Revealing In-Block Nestedness: detection and benchmarking
Supplemental Material

Albert Solé-Ribalta,[1] Claudio J. Tessone,[2] Manuel S. Mariani,[2,3,4] and Javier Borge-Holthoefer[1,5]

[1]*Internet Interdisciplinary Institute (IN3), Universitat Oberta de Catalunya, Barcelona, Catalonia*
[2]*URPP Social Networks, Universität Zürich, Switzerland*
[3]*Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China, Chengdu, PR China*
[4]*Physics Department, Université de Fribourg, Switzerland*
[5]*Institute for Biocomputation and Physics of Complex Systems (BIFI), Universidad de Zaragoza, Zaragoza, Spain*

S1. Real datasets used in the experiments

The set of real networks used throughout the article comprise ecological and social systems. The largest subset –ecological networks [3]– represent mutualistic and competitive systems, including macroscopic and microscopic environments. The analyzed social systems include social communication networks such as face-to-face interactions, e-mail contacts and Twitter messages; urban systems such as user check-ins to city services (museum, market, restaurant, etc.); technological systems such as cooperative software development projects, where we account which files each user works on. Some of these networks have been previously shown to exhibit nestedness and modularity jointly [4–6]. However, none of them have not been previously analyzed in the proposed setting.

Name	M	N	Connectance	Q	NODF	$\mathcal{N}$	$\mathcal{I}$	Type	Relation type
A_HP_001	18	10	0.34	0.31	0.67	0.21	0.36	bipartite	Ecological Host-Parasite
A_HP_002	24	18	0.22	0.32	0.39	0.10	0.35	bipartite	Ecological Host-Parasite
A_HP_003	9	23	0.52	0.18	0.74	0.11	0.19	bipartite	Ecological Host-Parasite
A_HP_004	21	6	0.41	0.29	0.56	0.10	0.21	bipartite	Ecological Host-Parasite
A_HP_005	13	7	0.56	0.17	0.75	0.17	0.21	bipartite	Ecological Host-Parasite
A_HP_006	37	16	0.21	0.36	0.36	0.08	0.41	bipartite	Ecological Host-Parasite
A_HP_007	17	8	0.32	0.37	0.48	0.09	0.33	bipartite	Ecological Host-Parasite
A_HP_008	24	8	0.19	0.49	0.30	0.08	0.32	bipartite	Ecological Host-Parasite
A_HP_009	22	14	0.31	0.25	0.54	0.12	0.34	bipartite	Ecological Host-Parasite
A_HP_010	31	18	0.16	0.50	0.27	0.07	0.43	bipartite	Ecological Host-Parasite
A_HP_011	19	4	0.57	0.23	0.64	0.05	0.14	bipartite	Ecological Host-Parasite
A_HP_012	23	7	0.39	0.25	0.47	0.04	0.27	bipartite	Ecological Host-Parasite
A_HP_013	22	11	0.43	0.22	0.68	0.14	0.23	bipartite	Ecological Host-Parasite
A_HP_014	19	11	0.33	0.29	0.58	0.16	0.19	bipartite	Ecological Host-Parasite
A_HP_015	7	3	0.57	0.25	0.75	0.14	0.21	bipartite	Ecological Host-Parasite
A_HP_016	21	6	0.41	0.29	0.56	0.10	0.21	bipartite	Ecological Host-Parasite
A_HP_017	9	5	0.42	0.29	0.78	0.25	0.26	bipartite	Ecological Host-Parasite
A_HP_018	21	15	0.40	0.22	0.60	0.10	0.19	bipartite	Ecological Host-Parasite
A_HP_019	18	9	0.22	0.43	0.45	0.17	0.44	bipartite	Ecological Host-Parasite
A_HP_020	17	16	0.39	0.22	0.62	0.13	0.25	bipartite	Ecological Host-Parasite
A_HP_021	15	9	0.42	0.23	0.67	0.16	0.24	bipartite	Ecological Host-Parasite
A_HP_022	18	16	0.24	0.34	0.33	0.04	0.32	bipartite	Ecological Host-Parasite
A_HP_023	8	9	0.57	0.23	0.53	-0.01	0.05	bipartite	Ecological Host-Parasite
A_HP_024	20	7	0.28	0.37	0.54	0.19	0.37	bipartite	Ecological Host-Parasite
A_HP_025	40	18	0.15	0.42	0.25	0.05	0.36	bipartite	Ecological Host-Parasite
A_HP_026	18	15	0.53	0.17	0.88	0.21	0.22	bipartite	Ecological Host-Parasite
A_HP_027	30	17	0.21	0.32	0.37	0.08	0.31	bipartite	Ecological Host-Parasite
A_HP_028	15	4	0.32	0.47	0.30	0.02	0.20	bipartite	Ecological Host-Parasite
A_HP_029	34	15	0.15	0.49	0.24	0.05	0.53	bipartite	Ecological Host-Parasite
A_HP_030	15	14	0.24	0.34	0.45	0.12	0.40	bipartite	Ecological Host-Parasite
A_HP_031	31	25	0.22	0.29	0.38	0.07	0.29	bipartite	Ecological Host-Parasite
A_HP_032	13	14	0.18	0.51	0.17	-0.04	0.39	bipartite	Ecological Host-Parasite
A_HP_033	25	22	0.36	0.19	0.68	0.20	0.29	bipartite	Ecological Host-Parasite
A_HP_034	8	9	0.49	0.21	0.77	0.16	0.22	bipartite	Ecological Host-Parasite
A_HP_035	7	6	0.36	0.36	0.57	0.12	0.37	bipartite	Ecological Host-Parasite
A_HP_036	13	8	0.29	0.42	0.35	0.01	0.43	bipartite	Ecological Host-Parasite
A_HP_037	21	17	0.25	0.34	0.54	0.20	0.38	bipartite	Ecological Host-Parasite

A_HP_038	20	10	0.26	0.38	0.31	-0.02	0.36	bipartite	Ecological Host-Parasite
A_HP_039	11	6	0.44	0.28	0.66	0.12	0.21	bipartite	Ecological Host-Parasite
A_HP_040	18	8	0.19	0.47	0.37	0.13	0.28	bipartite	Ecological Host-Parasite
A_HP_041	10	11	0.45	0.24	0.79	0.21	0.21	bipartite	Ecological Host-Parasite
A_HP_042	32	21	0.12	0.47	0.22	0.05	0.46	bipartite	Ecological Host-Parasite
A_HP_043	29	9	0.28	0.31	0.50	0.13	0.34	bipartite	Ecological Host-Parasite
A_HP_044	26	27	0.28	0.24	0.63	0.24	0.31	bipartite	Ecological Host-Parasite
A_HP_045	16	7	0.51	0.20	0.71	0.10	0.16	bipartite	Ecological Host-Parasite
A_HP_046	39	17	0.30	0.25	0.44	0.04	0.31	bipartite	Ecological Host-Parasite
A_HP_047	26	11	0.35	0.24	0.41	-0.01	0.21	bipartite	Ecological Host-Parasite
A_HP_048	14	12	0.42	0.26	0.77	0.23	0.23	bipartite	Ecological Host-Parasite
A_HP_049	19	5	0.41	0.35	0.47	0.06	0.26	bipartite	Ecological Host-Parasite
A_HP_050	35	27	0.24	0.27	0.40	0.06	0.39	bipartite	Ecological Host-Parasite
A_HP_051	26	13	0.32	0.25	0.67	0.24	0.38	bipartite	Ecological Host-Parasite
A_PH_004	22	52	0.16	0.42	0.30	0.10	0.42	bipartite	Ecological Plant-Herbivore
A_PH_005	24	54	0.13	0.41	0.31	0.14	0.43	bipartite	Ecological Plant-Herbivore
A_PH_006	88	6	0.22	0.39	0.37	0.20	0.27	bipartite	Ecological Plant-Herbivore
A_PH_007	64	5	0.30	0.33	0.47	0.20	0.20	bipartite	Ecological Plant-Herbivore
M_PA_001	8	16	0.15	0.78	0.04	-0.06	0.06	bipartite	Ecological Plant-Ant
M_PA_002	4	6	0.54	0.25	0.59	-0.00	0.20	bipartite	Ecological Plant-Ant
M_PA_003	15	24	0.12	0.67	0.13	-0.02	0.49	bipartite	Ecological Plant-Ant
M_PA_004	48	41	0.14	0.30	0.45	0.24	0.44	bipartite	Ecological Plant-Ant
M_PL_001	101	84	0.04	0.52	0.14	0.09	0.45	bipartite	Ecological Pollination
M_PL_002	64	43	0.07	0.53	0.15	0.06	0.56	bipartite	Ecological Pollination
M_PL_003	25	36	0.09	0.59	0.19	0.07	0.47	bipartite	Ecological Pollination
M_PL_004	102	12	0.14	0.47	0.31	0.17	0.35	bipartite	Ecological Pollination
M_PL_005	275	96	0.03	0.42	0.15	0.10	0.39	bipartite	Ecological Pollination
M_PL_006	61	17	0.14	0.40	0.52	0.33	0.41	bipartite	Ecological Pollination
M_PL_007	36	16	0.15	0.44	0.36	0.17	0.46	bipartite	Ecological Pollination
M_PL_008	38	11	0.25	0.36	0.36	0.05	0.33	bipartite	Ecological Pollination
M_PL_009	118	24	0.09	0.50	0.15	0.06	0.42	bipartite	Ecological Pollination
M_PL_010	76	31	0.19	0.25	0.35	0.10	0.25	bipartite	Ecological Pollination
M_PL_011	13	14	0.29	0.33	0.55	0.17	0.28	bipartite	Ecological Pollination
M_PL_012	55	29	0.09	0.45	0.30	0.19	0.44	bipartite	Ecological Pollination
M_PL_013	56	9	0.20	0.44	0.35	0.13	0.34	bipartite	Ecological Pollination
M_PL_014	81	29	0.08	0.49	0.26	0.15	0.53	bipartite	Ecological Pollination
M_PL_015	666	131	0.03	0.44	0.09	0.06	0.26	bipartite	Ecological Pollination
M_PL_016	179	26	0.09	0.47	0.22	0.12	0.44	bipartite	Ecological Pollination
M_PL_017	79	25	0.15	0.34	0.43	0.22	0.35	bipartite	Ecological Pollination
M_PL_018	105	39	0.09	0.38	0.20	0.08	0.41	bipartite	Ecological Pollination
M_PL_019	85	40	0.08	0.43	0.19	0.10	0.43	bipartite	Ecological Pollination
M_PL_020	91	20	0.10	0.47	0.37	0.22	0.46	bipartite	Ecological Pollination
M_PL_021	677	91	0.02	0.62	0.08	0.06	0.30	bipartite	Ecological Pollination
M_PL_022	45	21	0.09	0.62	0.18	0.07	0.53	bipartite	Ecological Pollination
M_PL_023	72	23	0.08	0.58	0.23	0.12	0.46	bipartite	Ecological Pollination
M_PL_024	18	11	0.19	0.48	0.32	0.08	0.49	bipartite	Ecological Pollination
M_PL_025	44	13	0.25	0.31	0.51	0.18	0.31	bipartite	Ecological Pollination
M_PL_026	54	105	0.04	0.57	0.25	0.19	0.38	bipartite	Ecological Pollination
M_PL_027	60	18	0.11	0.57	0.14	0.02	0.41	bipartite	Ecological Pollination
M_PL_028	139	41	0.07	0.48	0.16	0.08	0.49	bipartite	Ecological Pollination
M_PL_029	118	49	0.06	0.49	0.16	0.09	0.42	bipartite	Ecological Pollination
M_PL_030	53	28	0.07	0.59	0.11	0.02	0.42	bipartite	Ecological Pollination
M_PL_031	49	48	0.07	0.61	0.12	0.04	0.49	bipartite	Ecological Pollination
M_PL_032	33	7	0.28	0.36	0.57	0.24	0.32	bipartite	Ecological Pollination
M_PL_033	34	13	0.32	0.26	0.41	0.03	0.22	bipartite	Ecological Pollination
M_PL_034	128	26	0.09	0.45	0.25	0.15	0.44	bipartite	Ecological Pollination
M_PL_035	36	61	0.08	0.49	0.26	0.14	0.45	bipartite	Ecological Pollination
M_PL_036	12	10	0.25	0.44	0.36	0.06	0.42	bipartite	Ecological Pollination
M_PL_037	40	10	0.18	0.49	0.23	0.03	0.35	bipartite	Ecological Pollination
M_PL_038	42	8	0.24	0.44	0.28	0.02	0.37	bipartite	Ecological Pollination
M_PL_039	51	17	0.15	0.46	0.25	0.09	0.43	bipartite	Ecological Pollination

M_PL_040	43	29	0.09	0.55	0.20	0.07	0.51	bipartite	Ecological Pollination
M_PL_041	43	31	0.11	0.41	0.27	0.12	0.46	bipartite	Ecological Pollination
M_PL_042	6	12	0.35	0.35	0.50	0.09	0.22	bipartite	Ecological Pollination
M_PL_043	82	28	0.11	0.41	0.22	0.09	0.45	bipartite	Ecological Pollination
M_PL_044	609	110	0.02	0.62	0.05	0.03	0.33	bipartite	Ecological Pollination
M_PL_045	26	17	0.14	0.47	0.32	0.13	0.48	bipartite	Ecological Pollination
M_PL_046	44	16	0.39	0.22	0.64	0.13	0.17	bipartite	Ecological Pollination
M_PL_047	186	19	0.12	0.42	0.30	0.16	0.42	bipartite	Ecological Pollination
M_PL_048	236	30	0.09	0.38	0.26	0.14	0.47	bipartite	Ecological Pollination
M_PL_049	225	37	0.07	0.44	0.18	0.10	0.36	bipartite	Ecological Pollination
M_PL_050	35	14	0.18	0.44	0.33	0.11	0.46	bipartite	Ecological Pollination
M_PL_051	90	14	0.13	0.49	0.30	0.15	0.39	bipartite	Ecological Pollination
M_PL_052	39	15	0.16	0.42	0.31	0.11	0.40	bipartite	Ecological Pollination
M_PL_053	294	99	0.02	0.65	0.05	0.03	0.32	bipartite	Ecological Pollination
M_PL_054	318	113	0.02	0.55	0.09	0.06	0.35	bipartite	Ecological Pollination
M_PL_055	195	64	0.03	0.56	0.09	0.05	0.39	bipartite	Ecological Pollination
M_PL_056	365	91	0.03	0.55	0.07	0.04	0.34	bipartite	Ecological Pollination
M_PL_057	883	114	0.02	0.54	0.07	0.06	0.31	bipartite	Ecological Pollination
M_PL_058	81	32	0.12	0.34	0.28	0.12	0.40	bipartite	Ecological Pollination
M_PL_059	13	13	0.42	0.23	0.85	0.30	0.30	bipartite	Ecological Pollination
M_PL_060_01	39	11	0.22	0.36	0.33	0.07	0.37	bipartite	Ecological Pollination
M_PL_060_02	38	12	0.23	0.34	0.42	0.12	0.41	bipartite	Ecological Pollination
M_PL_060_03	45	13	0.22	0.35	0.37	0.10	0.32	bipartite	Ecological Pollination
M_PL_060_04	46	21	0.14	0.41	0.27	0.10	0.48	bipartite	Ecological Pollination
M_PL_060_05	54	33	0.08	0.50	0.17	0.08	0.41	bipartite	Ecological Pollination
M_PL_060_06	45	26	0.08	0.57	0.15	0.05	0.45	bipartite	Ecological Pollination
M_PL_060_07	39	29	0.10	0.46	0.23	0.12	0.49	bipartite	Ecological Pollination
M_PL_060_08	28	19	0.14	0.51	0.25	0.08	0.46	bipartite	Ecological Pollination
M_PL_060_09	40	18	0.11	0.54	0.19	0.07	0.43	bipartite	Ecological Pollination
M_PL_060_10	25	14	0.15	0.51	0.24	0.06	0.45	bipartite	Ecological Pollination
M_PL_060_11	20	14	0.15	0.55	0.27	0.08	0.59	bipartite	Ecological Pollination
M_PL_060_12	26	11	0.21	0.41	0.29	0.03	0.36	bipartite	Ecological Pollination
M_PL_060_13	31	7	0.22	0.46	0.34	0.10	0.34	bipartite	Ecological Pollination
M_PL_060_14	37	11	0.24	0.34	0.40	0.09	0.36	bipartite	Ecological Pollination
M_PL_060_15	37	14	0.25	0.32	0.42	0.09	0.33	bipartite	Ecological Pollination
M_PL_060_16	39	17	0.17	0.38	0.32	0.11	0.39	bipartite	Ecological Pollination
M_PL_060_17	35	17	0.17	0.41	0.30	0.09	0.48	bipartite	Ecological Pollination
M_PL_060_18	28	20	0.13	0.46	0.32	0.15	0.45	bipartite	Ecological Pollination
M_PL_060_19	13	18	0.18	0.46	0.40	0.17	0.48	bipartite	Ecological Pollination
M_PL_060_20	18	12	0.17	0.49	0.32	0.11	0.49	bipartite	Ecological Pollination
M_PL_060_21	22	6	0.24	0.49	0.30	0.08	0.30	bipartite	Ecological Pollination
M_PL_060_22	31	13	0.16	0.46	0.34	0.16	0.45	bipartite	Ecological Pollination
M_PL_060_23	27	12	0.18	0.46	0.33	0.12	0.42	bipartite	Ecological Pollination
M_PL_060_24	24	14	0.14	0.57	0.18	0.02	0.45	bipartite	Ecological Pollination
M_PL_061_01	12	5	0.28	0.53	0.29	0.03	0.32	bipartite	Ecological Pollination
M_PL_061_02	17	5	0.32	0.39	0.46	0.15	0.18	bipartite	Ecological Pollination
M_PL_061_03	14	6	0.29	0.45	0.33	0.03	0.25	bipartite	Ecological Pollination
M_PL_061_04	14	8	0.26	0.40	0.37	0.05	0.17	bipartite	Ecological Pollination
M_PL_061_05	22	12	0.19	0.43	0.35	0.12	0.42	bipartite	Ecological Pollination
M_PL_061_06	24	11	0.22	0.39	0.31	0.06	0.30	bipartite	Ecological Pollination
M_PL_061_07	23	9	0.30	0.31	0.46	0.08	0.29	bipartite	Ecological Pollination
M_PL_061_08	19	6	0.31	0.40	0.42	0.09	0.31	bipartite	Ecological Pollination
M_PL_061_09	10	6	0.25	0.52	0.19	-0.04	0.35	bipartite	Ecological Pollination
M_PL_061_10	14	5	0.29	0.51	0.27	0.00	0.24	bipartite	Ecological Pollination
M_PL_061_11	12	6	0.24	0.54	0.26	-0.00	0.35	bipartite	Ecological Pollination
M_PL_061_12	12	7	0.29	0.41	0.42	0.12	0.28	bipartite	Ecological Pollination
M_PL_061_13	19	7	0.29	0.38	0.48	0.13	0.24	bipartite	Ecological Pollination
M_PL_061_14	11	6	0.27	0.46	0.25	-0.03	0.18	bipartite	Ecological Pollination
M_PL_061_15	18	6	0.31	0.41	0.36	0.04	0.31	bipartite	Ecological Pollination
M_PL_061_16	19	8	0.27	0.42	0.43	0.12	0.41	bipartite	Ecological Pollination

M_PL_061_17	13	9	0.16	0.64	0.15	-0.01	0.34	bipartite	Ecological Pollination
M_PL_061_18	18	11	0.18	0.56	0.25	0.07	0.49	bipartite	Ecological Pollination
M_PL_061_19	21	11	0.19	0.47	0.29	0.08	0.37	bipartite	Ecological Pollination
M_PL_061_20	14	11	0.16	0.59	0.18	0.00	0.34	bipartite	Ecological Pollination
M_PL_061_21	18	11	0.22	0.44	0.29	0.02	0.30	bipartite	Ecological Pollination
M_PL_061_22	18	10	0.16	0.62	0.18	0.02	0.42	bipartite	Ecological Pollination
M_PL_061_23	26	10	0.17	0.55	0.24	0.06	0.38	bipartite	Ecological Pollination
M_PL_061_24	18	11	0.23	0.46	0.40	0.13	0.40	bipartite	Ecological Pollination
M_PL_061_25	11	5	0.38	0.37	0.47	0.04	0.17	bipartite	Ecological Pollination
M_PL_061_26	13	7	0.31	0.35	0.39	0.02	0.38	bipartite	Ecological Pollination
M_PL_061_27	13	6	0.27	0.47	0.21	-0.06	0.31	bipartite	Ecological Pollination
M_PL_061_28	19	8	0.24	0.47	0.39	0.12	0.31	bipartite	Ecological Pollination
M_PL_061_29	18	8	0.27	0.41	0.37	0.05	0.35	bipartite	Ecological Pollination
M_PL_061_30	13	7	0.33	0.38	0.48	0.10	0.31	bipartite	Ecological Pollination
M_PL_061_31	19	5	0.37	0.37	0.42	0.04	0.22	bipartite	Ecological Pollination
M_PL_061_32	18	6	0.26	0.49	0.27	0.00	0.21	bipartite	Ecological Pollination
M_PL_061_33	6	2	0.50	0.28	0.00	-0.21	0.00	bipartite	Ecological Pollination
M_PL_061_34	7	3	0.43	0.41	0.29	-0.04	0.00	bipartite	Ecological Pollination
M_PL_061_35	13	9	0.16	0.61	0.18	0.02	0.28	bipartite	Ecological Pollination
M_PL_061_36	17	7	0.26	0.44	0.31	0.04	0.28	bipartite	Ecological Pollination
M_PL_061_37	19	11	0.21	0.45	0.32	0.08	0.40	bipartite	Ecological Pollination
M_PL_061_38	23	10	0.21	0.45	0.31	0.06	0.40	bipartite	Ecological Pollination
M_PL_061_39	23	7	0.29	0.39	0.36	0.03	0.30	bipartite	Ecological Pollination
M_PL_061_40	26	9	0.25	0.38	0.37	0.07	0.31	bipartite	Ecological Pollination
M_PL_061_41	9	4	0.31	0.57	0.19	-0.06	0.16	bipartite	Ecological Pollination
M_PL_061_42	11	6	0.24	0.50	0.29	0.04	0.27	bipartite	Ecological Pollination
M_PL_061_43	16	9	0.18	0.58	0.18	0.01	0.28	bipartite	Ecological Pollination
M_PL_061_44	11	10	0.21	0.47	0.42	0.18	0.31	bipartite	Ecological Pollination
M_PL_061_45	23	11	0.20	0.48	0.29	0.07	0.40	bipartite	Ecological Pollination
M_PL_061_46	21	13	0.16	0.50	0.23	0.05	0.46	bipartite	Ecological Pollination
M_PL_061_47	26	9	0.24	0.39	0.39	0.09	0.32	bipartite	Ecological Pollination
M_PL_061_48	14	9	0.25	0.44	0.29	0.01	0.30	bipartite	Ecological Pollination
M_PL_062	1044	456	0.03	0.31	0.06	0.02	0.04	bipartite	Ecological Pollination
M_PL_063	9	55	0.25	0.33	0.66	0.35	0.37	bipartite	Ecological Pollination
M_PL_064	8	14	0.29	0.39	0.50	0.16	0.46	bipartite	Ecological Pollination
M_PL_067	5	31	0.38	0.32	0.64	0.22	0.23	bipartite	Ecological Pollination
M_PL_068	9	31	0.30	0.31	0.54	0.17	0.28	bipartite	Ecological Pollination
M_PL_069_01	6	18	0.27	0.44	0.31	0.03	0.34	bipartite	Ecological Pollination
M_PL_069_02	4	10	0.40	0.40	0.20	-0.12	0.21	bipartite	Ecological Pollination
M_PL_069_03	4	7	0.54	0.24	0.76	0.14	0.21	bipartite	Ecological Pollination
M_PL_070	8	8	0.64	0.23	0.69	0.07	0.07	bipartite	Ecological Pollination
M_PL_071	8	44	0.25	0.35	0.51	0.24	0.34	bipartite	Ecological Pollination
M_SD_001	21	7	0.34	0.32	0.51	0.12	0.24	bipartite	Ecological Seed Dispersal
M_SD_002	9	31	0.43	0.22	0.68	0.15	0.17	bipartite	Ecological Seed Dispersal
M_SD_003	16	25	0.17	0.40	0.45	0.22	0.53	bipartite	Ecological Seed Dispersal
M_SD_004	20	34	0.14	0.40	0.43	0.24	0.38	bipartite	Ecological Seed Dispersal
M_SD_005	13	25	0.15	0.54	0.30	0.12	0.41	bipartite	Ecological Seed Dispersal
M_SD_006	15	21	0.16	0.47	0.34	0.13	0.50	bipartite	Ecological Seed Dispersal
M_SD_007	7	72	0.28	0.33	0.52	0.20	0.36	bipartite	Ecological Seed Dispersal
M_SD_008	10	16	0.69	0.13	0.75	0.05	0.05	bipartite	Ecological Seed Dispersal
M_SD_009	18	7	0.30	0.39	0.34	0.02	0.20	bipartite	Ecological Seed Dispersal
M_SD_010	14	50	0.33	0.27	0.49	0.08	0.16	bipartite	Ecological Seed Dispersal
M_SD_011	14	11	0.31	0.36	0.45	0.10	0.37	bipartite	Ecological Seed Dispersal
M_SD_012	29	35	0.14	0.38	0.35	0.15	0.53	bipartite	Ecological Seed Dispersal
M_SD_013	19	36	0.29	0.37	0.37	0.02	0.33	bipartite	Ecological Seed Dispersal
M_SD_014	17	16	0.44	0.24	0.79	0.22	0.22	bipartite	Ecological Seed Dispersal
M_SD_015	27	5	0.64	0.18	0.67	0.04	0.05	bipartite	Ecological Seed Dispersal
M_SD_016	61	24	0.34	0.21	0.59	0.14	0.21	bipartite	Ecological Seed Dispersal
M_SD_017	8	16	0.56	0.20	0.60	0.00	0.05	bipartite	Ecological Seed Dispersal
M_SD_018	32	29	0.07	0.65	0.11	0.03	0.43	bipartite	Ecological Seed Dispersal

M_SD_019	40	169	0.10	0.40	0.33	0.19	0.42	bipartite	Ecological Seed Dispersal
M_SD_020	33	25	0.18	0.33	0.59	0.32	0.37	bipartite	Ecological Seed Dispersal
M_SD_021	28	18	0.26	0.29	0.62	0.26	0.29	bipartite	Ecological Seed Dispersal
M_SD_022	110	207	0.05	0.38	0.17	0.10	0.35	bipartite	Ecological Seed Dispersal
M_SD_023	8	15	0.32	0.33	0.67	0.26	0.37	bipartite	Ecological Seed Dispersal
M_SD_024	7	12	0.48	0.25	0.57	0.04	0.18	bipartite	Ecological Seed Dispersal
M_SD_025	6	7	0.52	0.26	0.67	0.10	0.19	bipartite	Ecological Seed Dispersal
M_SD_026	3	3	0.67	0.22	1.00	0.11	0.22	bipartite	Ecological Seed Dispersal
M_SD_027	4	12	0.65	0.18	0.74	0.05	0.12	bipartite	Ecological Seed Dispersal
M_SD_028	5	8	0.65	0.17	0.89	0.15	0.17	bipartite	Ecological Seed Dispersal
M_SD_029	5	4	0.50	0.30	0.81	0.17	0.24	bipartite	Ecological Seed Dispersal
M_SD_030	4	5	0.55	0.28	0.67	0.08	0.09	bipartite	Ecological Seed Dispersal
M_SD_031	8	41	0.23	0.42	0.37	0.12	0.35	bipartite	Ecological Seed Dispersal
M_SD_032	19	4	0.43	0.35	0.48	0.04	0.12	bipartite	Ecological Seed Dispersal
M_SD_033	11	13	0.37	0.25	0.74	0.24	0.28	bipartite	Ecological Seed Dispersal
M_SD_034	88	33	0.14	0.31	0.35	0.15	0.42	bipartite	Ecological Seed Dispersal
Bacteria and Phages (Flores)	286	215	0.02	0.78	0.03	0.00	0.35	bipartite	Ecological Bacteria-Phages [5]
Women Event Participation	18	14	0.35	0.35	0.49	0.07	0.24	bipartite	Social [7]
Athens	545	224	0.02	0.38	0.18	0.16	0.45	bipartite	Foursquare Urban Checkins [8, 9]
Chennai	280	279	0.04	0.25	0.27	0.20	0.31	bipartite	Foursquare Urban Checkins [8, 9]
Mcp2000	146	1131	0.13	0.23	0.28	0.12	0.12	bipartite	Github Project
animatecss	77	254	0.03	0.49	0.56	0.46	0.51	bipartite	Github Project
html5-boilerplate	240	382	0.01	0.54	0.26	0.22	0.44	bipartite	Github Project
javascript	285	70	0.03	0.58	0.15	0.17	0.27	bipartite	Github Project
UsrHstg_0_1439	49	48	0.08	0.47	0.31	0.21	0.43	bipartite	Twitter User-Hashtag [6]
UsrHstg_10080_11519	174	373	0.01	0.53	0.39	0.31	0.41	bipartite	Twitter User-Hashtag [6]
UsrHstg_10800_12239	160	317	0.01	0.57	0.36	0.29	0.39	bipartite	Twitter User-Hashtag [6]
UsrHstg_11520_12959	177	349	0.01	0.57	0.36	0.29	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_12240_13679	158	332	0.01	0.56	0.36	0.28	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_12960_14399	147	381	0.02	0.50	0.36	0.28	0.45	bipartite	Twitter User-Hashtag [6]
UsrHstg_13680_15119	170	404	0.01	0.51	0.36	0.29	0.44	bipartite	Twitter User-Hashtag [6]
UsrHstg_14400_15839	215	418	0.01	0.57	0.35	0.28	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_1440_2879	148	344	0.01	0.54	0.40	0.32	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_15120_16559	342	955	0.01	0.54	0.41	0.34	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_15840_17279	378	1024	0.01	0.53	0.46	0.38	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_16560_17999	283	872	0.01	0.52	0.42	0.35	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_17280_18719	209	428	0.01	0.54	0.40	0.33	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_18000_19439	192	378	0.01	0.55	0.39	0.32	0.38	bipartite	Twitter User-Hashtag [6]
UsrHstg_18720_20159	167	429	0.01	0.55	0.40	0.32	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_19440_20879	253	709	0.01	0.54	0.40	0.32	0.42	bipartite	Twitter User-Hashtag [6]
UsrHstg_20160_21599	403	1024	0.01	0.50	0.37	0.31	0.44	bipartite	Twitter User-Hashtag [6]
UsrHstg_20880_22319	407	1024	0.01	0.48	0.37	0.30	0.42	bipartite	Twitter User-Hashtag [6]
UsrHstg_21600_23039	386	1024	0.01	0.51	0.33	0.27	0.42	bipartite	Twitter User-Hashtag [6]
UsrHstg_2160_3599	170	398	0.01	0.53	0.40	0.32	0.39	bipartite	Twitter User-Hashtag [6]
UsrHstg_22320_23759	441	1024	0.01	0.52	0.32	0.26	0.41	bipartite	Twitter User-Hashtag [6]
UsrHstg_23040_24479	418	1024	0.01	0.49	0.33	0.26	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_23760_25199	354	1024	0.01	0.49	0.33	0.27	0.45	bipartite	Twitter User-Hashtag [6]
UsrHstg_24480_25919	314	844	0.01	0.50	0.30	0.24	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_25200_26639	346	1024	0.01	0.50	0.32	0.26	0.43	bipartite	Twitter User-Hashtag [6]
UsrHstg_25920_27359	414	1024	0.01	0.46	0.31	0.25	0.35	bipartite	Twitter User-Hashtag [6]
UsrHstg_26640_28079	429	1024	0.01	0.49	0.29	0.23	0.37	bipartite	Twitter User-Hashtag [6]
UsrHstg_27360_28799	442	1024	0.01	0.43	0.29	0.23	0.36	bipartite	Twitter User-Hashtag [6]
UsrHstg_28080_29519	477	1024	0.01	0.41	0.29	0.23	0.35	bipartite	Twitter User-Hashtag [6]
UsrHstg_28800_30239	713	1024	0.01	0.37	0.32	0.27	0.27	bipartite	Twitter User-Hashtag [6]
UsrHstg_2880_4319	172	365	0.01	0.55	0.37	0.30	0.35	bipartite	Twitter User-Hashtag [6]
UsrHstg_29520_30959	909	1024	0.01	0.37	0.27	0.25	0.25	bipartite	Twitter User-Hashtag [6]
UsrHstg_30240_31679	870	1024	0.01	0.34	0.30	0.27	0.27	bipartite	Twitter User-Hashtag [6]
UsrHstg_30960_32399	960	1024	0.01	0.37	0.28	0.26	0.26	bipartite	Twitter User-Hashtag [6]
UsrHstg_31680_33119	1075	1024	0.01	0.33	0.25	0.25	0.25	bipartite	Twitter User-Hashtag [6]
UsrHstg_32400_33839	1115	1024	0.01	0.32	0.24	0.25	0.25	bipartite	Twitter User-Hashtag [6]

UsrHstg_33120_34559	1244	1024	0.01	0.31	0.21	0.22	0.22	bipartite	Twitter User-Hashtag [6]
UsrHstg_33840_35279	1420	1024	0.01	0.31	0.17	0.19	0.19	bipartite	Twitter User-Hashtag [6]
UsrHstg_34560_35999	1550	1024	0.01	0.32	0.14	0.17	0.17	bipartite	Twitter User-Hashtag [6]
UsrHstg_35280_36719	1480	1024	0.01	0.32	0.14	0.17	0.17	bipartite	Twitter User-Hashtag [6]
UsrHstg_36000_37439	1516	1024	0.01	0.32	0.13	0.16	0.16	bipartite	Twitter User-Hashtag [6]
UsrHstg_37440_38879	1535	1024	0.01	0.33	0.12	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_38160_39599	1407	1024	0.01	0.36	0.12	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_38880_40319	1347	1024	0.01	0.36	0.12	0.13	0.13	bipartite	Twitter User-Hashtag [6]
UsrHstg_39600_41039	1331	1024	0.01	0.37	0.12	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_40320_41759	1180	1024	0.01	0.37	0.14	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_41040_42479	1093	1024	0.01	0.37	0.15	0.15	0.15	bipartite	Twitter User-Hashtag [6]
UsrHstg_41760_43199	1059	1024	0.01	0.39	0.15	0.14	0.15	bipartite	Twitter User-Hashtag [6]
UsrHstg_42480_43919	1049	1024	0.01	0.40	0.14	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_43200_44639	999	1024	0.01	0.41	0.14	0.14	0.14	bipartite	Twitter User-Hashtag [6]
UsrHstg_4320_5759	145	273	0.01	0.59	0.35	0.28	0.36	bipartite	Twitter User-Hashtag [6]
UsrHstg_43920_45359	899	1024	0.01	0.40	0.15	0.14	0.15	bipartite	Twitter User-Hashtag [6]
UsrHstg_44640_46079	820	1024	0.01	0.42	0.16	0.14	0.15	bipartite	Twitter User-Hashtag [6]
UsrHstg_45360_46799	611	1024	0.01	0.45	0.17	0.14	0.22	bipartite	Twitter User-Hashtag [6]
UsrHstg_5040_6479	149	278	0.01	0.60	0.31	0.25	0.33	bipartite	Twitter User-Hashtag [6]
UsrHstg_5760_7199	134	275	0.01	0.60	0.29	0.23	0.36	bipartite	Twitter User-Hashtag [6]
UsrHstg_6480_7919	116	231	0.02	0.58	0.32	0.25	0.37	bipartite	Twitter User-Hashtag [6]
UsrHstg_7200_8639	107	219	0.02	0.54	0.39	0.31	0.39	bipartite	Twitter User-Hashtag [6]
UsrHstg_720_2159	76	151	0.03	0.53	0.37	0.28	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_7920_9359	107	237	0.02	0.53	0.42	0.33	0.40	bipartite	Twitter User-Hashtag [6]
UsrHstg_8640_10079	133	283	0.01	0.55	0.42	0.34	0.39	bipartite	Twitter User-Hashtag [6]
UsrHstg_9360_10799	183	399	0.01	0.54	0.41	0.33	0.40	bipartite	Twitter User-Hashtag [6]
bunt0	31	31	0.01	0.75	0.00	-0.00	0.00	unipartite	Social contacts [10]
bunt0	31	31	0.01	0.75	0.00	-0.00	0.00	unipartite	Social contacts [10]
bunt1	32	32	0.14	0.43	0.14	-0.00	0.20	unipartite	Social contacts [10]
bunt3	32	32	0.21	0.34	0.29	0.05	0.18	unipartite	Social contacts [10]
bunt4	32	32	0.25	0.32	0.33	0.04	0.18	unipartite	Social contacts [10]
bunt5	32	32	0.29	0.24	0.39	0.04	0.17	unipartite	Social contacts [10]
bunt6	32	32	0.24	0.30	0.33	0.06	0.15	unipartite	Social contacts [10]
c1	26	26	0.19	0.41	0.21	-0.02	0.24	unipartite	Social contacts [11]
c2	26	26	0.25	0.28	0.33	-0.01	0.21	unipartite	Social contacts [11]
c3	26	26	0.31	0.24	0.42	0.04	0.17	unipartite	Social contacts [11]
c4	26	26	0.28	0.30	0.38	0.04	0.14	unipartite	Social contacts [11]
E-mail contacts (Milchaski)	196	196	0.10	0.39	0.21	0.07	0.24	unipartite	Social contacts
stu98t0	31	31	0.01	0.80	0.00	-0.00	0.00	unipartite	Social contacts [10]
stu98t2	34	34	0.27	0.36	0.32	0.02	0.18	unipartite	Social contacts [10]
stu98t3	34	34	0.36	0.26	0.46	0.04	0.13	unipartite	Social contacts [10]
stu98t5	34	34	0.35	0.19	0.55	0.12	0.14	unipartite	Social contacts [10]
stu98t6	34	34	0.35	0.15	0.44	0.10	0.12	unipartite	Social contacts [10]
Primary School	242	242	0.28	0.28	0.38	0.04	0.13	unipartite	Social contacts [12]
High School 2011	126	126	0.22	0.46	0.31	0.04	0.35	unipartite	Social contacts [13]
High School 2012	180	180	0.14	0.52	0.19	0.02	0.31	unipartite	Social contacts [13]
E-mail contacts	1133	1133	0.01	0.58	0.02	0.01	0.10	unipartite	Social [14]
Zachary	34	34	0.13	0.42	0.30	0.13	0.34	unipartite	Social [15]
Enron E-mail contacts M12	139	139	0.02	0.61	0.15	0.12	0.35	unipartite	Social [16]
Enron E-mail contacts M13	287	287	0.01	0.56	0.16	0.14	0.40	unipartite	Social [16]
Enron E-mail contacts M14	383	383	0.01	0.63	0.11	0.09	0.33	unipartite	Social [16]
Enron E-mail contacts M15	420	420	0.01	0.63	0.11	0.10	0.32	unipartite	Social [16]
Enron E-mail contacts M16	286	286	0.01	0.57	0.17	0.15	0.35	unipartite	Social [16]
Enron E-mail contacts M17	367	367	0.01	0.68	0.07	0.05	0.27	unipartite	Social [16]
Enron E-mail contacts M18	418	418	0.01	0.66	0.10	0.09	0.31	unipartite	Social [16]
Enron E-mail contacts M19	1052	1052	0.00	0.76	0.05	0.04	0.00	unipartite	Social [16]
Enron E-mail contacts M20	1285	1285	0.00	0.72	0.05	0.04	0.00	unipartite	Social [16]
Enron E-mail contacts M21	2485	2485	0.00	0.76	0.02	0.02	0.17	unipartite	Social [16]
Enron E-mail contacts M22	2477	2477	0.00	0.73	0.03	0.03	0.22	unipartite	Social [16]
Enron E-mail contacts M23	2081	2081	0.00	0.69	0.04	0.04	0.24	unipartite	Social [16]

Enron E-mail contacts M24	2158	2158	0.00	0.65	0.04	0.03	0.23	unipartite	Social [16]
Enron E-mail contacts M25	3106	3106	0.00	0.67	0.06	0.05	0.23	unipartite	Social [16]
Enron E-mail contacts M26	3479	3479	0.00	0.65	0.04	0.03	0.22	unipartite	Social [16]
Enron E-mail contacts M27	3491	3491	0.00	0.67	0.05	0.04	0.25	unipartite	Social [16]
Enron E-mail contacts M28	3990	3990	0.00	0.66	0.05	0.04	0.26	unipartite	Social [16]
Enron E-mail contacts M29	4291	4291	0.00	0.68	0.03	0.03	0.22	unipartite	Social [16]
Enron E-mail contacts M30	5138	5138	0.00	0.67	0.04	0.04	0.25	unipartite	Social [16]
Enron E-mail contacts M31	4793	4793	0.00	0.67	0.02	0.02	0.16	unipartite	Social [16]
Enron E-mail contacts M32	4081	4081	0.00	0.68	0.03	0.02	0.20	unipartite	Social [16]
Enron E-mail contacts M33	3810	3810	0.00	0.66	0.03	0.02	0.16	unipartite	Social [16]
Enron E-mail contacts M34	4341	4341	0.00	0.66	0.03	0.03	0.10	unipartite	Social [16]
Enron E-mail contacts M37	7287	7287	0.00	0.63	0.03	0.03	0.18	unipartite	Social [16]
Enron E-mail contacts M38	5013	5013	0.00	0.71	0.04	0.04	0.23	unipartite	Social [16]
Enron E-mail contacts M39	4584	4584	0.00	0.69	0.02	0.02	0.17	unipartite	Social [16]
Enron E-mail contacts M40	4702	4702	0.00	0.69	0.04	0.03	0.20	unipartite	Social [16]
Enron E-mail contacts M43	6735	6735	0.00	0.67	0.02	0.02	0.16	unipartite	Social [16]
Enron E-mail contacts M44	2974	2974	0.00	0.68	0.03	0.03	0.19	unipartite	Social [16]
Enron E-mail contacts M45	3109	3109	0.00	0.62	0.05	0.05	0.22	unipartite	Social [16]
Enron E-mail contacts M46	2231	2231	0.00	0.61	0.09	0.08	0.30	unipartite	Social [16]
Enron E-mail contacts M47	1639	1639	0.00	0.70	0.10	0.09	0.28	unipartite	Social [16]
Enron E-mail contacts M48	313	313	0.01	0.69	0.09	0.08	0.34	unipartite	Social [16]
Enron E-mail contacts M49	1028	1028	0.00	0.62	0.12	0.12	0.24	unipartite	Social [16]
Enron E-mail contacts M50	306	306	0.01	0.62	0.21	0.19	0.51	unipartite	Social [16]

TABLE S1: Details of the ecological and social networks used in the main document.

[1] S. Sobolevsky, R. Campari, A. Belyi, and C. Ratti, Physical Review E **90**, 012811 (2014).

[2] S. Fortunato and M. Barthelemy, Proceedings of the National Academy of Sciences **104**, 36 (2007).

[3] *Web of life: ecological networks database*, `http://www.web-of-life.es/`.

[4] J. M. Olesen, J. Bascompte, Y. L. Dupont, and P. Jordano, Proceedings of the National Academy of Sciences **104**, 19891 (2007).

[5] C. O. Flores, S. Valverde, and J. S. Weitz, The ISME journal **7**, 520 (2013).

[6] J. Borge-Holthoefer, R. A. Baños, C. Gracia-Lázaro, and Y. Moreno, Scientific Reports **7**, 41673 (2017).

[7] A. Davis, B. B. Gardner, and M. R. Gardner, *Deep South: A social anthropological study of caste and class* (Univ of South Carolina Press, 2009).

[8] M. Sarwat, J. J. Levandoski, A. Eldawy, and M. F. Mokbel, IEEE Transactions on Knowledge and Data Engineering **26**, 1384 (2014).

[9] J. J. Levandoski, M. Sarwat, A. Eldawy, and M. F. Mokbel, in *Data Engineering (ICDE), 2012 IEEE 28th International Conference on* (IEEE, 2012), pp. 450–461.

[10] G. G. Van de Bunt, M. A. Van Duijn, and T. A. Snijders, Computational & Mathematical Organization Theory **5**, 167 (1999).

[11] T. A. Snijders, C. E. Steglich, and G. G. van de Bunt, Social Networks (2008).

[12] J. Stehlé, N. Voirin, A. Barrat, C. Cattuto, L. Isella, J.-F. Pinton, M. Quaggiotto, W. Van den Broeck, C. Régis, B. Lina, et al., PloS one **6**, e23176 (2011).

[13] J. Fournet and A. Barrat, PloS one **9**, e107878 (2014).

[14] R. Guimerà, L. Danon, A. Diaz-Guilera, F. Giralt, and A. Arenas, Physical review E **68**, 065103 (2003).

[15] W. W. Zachary, Journal of anthropological research **33**, 452 (1977).

[16] B. Klimt and Y. Yang, Proc. Eur. Conf. Machine learning (ECML) pp. 217–226 (2004).