

Table 1: Subset of Possible Combinations for re-classifying Sequences by Incorporating Ecological Factors

Spatial	Temporal	Congener	Confamilial	Congeners	Confamilials	Condition	Return	Rank
1	1	1	1	0	0	A.1	Input	Species
1	1	1	1	1	0	A.2	Input	Species
1	1	1	1	0	1	A.3	Input	Species
1	1	1	1	1	1	A.4	Input	Species
1	1	1	0	0	0	A.5	Input	Species
1	1	1	0	1	0	A.6	Input	Species
1	1	0	1	0	0	A.7	Input	Species
1	1	0	1	0	1	A.8	Input	Species
1	1	0	0	0	0	A.9	Input	Species
1	0	1	1	0	0	B.1	Congener	Species
1	0	1	1	0	1	B.2	Congener	Species
1	0	1	0	0	0	B.3	Congener	Species
1	0	1	1	1	0	C.1	Congener	Genus
1	0	1	1	1	1	C.2	Congener	Genus
1	0	1	0	1	0	C.3	Congener	Genus
1	0	0	1	0	0	D.1	Confamilial	Species
1	0	0	1	0	1	E.1	Confamilial	Family
1	0	0	0	0	0	F.1	Input	Species
0	0	1	1	0	0	G.1	Congener	Species
0	0	1	1	0	1	G.2	Congener	Species
0	0	1	0	0	0	G.3	Congener	Species
0	0	1	1	1	0	H.1	Congener	Genus
0	0	1	1	1	1	H.2	Congener	Genus
0	0	1	0	1	0	H.3	Congener	Genus
0	0	0	1	0	0	I.1	Confamilial	Species
0	0	0	1	0	1	J.1	Confamilial	Family

Note, for both ‘Congener’ and ‘Confamilial’ (*in the singular*) ‘1’ denotes that a species is present; in a sense the genus is monotypic in space and time. For both ‘Congeners’ and ‘Confamilials’ (*in the plural*), ‘1’ denotes that two or more species are present; ‘Confamilial’ again representing a monotypic entity in space and time.

Spatial == 1 & Temporal == 1 ~ **A**

Spatial == 1 & Temporal == 0 & Congener == 1 ~ **B**

*The temporal dimension is now buffered and a form of **A** is employed*

Spatial == 1 & Temporal +/- Buffer == 1 ~ **X**

Spatial == 1 & Temporal == 0 & Congeners >= 2 ~ **C**

Spatial == 1 & Temporal == 0 & Congeners == 0 & Confamilial == 1 ~ **D**

Spatial == 1 & Temporal == 0 & Congeners == 0 & Confamilial >= 2 ~ **E**

Spatial == 1 & Temporal == 0 & Congener|s == 0 & Confamilial|s == 0 ~ **F**

Spatial == 0 & Temporal == 0 & Congener == 1 ~ **G**

Spatial == 0 & Temporal == 0 & Congeners == 1 ~ **H**

Spatial == 0 & Temporal == 0 & Confamilial == 1 ~ **I**

Spatial == 0 & Temporal == 0 & Confamilials == 1 ~ **J**

While the overall order matters, **X** in particular may significantly alter conclusions.