $S_i$
Low taxonomic resolution inflates generalism	$C, G_i, G_p$	Taxonomic resolution (-)	Merging species partner pools	Renaud <i>et al.</i> 2020	Not detected