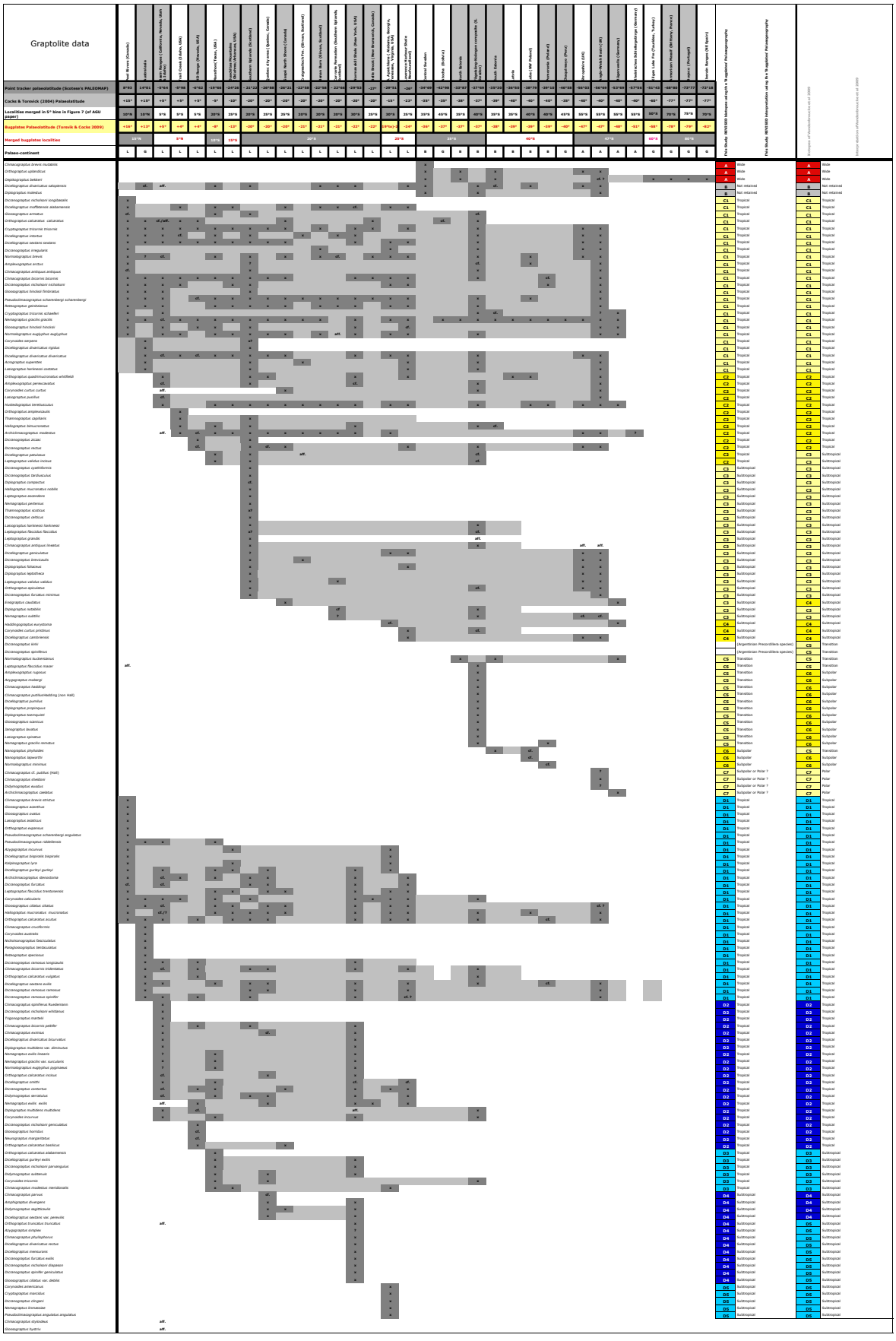

Graptolite data

	Red Brook (Canada)	Laurentia	Mills Ridge (California, Nevada, Utah, Idaho)	Red Creek (Idaho, USA)	Wilberns (Nevada, USA)	Southern Texas, USA	Laurentia, Mexico (Sierra Madre, Sonora, USA)	Southern Uplands (Scotland)	Lobster Cove (Quebec, Canada)	Road Brook (Canada)	Afonveirdrin (Gwynedd, Scotland)	Main Basin (Shropshire, Scotland)	Lake Simcoe (Southern Ontario, Canada)	Dobrotiva (Bohemia, Czech Republic)	Elk Brook (Rose Brook, Canada)	Laurentia / Alabama, Georgia, Kentucky, Virginia, USA	Laurentia / Alabama, Georgia, Kentucky, Virginia, USA	Laurentia / Southern United States	Laurentia / Southern United States	Scania (Sweden)	South Estonia	South Estonia	Jelole	Jelole (NW Poland)	Horoszowice (Poland)	Podwilczany (Poland)	Dob Hill (UK)	Wenlock Edge (Shropshire, UK)	Upper Wenlock Beds (UK)	Upper Wenlock Beds (UK)	Schalkenbach (Germany)	Schalkenbach (Germany)	Eğen Lake Fm (Turkiye, Turkey)	Armorican Massif (Brittany, France)	Sepino / (Thailand)	Sepino (Molise (NE Spain)	This Study: NEW/OLD Interpretation using its to highlight Palaeogeography	This Study: NEW/OLD Interpretation using its to highlight Palaeogeography	Antoine et al. (2009)	Antoine et al. (2009)
Point tracker palaeolatitude (Scotese's PALEOMAP)	8°N	14°N	4°N	4°N	4°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N	10°N				
Cocks & Torsvik (2004) Palaeolatitude	+15°	+15°	+5°	+5°	+5°	-5°	-10°	-20°	-20°	-20°	-20°	-20°	-20°	-20°	-20°	-15°	-15°	-25°	-25°	-25°	-40°	-40°	-40°	-40°	-35°	-40°	-40°	-40°	-40°	-40°	-40°	-40°	-40°	-77°	-77°	-77°	-77°				
Localities merged in S° bins in Figure 7 (of AGU paper)	10°N	10°N	5°N	5°N	5°N	20°S	20°S	20°S	20°S	20°S	20°S	20°S	20°S	20°S	20°S	20°S	20°S	35°S	35°S	35°S	35°S	35°S	35°S	40°S	40°S	40°S	40°S	40°S	40°S	40°S	40°S	40°S	40°S	70°S	70°S	70°S	70°S				
Bugglites Palaeolatitude (Torvik & Cocke 2009)	+14°	+14°	+9°	+4°	+4°	-8°	-10°	-20°	-20°	-20°	-21°	-21°	-21°	-22°	-22°	-18°N/+2°	-24°	-24°	-27°	-37°	-37°	-37°	-39°	-39°	-39°	-39°	-40°	-47°	-47°	-48°	-51°	-58°	-79°	-79°	-79°	-82°				
Merged bugglites localities	15°N			5°N		10°S	10°S				20°S					25°N		35°S						40°S						47°S				60°S		80°S						
Palaeo-continent	L	G	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	B	B	B	B	B	B	B	B	G	A	A	A	A	A	G	G	G	G	G				
Climacograptus brevis mutabilis																		x																				A	Wide	A	Wide
Orthograptus spiniferulus																		x		x		x						x		x								A	Wide	A	Wide
Diplograptus bekkeri																		x		x		x								cf. ?				x		x	x	A	Wide	A	Wide
Dicellograptus divaricatus salopensis		cf.	aff.			x		x			x	x	x	x		x		x		x	cf.		x					x										B	Not retained	B	Not retained
Diplograptus modestus																		x		x								x										B	Not retained	B	Not retained
Dicranograptus nicholsoni longibasalis	x																																					C1	Tropical	C1	Tropical
Dicellograptus muffenae alabamensis	x			x		x	x			x		x	x	x		x	x																					C1	Tropical	C1	Tropical
Glossograptus armatus	cf.					x		x																														C1	Tropical	C1	Tropical
Orthograptus calcaratus calcaratus	x	x	cf./aff.	x						x					x					cf.																			C1	Tropical	C1	Tropical
Cryptograptus tricornis tricornis	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x			x								x		x									C1	Tropical	C1	Tropical
Dicellograptus intortus	x	x	cf.	x	x	x	x	x	x	x		x	x		x					x								x		x									C1	Tropical	C1	Tropical
Dicellograptus sextans sextans	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x			x								x		x									C1	Tropical	C1	Tropical
Dicranograptus irregularis	x													x		x				x								x		x								C1	Tropical	C1	Tropical
Normalograptus brevis	x	?	cf.			x		x		x		x	cf.		x		x			x				x				x		x									C1	Tropical	C1	Tropical
Amplexograptus arctus	x							?												x				cf.				x		x								C1	Tropical	C1	Tropical
Climacograptus antipus antipus	cf.							?												x								x		x								C1	Tropical	C1	Tropical
Climacograptus bicornis bicornis	x	x	x	x	x	x	x	x		x	x				x	x	x			x					cf.			x		x									C1	Tropical	C1	Tropical
Dicranograptus nicholsoni nicholsoni	x	x	x				x	x								x	x								x			x										C1	Tropical	C1	Tropical
Glossograptus hincksii fimbriatus	x	x	x					x																				x										C1	Tropical	C1	Tropical
Pseudoklimacograptus scharenbergi scharenbergi	x	x	x			cf.	x	x		x	x	x	x	x	x	x	x			x				x				x										C1	Tropical	C1	Tropical
Retiograptus geinitzianus	x	x	x			x	x	x		x	x		x		x					x								x										C1	Tropical	C1	Tropical
Cryptograptus tricornis schaefer	x																			cf.								x		x								C1	Tropical	C1	Tropical
Normalograptus gracilis gracilis	x	x	cf.	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x	x	x	x	x	x	x	x		x								C1	Tropical	C1	Tropical
Glossograptus hincksii hincksii	x			x	x	x	x	x		x	x	x		x		x	x			cf.								x		x								C1	Tropical	C1	Tropical
Normalograptus euglyphus euglyphus	x			x		x	x	x		x	x		x	x	aff.	x	x			x								x		x								C1	Tropical	C1	Tropical
Corynoides serpens		x						?																														C1	Tropical	C1	Tropical
Dicellograptus divaricatus rigidus		x						?												x																		C1	Tropical	C1	Tropical
Dicellograptus divaricatus divaricatus		x	cf.	x	cf.	x	x	x		x	x									x								x		x								C1	Tropical	C1	Tropical
Acrograptus superstes		x						x				x								x																		C1	Tropical	C1	Tropical
Lasiograptus harknessi costatus		x						x												x																		C1	Tropical	C1	Tropical
Orthograptus quadrimucronatus whitfieldi		x						x		x					x								x		x													C2	Tropical	C2	Tropical
Amplexograptus perexcavatus		cf.						x							cf.					x																		C2	Tropical	C2	Tropical
Corynoides curtus curtus			aff.					x		x										x																		C2	Tropical	C2	Tropical
Lasiograptus pusillus			cf.					x																														C2	Tropical	C2	Tropical
Hustedograptus teretiusculus						x	x	x	x	x	x	x	x	x		x	x			x				x	x			x		x								C2	Tropical	C2	Tropical
Orthograptus amplexicaulis				x																																		C2	Tropical	C2	Tropical
Thamnograptus zippelianus				x																																		C2	Tropical	C2	Tropical
Holograptus bimucronatus				x		x		x							x					x	cf.																	C2	Tropical	C2	Tropical
Archiclimacograptus modestus			aff.	x	cf.	x	x	x		x	x	x	x	x		x												x		x				?					C2	Tropical	C2	Tropical
Dicranograptus acuus								x																														C2	Tropical	C2	Tropical
Dicranograptus rectus					cf.			x		cf.	x					x				x								x		x								C2	Tropical	C2	Tropical
Dicellograptus patulosus						x		x				aff.								x																		C2	Tropical	C3	Subtropical
Leptograptus validus inclusus						x		x												cf.																		C3	Tropical	C3	Subtropical
Dicranograptus cyathiformis								x																														C3	Subtropical	C3	Subtropical
Dicranograptus birchiculus								x																														C3	Subtropical	C3	Subtropical
Diplograptus compactus								cf.																														C3	Subtropical	C3	Subtropical
Holograptus macronatus nobilis								x																														C3	Subtropical	C3	Subtropical
Leptograptus assimilans								x																														C3	Subtropical	C3	Subtropical
Normalograptus perfectus								x																														C3	Subtropical	C3	Subtropical
Thamnograptus scalarus								x?																														C3	Subtropical	C3	Subtropical
Dicranograptus ortotacus								x																														C3	Subtropical	C3	Subtropical
Lasiograptus harkness harkness								x																														C3	Subtropical	C3	Subtropical
Leptograptus flaccidus flaccidus								x?												cf.																		C3	Subtropical	C3	Subtropical
Leptograptus grandis								x												aff.																		C3	Subtropical	C3	Subtropical
Climacograptus antipus linearis								x												x								aff.		aff.								C3	Subtropical	C3	Subtropical
Dicellograptus geniculatus								?								x	x											x		x								C3	Subtropical	C3	Subtropical
Dicranograptus brevicaulis								x				x																x		x								C3	Subtropical	C3	Subtropical
Diplograptus falsanus								x								x												x		x								C3	Subtropical	C3	Subtropical
Diplograptus leptotheca								x																				x		x								C3	Subtropical	C3	Subtropical
Leptograptus validus validus								x					x															x		x								C3	Subtropical	C3	Subtropical
Orthograptus apiculatus								x												cf.								x		x								C3	Subtropical	C3	Subtropical
Dicranograptus furcatus minimus								x																				x		x								C3	Subtropical	C3	Subtropical
Eniograptus caudatus										x																						x						C3	Subtropical	C4	Subtropical
Diplograptus nobilis													x							x																		C3	Subtropical	C3	Subtropical
Normalograptus subtilis																				x								cf.		cf.								C3	Subtropical	C3	Subtropical
Hadeniograptus eurystoma																cf.																x						C4	Subtropical	C4	Subtropical
Corynoides curtus pristinus																	x			cf.																		C4	Subtropical	C4	Subtropical
Dicellograptus cambrensis																	x											x		x								C4	Subtropical	C4	Subtropical
Dicranograptus kinki																																							(Argentinian Precordillera species)	C5	Transition
Dicranograptus spiniferus																																							(Argentinian Precordillera species)	C5	Transition
Normalograptus kuckersianus																						x		x								x						C5	Transition	C5	Transition
Leptograptus flaccidus macer		aff.																		x																		C5	Transition	C5	Transition
Amplexograptus rugosus																				x																		C5	Transition	C6	Subpolar
Arygograptus modesgi																				x																		C5	Transition	C6	Subpolar
Climacograptus haddingi																				x																		C5	Transition	C6	Subpolar
Climacograptus puddleshedding (non Hall)																				x																		C5	Transition	C6	Subpolar
Dicellograptus pumilus																				x																		C5	Transition	C6	Subpolar
Diplograptus propinquus																				x																		C5	Transition	C6	Subpolar
Diplograptus taeniatus																				x																		C5	Transition	C6	Subpolar
Glossograptus scalaris																				x																		C5	Transition	C6	Subpolar
Jenograptus deutus																				x																		C5	Transition	C6	Subpolar
Lasiograptus spinatus																				x																		C5	Transition	C6	Subpolar
Normalograptus gracilis remotus																				x						x												C5	Transition	C6	Subpolar
Normograptus phyllodes																						x		cf.														C6	Subpolar	C5	Transition
Normograptus tapeworthi																								cf.														C6	Subpolar	C6	Subpolar
Normalograptus minimus																										cf.												C6	Subpolar	C6	Subpolar
Climacograptus cf. putillus (Hall)																														?								C7	Subpolar or Polar ?	C7	Polar
Climacograptus scalaris																														?								C7	Subpolar or Polar ?	C7	Polar
Didymograptus eudalei																														?								C7	Subpolar or Polar ?	C7	Polar
Archiclimacograptus caelatus																																x						C7	Subpolar or Polar ?	C7	Polar
Climacograptus brevis ornatus	x																																					D1	Tropical	D1	Tropical
Glossograptus acanthus	x																																					D1	Tropical	D1	Tropical
Glossograptus ovatus	x																																					D1	Tropical	D1	Tropical
Lasiograptus asiaticus	x																																					D1	Tropical	D1	Tropical
Orthograptus aspasinus	x																																					D1	Tropical	D1	Tropical
Pseudoklimacograptus scharenbergi angustus	x																																					D1	Tropical	D1	Tropical
Pseudoklimacograptus rabdinensis	x		x			x																																D1	Tropical	D1	Tropical
Arygograptus incurvus	x						x									x																						D1	Tropical	D1	Tropical
Dicellograptus bispinatus bispinatus	x															x																						D1	Tropical	D1	Tropical
Diplograptus tyra	x						x									x																						D1	Tropical	D1	Tropical
Dicellograptus gurleyi gurleyi	x		x			x	x			x						x																						D1	Tropical	D1	Tropical
Archiclimacograptus stenostoma	x		cf.	x		x		x	x	x						x		x																				D1	Tropical	D1	Tropical
Dicranograptus furcatus	x		cf.			x		x		x						x		x																				D1	Tropical	D1	Tropical
Leptograptus flaccidus trentonensis	x					x	x			x			x			x		x																				D1	Tropical	D1	Tropical
Corynoides calicularis	x		x	x		x		x	x	x						x	x	x								x												D1	Tropical	D1	Tropical
Glossograptus ciliatus ciliatus	x		cf.			x	x	x	x	x						x		x																				D1	Tropical	D1	Tropical
Holograptus macronatus macronatus	x		cf.?			x		x		x						x		x								x				cf. ?								D1	Tropical	D1	Tropical
Orthograptus calcaratus acutus	x	x	x		x	x		x	x	x						x		x												x								D1	Tropical	D1	Tropical
Climacograptus cloufferiae		x																																				D1	Tropical	D1	Tropical
Corynoides australis		x																																				D1	Tropical	D1	Tropical
Nicholsograptus flexicaulis		x																																				D1	Tropical	D1	Tropical
Pengloograptus tentaculatus		x																																				D1	Tropical	D1	Tropical
Retiograptus speciosus		x																																				D1	Tropical	D1	Tropical
Dicranograptus ramosus longicaulis		x	x		x					x																												D1	Tropical	D1	Tropical
Climacograptus bicornis tridentatus		x	cf.		x			x	x	x						x				x																		D1	Tropical	D1	Tropical
Orthograptus calcaratus vulgatus		x			x															x																		D1	Tropical	D1	Tropical
Dicellograptus sextans exilis		x	x			x		x		x						x				x						cf.				x								D1	Tropical	D1	Tropical
Dicranograptus ramosus ramosus		x						x	x	x						x														x								D1	Tropical	D1	Tropical
Dicranograptus ramosus spiniferus		x	x		x			x		x						x		cf. ?												x								D1	Tropical	D1	Tropical
Climacograptus spiniferus fluviatilis			x																																			D2	Tropical	D2	Tropical
Dicranograptus nicholsoni whitianus			x																																			D2	Tropical	D2	Tropical
Trigonograptus martelli			x																																			D2	Tropical	D2	Tropical
Climacograptus bicornis pebbler			x		x			x		x																												D2	Tropical	D2	Tropical
Climacograptus evansi			x						cf.	x																												D2	Tropical	D2	Tropical
Dicellograptus divaricatus bisurvatus			x							x																												D2	Tropical	D2	Tropical
Diplograptus multidens var. dimorphus			?							x																												D2	Tropical	D2	Tropical
Normalograptus exilis inexpectus			x			x				x																												D2	Tropical	D2	Tropical
Normalograptus gracilis var. curvulentus			x			x				x																												D2	Tropical	D2	Tropical
Normalograptus euglyphus pagiolensis			x			x				x																												D2	Tropical	D2	Tropical
Orthograptus calcaratus incisus			cf.						x																													D2	Tropical	D2	Tropical
Dicellograptus sinitic			x			x				cf.			cf.																									D2	Tropical	D2	Tropical
Dicranograptus contortus			cf.		x	x			x							x																						D2	Tropical	D2	Tropical
Didymograptus serratulus			cf.		x	x		x	x	x						x																						D2	Tropical	D2	Tropical
Normalograptus exilis exilis			aff.		x					x						x	x																					D2	Tropical	D2	Tropical
Diplograptus multidens multidens					cf.					aff.										x																		D2	Tropical	D2	Tropical
Corynoides incurvus			x		x					x										x																		D2	Tropical	D2	Tropical
Dicranograptus nicholsoni geniculatus					x																																	D2	Tropical	D2	Tropical
Glossograptus hoernlei					x																																	D2	Tropical	D2	Tropical
Neurograptus margaritatus					cf.																																	D2	Tropical	D2	Tropical
Orthograptus calcaratus basilicus					x				x																													D2	Tropical	D2	Tropical
Orthograptus calcaratus alabamensis						x																																D3	Tropical	D3	Subtropical
Dicellograptus gurleyi exilis						x				x																												D3	Tropical	D3	Subtropical
Dicranograptus nicholsoni parvangulus						x				x																												D3	Tropical	D3	Subtropical
Didymograptus sublimis							x																															D3	Tropical	D3	Subtropical
Corynoides tricornis							x																															D3	Tropical	D3	Subtropical
Climacograptus modestus meridionalis						x	x									x				x																		D3	Tropical	D3	Subtropical
Climacograptus parvus								cf.																														D4	Subtropical	D4	Subtropical
Amplexograptus divergens								x		x																												D4	Subtropical	D4	Subtropical
Didymograptus sagittulus								x	x																													D4	Subtropical	D4	Subtropical
Dicellograptus sextans var. pennatus								x		x																												D4	Subtropical	D4	Subtropical
Orthograptus truncatus truncatus			aff.							x																												D4	Subtropical	D5	Subtropical
Arygograptus simplex										?																												D4	Subtropical	D5	Subtropical
Climacograptus phyllophorus										x																												D4	Subtropical	D5	Subtropical
Dicellograptus divaricatus rectus										x																												D4	Subtropical	D5	Subtropical
Dicellograptus mesurans										x																												D4	Subtropical	D5	Subtropical
Dicranograptus furcatus exilis										x																												D4	Subtropical	D5	Subtropical
Dicranograptus nicholsoni diplasian										x																												D4	Subtropical	D5	Subtropical
Dicranograptus spiniferus geniculatus										x																												D4	Subtropical	D5	Subtropical
Glossograptus ciliatus var. elegans										x																												D4	Subtropical	D5	Subtropical
Corynoides americanus																	x																					D5	Subtropical	D5	Subtropical
Cryptograptus mancius																	x																					D5	Subtropical	D5	Subtropical
Dicranograptus clingani																	x																					D5	Subtropical	D5	Subtropical
Neograptus innexus																	x																					D5	Subtropical	D5	Subtropical
Pseudoklimacograptus angulatus angulatus																	x																					D5	Subtropical	D5	Subtropical
Climacograptus styloideus			aff.																																						
Glossograptus hystrix			aff.																																						