Table S1. Topological properties of the observed molecular ecological networks (MENs) and their associated random MENs

Network Indexes	Non-salinity		Mild-salinity		Severe-salinity	
	Observed Network	Random Networks	Observed Network	Random Networks	Observed Network	Random Networks
Average clustering coefficient (avgCC)	0.248	0.047 +/- 0.002	0.207	0.055 +/- 0.003	0.339	0.064 +/- 0.002
Average path distance (GD)	5.303	2.882 +/- 0.010	6.094	3.091 +/- 0.014	3.852	2.421 +/- 0.005
Geodesic efficiency (E)	0.228	0.377 +/- 0.001	0.2	0.350 +/- 0.001	0.305	0.445 +/- 0.001
Harmonic geodesic distance (HD)	4.389	2.653 +/- 0.007	5.002	2.856 +/- 0.009	3.284	2.247 +/- 0.003
Centralization of degree (CD)	0.06	0.060 +/- 0.000	0.058	0.058 +/- 0.000	0.087	0.087 +/- 0.000
Centralization of betweenness (CB)	0.047	0.015 +/- 0.002	0.118	0.020 +/- 0.002	0.052	0.010 +/- 0.001
Centralization of stress centrality (CS)	517.933	0.163 +/- 0.012	648.053	0.198 +/- 0.019	115.604	0.163 +/- 0.011
Centralization of eigenvector centrality (CE)	0.177	0.094 +/- 0.004	0.161	0.103 +/- 0.007	0.109	0.061 +/- 0.002
Density (D)	0.019	0.019 +/- 0.000	0.014	0.014 +/- 0.000	0.035	0.035 +/- 0.000
Reciprocity	1	1.000 +/- 0.000	1	1.000 +/- 0.000	1	1.000 +/- 0.000
Transitivity (Trans)	0.228	0.059 +/- 0.001	0.245	0.077 +/- 0.001	0.297	0.069 +/- 0.001
Connectedness (Con)	0.862	0.982 +/- 0.008	0.908	0.988 +/- 0.007	0.965	0.995 +/- 0.004
Efficiency	0.979	0.982 +/- 0.000	0.986	0.987 +/- 0.000	0.965	0.966 +/- 0.000
Hierarchy	0	0.000 +/- 0.000	0	0.000 +/- 0.000	0	0.000 +/- 0.000
Lubness	1	1.000 +/- 0.000	1	1.000 +/- 0.000	1	1.000 +/- 0.000
Modularity(fast_greedy)	0.775	0.189 +/- 0.003	0.74	0.221 +/- 0.003	0.677	0.125 +/- 0.003

Table S2. Pair-wise comparison of network parameters among salinity levels

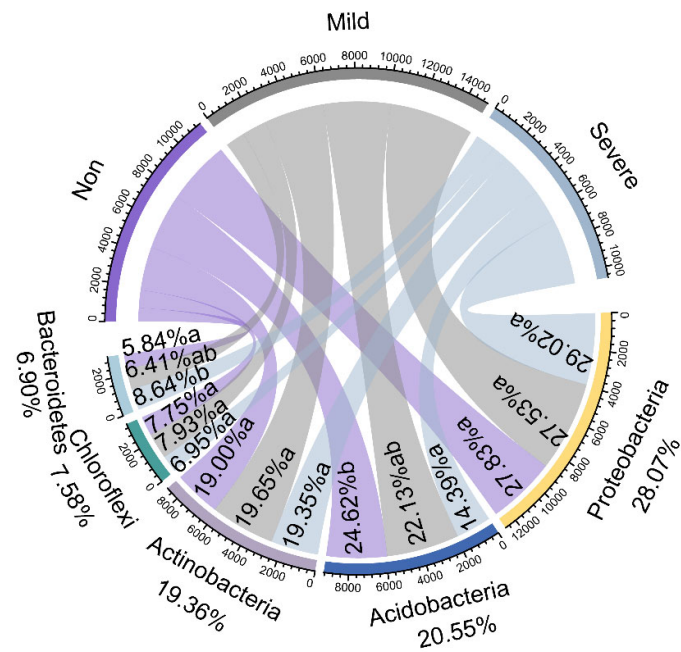|	Mild vs Non	Severe vs Non	Severe vs Mild
Average clustering coefficient (avgCC)	0.0001	0.0001	0.0001
Average path distance (GD)	0.0001	0.0001	0.0001
Geodesic efficiency (E)	0.0001	0.0001	0.0001
Harmonic geodesic distance (HD)	0.0001	0.0001	0.0001
Centralization of degree (CD)	\	\	\
Centralization of betweenness (CB)	0.0001	0.0001	0.0001
Centralization of stress centrality (CS)	0.0001	0.0001	0.0001
Centralization of eigenvector centrality (CE)	0.0001	0.0001	0.0001
Density (D)	\	\	\
Reciprocity	\	\	\
Transitivity (Trans)	0.0001	0.0001	0.0001
Connectedness (Con)	0.0001	0.0001	0.0001
Efficiency	\	\	\
Hierarchy	\	\	\
Lubness	\	\	\
Modularity(fast_greedy)	0.0001	0.0001	0.0001

Figure S1. Phylogenetic distributions of dominant bacterial phyla in soils with three salinity levels, Non-salinity, Mild-salinity and Severe-salinity. Different letters denote significant phylogenetic differences (p<0.05) among salinity levels.
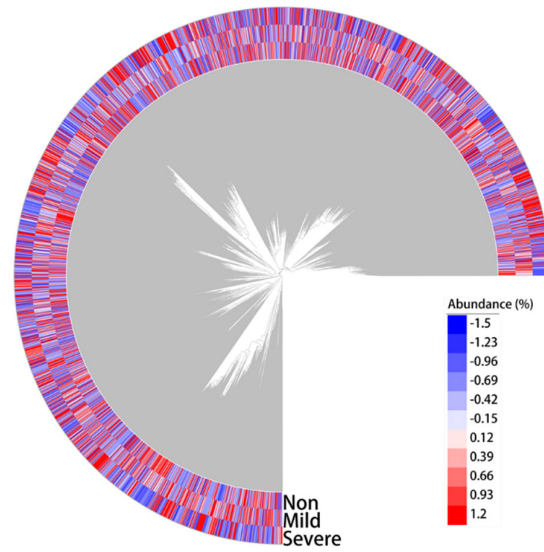
Figure S2. Phylogenetic distribution of the 3123 bacteria and their relative abundance among three salinity soils.