References cited in figures 2, 3				Hashemi & Playford (2005)				Colbath (1990)	Playford & Dr	ooki (1994, 2003), Hashemi & Pla			Moreau-Benoit (1979,		Paris *et al*. (1985		Loboziak & Streel (199			Moreau-Benoit *et al*. (1993)				Bär & Rieguel (1974)		Loboziak (2000)		Breuer *et al*. (2007*b*)			Marshall *et*
Stratigraphic units																															
Country	both	Canada	Australia	Australia						Iran			Libya				Tunisia and Libya			Algeria				Ghana		Saudi Arabia					
Age of the assemblages	Spp number	general ranges		Ems	Eifel	Giv	ea Fra	Giv-Fras	Fras	Ems-Eif	Giv	Frasn	ranges	No. Spp	ranges	No. Spp	Eifel	Giv	Fra	Ems	Eif	Giv	Fras	Mid-Dev	Fras	ranges	No. Spp	Ems	Eif	Giv	Giv
Biozones																															
Selected species from Argentina and Bolivia	McGregor & Playford (1992)			16				17		18			19.A		19.B		20			21				22		23.A		23.B			23.C
Acinosporites acanthomammillatus						1				1			Prag-Giv	1	Giv	1								1		Eif-ea Giv	1		1	1	
Acinosporites apiculatus													Eif	1	Giv	1										Eif	1	1	1	1	
Acinosporites eumammillatus																															
Acinosporites hirsutus																															
Acinosporites ledundae																															
Acinosporites lindlarensis	1	la Ems-ea Giv	la Giv							1			Eif-Fras	1												Eif-Giv	1	1	1	1	
Acinosporites macrospinosus										1					Eif-Giv	1								1		la Eif-Giv	1				
Anapiculatisporites petilus	1	Eif	Giv										Ems-ea Giv	1														1	1		
Ancyrospora langii	1	la Giv-Fra	la Giv-Fra			1	1		1				la Fra-Fam	1	Fras	1							1			Fra	1				
Ancyrospora spp.												1																			
Apiculatasporites inferus																															
Apiculatasporites microconus																															
Apiculatisporis grandis																															
Apiculiretusispora brandtii													Eif-Giv	1	Ems-Giv	1				1				1				1	1	1	
Apiculiretusispora densiconata																															
Apiculiretusispora gaspiensis																															
Apiculiretusispora laxa																															
Apiculiretusispora plicata													Prag-ea Giv	1	Giv	1												1	1	1	
Archaeoperisaccus sp. in Ottone																															
Archaeozonotriletes chulus var. *chulus*													Prag-Ems te	1														1	1	1	
Archaeozonotriletes variabilis	1	Giv-Fam	Giv-Fra			1	1						Giv-Fras	1	Fras	1								1		Giv-Fra	1				
Auroraspora pseudocrista																															
Camarozonotriletes concavus													Giv-la Fras	1			1	1								Eif-ea Fra	1				
Camptozonotriletes caperatus																															
Chelinospora concinna	1	la Giv-Fra	la Giv										la Giv-ea Fras	1																	
Chelinospora ligurata																										Giv-ea Fra	1				
Chelinospora paravermiculata																															
Chelinospora timanica	1	Giv-ea Fra	ea Fra			1	1						Giv-Fras	1												la Eif-Fra	1				
Convolutispora crassata																															
Convolutispora disparalis																															
Corystisporites multispinosus													la Eif-ea Fra	1																	
Craspedispora ghadamisensis													la Eif-Giv	1			1	1								Eif-Giv	1				
Craspedispora paranensis																	1	1													
Crassispora catenata																															
Cymbosporites catillus											1	1	la Giv-Fras	1												Giv-ea Fra	1				
Cymbosporites cyathus													Fras-Fam	1								1	1			la Giv-ea Fra	1				
Cymbosporites hormiscoides									1																						
Cymbosporites spp.																															
Diatomozonotriletes franklinii													Eif-Giv	1												Eif-Giv	1				
Dibolisporites echinaceus										1			Prag-ea Giv	1	Ems-Giv	1												1	1		
Dibolisporites eifeliensis										1					Ems-	1												1	1		
Dibolisporites farraginis	1	la Eif-ea Fra	Giv																												
Dibolisporites quebecensis										1																					
Dibolisporites spp.																															

Dibolisporites uncatus	1	Giv	Giv-ea Fra																										
Dibolisporites variegatus																													
Dibolisporites varius																													
Dictyotriletes emsiensis morphon													Prag-ea Ems	1												1			
Dictyotriletes subgranifer													Prag-ea Ems	1												1			
Diducites mucronatus																													
Emphanisporites annulatus	1	Ems-ea Giv	la Giv-ea Fra					1					la Ems-Giv	1	Ems-	1				1			1				1	1	1	
Emphanisporites decoratus															Ems-	1										1	1	1	
Emphanisporites epicautus																													
Emphanisporites orbicularis																										1	1	1	
Emphanisporites rotatus	1	Dev	Giv/Fra					1	1			1	la Prag-Fras	1	Ems-	1							1			1	1	1	1
Endoculeospora altobellii																													
Endosporites longiradiatus																													
Geminospora lemurata	1	Giv-Fam	la Giv-ea Fam		1	1		1		1		1	Giv-Fam	1	Giv-Fra	1					1	1	1		la Eif-Fra	1		1	1
Geminospora piliformis																		1							la Giv-ea Fra	1			
Geminospora punctata	1	Fra-ea Fam	ea Fra									1	Giv-Fras	1											Giv-Fra	1			1
Geminospora sp. cf. *G. tuberculata* var. *tuberculata*															Giv	1													
Grandispora brevispinosa																													
Grandispora brevizonata																													
Grandispora daemonii																						1							
Grandispora douglastownense									1				la Ems-Eif	1					1	1					Eif-Giv	1		1	1
Grandispora eximia	1	ea Eif	Giv-Fra										Eif-Giv	1															
Grandispora gabesensis													Eif	1			1	1		1					Eif-Giv	1			
Grandispora inculta	1	la Eif-ea Fra	Giv -ea Fra		1								la Ems-Giv	1	Giv-Fra	1				1									
Grandispora libyensis													la Ems-Fras	1	Giv	1	1	1		1	1	1							
Grandispora limae																													
Grandispora mammillata											1		la Giv	1									1						
Grandispora megaformis													la Ems-Giv	1						1									
Grandispora permulta													Giv	1	(pl24,fig.8	1	1	1	1						Eif-ea Fra	1			
Grandispora protea													la Ems-Giv	1	Giv	1				1	1	1						1	1
Grandispora pseudoreticulata																							1						
Grandispora spp.																							1						
Grandispora tabulata																		1											
Grandispora velata	1	Eif-ea Fra	Giv te	1	1								la Ems-ea Fra	1															
Grandispora verrucosa																													
Granulatisporites muninensis													Prag-ea Giv	1															
Hystricosporites sp. cf. *H. mitratus*																													
Hystricosporites sp. *in* Ottone																													
Hystricosporites spp.												1																	
Leiotriletes balapucensis																													
Leiotriletes pagius													Prag-Ems	1															
Leiotriletes trivialis																													
Lophozonotriletes lebedianensis																													
Lophozonotriletes media																													
Lophozonotriletes spp.																													
Punctatisporites glaber																													
Punctatisporites picuibaensis																													
Punctatisporites planus																													
Punctatisporites spp.																													
Raistrickia aratra															Giv	1													
Raistrickia spp.																													

Retusotriletes maculatus											Prag-Eif	1											1				
Retusotriletes paraguayensis																					1						
Retusotriletes simplex											Prag-ea Giv	1															
Retusotriletes spp.																											
Rhabdosporites langii	1	Eif-Giv	Giv-ea Fra		1	1		1	1		la Ems-la Fam	1	Eif-Giv	1			1	1								1
Rugospora bricei											la Fras	1															
Grandispora praetervisa											la Ems-ea Fra	1				1											
Samarisporites triangulatus	1	la Giv-Fra	la Giv-ea Fra		1	1		1			la Giv-Fras	1	Fras	1			1	1		1		la Giv-Fra	1				1
Teichertospora torquata																											
Verruciretusispora magnifica																											1
Verruciretusispora ornata																											
Verrucosisporites bulliferus											Fras-la Fam	1	Fras	1				1									
Verrucosisporites polygonalis				1					1		la Ems-Eif	1											1				
Verrucosisporites premnus	1	la Eif-ea Fra	la Giv						1		Giv	1	Eif-Fra	1								Eif-Fra	1				
Verrucosisporites scurrus	1	la Eif-ea Fra	Giv-ea Fra		1	1		1			Giv-Fra	1	Eif-Fra	1								Eif-Fra	1				1
Verrucosisporites tumulentus					1	1																					
ACRITARCHS-PRASINOPHYCEA		Molyneux et al. (1996)	e Hérissé et al.(2000)																								
Ammonidium garrasinoi																											
Ammonidium microcladum																											
Arkonites bilixus																											
Baltisphaeridium spp.																											
Baltisphaerosum spp.																											
Barbestiastra/Estiastra spp.																											
Bimerga bensonii			Prag-Frasn																								
Cordobesia oriental			la Ems-ea Giv																								
Crassiangulina tessellita		Fra-Fam	Fam																								
Crucidia camirense			la Giv-Fra																								
Cymatiosphaera apiaria																											
Cymatiosphaera canadensis																											
Cymatiosphaera perimembrana							1	1		1																	
Cymatiosphaera sp. cf. *C. subtrita*																											
Cymatiosphaera spp.																											
Dactylofusa fastidiona			Prag-Ems																								
Daillydium pentaster		la Giv-Fam					1	1		1																	
Dictyotidium granulatum								1		1																	
Dictyotidium munificum																											
Dictyotidium venulosum																											
Diexalophasis remota		Sil-Giv											Dev	1		1	1	1									
Diexalophasis simplex																											
Duvernaysphaera angelae		Ems-Fras	Giv																								
Duvernaysphaera kraeuseli		la Ems-ea Fam	la Ems-Fam				1																				
Duvernaysphaera tenuicingulata								1																			
Duvernaysphaera tessella			Giv					1												1							
Estiastra improcera																											
Estiastra rhytidoa			Giv-Fra																								
Estiastra spinulireticulata																											
Evittia sommeri			la Ems-Fam																								
Exochoderma arca																											
Exochoderma irregularis		la Giv-Fam	Eif-Fam																								
Exochoderma triangulata			Eif-Fam																								

Geron elegans																			
Gorgonisph ohioense		la Fra-Fam	la Fra-Fam				1		Fam	1									
Gorgonisphaeridium discissum						1	1												
Gorgonisphaeridium evexispinosum																			
Gorgonisphaeridium spp.							1												
Gorgonisphaeridium winslowiae																			
Hapsidopalla exornata			la Eif-ea Giv																
Hapsidopalla invenusta			Giv																
Hapsidopalla sannemanii		Sil-Ems	Loch-Giv																
Hemiruptia legaultii																			
Hoegklintia corallina																			
Horologinella quadrispina		Fra-Fam	Fam						Fras	1									
Leiofusa banderillae																			
Leiofusa estrecha		Sil-Lochk																	
Leiofusa pyrena			Giv-ea Fra																
Leiosphaeridia spp.																			
Lophosphaeridium deminutum					1	1	1						1						
Lophosphaeridium spp.																			
Lunulidia micropunctata																			
Maranhites brasiliensis		Fra-Fam	Eif-Fam		1							1	1		1				
Maranhites britoi			Fras				1												
Maranhites insulatus			Fra-Fam																
Maranhites mosesii			la Fra-Fam																
Maranhites spp.																			
Micrhystridium sp. cf. *M. pentagonale*						1													
Multipliscisphaeridium microcladum																			
Multipliscisphaeridium ramusculosum		Fra-Fam	Giv-Fam		1		1												
Navifusa bacilla		Ems-Fam	Ems-Fam		1						1	1	1	1					
Navifusa brasiliensis															1				
Neoveryhachium carminae																			
Onondagaella asymetrica		Low Dev	Loch-ea Ems								1								
Orygmahapsis pachyderma					1														
Palacanthus ledanoisii		Ems-Fam	Ems-Fam			1													
Petrovina connata			Fra-Fam te																
Polyedryxium ambitum																			
Polyedryxium decorum		Prag-Fam	Prag-Fam																
Polyedryxium embudum						1													
Polyedryxium fragosulum			Prag-Giv						Giv	1									
Polyedryxium leptum																			
Polyedryxium pharaonis		Prag-Fam			1		1		Giv	1					1				
Polyedryxium spp.																			
Polyedryxium talus																			
Polyedryxium tectum																			
Polygonium barredae																			
Pseudolunulidia imperatrizensis																			
Pseudolunulidia laevigata																			
Pseudolunulidia spp.																			
Pterospermella capitana																			
Pterospermella circumstriata		Low Dev	Loch-Ems																
Pterospermella pernambucensis																			
Pterospermella spp.																			

Pulvinosphaeridium trifidum																															
Puteoscortum polyankystrum			la Fra																												
Puteoscortum willireae			la Fra																												
Schizocystia pilosa			Loch-ea Prag																												
Schizocystia saharica			Loch-ea Ems																												
Stellinium comptum		Giv-Fam	Giv-ea Fam									1																			
Stellinium micropolygonale		Prag-Fam	Prag - Fam					1	1			1			Fra-Fam	1															
Stellinium octoaster																															
Tasmanites spp.																															
Triangulina alargada		Dev	Dev									1																			
Tunisphaeridium caudatum																															
Umbellasphaeridium armillatum																															
Umbellasphaeridium companulatum																															
Umbellasphaeridium deflandrei		Fra-Fam	Giv ta-Fam												Giv-Fam	1								1	1						
Umbellasphaeridium saharicum		Eif-Fam	Fra-Fam																						1						
Verhyachium trispininflatum			Prag-Ems																												
Verhyachium trispinosum								1				1																			
Veryhachium polyaster		Prag-Fam	Prag-Fam																												
Veryhachium spp.												1																			
Villosacapsula rosendae		Prag-Fam	Loch-Ems									1																			
Winwaloeusia distracta			Dev																												
CHITINOZOANS																															
Alpenachitina eisenacki																															
Ancyrochitina ancyrea																															
Ancyrochitina langei																															
Ancyrochitina spp.																															
Angochitina comosa																															
Angochitina galarzae																															
Angochitina mourai																															
Belonechitina holfeltzii																															
Belonechitina sp.																															
Fungochitina pilosa																															
Fungochitina sp. In Ottone																															
Lagenochitina avelinoi																															
Lagenochitina sommerii																															
Urochitina bastosi																															
Urochitina loboi																															
MEGASPORES																															
Aulicosporites sp.																															
Aulicosporites vitabilis																															
Biharisporites parviornatus																															
CHLOROPHYCEAN ALGAE																															
Quadrisporites granulatus																															
Quadrisporites variabilis																															
Chomotriletes vendugensis									1			1			Fra-Fam	1															
Botryococcus sp.																															
CRIPTOSPORES																															
Tetrahedraletes medinensis																												1	1	1	
Laeovolancis divellomedia	1	Em-ea Eif	la Eif-ea Fra	1	1	1			1	1			Loch-ea Ems	1														1	1	1	
Total number of species in each column	20	0	0	2	2	12	8	11	21	12	3	23	0	47	0	32	6	6	3	6	9	9	12	12	7	0	22	17	17	15	7
Total number of species per assemblage	44			82				74	100	65		90		106						16	11	16	26	38	32		34	76			18