

Supplementary figures and tables

Table S1. ANOVA test results for various alpha-diversity metrics.

Observed S	Sum Sq	Df	F value	Pr(>F)	
(Intercept)	588166	1	198.58	3.60E-12	***
Location	3993	1	1.35	0.26	
Rock.type	7767	1	2.62	0.12	
Location:Rock.type	10123	1	3.42	0.08	
Residuals	62200	21			
Inv. Simpson					
(Intercept)	4281315	1	1306.61	2E-16>	***
Location	4	1	0	0.97	
Rock.type	1671	1	0.51	0.48	
Location:Rock.type	8756	1	2.67	0.12	
Residuals	68810	21			
Shannon's H					
(Intercept)	308.9	1	1353.08	2E-16>	***
Location	1.4	1	6.1	0.02	
Rock.type	0.1	1	0.36	0.55	
Location:Rock.type	0.3	1	1.15	0.3	
Residuals	4.8	21			
Berger Parker					
(Intercept)	7346	1	145.56	6.60E-11	***
Location	543	1	10.76	3.60E-03	**
Rock.type	99	1	1.96	0.18	
Location:Rock.type	117	1	2.32	0.14	
Residuals	1060	21			

Table S2. Variance partitioning of the Morisita-Horn distance matrix using PERMANOVA

Observed S	Df	Sums of Sqs	Mean Sqs	F Model	R2	Pr(>F)	
Location	1	0.63	0.63	2.12	0.08	0.02	*
Rock.type	1	0.39	0.39	1.3	0.05	0.23	
Location:Rock.type	1	0.49	0.49	1.63	0.06	0.1	
Residuals	21	6.25	0.3	0.81			
Total	24	7.75	1				

Table S3. Taxonomic classification and differential-abundance test results between the samples from the archaeological site
5 (City) and the nearby slopes (Slope). (See attached Table S3.xlsx)

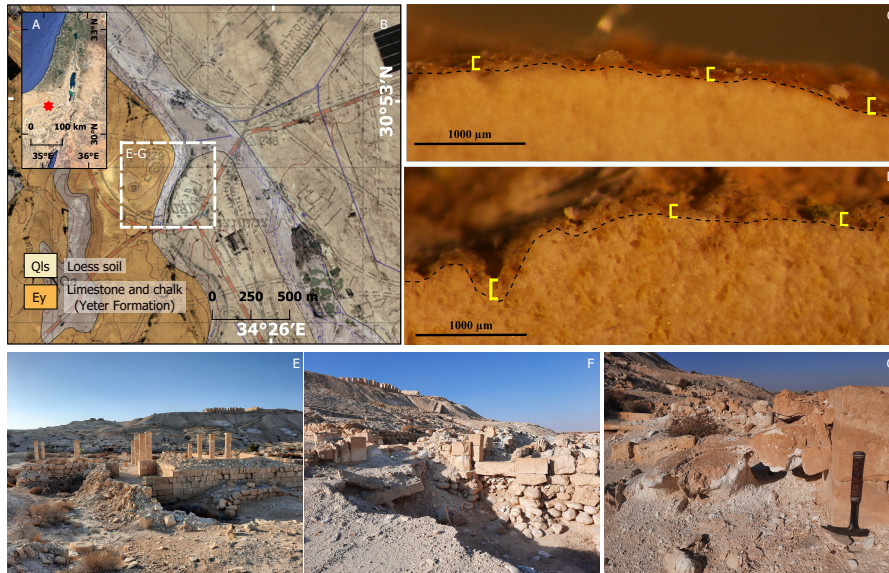


Figure S1. (A) Geographical location of the study area (red star) in the central Negev Desert, Israel (Google, ©2020 Landsat / Copernicus Data SIO, NOAA, U.S. Navy, NGA, GEBCO Mapa GISrael) ; (B) Nitzana geological map (?; reproduced with permission) ; (C) A panoramic view of Nitzana Byzantine city; (D, E) Buildings blocks at Nitzana site (30 cm hammer for scale); (F) BRC on chalk sample retrieved from the site, black dashed line marks the interface between BRC at the top and host rock at the bottom; (G) BRC on limestone sample retrieved from the site, black dashed line marks the interface between BRC at the top and host rock at the bottom.

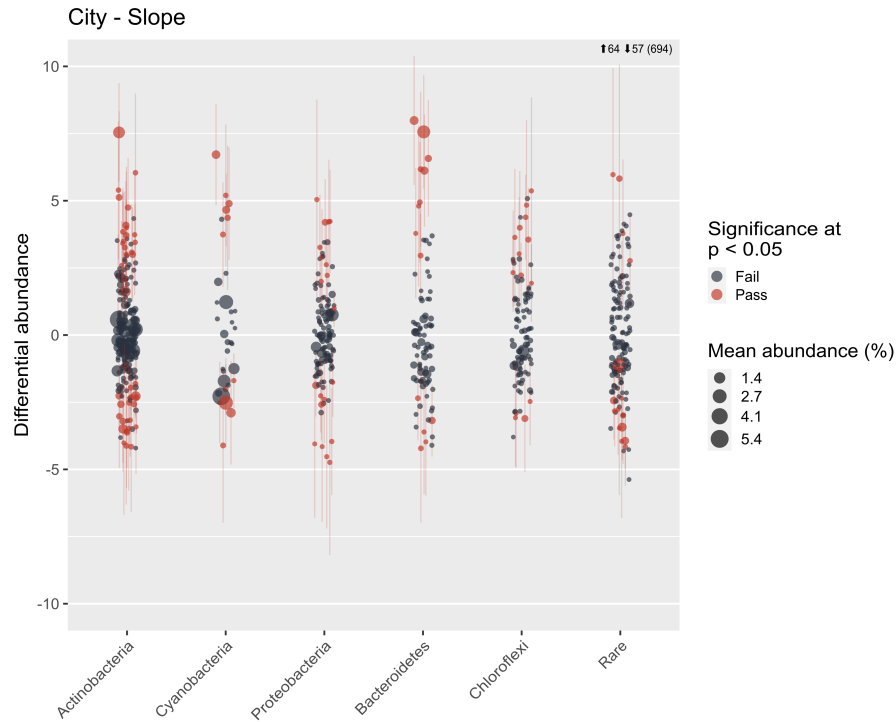


Figure S2. Detection of differentially abundant OTUs between the city and slope samples using a beta-binomial regression model (corncob). Each circle denotes a single OTU, and its size is its average relative abundance across all samples. The x-axis shows the classification of each OTU, whereas the y-axis denotes the difference in the modelled mean relative abundance between the city and slope samples. 'Rare' denotes all OTUs belonging to phyla that account for less than 5% of the relative abundance. Red circles are OTUs that show significant differential abundance at the $P < 0.05$ level. Numbers next to the arrows (top right) indicate the number of significant differentially abundant OTUs that are either more abundant (up arrow) or less abundant (down arrow) in the city samples compared to the slope samples. The number in brackets indicates the total number of OTUs tested.