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TABLE 1. Presence-absence matrix of St. Bathans Member conifers.

TAXON	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
Acmopyle		1				1																								1		1			1										1			1				1						
Araucariaceae																																1												1				1	1									
Agathis-like																																1								1																		
Dacrycarpus		1							1		1		1								1			1	1			1		1	1	1			1					1	1	1			1	1	1		1	1	1	1	1		1		1		1	1
Dacrydium																												1		1																													
Greylackia									1																													1						1									1					
Lepidothamnus		1																																														1										
Papuacedrus																												1																														
Podocarpus alwyniae																												1																														
Podocarpus sp. "Mata Ck"		1																												1	1	1			1					1												1		1		1		
Podocarpus sp. "sinuous"																																																							1		
Prumnopitys taxifolia		1	1									1				1														1		1			1													?						1				
Kakahuia		1																														1																										
Pterostoma						1			1																					1					1	1	1	1		1					1		1	1	1									
Retrophyllum		1	1	1		1		1	1			1	1				1	1	1	1				1	1				1	1						1	1			1	1	1			1	1	1	1	1	1	1	1		1				1	1
Taxaceae		1																																																								

TABLE 2. Presence-absence matrix of St. Bathans Member monocot dispersed cuticle taxa.

	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-Mo-AAI												1																		1		1																													
CUT-Mo-EFE											1																																																		
CUT-Mo-EHB									1																																																				
CUT-Mo-FJE									1																																																			
CUT-Mo-FEF																															1	1																													
CUT-Mo-FEG																																					1																								
CUT-Mo-FFA																																1																													

TABLE 3. Presence-absence matrix of St. Bathans Member Lauraceae dispersed cuticle taxa.

	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-L-DBD	1									1		1	1			1										1				1	1	1	1						1				1		1	1						1				1				
CUT-L-DBH		1																												1			1																										
CUT-L-DCA		1						1																							1																					1	1						
CUT-L-DCC		1			1																											1																												
CUT-L-DEC					1			1	1																	1				1		1			1		1	1	1			1	1		1		1				1	1	1	1				
CUT-L-DEJ																																1										1																
CUT-L-DFA									1			1				1																1				1	1	1	1	1								1	1	1		1		1				1	1
CUT-L-DFI				1				1	1																					1					1	1													1				1		1				
CUT-L-DGA	1	1				1		1							1	1		1		1										1					1				1	1	1	1			1														
CUT-L-DGD					1																											1																			1								
CUT-L-ECB	1	1	1		1	1		1					1					1			1	1	1				1	1		1	1	1	1		1				1		1	1	1	1	1			1					1	1	1	1		
CUT-L-EEB																																							1																				
CUT-L-EED	1													1																		1			1																								
CUT-L-EEF																	1	1												1							1																							
CUT-L-EEG									1				1																	1									1	1	1	1																		
CUT-L-EEH		1				1					1				1																	1			1			1																							
CUT-L-EHD												1																															1																
CUT-L-EHE						1																								1																														
CUT-L-EHG												1																									1				1																		
CUT-L-FJA																													1									1																						
CUT-L-FJD													1																																														

TABLE 4. Presence-absence matrix of St. Bathans Member Myrtaceae dispersed cuticle taxa.

	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-M-DID	1	1	1	1			1				1		1	1			1		1	1	1	1	1	1	1		1			1	1		1			1	1		1			1				1					1							1	1
CUT-M-DIE	1	1			1								1														1			1	1		1													1		1												
CUT-M-EFJ																																																											
CUT-M-EGF								1															1							1																														
CUT-M-EGG												1																		1	1		1																												
CUT-M-EGH							1																																																					
CUT-M-FJJ							1																			1																																		

TABLE 5. Presence-absence matrix of St. Bathans Member Proteaceae dispersed cuticle taxa.

	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-P-003							1						1																	1							1		1																					
CUT-P-015																														1		1	1															1					1	1					
CUT-P-017									1			1			1															1		1			1		1	1				1																		
CUT-P-018						1		1		1																				1										1				1																
CUT-P-019																														1					1																								
CUT-P-020									1																			1			1																													
CUT-P-021		1																																																										
CUT-P-022		1				1	1	1	1	1									1											1			1				1	1	1	1	1	1	1		1		1	1	1	1		1	1	1	1				1
CUT-P-023			1	1	1							1						1										1			1																													
CUT-P-EHJ						1																																																					
CUT-P-JJF									1																																																		

TABLE 6. Presence-absence matrix of St. Bathans Member ‘other angiosperm’ dispersed cuticle taxa.

TAXON	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-Z-AAB																														1																														
CUT-Z-AAC						1												1												1		1	1		1		1			1	1			1										1					
CUT-Z-AAD		1						1																																		1			1													
CUT-Z-AAE							1																							1																													
CUT-Z-AAF																														1																													
CUT-Z-ABA			1			1		1	1				1													1				1	1						1	1					1					1	1	1		1	1						
CUT-Z-ABB									1																	1				1								1		1	1	1			1		1			1	1	1	1					
CUT-Z-ABC												1																		1		1			1		1	1	1																				
CUT-Z-ABD	1				1	1		1	1	1	1	1	1	1		1		1				1			1	1	1	1	1	1	1	1	1		1	1			1	1	1	1	1	1	1		1	1	1	1	1	1		1		1			
CUT-Z-ABF																												1		1		1										1						1				1	1		1		1			
CUT-Z-ABG																														1			1																										
CUT-Z-ABH																														1							1		1																				
CUT-Z-ABI		1																													1																												
CUT-Z-ACA						1			1																								1																										
CUT-Z-ACC		1																														1			1																								
CUT-Z-ACD																														1																													
CUT-Z-ACJ																														1																													
CUT-Z-ADA																															1																												
CUT-Z-ADD																																1	1																										
CUT-Z-ADE												1																		1			1																										
CUT-Z-ADF			1																																																								
CUT-Z-ADJ		1																										1																															
CUT-Z-AJC						1			1																					1																													
CUT-Z-AJD		1							1												1									1			1					1		1		1	1										1						
CUT-Z-AJE		1																																																									
CUT-Z-AJG		1																																																									
CUT-Z-AJH		1										1																					1																											
CUT-Z-AJI		1																												1																													
CUT-Z-AJJ																														1																													
CUT-Z-CAI								1	1																																				1														
CUT-Z-CBI								1													1																																							
CUT-Z-CCD						1		1																	1					1		1					1	1										1		1			1							

TAXON	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-Z-CCE			1			1			1			1									1							1		1					1																	1							
CUT-Z-CDC					1																																																							
CUT-Z-CDD					1																												1									1							1					1					
CUT-Z-CDE						1												1						1														1	1		1			1		1			1	1	1		1					
CUT-Z-CDH								1																																																			
CUT-Z-CDJ						1			1																																																		
CUT-Z-CEB								1																						1																													
CUT-Z-CEF												1																		1			1																											
CUT-Z-CEI													1																																														
CUT-Z-CFA						1																		1						1		1			1			1	1									1	1										
CUT-Z-CFC		1		1																																																							
CUT-Z-CFF									1																								1																											
CUT-Z-CFJ									1																																																		
CUT-Z-CGB								1	1			1																		1	1	1																1					1							
CUT-Z-CGC																														1																														
CUT-Z-CGE									1				1																	1							1		1								1													
CUT-Z-CGG												1																1			1																													
CUT-Z-CGJ									1																																																		
CUT-Z-CJI									1																														1																					
CUT-Z-DDG		1																													1																													
CUT-Z-DDH																														1			1				1	1											1										
CUT-Z-ECF				1																																																								
CUT-Z-ECG																					1																																							
CUT-Z-ECH																																1																												
CUT-Z-EDB														1																			1									1																	
CUT-Z-EDD																																	1																											
CUT-Z-EDH													1																			1																													
CUT-Z-EEA																														1																														
CUT-Z-EGA														1																							1		1																					
CUT-Z-EGB		1																1										1																																
CUT-Z-EIC																					1		1																													1								
CUT-Z-EID																															1																													
CUT-Z-FCC									1																												1																			1				

TAXON	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-Z-FAA			1																																																										
CUT-Z-FAE																												1																																
CUT-Z-FAJ																																					1																							
CUT-Z-FBB																																																				1							
CUT-Z-FBC																																																								1			
CUT-Z-FBD																																																		1									
CUT-Z-FBE																																																							1			
CUT-Z-FBG																							1																																					
CUT-Z-FBH																																																					1						
CUT-Z-FBI																																																				1							
CUT-Z-FCA																																															1												
CUT-Z-FCB																																																								1			
CUT-Z-FCD																																																							1			
CUT-Z-FCJ																										1																																		
CUT-Z-FEC																														1																														
CUT-Z-FEE is P-FEE																															1																													
CUT-Z-FFB																																	1																											
CUT-Z-FFC																																																							1			
CUT-Z-FFD																																1																											
CUT-Z-FFE																																					1																							
CUT-Z-FFG																																										1																		
CUT-Z-FGJ																																1																											
CUT-Z-FJF																																	1																											
CUT-Z-FJG							1																																																					
CUT-Z-FJH																																								1																				
CUT-Z-FJI																																	1																											
CUT-Z-GAH																																																												
CUT-Z-GAI																																																												
CUT-Z-GBA																																																												
CUT-Z-GBB																																																												
CUT-Z-GBJ																																																												
CUT-Z-GDC																												1																																	

TAXON	Mata-01	Mata-03	Mata-06	Mata-18	Mata-23	BL-01	BL-03	BL-04	BL-05	BL-06	BL-07	BL-08	BL-09	BL-14	BL-15	BL-16	BL-17	BL-18	BL-19	BL-21	BL-22	BL-24	BL-25	BL-26	BL-27	BL-28	BL-29	BL-30	BL-31	BL-32	BL-33	GL-01	GL-02	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11	GL-12	GL-16	GL-17	GL-18	GL-19	GL-20	GL-21	GL-22	GL-23	GL-24	GL-25	GL-26	GL-27	GL-28	GL-29	GL-30	GL-31	GL-32
CUT-Z-JIB																														1																														
CUT-Z-JIC																															1																													
CUT-Z-JIF	1	1							1																						1											1																		
CUT-Z-JII																														1																														
CUT-Z-JIJ																														1																														

TABLE 7. Presence-absence matrix of St. Bathans Member leaf parataxa.

Leaf taxon	BL-32	BL-30	BL-15	GL-01	GL-02	GL-03	GL-04	GL-05	Mata-01
Palm fronds		1							
MANU-1									1
MANU-3				1					
MANU-6 var C *Nothofagus azureus*		1				1			
MANU-13				1					1
MANU-15		1		1				1	
MANU-17				1					
MANU-33				1					
MANU-35									1
MANU-46		1							
MANU-49			1						
MANU-50				1					
MANU-51				1					
MANU-52			1						
MANU-53				1					
MANU-54								1	
MANU-55	1								
MANU-56				1					
MANU-57								1	
MANU-58						1			

TABLE 8. Palynological data for St. Bathans Member samples. Percentage counts of main taxa are given for GL-3 and GL-05. For all other samples, presence is indicated by an asterix (*).

Pollen Taxon	BL-09	BL-15	BL-17	BL-18	BL-19	BL_20	BL-21	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11
Baculatisporites	*				*				*						
Cyathidites sp.	*					*	*	*	*			*	*	*	
Foveotriletes verrucosus		*				*		*	*			*	*		*
Ischyosporites gremius															*
Monolete ferns total								6%							
Monolites alveolatus								*				*			
Polypodiisporites radiatus	*	*	*						*	*					
Polypodiisporites sp.	*	*	*	*	*		*	*	*	*		*	*		
Polypodiaceoisporites tumulatus												*			
Periporopollenites polyoratus								*							
Trilete ferns total								1%							
Verrucosisporites kopukuensis								*							
Araucariacites australis			*			*									
Dacrycarpites australiensis	*		*		*		*	*	*		*		*		
Dacrydiumites praecupressinoides	*		*											*	
Microalatidites paleogenicus		*				*	*	*	*	1%					
Microcachryidites antarcticus						*									
Podocarpidites sp.								1%		2%					
Podocarpidites ellipticus										*					
Podocarpidites exiguus								*							
Podocarpidites puteus	*		*	*	*	*	*			*			*		
Arecipites sp.	*	*	*		*	*	*			5 %		*		*	*
Beaupreaidites elegansiformis									*						
Bluffopollis sp.									*						
Cranwellia striata	*	*	*		*	*	*		*	1 %				*	
Cupanieidites reticularis	*	*	*	*	*		*	*							
Elaeocarpus/Cunoniaceae	*		*		*									*	
Equisetosporites notensis	*														

Pollen Taxon	BL-09	BL-15	BL-17	BL-18	BL-19	BL_20	BL-21	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11
Ericipites longisulcatus	*							*	*	*					
Glencopollis ornatus			*												
Gothanipollis bassensis			*												
Gothanipollis gothani			*							*					
Gothanipollis perplexus			*									*			
Lateropora glabra								*							
Lilliacidites sp.	*		*		*	*	*	*		*			*	*	
Malvacearumpollis mannanensis						*				10%					
Malvacipollis subtilis	*	*	*			*	*	*		*		*			*
Margocolporites spheripunctatus			*	*		*			*						
Milfordia homeopunctata	*														
Monogemmites gemmatus	*														
Myricipites harrisii	*	*	*		*	*	*	*	*	1 %	*	*	*	*	
Myrtaceidites sp.	*	*	*	*	*	*	*		*	39 %		*	*	*	
Nothofagidites asperus	*	*	*			*	*	1%	*						
Nothofagidites cranwelliae	*	*	*	*	*	*	*	80 %	*	26 %	*	*	*	*	*
Nothofagidites falcatus	*		*	*		*	*	3 %				*			*
Nothofagidites lachlaniae	*	*	*			*	*	6 %	*	1%				*	
Nothofagidites matauraensis	*		*			*		*		*		*		*	
Nothofagidites spinosus	*			*						*					
Nyssapollenites endobalteus							*								
Palaeocoprosmadites zelandiae								*							
Parsonsidites psilatus								*	*						
Proteacidites obscurus				*		*		*		*	*			*	
Proteacidites pseudomoides	*	*			*	*	*		*	*		*	*	*	
Proteacidites stratosus		*													
Proteacidites symphyonemoides														*	
Proteacidites tenuinexinus		*	*			*			*	*		*			
Proteacidites spp. Total										5 %					
Rhoipites abnormis								*							

Pollen Taxon	BL-09	BL-15	BL-17	BL-18	BL-19	BL_20	BL-21	GL-03	GL-04	GL-05	GL-07	GL-08	GL-09	GL-10	GL-11
Rhoipites alveolatus	*	*	*	*	*	*	*			%			*	*	*
Rhoipites aralioides						*									
Rhoipites titokioides	*			*				*		*					
Roxburghpollis giganteus								*	*						
Rubipollis oblatus		*							*						
Striatricolporites pseudostriatus							*								
Tetracolporites ixerboides				*				*							
Tricolpites reticulatus	*									*		*			
Triporopollenites ambiguus						*									