

Table 2: Calcareous nannoplankton assemblages in the Amiran foreland basin (NE Zagros, Iran)

Datum	Waypoint	Date	Index	Latitude	Longitude	Fm./Mbr.	Sample type	Level in the section (m)	Nannofossil Zone	Biostratigraphic marker assemblage	Total abundance	Preservation	Comments
Cehel Taghi													
SH	01	070508	-	33.42412	48.55554	Am Conglo.	NP	812	Barren		B	--	
SH	20	060508	-	33.42350	48.55491	Amiran	NP	725					
SH	19	060508	-	33.42276	48.55413	Amiran	NP	670	Barren		B	--	
SH	18	060508	-	33.42306	48.55145	Amiran	NP	543	Barren		B	--	
SH	17	060508	-	33.42225	48.54940	Amiran	NP	465	Zone not determinated		P	P	Only few specimens of most resistant Cretaceous taxa ie. <i>Watznaueria barnesae</i>
SH	16	060508	1	33.42213	48.54732	Amiran	NP	422					
SH	15	060508	-	33.42187	48.54693	Amiran	NP	386					
SH	14	060508	1	33.42164	48.54619	Amiran	NP	327	Zone not determinated		P	P	Only few specimens of most resistant Cretaceous taxa ie. <i>Watznaueria barnesae</i>
SH	13	060508	-	33.42135	48.54551	Gu/Am	NP	270	CC-22	<i>Eiffellithus eximius, Uniplanarius trifidum, Uniplanarius gothicum, Uniplanarius sissinghii</i>	F	M	
SH	12	060508	-	33.42124	48.54462	Gu/Am	NP	210					
SH	11	060508	-	33.42587	48.51574	Gurpi	NP	105					
SH	10	060508	-	33.42560	48.51549	Gurpi	NP	75	CC-22	<i>Eiffellithus eximius, Uniplanarius trifidum, Uniplanarius gothicum, Uniplanarius sissinghii</i>	F	M	
SH	09	060508	-	33.42531	48.51437	Gurpi	NP	34					
SH	08	060508	-	33.42516	48.51421	Gurpi	NP	17					
SH	07	060508	-	33.42494	48.51397	Gurpi	NP	0	Zone not determinated		P	P	
SE Khorramabad													
SH	06	100508	-	33.33377	48.62863	Am Conglo.	NP	-	CC18-CC22	Abundant <i>Eiffellithus eximius, Lithraphidites cayeuxii</i>	F	M	
SH	07	100508	-	33.33409	48.62840	Am Conglo.	NP	-	CC21-CC22	<i>Eiffellithus eximius, Uniplanarius cf. trifidum, Uniplanarius gothicum</i>	F	M	
Dar Howz													
SH	05	050508	1	33.60209	48.29857	Shahbazan	NP	1035	Zone not determinated		P	P	Only few specimens of most resistant Cretaceous taxa ie. <i>Watznaueria barnesae</i>
SH	16	050508	1	33.58172	48.29299	Am Conglo.	NP	5	Barren		B	--	
SH	16	050508	2	33.58172	48.29299	Am Conglo.	NP	0	Barren		B	--	
NE Pusht-e Jangal													
SH	05	170508	-	33.44884	47.98553	Taleh Zang	NP	1259	Barren		B	--	
SH	21	160508	-	33.44534	47.98472	Am-TZ	NP	1005	Barren		B	--	
SH	20	160508	-	33.44522	47.98429	Amiran	NP	971	Barren		B	--	
SH	19	160508	-	33.44510	47.98362	Amiran	NP	940					
SH	18	160508	-	33.44478	47.98283	Amiran	NP	873	NP2	<i>Cruciplacolithus primus</i> large, <i>Futyania petalosa</i> , <i>Coccolithus pelagicus</i> , <i>Neobiscutum parvulum</i>	F	M	
SH	17	160508	1	33.44464	47.98146	Amiran	NP	787					
SH	15	160508	-	33.44193	47.98374	Amiran	NP	732	NP1	<i>Neobiscutum parvulum</i> , <i>Cruciplacolithus primus</i> small, relatively abundant <i>Thoracosphaera operculata</i>	F	M	Abundant cretaceous reworked species
SH	14	160508	-	33.44030	47.98480	Amiran	NP	661					
SH	13	160508	-	33.43945	47.98451	Amiran	NP	594					
SH	12	160508	-	33.43852	47.98365	Amiran	NP	504	CC26b	<i>Micula prinsii</i>	F	M	
SH	11	160508	-	33.43721	47.98358	Amiran	NP	380					
SH	10	160508	-	33.43556	47.98400	Amiran	NP	284	CC25c	<i>Micula murus</i>	A	M	
SH	09	160508	-	33.43485	47.98392	Amiran	NP	226					
SH	07	160508	-	33.43432	47.98383	Amiran	NP	180					
SH	06	160508	-	33.43383	47.98403	Amiran	NP	145	Zone not determinated		P	P	

SH	02	200508	-	33.12111	48.04206	Purple Shales	NP	100	NP4 (upper part)	<i>Ellipsolithus macellus</i> , <i>Sphenolithus primus</i> , <i>Chiasmolithus edentulus</i>	F	M	
SH	01	200508	-	33.11842	48.03672	Gurpi	NP	0	Cretaceous	<i>Prediscosphaera</i> spp., <i>Micula</i> spp.,	R	M/P	
NE Rit													
SH	4	180607	2	33.07638	48.24117	Shahbazan	NP	1182	Barren		B	--	
SH	5	180607	2	33.07621	48.24116	Shahbazan	NP	1170	Barren		B	--	
SH	6	180607	2	33.07609	48.24117	Shahbazan	NP	1131	Barren		B	--	
SH	11	180607	3	33.07266	48.24037	Taleh Zang	NP	845	Zone not determinated		F	M	Mostly cretaceous reworked specimens with few paleocene species
SH	12	180607	3	33.0706	48.24013	Taleh Zang	NP	701	Zone not determinated		R	M/P	Mostly cretaceous reworked specimens with few paleocene species
SH	15	180607	1	33.06858	48.23838	Amiran	NP	578	NP9	<i>Discoaster multiradiatus</i> , <i>Fasciculithus</i> spp., <i>Scapholithus apertus</i>	C	M	Only 3 specimens of <i>Discoaster</i> have been recorded. Few cretaceous reworked specimens
SH	16	180607	1	33.06815	48.23875	Amiran	NP	531	NP9	<i>Discoaster multiradiatus</i> , <i>Fasciculithus</i> spp., <i>Scapholithus apertus</i>	F	M	Few specimens of <i>Discoaster</i> have been recorded. Few cretaceous reworked specimens
SH	17	180607	1	33.06516	48.23604	Amiran	NP	351	Barren				
SH	18	180607	1	33.06155	48.23334	Amiran	NP	91	NP7	<i>Discoaster</i> cf. <i>mohleri</i> , <i>Scapholithus apertus</i>	C	M	The presence of representatives of the genus <i>Discoaster</i> indicate that this sample corresponds to Zone NP7. The species total abundance decreased from this sample upward.
SH	19	180607	1	33.06003	48.21956	Purple Shale Mb	NP	12	NP5	<i>Fasciculithus tympaniformis</i> , <i>Fasciculithus billii</i> , <i>Heliolithus cantabriae</i> , <i>Toweius tovae</i>	A	M	Few cretaceous reworked specimens
SH	20	180607	1	33.05965	48.21949	Gurpi	NP	9	NP4 (upper part)	<i>Ellipsolithus macellus</i> , <i>Sphenolithus primus</i> , <i>Fasciculithus vertebratooides</i> , <i>Chiasmolithus edentulus</i> , <i>Neochiastozygus perfectus</i>	A	M	Few cretaceous reworked specimens
SW Rit													
SH	3	230607	1	32.99766	48.20467	Purple Shales	NP	2	NP6	<i>Heliolithus kleinPELLI</i> , absence of <i>Discoaster mohleri</i>	A	G/M	
SH	1	230607	1	32.99595	48.21333	Amiran	NP	5	NP9 (lower part)	<i>Discoaster multiradiatus</i> , <i>Fasciculithus</i> spp., <i>Discoaster nobilis</i>	A	G/M	First forms of <i>D. multiradiatus</i>
SH	2	230607	1	32.99625	48.21313	Amiran	NP	15	NP9	<i>Fasciculithus</i> spp., <i>Scapholithus apertus</i> , <i>Zygrhablithus bijugatus</i>	R	M	No <i>Discoaster</i> spp. have been found, however the presence of <i>Scapholithus apertus</i> and several species of <i>Fasciculithus</i> indicate that this part of the section correspond to Zone NP9
SH	014	120607	2	33.01004	48.19553	Amiran	NP	64					
SH	014	120607	4	33.01004	48.19553	Amiran	NP	129					
SH	3	220607	1	33.00368	48.19929	Amiran	NP	130	NP9	<i>Discoaster multiradiatus</i> , <i>Fasciculithus</i> spp., <i>Scapholithus apertus</i>	R	M	
SH	4	220607	1	33.00899	48.19583	Amiran	NP	135	NP10-11	absence of <i>Fasciculithus</i>	R	M	
SH	6	220607	1	33.00713	48.19418	Amiran	NP	189	NP10-11	absence of <i>Fasciculithus</i>	P	M	
SH	8	220607	1	33.00571	48.19225	Amiran	NP	216	NP10-11	absence of <i>Fasciculithus</i> , <i>Discoaster</i> cf. <i>diastypus</i>	P	M	
SH	9	220607	1	33.00592	48.18915	Amiran	NP	408	NP10-11	absence of <i>Fasciculithus</i>	P	M	
Kush Ab													
SH	5	230607	1	32.94552	48.12228	Taleh Zang	NP	10	NP11	<i>Sphenolithus editus</i> , absence of <i>Discoaster lodoensis</i>	F	M	more than 70% cretaceous reworked specimens
SH	6	230607	1	32.94465	48.12244	Taleh Zang	NP	29	NP12	<i>Sphenolithus editus</i> , <i>Discoaster lodoensis</i> , <i>Tribrachiatulus orthostylus</i>	F	M	more than 70% cretaceous reworked specimens
NE Chenareh													
GC	3935	150508	1	32.92214	48.07167	Gurpi	NP		NP2	<i>Cruciplacolithus primus</i> large, <i>Coccolithus pelagicus</i> , abundant <i>Futyania petalosa</i>	C	M	

GC	3936	150508	2	32.92239	48.07103	Gurpi	NP		NP3	<i>Cruciplacolithus edwardsii</i> , <i>Cruciplacolithus tenuis</i> , abundant <i>Prinsius dimorphosus</i>	F	M		
GC	3937	150508	3	32.92272	48.07069	Gurpi	NP		basal NP4	<i>Toweius pertusus</i> , <i>Neochiastozygus eosaepe</i> , <i>Prinsius bisulcus</i>	C	M	The Zone NP4 marker, <i>Ellipsolithus macellus</i> , is not present; however, the occurrence of <i>T. pertusus</i> and <i>N. eosaepe</i> indicate Zone NP4.	
GC	3938	150508	4	32.92325	48.07022	Gurpi	NP		NP4	<i>Ellipsolithus macellus</i> , <i>Sphenolithus primus</i>	C	M		
SH	2	190607	1	32.92306	48.07032	Purple shales	NP	0	NP5	<i>Fasciculithus tympaniformis</i> , <i>Fasciculithus pileatus</i> , <i>Fasciculithus janni</i> , <i>Chismolithus consuetus</i> , <i>Toweius cf. eminens</i>	C	G/M	Presence of few cretaceous reworked specimens. Presence of several <i>Fasciculithus</i> species of the lower part of Zone NP5	
SH	4	190607	1	32.92333	48.07072	Gurpi-Amiran	NP	20	NP8 (uppermost part)	<i>Discoaster mohleri</i> , <i>Discoaster nobilis</i> , <i>Discoaster cf. multiradiatus</i> , <i>Fasciculithus</i> spp.	F	G/M	Transitional forms between <i>D. mohleri</i> and <i>D. multiradiatus</i> .	
SH	6	190607	3	32.92377	48.071	Amiran	NP	56	Zone not determined		P	P	Mostly cretaceous reworked specimens	
SH	7	190607	1	32.92417	48.07155	Amiran	NP	84	NP12 (lower part)	<i>Discoaster cf. lodoensis</i> , <i>Sphenolithus editus</i> , <i>Sphenolithus radians</i> , <i>Discoaster kuepperi</i>	R	M	80% of the autochthonous specimens are <i>Sphenolithus</i>	
SH	10	190607	1	32.9249	48.07246	Amiran	NP	157	Zone not determined		P	P	Almost barren	
SH	11	190607	2	32.92491	48.0726	Amiran	NP	163						
SH	14	190607	3	32.92383	48.07624	Amiran	NP	181,2	NP12	<i>Discoaster lodoensis</i> , <i>Tribrachiatius orthostylus</i>	F	M	40% cretaceous reworked specimens	
SH	17	190607	1	32.92429	48.07945	Amiran	NP	280	NP12	<i>Discoaster lodoensis</i> , <i>Tribrachiatius orthostylus</i>	F	M	More than 60% cretaceous reworked specimens	
SH	18	190607	1	32.92439	48.07977	Amiran	NP	296	NP12	<i>Discoaster lodoensis</i> , <i>Sphenolithus radians</i> , <i>Sphenolithus seditus</i>	C	M	More than 70% cretaceous reworked specimens	
SH	2	200607	2	32.92443	48.08002	Amiran	NP	311	Zone not determined		P	P	Almost barren	
SH	3	200607	1	32.9245	48.08086	Amiran	NP	455	NP12	<i>Discoaster lodoensis</i> , <i>Tribrachiatius orthostylus</i>	A	M	More than 60% cretaceous reworked specimens	
SH	4	200607	3	32.92615	48.08264	Amiran	NP	500	Zone not determined		P	P	Almost barren	
SH	5	200607	3	32.92616	48.08311	Taleh Zang	NP	510	Zone not determined		P	P	Almost barren	
SH	6	200607	3	32.92629	48.08312	Taleh Zang	NP	520	Zone not determined		R	M	Only cretaceous reworked specimens	
SH	11	200607	1	32.92667	48.08443	Taleh Zang - Kashkan	NP	574	Barren		B	--		
SH	12	200607	1	32.9264	48.08461	Taleh Zang - Kashkan	NP	581,5	Barren		B	--		
SH	17	200607	2	32.92681	48.08507	Taleh Zang - Kashkan	NP	649	Barren		B	--		
SH	18	200607	1	32.92691	48.08506	Taleh Zang - Kashkan	NP	653,5	Barren		B	--		
SH	19	200607	1	32.92725	48.08403	Taleh Zang - Kashkan	NP	671	Barren		B	--		
SH	20	200607	2	32.92752	48.08415	Taleh Zang - Kashkan	NP	685,5	Barren		B	--		
SH	21	200607	2	32.92726	48.0839	Shahbazan-Asmari	NP	798	Barren		B	--		

A (abundant): >30 specimens per field of view (spp./f.v.); **C** (common): 10 to 30 spp./f.v.; **F** (few): 1 to 10 spp./f.v.; **R** (rare): 0,1 to 1 spp./f.v.; **P** (presence): <0,1 spp./f.v.; **B** (barren): no nannofossils.

G (good): little or no evidence of dissolution and/or secondary overgrowth; fully preserved diagnostic characters. **M** (moderate): dissolution and/or secondary overgrowth; partially altered primary morphological characters; nearly all the specimens can be identified at the species level. **P** (poor): severe dissolution, fragmentation and/or secondary overgrowth; largely destroyed primary features; many specimens cannot be identified at the species level.

n=170