



**PALYNOLOGICAL STUDY ON THE SUBSURFACE
CRETACEOUS IN THE WESTERN DESERT,
EGYPT**

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I declare that the work contained in this thesis is the result of my own investigations. It has not been previously submitted for any degree at this or any other University.

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This thesis is dedicated to...

my parents,

my sisters,

and my sweet heart Omar, Belal & Eyad

Without whom it could not be possible.

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Contents

<i>Subject</i>	<i>Page</i>
List of Figures	i
List of Tables	iii
Abstract	vi
Preface	v
Chapter 1: Introduction	1
1.1. Background.....	1
1.2. Purpose and scope	5
1.3. Previous work.....	5
1.4. Location of the studied well.....	12
Chapter 2: Materials and Methods	14
2.1. Materials.....	14
2.2. Methods.....	14
2.2.1. Disaggregation and weighing.....	14
2.2.2. Demineralization.....	15
2.2.3. Final processes.....	16
Chapter 3: Lithostratigraphy	20
3.1. Bahariya Foramation.....	20
3.2. Abu Roash Formation.....	22
3.3. Khoman Formation.....	24
Chapter 4: Systematic Palynology	27
4.1. Introduction.....	27
4.2. Spores and pollen.....	27
4.3. Fungal palynomorphs.....	104
4.4. Microalgal palynomorphs.....	105
4.5. Dinoflagellate cysts.....	110
4.6. Acritarchs.....	134
4.7. Microforaminiferal inner test linings.....	138
4.8. Scolecodonts.....	140
4.9. Varia.....	141
4.10. A review of the angiosperm pollen genus <i>Cretacaeiporites</i> Herngreen.....	142
4.10.1. Historical introduction	142
4.10.2. Systematic Palynology.....	143
Chapter 5: Palynostratigraphy	160
Introduction.....	160

<i>Palynozone 1: Dinogymnium spp. -Odontochitina porifera</i> Assemblage Zone.....	160
<i>Palynozone 2: Unnamed Zone</i>	162
<i>Palynozone 3: Ephedripites ambiguus-Triporoletes blanensis- Trichodinium spp. Assemblage Zone</i>	163
<i>Palynozone 4: Afropollis jardinus-Afropollis cf. kahramanensis- Dichastopollenites ghazalatensis Assemblage Zone</i>	165
<i>Palynozone 5: Elaterosporites verrucatus-Sofrepites legouxae- Cretacaeiporites spp. Assemblage Zone</i>	167
Chapter 6: Palynofacies and Source Rock Evaluation	179
6.1. Introduction.....	179
6.2. Palynofacies constituents.....	179
6.3. Palynofacies and kerogen type classification.....	185
6.4. Palynofacies zones and kerogen types of Lotus#3 borehole..	188
Chapter 7: Depositional Environment and Palaeoclimate	194
7.1. Depositional environment.....	194
7.1.1. Introduction.....	194
7.1.2. Palynofacies and the depositional environment.....	194
7.1.3. Palynomorphs and the depositional environment.....	195
7.1.4. Depositional environment interpretations of Lotus#3 borehole.....	196
7.2. Palynoflora and palaeoclimatic implications.....	198
Chapter 8: Summary and Conclusions	204
References	209
Appendices	239
Appendix 1.....	239
Appendix 2.....	240
Appendix 3.....	244
Plates	246
المستخلص	1
الملخص العربي.....	3

List of Figures

<i>No.</i>	<i>Caption</i>	<i>Page</i>
1	Generalized lithostratigraphic column in the northern part of the Western Desert (after Schlumberger, 1995).....	4
2	Location map of the Lotus#3 (Lot#3) well.....	13
3	Stratigraphic succession and position of the samples encountered in Lotus#3 borehole.....	26
4	Basic morphologic groups of acritarchs encountered in the present study.....	135
5	Stancliffe's informal classification of the microforaminiferal linings.....	139
6	Line illustration of <i>Cretacaeiporites</i> species	153
7	Stratigraphic range of <i>Cretacaeiporites</i> species.....	154
8	World palaeogeographic map showing the distribution of the <i>Cretacaeiporites</i> species durin the Cretaceous period.....	155
9a	Stratigraphic ranges of the recorded microspores in Lotus#3 (Lot#3) well in order of last occurrences.....	170
9b	Stratigraphic ranges of the recorded microspores and gymnosperm pollen in Lotus#3 (Lot#3) well in order of last occurrences.....	171
9c	Stratigraphic ranges of the recorded gymnosperm pollen in Lotus#3 (Lot#3) well in order of last occurrences.....	172
9d	Stratigraphic ranges of the recorded angiosperm pollen in Lotus#3 (Lot#3) well in order of last occurrences.....	173
9e	Stratigraphic ranges of the recorded dinoflagellates and other organic-walled microfossils in Lotus#3 (Lot#3) well in order of last occurrences.....	174
9f	Stratigraphic ranges of the recorded dinoflagellates and other organic-walled microfossils in Lotus#3 (Lot#3) well in order of last occurrences.....	175
10	Ternary AOM-phytoclast-palynomorph (APP) kerogen plot (after Tyson, 1993).....	186
11	Chart of semi-quantitative palynofacies analysis of the studied samples of Lotus#3 borehole.....	188

12	Palynofacies zone 1 (PF-1); dominated by AOM and phytoclasts while the palynomorphs represented by low proportion, sample no. 3 (1966 m).....	190
13	Palynofacies zone 2 (PF-2); the AOM constitutes the total bulk of POM, sample no. 30 (1686 m).....	191
14	Palynofacies zone 3 (PF-3); a sharp decrease in AOM and a slightly increase in phytoclasts quantity, sample no. 45 (1524 m).....	192
15	Ternary AOM-Phytoclast-Palynomorph (APP) Kerogen plots of the studied samples of Lotus#3 borehole; illustrating the three recognized palynofacies types.....	193
16	A summary of the principal sedimentary environments.....	194
17	Microplankton-spore-pollen palynomorph plot of Federova (1977) and Düringer and Doubinger (1985) (after Tyson, 1995).....	195
18	Microplankton-spore-pollen ternary plot of the studied interval of Lotus#3 borehole.....	198
19	Chart of semi-quantitative analysis of selected and frequent-dominant palynomorphs in the studied interval of Lotus#3 borehole.....	201

List of Tables

<i>No.</i>	<i>Caption</i>	<i>Page</i>
1	Northern Western Desert formations encountered in the Lotus#3 well.....	13
2	Previous records of <i>Cretacaeiporites</i> species compiled from Palynodata and White (2008) unless otherwise noticed (*).....	156
3	Correlation of the most important Late Cretaceous palynological biozonation in North Western Desert of Egypt, including the present study.....	176
4	Detailed classification system of the individual palynological components from palynomorph group (simplified after Tyson, 1993, 1995; Mendonça Filho <i>et al.</i> , 2012).....	181
5	Detailed classification system of the individual palynological components from AOM group (simplified after Tyson, 1993, 1995; Mendonça Filho <i>et al.</i> , 2012).....	182
6	Detailed classification system of the individual palynological components from phytoclast group (simplified after Tyson, 1993, 1995; Mendonça Filho <i>et al.</i> , 2012).....	184
7	Key to palynofacies fields indicated in the ternary kerogen plot (after Tyson, 1995).....	187
8	Botanical affinities, and the ecological types of miospore taxa recorded in the present study. Ecological types after Schrank (2001), Wang <i>et al.</i> (2005), Eiserhardt <i>et al.</i> (2011) and Bowman <i>et al.</i> (2014).....	202



Abstract



Abstract

Fifty five cutting samples from the Cretaceous Bahariya and Abu Roash formations of the Lotus#3 borehole in the North Western Desert of Egypt, have been palynologically investigated. The study has yielded copious amounts of mostly well-preserved palynomorphs (193 species), out of which 57 spores, 38 gymnosperm pollen, 39 angiosperm pollen, one fungal palynomorph, one cyanobacterium, five fresh water algae, one prasinophyte, 46 dinoflagellate cysts and five acritarchs, in addition to various morphological forms of scolecodonts and microforaminiferal inner test linings. Of these, One new angiosperm pollen belonging to the genus *Cretacaeiporites* is described and a new combination *C. krutzschi* (Boltenhagen) comb. nov. is also proposed. In addition, one genus (*Rivularia*) and five species (*Ariadnaesporites cristatus*, *Crassosphaera ornata*, *Fromea amphora*, *Odontochitina tabulata* and *Ovoidites gracilis*) are recorded for the first time from the Cretaceous of Egypt.

Five informal assemblage palynozones are proposed: *Dinogymnium* spp.-*Odontochitina porifera* (Coniacian-Santonian); Unnamed Zone (late Turonian-early Coniacian); *Ephedripites ambiguus*-*Triporoletes blanensis*-*Trichodinium* spp. (late Cenomanian-Turonian); *Afropollis jardinus*-*Afropollis* cf. *kahramanensis*-*Dichastopollenites ghazalatensis* (early-late Cenomanian); *Elaterosporites verrucatus*-*Sofrepites legouxae*-*Cretacaeiporites* spp. (late Albian-early Cenomanian). These palynozones were correlated with their equivalents from the North Western Desert of Egypt.

Three palynofacies zones which are environmentally controlled are identified and the source rock potential is evaluated. Kerogen type II, oil-prone material is suggested to the Bahariya and basal part of Abu Roash "G", "D", "C", "B", "A" members while kerogen type I-II, highly oil prone is postulated for the upper part of Abu Roash "G", "F" and "E" members.

The information gained from the climatic tolerances of modern plants with affinities to the encountered sporomorphs, suggest that