Appendix S5: Network Data

Unimodal networks on Fig 4

Network	r	r z-score	r P-value	η	η z-score	η P-value	η z-score with correlations
Biological - Food Webs (13)							
Little Rock lake	-0.327	0.514 ()	0.300 ()	1.326	0.026 ()	0.199 ()	0.350 ()
Ythan Estuary	-0.278	2.000 ()	0.039 (*)	1.482	-2.459 ()	0.021 (*)	-1.339 ()
Stony Stream	-0.208	0.368 ()	0.401 ()	1.295	-0.500 ()	0.300 ()	-0.594 ()
Canton creek	-0.201	0.667 ()	0.266 ()	1.331	-1.454 ()	0.096 ()	-0.880 ()
Skipwith Pond	-0.086	-3.406 (*)	0.001 (*)	1.014	2.142 ()	0.017 (*)	-4.600 (*)
El Verde rainforest	-0.171	0.133 ()	0.306 ()	1.187	1.520 ()	0.072 ()	0.561 ()
Caribbean Reef	-0.164	-0.778 ()	0.245 ()	1.095	-0.687 ()	0.297 ()	-3.140 (*)
St. Martin Island	-0.135	0.723 ()	0.226 ()	1.181	-3.000 ()	0.005 (*)	-5.488 (*)
UK grassland	-0.182	1.093 ()	0.142 ()	1.266	-1.412 ()	0.069 ()	-0.985 ()
Chesapeake bay	-0.115	-0.510 ()	0.299 ()	1.080	1.015 ()	0.162 ()	1.191 ()
Northwest Shelf	-0.082	-5.125 (*)	0.000 (*)	1.024	5.000 (*)	0.001 (*)	-0.495 ()
Coachella Valley	0.050	-4.548 (*)	0.000 (*)	0.990	4.272 (*)	0.000 (*)	0.031 ()
St. Marks Forest	0.116	-3.379 (*)	0.000 (*)	0.984	2.733 ()	0.002 (*)	-0.205 ()
Biological - other (4)							
Macaque cortex [1]	-0.295	-3.167 (*)	0.001 (*)	1.664	0.076 ()	0.484 ()	-2.909 ()
C.elegans metabolic network [2]	-0.220	4.434 (*)	0.001 (*)	1.736	-1.500 ()	0.166 ()	0.5 ()
C.elegans neuronal connectivity [3]	-0.163	7.443 (*)	0.000 (*)	1.908	-12.446 (*)	0.000 (*)	-3.875 (*)
Yeast metabolic [4]	-0.076	-	-	1.411	-	-	-
Social (12)							
Facebook friendship [5]	-0.712	-	-	4.077	-	-	-
Karate club [6]	-0.476	3.744 (*)	0.000 (*)	1.568	-3.487 (*)	0.000 (*)	-0.303 ()
Kaitiaki web relations [7]	-0.245	1.698 (*)	0.042 (*)	0.203	-0.904 ()	0.165 ()	0.287 ()
Political blogs [8]	-0.221	-	-	1.549	-	-	
Ownership network [9]	-0.181	-	-	2.315	-	-	
Consulting firm [10]	-0.167	-	-	1.073	-	-	-
Political books in th US [8]	-0.128	-0.622 ()	0.229 ()	1.103	0.800 ()	0.189 ()	0.919 ()
Dolphins relationships [11]	-0.044	0.149 ()	0.460 ()	1.164	-1.020 ()	0.157 ()	-1.480 ()
Jazz musicians [12]	0.020	-7.000 (*)	0.000 (*)	0.997	4.631 (*)	0.000 (*)	1.631 ()

Football games [13]	0.162	-4.526 (*)	0.000 (*)	0.999	2.000 ()	0.002 (*)	-3.832 (*)
Net-science arXiv [14]	0.462	-	-	0.653	-	-	-
Technical (3)							
Airports network [15]	-0.221	-	-	2.352	-	-	-
Power grid [16]	0.003	-	-	1.198	-	-	-
World flights [17]	0.051	-	-	1.134	-	-	-

Table S 1. Pearson's correlation coefficient and nestedness η for different empirical (unimodal) networks from different backgrounds appearing in Fig.4 . The z-score and P-values are calculated with respect to the random null model, and the "z-score with correlations" with the null model constraint to keep to the actual value of the Pearson's coefficient r. The asterisks $*$ stand for z-values larger than 3 (in absolute value) and P-values smaller than the threshold 0.05.

Empirical bipartite networks on Fig 4

Network	r	r z-score	r P-value	η	η z-score	η P-value	η z-score with correlations
Plant - Pollinator (28)							
Andean scrub (1) (Chile) [18]	-0.239	2.448 ()	0.009 (*)	1.409	-2.857 ()	0.005 (*)	-1.067 ()
Andean scrub (2) (Chile) [18]	-0.363	2.840 ()	0.003 (*)	1.208	-3.246 (*)	0.001 (*)	-1.595 ()
Montane forest and grassland (USA) [19]	-0.131	-2.364 ()	0.011 (*)	1.218	1.067 ()	0.131 ()	-0.442 ()
High-altitude desert (Canary Islands) [20]	-0.018	0.625 ()	0.253 ()	0.989	-0.340 ()	0.334 ()	0.397 ()
Arctic community (Canada) [21]	-0.128	1.467 ()	0.079 ()	1.246	-1.164 ()	0.116 ()	0.195 ()
Multiple Communities (Galápagos Islands) [22]	-0.638	5.444 (*)	0.000 (*)	2.416	-5.033 (*)	0.003 (*)	-1.957 ()
Xeric scrub (Argentina) [23]	-0.241	4.086 (*)	0.000 (*)	1.447	-4.104 (*)	0.000 (*)	-0.919 ()
Woody riverine veg. and xeric scrub (Argentina) [23]	-0.124	0.722 ()	0.224 ()	1.268	-1.550 ()	0.071 ()	-1.745 ()
Palm swamp community (Venezuela) [24]	-0.074	0.018 ()	0.492 ()	0.872	0.370 ()	0.382 ()	1.033 ()
Boreal forest (Canada) [25]	-0.069	1.815 ()	0.030 (*)	1.309	-0.926 ()	0.138 ()	-0.151 ()
Alpine subarctic community (sweden) [26]	-0.034	0.500 ()	0.298 ()	1.061	-0.500 ()	0.282 ()	-0.625 ()
High Arctic (Canada) [27]	-0.075	0.875 ()	0.171 ()	1.322	-2.866 ()	0.030 (*)	-2.977 ()
Medow (U.K) [28]	-0.104	0.049 ()	0.434 ()	1.442	-1.049 ()	0.156 ()	-0.658 ()
Arctic community (Canada) [29]	-0.104	-1.720 ()	0.031 (*)	0.821	1.472 ()	0.069 ()	-0.485 ()
Deciduous forest (USA) [30]	-0.040	-0.571 ()	0.307 ()	1.130	0.544 ()	0.297 ()	0.130 ()
Coastal forest (Mauritius Island) [31]	-0.488	2.278 ()	0.020 (*)	1.257	-3.378 (*)	0.002 (*)	-2.143 ()
Upland grassland (South Africa) [32]	-0.041	-1.000 ()	0.180 ()	1.180	0.885 ()	0.232 ()	0.017 ()
Maple-oak woodland (USA) [33]	-0.037	0.500 ()	0.320 ()	1.114	-0.166 ()	0.426 ()	0.578 ()
Snowy Mountains of Australia [34]	-0.139	0.778 ()	0.236 ()	1.165	-1.432 ()	0.076 ()	-0.804 ()
Peat bog (Canada) [35]	0.003	-2.857 ()	0.002 (*)	0.905	1.722 ()	0.035 (*)	-0.367 ()
Arroyo Goye (Argentina) [36–38]	-0.034	-0.091 ()	0.497 ()	0.114	-0.125 ()	0.446 ()	-0.507 ()
Cerro Lopez (Argentina) [36–38]	-0.030	0.071 ()	0.412 ()	0.133	-0.250 ()	0.352 ()	-0.078 ()
Llao Llao (Argentina) [36–38]	-0.059	0.182 ()	0.375 ()	0.124	-0.375 ()	0.317 ()	-0.504 ()
Mascardi (c) (Argentina) [36–38]	-0.034	0.500 ()	0.307 ()	0.083	0.000 ()	0.417 ()	1.300 ()
Mascardi (nc) (Argentina) [36–38]	-0.023	-1.400 ()	0.045 (*)	0.151	1.555 ()	0.040 (*)	0.937 ()
Quetrihue (c) (Argentina) [36–38]	-0.051	0.900 ()	0.144 ()	0.104	-1.428 ()	0.081 ()	-0.806 ()
Quetrihue (nc) (Argentina) [36–38]	-0.043	1.636 ()	0.073 ()	0.079	-1.750 ()	0.053 ()	-0.627 ()
Safariland (Argentina) [36–38]	-0.035	0.031 ()	0.432 ()	0.097	-0.142 ()	0.406 ()	-0.182 ()
Plant - Hervibore (4)							

Arid grasslands in Marathon (USA) [39]	-0.168	4.571 (*)	0.000 (*)	1.193	-1.256 ()	0.112 ()	2.696 ()
Arid grasslands in Altuda (USA) [39]	-0.215	3.200 (*)	0.001 (*)	1.316	-1.489 ()	0.048 (*)	1.226 ()
Whole country (Britain) [40]	-0.016	-0.500 ()	0.198 ()	1.100	0.875 ()	0.177 ()	0.693 ()
Whole country (Finland) [40]	-0.055	0.651 ()	0.275 ()	1.420	0.000 ()	0.240 ()	-0.320 ()
Plant - Seed Disperser (5)							
Forest (Papa New Guinea) [41]	-0.030	0.075 ()	0.427 ()	1.131	-0.588 ()	0.246 ()	-0.537 ()
Semideciduous tropical forest (Panama) [42]	-0.689	0.276 ()	0.322 ()	1.081	-0.14 ()	0.449 ()	-0.950 ()
Neotropical forest (Trinidad) [43]	-0.026	0.858 ()	0.192 ()	1.077	-0.736 ()	0.231 ()	-0.178 ()
Birds and Berries. Calton (England) [43]	-0.087	0.500 ()	0.346 ()	0.796	0.333 ()	0.358 ()	0.965 ()
Temperate woodland (Britain) [44]	-0.459	0.814 ()	0.266 ()	0.926	-0.561 ()	0.470 ()	1.559 ()
Anemone-Fish (1)							
Coral reefs [45]	-0.064	0.063 ()	0.483 ()	1.085	-0.633 ()	0.322 ()	-1.025 ()

Table S 2. Pearson's correlation and nestedness η for empirical bimodal networks from different backgrounds appearing in Fig.4 . The z-score and P-values are calculated with respect to the random null model, and the "z-score with correlations" with the null model restricted to the actual correlation coefficient r of the network. As above, the asterisks $*$ stand for z-values larger than 3 (in absolute value) and P-values smaller than the threshold 0.05.

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