

PERMANOVA

Permutational MANOVA

Resemblance worksheet

Name: ITS2_Sydney_clade_rm1_stand_sqrt_resem
 Data type: Similarity
 Selection: All
 Standardise Samples by Total
 Transform: Square root
 Resemblance: S17 Bray Curtis similarity

Sums of squares type: Type III (partial)
 Fixed effects sum to zero for mixed terms
 Permutation method: Unrestricted permutation of raw data
 Number of permutations: 999

Factors

Name	Type	Levels
Site	Fixed	3
Habitat	Fixed	5
Season	Fixed	2

PAIR-WISE TESTS

Term 'SitexHabitatxSeason' for pairs of levels of factor 'Site'

Within level 'Hard coral' of factor 'Habitat'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	Denominator	is 0	
Site 1, Site 3	Denominator	is 0	
Site 2, Site 3	Denominator	is 0	

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	0
Site 1, Site 3	1*Res	0
Site 2, Site 3	1*Res	0

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	100		
Site 2	100	100	
Site 3	100	100	100

Within level 'Hard coral' of factor 'Habitat'
 Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	Denominator	is 0	
Site 1, Site 3	Denominator	is 0	
Site 2, Site 3	Denominator	is 0	

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	0
Site 1, Site 3	1*Res	0
Site 2, Site 3	1*Res	0

Average Similarity between/within groups

	site 1	Site 2	Site 3
Site 1	100		
Site 2	100	100	
site 3	100	100	100

Within level 'Soft coral' of factor 'Habitat'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	Denominator is 0		
Site 1, Site 3	Denominator is 0		
Site 2, Site 3	Denominator is 0		

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	0
Site 1, Site 3	1*Res	0
Site 2, Site 3	1*Res	0

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	100		
Site 2	100	100	
Site 3	100	100	100

Within level 'Soft coral' of factor 'Habitat'
 Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 2, Site 3	Denominator is 0		

Denominators

Groups	Denominator	Den.df
Site 2, Site 3	1*Res	0

Average Similarity between/within groups

	Site 2	Site 3
Site 2	100	
Site 3	100	100

Within level 'Water' of factor 'Habitat'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	2.7555	0.035	15
Site 1, Site 3	66.381	0.023	4
Site 2, Site 3	4.7817	0.029	8

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	6
Site 1, Site 3	1*Res	6
Site 2, Site 3	1*Res	6

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	97.068		
Site 2	68.616	70.554	
Site 3	2.7696	45.683	100

Within level 'Water' of factor 'Habitat'
 Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	39.392	0.027	8
Site 1, Site 3	65.705	0.036	6
Site 2, Site 3	4.4795	0.031	25

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	6

Site 1, Site 3 1*Res 5
 Site 2, Site 3 1*Res 5

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	100		
Site 2	20.469	94.845	
Site 3	0	87.166	96.363

Within level 'Sediment' of factor 'Habitat'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	6.6582	0.106	7
Site 1, Site 3	3.0509	0.054	35
Site 2, Site 3	1.3389	0.386	15

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	4
Site 1, Site 3	1*Res	5
Site 2, Site 3	1*Res	5

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	79.026		
Site 2	12.938	81.588	
Site 3	39.236	68.184	61.258

Within level 'Sediment' of factor 'Habitat'
 Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	Denominator is 0		
Site 1, Site 3	0.98258	0.796	4
Site 2, Site 3	2.2468	0.064	11

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	1
Site 1, Site 3	1*Res	3
Site 2, Site 3	1*Res	4

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	0		
Site 2	0	100	
Site 3	42.461	11.161	33.469

Within level 'Macroalgae' of factor 'Habitat'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	1.2275	0.317	35
Site 1, Site 3	1.797	0.052	25
Site 2, Site 3	1.4355	0.229	15

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	6
Site 1, Site 3	1*Res	6
Site 2, Site 3	1*Res	6

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	32.62		
Site 2	39.533	49.438	

Site 3 44.825 61.452 82.493

Within level 'Macroalgae' of factor 'Habitat'

Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Site 1, Site 2	0.5321	0.452	11
Site 1, Site 3	1.6027	0.244	18
Site 2, Site 3	1.1761	0.393	4

Denominators

Groups	Denominator	Den.df
Site 1, Site 2	1*Res	4
Site 1, Site 3	1*Res	5
Site 2, Site 3	1*Res	3

Average Similarity between/within groups

	Site 1	Site 2	Site 3
Site 1	33.676		
Site 2	49.903	44.392	
Site 3	39.619	65.966	79.258

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Season	Fixed	2

PAIR-WISE TESTS

Term 'SitexHabitatxSeason' for pairs of levels of factor 'Habitat'

Within level 'Site 1' of factor 'Site'
 Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Hard coral, Soft coral	Denominator is 0		
Hard coral, water	1	1	1
Hard coral, Sediment	2.2633	0.154	4
Hard coral, Macroalgae	2.6657	0.03	8
Soft coral, water	66.381	0.033	4
Soft coral, Sediment	12.769	0.026	8
Soft coral, Macroalgae	2.1006	0.027	8
water, Sediment	2.3019	0.104	8
water, Macroalgae	2.5992	0.035	15
Sediment, Macroalgae	2.1964	0.053	35

Denominators

Groups	Denominator	Den.df
Hard coral, Soft coral	1*Res	6
Hard coral, water	1*Res	6
Hard coral, Sediment	1*Res	5
Hard coral, Macroalgae	1*Res	6
Soft coral, water	1*Res	6
Soft coral, Sediment	1*Res	5
Soft coral, Macroalgae	1*Res	6
water, Sediment	1*Res	5
water, Macroalgae	1*Res	6
Sediment, Macroalgae	1*Res	5

Average Similarity between/within groups

	Hard coral	Soft coral	water	Sediment	Macroalgae
Hard coral	100				
Soft coral	0	100			
water	98.534	2.7696	97.068		
Sediment	82.474	0	81.436	79.026	
Macroalgae	26.458	43.263	27.938	23.669	32.62

Within level 'Site 1' of factor 'Site'
 Within level 'Bleaching' of factor 'Season'

Unique

Groups	t	P(perm)	perms
Hard coral, water	Denominator is 0		
Hard coral, Sediment	Denominator is 0		
Hard coral, Macroalgae	1.6941	0.402	2
water, Sediment	Denominator is 0		
water, Macroalgae	1.6941	0.399	2
Sediment, Macroalgae	0.75762	1	3

Denominators

Groups	Denominator	Den.df
Hard coral, water	1*Res	0
Hard coral, Sediment	1*Res	0
Hard coral, Macroalgae	1*Res	6
water, Sediment	1*Res	0
water, Macroalgae	1*Res	6
Sediment, Macroalgae	1*Res	3

Average Similarity between/within groups

	Hard coral	water	Sediment	Macroalgae
Hard coral	100			
water	100	100		
Sediment	100	100	0	
Macroalgae	53.713	53.713	53.713	33.676

Within level 'Site 2' of factor 'Site'

Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Hard coral, Soft coral	Denominator is 0		
Hard coral, water	2.9243	0.032	8
Hard coral, Sediment	11.526	0.033	6
Hard coral, Macroalgae	3.0722	0.032	8
Soft coral, water	4.7817	0.028	8
Soft coral, Sediment	1.1952	0.421	2
Soft coral, Macroalgae	1.7167	0.15	4
water, Sediment	2.97	0.078	25
water, Macroalgae	1.246	0.234	35
Sediment, Macroalgae	0.96491	0.523	15

Denominators

Groups	Denominator	Den.df
Hard coral, Soft coral	1*Res	6
Hard coral, water	1*Res	6
Hard coral, Sediment	1*Res	5
Hard coral, Macroalgae	1*Res	6
Soft coral, water	1*Res	6
Soft coral, Sediment	1*Res	5
Soft coral, Macroalgae	1*Res	6
water, Sediment	1*Res	5
water, Macroalgae	1*Res	6
Sediment, Macroalgae	1*Res	5

Average Similarity between/within groups

	Hard coral	soft coral	water	Sediment	Macroalgae
Hard coral	100				
Soft coral	0	100			
water	66.953	45.683	70.554		
Sediment	11.859	90.794	53.253	81.588	
Macroalgae	26.167	64.655	53.706	67.248	49.438

Within level 'Site 2' of factor 'Site'

Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Hard coral, Soft coral	Denominator is 0		
Hard coral, water	39.392	0.039	8
Hard coral, Sediment	Denominator is 0		
Hard coral, Macroalgae	3.9981	0.068	4

Soft coral, water	5.7003	0.031	8
Soft coral, Sediment	Denominator is 0		
Soft coral, Macroalgae	1.633	0.322	2
Water, Sediment	32.947	0.058	11
Water, Macroalgae	0.72554	0.607	15
Sediment, Macroalgae	3.4548	0.354	2

Denominators

Groups	Denominator	Den.df
Hard coral, Soft coral	1*Res	6
Hard coral, water	1*Res	6
Hard coral, Sediment	1*Res	4
Hard coral, Macroalgae	1*Res	4
Soft coral, water	1*Res	6
Soft coral, Sediment	1*Res	4
Soft coral, Macroalgae	1*Res	4
Water, Sediment	1*Res	4
Water, Macroalgae	1*Res	4
Sediment, Macroalgae	1*Res	2

Average Similarity between/within groups

	Hard coral	Soft coral	Water	Sediment	Macroalgae
Hard coral	100				
Soft coral	0	100			
water	20.469	88.486	94.845		
Sediment	0	0	0	100	
Macroalgae	35.736	72.196	73.485	0	44.392

Within level 'Site 3' of factor 'Site'

Within level 'Pre-bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
Hard coral, Soft coral	Denominator is 0		
Hard coral, water	Denominator is 0		
Hard coral, Sediment	3.828	0.034	8
Hard coral, Macroalgae	13.709	0.021	6
Soft coral, water	Denominator is 0		
Soft coral, Sediment	2.2688	0.143	4
Soft coral, Macroalgae	1.1846	0.392	2
Water, Sediment	2.2688	0.151	4
Water, Macroalgae	1.1846	0.448	2
Sediment, Macroalgae	2.1522	0.07	15

Denominators

Groups	Denominator	Den.df
Hard coral, Soft coral	1*Res	6
Hard coral, water	1*Res	6
Hard coral, Sediment	1*Res	6
Hard coral, Macroalgae	1*Res	6
Soft coral, water	1*Res	0
Soft coral, Sediment	1*Res	6
Soft coral, Macroalgae	1*Res	6
Water, Sediment	1*Res	6
Water, Macroalgae	1*Res	6
Sediment, Macroalgae	1*Res	6

Average Similarity between/within groups

	Hard coral	Soft coral	Water	Sediment	Macroalgae
Hard coral	100				
Soft coral	0	100			
water	0	100	100		
Sediment	44.112	65.986	65.986	61.258	
Macroalgae	0	90.103	90.103	60.706	82.493

Within level 'Site 3' of factor 'Site'

Within level 'Bleaching' of factor 'Season'

Groups	t	P(perm)	Unique perms
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Hard coral, Soft coral	Denominator is 0		
Hard coral, Water	65.705	0.029	6
Hard coral, Sediment	2.1971	0.141	4
Hard coral, Macroalgae	11.4	0.028	6
Soft coral, Water	1.1952	0.432	2
Soft coral, Sediment	2.1747	0.031	8
Soft coral, Macroalgae	1.1952	0.43	2
Water, Sediment	1.8164	0.07	25
Water, Macroalgae	1.0749	0.597	2
Sediment, Macroalgae	1.7506	0.071	25

Denominators

Groups	Denominator	Den.df
Hard coral, Soft coral	1*Res	6
Hard coral, Water	1*Res	5
Hard coral, Sediment	1*Res	6
Hard coral, Macroalgae	1*Res	5
Soft coral, Water	1*Res	5
Soft coral, Sediment	1*Res	6
Soft coral, Macroalgae	1*Res	5
Water, Sediment	1*Res	5
Water, Macroalgae	1*Res	4
Sediment, Macroalgae	1*Res	5

Average Similarity between/within groups

	Hard coral	Soft coral	Water	Sediment	Macroalgae
Hard coral	100				
Soft coral	0	100			
Water	0	98.182	96.363		
Sediment	42.461	42.656	42.688	33.469	
Macroalgae	0	89.629	88.101	39.49	79.258