Cairo University
Faculty of Science
Geology Department

GEOLOGICAL AND PALEOECOLOGICAL ASPECTS OF THE MOGHRA FOSSIL MAMMALS, NORTH WESTERN DESERT, EGYPT

Presented by
Mohamed Korany Ismail Abdel Gawad
(B. Sc. in Geology)

A Thesis submitted to
Faculty of Science

In Partial Fulfillment for the Requirements of
Master Degree of Science in Geology

To
Department of Geology,
Faculty of Science,
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Supervisors

Prof. Mohamed Abdel- Hamid El Sharkawi

Professor of Mineralogy, Geology Department,
Faculty of Science, Cairo University.

Prof. Mohamed Abdel- Rahman Hamdan

Professor of Sedimentology, Geoarcheology and Quaternary geology,
Geology Department, Faculty of Science, Cairo University.

Dr. Ahmed Niazy El- Barkooky

Lecturer of Stratigraphy and Sedimentology, Geology Department,
Faculty of Science, Cairo University.

2011

APROVAL SHEET FOR SUMISSION

Thesis Title

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Name of Candidate

Mohamed Korany Ismail Abdel Gawad

This thesis has been approved for submission by the supervisors:

Prof. Mohamed Abdel- Hamid El Sharkawi
Professor of Mineralogy, Geology Department,
Faculty of Science, Cairo University.
Signature:

Prof. Mohamed Abdel- Rahman Hamdan
Professor of Sedimentology, Geoarcheology and Quaternary geology, Geology Department,
Faculty of Science, Cairo University.
Signature:

Dr. Ahmed Niazy El- Barkooky
Lecturer of Stratigraphy and Sedimentology, Geology Department,
Faculty of Science, Cairo University.
Signature:

Prof. Adel A. A. Sehim
Chairman of Geology Department
Faculty of Science- Cairo University

أسماء الممتحنين

الممتحن الاول (الاجنبي) :

Dr. Gregg F. Gunnell

الممتحن الثاني (المصري) :

أ.د. عبد المحسن عثمان زيكو

الممتحن الثالث (المشرف) :

أ.د. محمد عبد الرحمن حمدان

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Mohamed K. Abdel-Gawad

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Dedication

I would like to dedicate this thesis to my father ***Prof. Korany Ismail Abdel-Gawad,*** *my mother* ***Prof. Rafee Ibrahim El Zanaty*** *and my sister* ***Dr. Fatma Korany Ismail,*** *and my lovely dedication to my lovely wife* ***Dr. Marwa Aly El Chaghabey*** *and my little lovely daughter* ***Hafsa****.*

Mohamed K. Abdel-Gawad

2011

Note

The candidate has been passed the pre-master courses in Geology (Sedimentary rocks and sedimentology) in 12/2005. The courses include:

1) Clastic sedimentary rocks
2) Non-Clastic sedimentary rocks
3) Sedimentation
4) Primary sedimentary structures
5) Stratigraphy
6) Geochemistry of sedimentary rocks
7) Diagenesis
8) Tectonics and sedimentation
9) Evaporites
10) Statistics
11) German language

Prof. Adel A. A. Sehim
Chairman of Geology Department
Faculty of Science- Cairo University

ABSTRACT

Student Name: Mohamed Korany Ismail Abdel Gawad

Title of the thesis: **Geological and paleoecological aspects of the Moghra fossil mammals, north Western Desert, Egypt**

Degree: Master in Sedimentary rocks and sedimentation

This thesis deals with geological and paleoecological aspects of the Early Miocene fossils mammals of Moghra Depression, North Western Desert, Egypt. The vertebrate assemblage is represented by mixture of marine, fresh water and terrestrial types such as shark, rays, turtles and crocodiles. The mammal's assemblage represented as follows Sirenia as marine mammal, fresh water mammal such as Artiodactyla (Anthracotheriidae) and the terrestrial ones such as Artiodactyla (Suidae, Sanitheriidae, Ruminantia), Perissodactyla, Proboscidea, Carnivora, Creodont and Primate. Ichnofossil assemblages in the studied area are represented by *Ophiomorpha*, *Thalassinoides* and Root system of Mangrove. Petrified wood may be found in situ in the bed or found in great numbers on some levels as Petrified Forest and Lag deposits which contain coprolites. Taphonomic aspects suggest that the fossil location might not be always the site of a natural death assemblage. The sedimentary facies and faunal content of the Moghra Formation reveal tide dominated estuary depositional environment.

Keywords: Moghra Formation, Early Miocene, mammals, *Ophiomorpha*, *Thalassinoides*, coprolites, Taphonomic aspects, and tide dominated estuary.

Supervisors:

Signature:

1- Prof. Mohamed Abdel- Hamid El Sharkawy
2- Prof. Mohamed Abdel- Rahman Hamdan
3- Dr. Ahmed Niazy El- Barkooky

Prof. Dr. Adel Abdel Aziz Sehim

Chairman of Geology Department
Faculty of Science- Cairo University

Abstract

Abstract

The present thesis deals with geological and paleoenvironmental aspects of the Early Miocene fossils mammals of Moghra Depression, North Western Desert, Egypt. The fossil content in the study area includes both invertebrate and vertebrate remains as well as trace fossils.

The vertebrate assemblage is represented by mixture of marine, fresh water and terrestrial types such as shark, rays, turtles and crocodiles. The mammals assemblage represented seven orders, 16 families, 25 genera and 24 species as follows Sirenia as marine mammal , fresh water mammal such as Artiodactyla (Anthracotheriidae, ancestor of hippopotamus) and the terrestrial ones such as Artiodactyla (Suidae, Sanitheriidae (pig), Ruminantia (deer and giraffe)), Perissodactyla (the rhinoceroses and their relatives), Proboscidea (the largest land mammals, elephants), Carnivora (Flesh eating mammals, wolves and cats), Creodont (Hyaena) and Primate (omnivorous and herbivorous mammals, lemur, monkey and apes).

The trace fossils are important paleoenvironmental aspects. Ichnofossil assemblages in the studied area are represented by *Ophiomorpha* which indicates intertidal zone and *Thalassinoides* indicating subtidal environments, Root system of Mangrove is mainly characteristic of the beaches and tidelands in the Tropics (especially the Eastern Hemisphere) that best grows in brackish water (most commonly in salt water), Petrified wood may be found in situ in the bed with less silicification or found in great numbers on some levels as Petrified Forest and Lag deposits which contain coprolites (fecal pellets of the vertebrates).

Taphonomic aspects have been considered in this work. Most of the fossilized remains of the mammals are teeth, jaws with or without teeth, and sometimes skull and broken bones. The fragmented and disarticulated nature of the fossils suggests that the fossil location might not be always the site of

a natural death assemblage. The concentration of teeth and denser bones could be the result of sorting by transport processes.

The sedimentary facies and faunal content of the Moghra Formation reveal tide dominated estuary depositional environment.

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